ABSTRACT

This book on implementing Montessori education in the public sector begins with a historical and social overview that reveals the usefulness of Montessori pedagogy as a means of national public school reform. The second chapter discusses equipment needed for Montessori schools, the scope and sequence of curriculum used, and minimal expectations for what should be included in a Montessori classroom. Chapter Three provides a view of Montessori language arts in light of current trends, including bilingual education. Chapter Four outlines a number of implementation approaches. Chapter Five discusses ways to integrate different funding sources so that early childhood Montessori can be supported in school districts that usually do not provide prekindergarten services. Chapter Six concerns Montessori education in relation to the disabled child and special education. Chapter Seven discusses the process of starting a school in terms of development of a proposal, common misconceptions, magnet school funding, and task force development. Cost audits from two established Montessori schools in Cincinnati are included. Chapter Eight covers admissions and recruitment, nonselective admissions, magnet school recruitment, promotions, and admission application procedures. Chapter Nine concerns parent involvement; Chapter Ten, program expansion; and Chapter Eleven, program evaluation. Numerous references are cited throughout; supportive materials are appended to some chapters. (RH)
Montessori in the public schools is a rapidly expanding phenomenon. Magnet school experts cite Montessori as the most offered choice in the “schools of choice” reform movement. Public school Montessori currently includes one hundred schools serving about 14,000 children with five to ten districts beginning new Montessori programs each year. Over half of the public school programs now in existence have been founded since 1980.

When we refer to “Montessori in the Public Sector,” there is sometimes the implication that the public school Montessori pedagogical experience should be different from that of the private sector. Even though there is a range of practice in both the private and public sector — some conservative, some reformed, some piecemeal, some not defined at all — good Montessori education remains the same in any sector. No matter what language is chosen to describe Montessori, there is no substitute for visiting a good Montessori program for several days and observing children interact within a scientifically prepared environment and with adults who are trained and experienced in working in that prepared environment.

Montessorians responsible for Montessori implementation in the public sector must look at the physical, administrative, and psychological changes that precede curricular change. The district standards, desegregation, the office and school forms, the financials, and marketing are factors having little to do with Montessori pedagogy, but which need to be aligned with Montessori philosophy. Thus, this volume contains documents which, for the most part, do not capture Montessori in its philosophical essence, but which demonstrate how Montessori is represented in bureaucratic and research terms. These terms, in their reductionism, can diminish the subtle vision of Montessori. The sensitivity to the child, the spiritual and moral values of the Montessori philosophy, the intensity of the cosmic task, etc., have a vernacular and meaning which are essential to authentic Montessori but are to be distinguished from the reporting, testing, researching, and general idiom of modern public schools.

In some districts, Montessori expertise is not available. A good fifth of these existing schools do not have certified Montessori teachers. More than half do not have Montessori supervision. Two-thirds are starting children after age three. One-third show random or non-existent multi-age groupings. Montessori is at greatest risk during its implementation stage, when knowledge of the method and source material is weak. New Montessori programs without proper foundations have diminished chances of surviving as alternative models because they often drift from their initial Montessori goals.

It is the conviction of the North American Montessori Teachers’ Association (NAMTA) that if there is a clear definition of Montessori curriculum, then Montessori can be accomplished in its fullness even when initial prevailing conditions are not always sympathetic to Montessori education. The potential for quality education in the public schools is greatly enhanced if the Montessori curriculum tradition insists on knowledgeable implementation built on a child-tested, time-proven set of practices. The long-term gain resulting from a careful construction of Montessori is that the pedagogy remains intact, the child receives a coherent educational experience, and the Montessorians have a framework in which to continue the Montessori dialogue. Thorough implementation of Montessori means that the school district, as it establishes its various “schools of choice,” will be able to advance a Montessori model that is recognized by parents as an established and unique program for their children.

As Montessori moves into the public arena and as the outside world makes its assessment of the Montessori community, there is a new level of cooperation necessary to deal with the
increasing size of the movement. As an outgrowth of NAMTA public school research and documentation, the Nienhuis Corporation has funded the establishment of a Montessori Public School Consortium located at Cleveland State University, under the direction of Dr. Mary Boehmlein. This consortium has received the encouragement of both the Association Montessori Internationale and the American Montessori Society, and is an effort to consolidate and disseminate Montessori information as it pertains to Montessori public schools. It is hoped that Montessori public education will be developed without compromise to its original spirit and without losing sight of Dr. Montessori's desire to help all children, regardless of socio-economic and cultural backgrounds. Montessori in the public sector would then afford an opportunity to achieve our highest aspirations in a new initiative which, if successful, would provide a professional environment with adequate resources and institutional stability to bring Montessori into the twenty-first century.

David Kahn,
Editor
ACKNOWLEDGMENTS

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This historical and social overview of Montessori schools in the public sector provides an understanding of the usefulness of Montessori pedagogy as a means of national public school reform. Although Montessori is not a panacea, it is seen by many as a successful educational alternative for children of low socioeconomic backgrounds.
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MONTESSORI MAGNET SCHOOLS AND CONTEMPORARY SCHOOL REFORM

by David Kahn

- The Montessori magnet schools find their roots in alternative education. The formative period for alternative, experimental schools coincided with the formative period of federal court-ordered desegregation plans for America's urban centers.
- Montessori magnet schools are expanding at an increasing rate; their successes can be measured in terms of cost, desegregation impact, educational quality, and thematic cohesiveness.
- Montessori is valued for its instructional uniqueness as a whole pedagogy. A comprehensive curriculum gets comprehensive results.
- The Montessori child-centered curriculum is in keeping with national educational trends.

INTRODUCTION

The Montessori model of education has been in existence since 1907. The Association Montessori Internationale was established for the safeguarding of the method in 1929, and Montessori has been rooted in the American alternative education tradition since 1939. Although introduced in America as early as 1910, the popularity of Montessori education has emerged primarily in the last thirty years. In 1989 various forms of Montessori are implemented in almost 3,000 private schools and in 100 public school projects of varying scales and implementation status. About one-third of the Montessori public schools were established as "magnet schools" to redistribute racial and economic imbalances, one fourth were founded by Montessori teachers and parents wanting their Montessori experience to be supported by public funds, with the remaining balance supported by a variety of motivations aimed at combined educational reform and voluntary desegregation (Kahn, Boehnlein, Villegas, 1987).

MONTESSORI MAGNETS – A COMPREHENSIVE EDUCATIONAL REFORM

The purpose of this chapter is to demonstrate the usefulness of Montessori education, not only as one tool to assist in desegregation in the context of magnet schools, but also as a comprehensive educational reform which is compatible with today's magnet school mission.

To gain insight into the emerging importance of Montessori magnets, it is important to look at the evolution of both the Montessori and magnet school movements, how they differ and how they coincide.

Magnet School Beginnings and Montessori

Montessori magnets find their roots in alternative education. Fantini states that the first alternative education models were outside of public education (Fantini, 1972). This holds true for Montessori, which began in the private sector and added about fifty private schools a year between 1960 and 1970. It is no wonder that by the late sixties Montessori books were on sale with those of Neill, Kozol, Dennison, Herdon, Holt and Goodman. Small, private experimental schools reached a new status in the early seventies,
likewise Montessori schools were operated by a handful of teachers and parents “working around the clock for sub-standard wages trying to run a school on a shoestring” (Fantini, 1972).

This formative period for alternative, experimental schools coincided with the formative period of federal court-ordered desegregation plans for America’s urban centers. Rossell and Hawley (1981) reported that court appointed officials and urban school boards believed they had learned an important lesson about desegregation during this time: when the issue was busing for desegregation, blacks would ride the bus, but significant numbers of whites would flee or actually fight to stay off. Orfield (1981) noted that a quarter-century after the Brown v. Board of Education court decision, desegregation policies had little impact on big cities, and a growing number of them were reaching the status of virtually all-minority school populations. He was concerned that policies were urgently needed which could successfully reduce segregation in metropolitan centers.

As a result, the increasingly minority public school population and the racial violence which surrounded mandatory busing for desegregation, as exemplified in the Boston, Little Rock, and Pontiac school systems, lead desegregation planners to seek methods which would attract children to desegregation schools (Coleman, 1981). Since the desegregation schools were meant to attract children, they were called magnets.

In the early seventies, magnet schools were being set up on a small scale in Michigan and Minnesota. By the late seventies, a provision of the federal Emergency School Aid Act called for the spending of $25 million in 1977 and $50 million the following year for planning and operating magnet schools (Fullington, 1988). Magnet schools were seen by some as a serious solution for desegregation to be supported by federal funds. By offering specialized and unique curricula, it was hoped that magnet schools would attract students of all races and economic levels on a voluntary basis.

Montessori Curriculum Merges with Magnet Concepts

By 1978 the Montessori model had already become prominent in the early childhood movement as part of the “war on poverty.” Furthermore, in the seventies, Montessori private schools were expanding their Montessori curriculum through the sixth grade. An estimated 100 to 200 classrooms nationwide represented a developed and self-sufficient alternative education model with its own materials, time-tested curriculum and pre-trained teachers. In keeping with the Brunerian “curriculum spiral” proposed in the late fifties, Montessori programming provided an interconnected, internally consistent model, easily put in place as long as trained teachers were available. It is not surprising then that the eighties saw a 500 percent increase in the number of Montessori magnet schools. Their successes were measured in terms of cost, desegregation impact, educational quality, and thematic cohesiveness.

Schools of Choice: The Problem of the Match

In the seventies, the “schools of choice,” as magnets are sometimes called, were revered for their ability to provide options according to the personal interests of teachers, students, and parents. The dynamic of choice created competition among the magnet schools which insured a higher level of fitness and accountability within each program (Joy and Clowell, 1988). Until recently, magnet schools were evaluated on this basis — to hold and attract (Frey, 1988). Both Fantini and Fullington write that fundamental to choice is the school objective of “talent identification and cultivation” (Fullington), which suggests that ever person can develop a talent which will ultimately evolve into a career. The choice of school deals with the problem of the match. The general assumption is that the magnet school must offer specific interest areas to match specific needs of children.

The medical, legal, and arts communities along with libraries and museums, interacted with magnet schools to provide “enrichment” components. Community partnerships suggested a variety of themes. There could be a business magnet, an arts academy, a health professional curriculum, computer magnets,
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humanities, world studies, second language, etc. Each specialty magnet offered a core curriculum which included a special focus or subject area (Joy and Clewell, 1988).

Schools of Choice: The Comprehensive Curriculum

Recently, however, particularly at the elementary level, the focus has shifted from the curriculum specialty schools. Dentler’s 1988 criteria for what makes a magnet school indicates a shift from the emphasis on choice of unique “special” offerings to that of instructional uniqueness. A magnet school, says Dentler, has “a distinctive curriculum based on a special theme or method of instruction.” Magnets still maintain their role in desegregation, their consumer choice option, their open access to school enrollment beyond the neighborhood zone, but the “alternative” curriculum as a unique delivery system is coming to the forefront. Dentler states that even specialties are included as part of “progressive and alternative pedagogies embracing self-paced or age-mixed groups” (Dentler, 1988).

Another report accents once again choice, not of specialized programs such as computer and foreign language, but rather of instructional style. Instructional styles are characterized as two extremes—‘‘the fundamental schools with an emphasis on basics had a more structured, disciplined atmosphere and the

More than ever magnet schools are playing a major role in the educational reform movement, delving deeper than previously into pedagogical schools of thought.

gifted and talented schools with experimental, flexible curricula were more relaxed and informal” (Joy and Clewell, 1988). This shift suggests that more than ever magnet schools are playing a major role in the educational reform movement, delving deeper than previously into pedagogical schools of thought. As soon as this shift becomes more evident, school districts will have to pay more attention to the pedagogical principles that communities are beginning to discern.

Montessori: A Well Rounded Education

As the demand for Montessori magnets increases, it is important to indicate that although the Montessori model has some unsurpassed results, it operates with well-defined program structures which are unique to Montessori and very different from the original “schools of choice” rationale. The Montessori premise is that it works for every kind of child when the community, the school staff and the administrator and parents are in agreement with the tenets of Montessori philosophy. Those looking to magnets to develop a specific talent will find that Montessori curriculum activity deals with a well rounded view of human potential which it assumes is present within every child. For example, the Montessori magnet might not provide an optimum facility for instrumental music as would a music magnet school, but it would endeavor to develop music universals appropriate to human development. The only specialization in the classroom is initiated by the child’s choice of activity. But the teacher, who is the enlightened generalist, will at the right time endeavor to interest the child in all subject areas.

Comprehensive Curriculum Gets Comprehensive Results

“Piecemeal reform measures beget piecemeal effects, if any” (Science for All Americans, 1989). When a district chooses a comprehensive approach such as Montessori, it is dealing with many levels, the preparation of teachers, the content of the learning materials, testing methods and evaluation technique, and the very organization of the school. Creating a Montessori magnet requires careful planning of curriculum sequence, reallocation of material resources, and careful delineation of teacher career paths within the schools. Failure to establish planned priorities for a whole curriculum system may leave the students worse off than before Montessori programming was adopted. Well-planned Montessori programming means a
Teacher Education is Essential

The starting point is teacher education. Alternative teachers need preparation for new structures and approaches. If a teacher has been teaching in a lock step, skill drill fundamental program, he or she needs to know how to substitute new strategies for old. Teachers need to see clearly how curriculum must be adapted to the child, not the child to the curriculum. A matter of word and deed, educational reform must go to the philosophical roots of the teacher's methodology. This can only be done with thorough knowledge of a child's developmental timetable. In addition, teachers need educational tools which are designed to acquaint the child with the independent explorations of subject areas through manipulation, writing, reading, guided discovery, etc. Montessori teacher training reorients the teacher to new levels of understanding. Methodology and content come after a philosophical view of the child has been established. It is definitely a difficult path to take, but Montessori teacher training can activate a restructuring of the teacher's whole approach.

Montessori training may offset what George Frey has pinpointed as resistance to change in teachers and administrators. "They are afraid of losing power or control...the new concept means more work. Or, perhaps they feel changing negates the value of their past work..." (Frey, 1988). Strong knowledge of curriculum, philosophy, scope, sequence, and methodology helps teachers predict change and treat change as a "process and not an event" (Frey, 1988). The change process is based on personal experience involving growth of knowledge integrated with a change of personal philosophy. This special formation is exactly what good Montessori training is about. Montessori teacher training includes observation in an established Montessori classroom in order to observe the new philosophy and methodology at work. This is followed by a practicum in two or more established classes so trainees may experience implementation in action.

Montessori Education Inspires Family Commitment

Montessori's philosophy attracts and holds families for the extent of the school's gradespan and beyond. Parents learn a new way of seeing their parenting role which can last a lifetime. Montessori sustains parents, and it invites them from the beginning to embrace its principles of childrearing, the prepared environment, the will to belong, the role of movement, etc. If a program starts at age three, the intimacy and involvement of parents is higher; parents become loyal to the school community and to the very philosophical roots of the pedagogy involved. Preliminary research (Villegas) is beginning to demonstrate the extraordinary impact that Montessori parent education has had on the retention and success of children enrolled in a Montessori school. It is the philosophy of child development that brings both parent and teacher into a deeply felt commitment to the Montessori educational program. Why? Because Montessori is seen as an "aid to life" which begins at birth. Home life is considered indispensable to learning because children are learning well before mandatory school age. When the parent commits to Montessori, the parent commits to more than an educational idea. The parent relates to the vital process of human development which is clearly presented in the Montessori philosophy. Montessori brings to magnet schools what Frey considers to be a primary magnet school characteristic — "a unifying sense of purpose felt by the staff, students and parents" (Frey, 1988).
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The Child-Centered Curriculum — A National Trend

Frey and others have hinted that "magnet schools, in the forefront of innovation and change, have created blueprints for use by those who are now starting to restructure comprehensive schools." This means that those magnet schools which have undergone true curriculum reform, such as Montessori, will be enlisted to help with the larger educational reforms of the future. It is clear that the public is demanding educational revision and new directions which place the child in an active learning role. The April 17, 1989 Newsweek cover story entitled "How Kids Learn," called for a child-centered curriculum involving movement, manipulation and discovery. The educational mainstream is ready for a more humane and engaging child-centered curriculum. Montessori magnet schools can play a major role in the improvement of child-centered education for the following reasons. An extensive history of operations, a well-developed teacher training support, curriculum depth, and parent involvement. As magnet concepts are being reviewed for their educational integrity, Montessori magnets will be a well-researched and in-depth curriculum option, ready for all kinds of learners in a variety of settings. As school reforms continue to be national trends, a well-organized Montessori body of work may provide the nation with a process of education which can help every school district meet increasingly high expectations. Such schools provide quality alternatives that really work and match theory with results.

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Fundamental changes in how we assist at-risk students and their families must become a national priority.

Education of at-risk students must change from a pedagogy of minimal basic skills to that of learning what is critical, diagnostic, adaptable, and longlasting.

School-based decision making can improve learning.

Whatever changes are made in our educational system, the overriding concern must be to improve learning for all children, especially those at risk of school failure.

The Montessori model of education has been used successfully with at-risk children.

Magnet schools hold the potential for both positive and negative impacts on children, particularly those at risk of later failure.

EDUCATIONAL REFORM

In the late nineteenth and early twentieth centuries, education in the United States was influenced by the Progressive Movement which criticized the nation's schools for providing most students with an education that was rigid, passive, and rote-oriented, resulting in learners unable to think critically, to synthesize and transform, or to experiment and create. This movement was followed by one which stressed standardization of learning. The 1920s saw what educational historians call the Efficiency Movement. Many readers will also recall the teacher-proof curricular reforms of the 1950s and the “back to basics” movement of the 1970s.

In the last two decades, efforts to change the educational system of this country have been collectively described as being part of the educational reform movement, or more precisely, as part of one of several “waves” of educational reform (Phipho, 1988). The product most writers cite as the lightning rod of educational reform in the 1980s was the federal report, A Nation At Risk (National Commission on Excellence in Education, 1983). That report and the other reports released soon after by a variety of blue-ribbon commissions helped to bring increased attention to the pressing need for changes in how children in the United States were being schooled.

A tremendous amount of activity in the effort to reform education has occurred since the publication of those reports. Federal, state, and local education agencies as well as foundations and corporations all have become involved in the discussion, design, and implementation of changes in the educational system. The states have emerged as the most visible actors in these various reforms (Brown, 1987; Doyle and Hartle, 1985). The National Governors' Association report, Time for Results (NGA, 1986), received considerable attention and indicates how active governors have become in the area of educational reform. State legislatures, too, have dramatically increased their attention to education. State-level action has included the formation of over 270 state task forces and commissions as well as the enactment of more than 700

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Recommendations for reform in this period have focused on educational “excellence,” including increased graduation requirements in the form of additional course work or exit examinations. Other recommendations resulting from the excellence wave have involved increased teacher salaries, new teacher assessment and certification tests, as well as merit pay and career ladders. The recommendations are varied and sometimes contradictory. For instance, increasing graduation requirements for high school students without providing additional assistance to those students at risk of school failure can serve to encourage those same students to drop out instead of improving their education. Likewise, poorly designed and biased exams that keep minority teacher applicants from certification help ensure that the seriously dwindling supply of minority teachers will diminish even further (Alston, 1988).

CHILDREN AT RISK OF SCHOOL FAILURE

Many argue that the reform movement of the early 1980s did little to help those students at risk of school failure. A decade of federal social policies, since 1980, which reduced assistance to low income families coupled with state and local educational reform policies which offered limited assistance to at-risk children and youth have taken their toll. There is a growing consensus among policymakers, national education organizations, and child advocacy groups at all levels, that fundamental changes in how, and substantial increases in how much, we assist at-risk students and their families must become a national priority.

Even a cursory glance at current economic, social, and educational indicators leaves the reader with a sense of emergency and a clear recognition that responsible people must move now to ensure the provision of necessary and high quality social, economic, and educational services to children and their families. Consider the following statistics reported by the Children’s Defense Fund (1989):

- If current trends in child poverty continue, between now and the year 2000, all of the growth in our child population will consist of poor children — in the year 2000 one in four of all American children will be poor — an increase of three million from 1987;
- Among all children (up to 18 years of age) in America, one out of five is poor; among infants and toddlers younger than three, one in four is poor;
- Among black children, nearly one out of every two is poor;
- By the year 2000, the total number of minority children will increase by more than twenty-five percent and will constitute one-third of all children, the number of white, non-Hispanic children will increase by one-twentieth of one percent;
- Regardless of race, poor youths are almost three times more likely than their well-off peers to drop out of school;
- According to the U.S. Department of Education, only a small minority of the millions of students with limited English proficiency are currently receiving adequate bilingual education services,
- Approximately one-fourth of all students fail to graduate from high school; in some urban areas well over fifty percent fail to graduate; and
- More than half of the new jobs created between 1984 and 2000 will require some kind of education beyond high school, with almost one-third requiring four or more years of college.

These statistics, of course, are not simply numbers, they are people and they are predominantly women and children. Since 1980, this nation has chosen to spend just under two trillion dollars on the defense of a system that not only permits but creates the poverty, racism, and sexism which these statistics rather coldly outline. In this same period of time, we have seen cuts of forty billion dollars made in programs for low income children and families.

Unconscionable injustices have resulted from policies in this country that permit pregnant young women to go without proper prenatal care, young children to live through infancy with inadequate nutrition and without necessary immunizations, and school-age children to attend schools in dilapidated, dangerous
buildings with inadequate materials and inappropriately trained teachers. Earlier calls for improved educational and related services for at-risk children and youth — based in justice and compassion — have gone largely unheeded.

More recently, a number of prominent people outside the field of education have called for improved education for reasons of international economic competition. The demographer, Harold Hodgkinson (1986), explains that in the early 1950s, every American retiree was supported by seventeen active workers, while in the 1990s, each retiree will only have three workers for support. More than one-third of those workers will be minorities. Business leaders in organizations like the Committee on Economic Development (1987) argue that the soundest investment in America's economy is the provision, at public expense, for high quality early childhood and family education and related services for those at risk. While some may question the seriousness of the interest business leaders have expressed in at-risk students, at least their rhetoric focuses public attention on the current unmet needs. Whatever the source of recognition, the problems remain.

In an optimistic joining of these two points of view — of social justice and economic self-interest — Marian Wright Edelman, President of the Children's Defense Fund (CDF), has written, “In the waning years of the twentieth century, doing what is right and doing what is necessary to save our national skins have converged. I see the 1990s as a marvelous opportunity to revitalize and strengthen our democracy.” Edelman goes on to spell out in detail what the national agenda for children should be.

Educators of all stripes have a particular responsibility in meeting the needs — difficult and complex as they may be — of at-risk youngsters. Research shows clearly that low income students, minority students, and students with limited English proficiency are many times more likely to attend schools with inadequate facilities, work with low quality materials, and receive an unchallenging and inappropriate education. What is missing is not knowledge. We know now to teach all children. We know that different individuals learn in different ways and at different times. Absent is the universal commitment at the national, state, and local levels to ensure that students at risk are provided an effective and appropriate education.

**SCHOOL RESTRUCTURING**

For all students, but especially for at-risk students, to become responsible citizens and productive workers in the next decades, the nature of what is meant by "effective learning" must change fundamentally. The attainment of basic skills or minimal competencies alone is not adequate preparation for life. Schooling must develop and support the ability to think critically and creatively, to be flexible and reflective, to engage in respectful dialogue, to make ethical judgments, and to develop what early childhood expert Lilian Katz calls "a disposition for learning." The end result of instruction must be much more than basic literacy and numeracy; it must be improved student comprehension and thinking. Almost universally, schooling for at-risk students has stressed the former rather than the latter. The education of at-risk students must change from a pedagogy of minimal basic skills to a pedagogy of learning that is critical, diagnostic, adaptable, and long-lasting (CCSSO, 1989).

It is abundantly clear that young people in the 1980s and 1990s must graduate at least from high school in order to have access to an economically secure life. Continuing failure of the schools to adequately serve and appropriately educate at-risk students, and demographic trend data that show that these same young people are quickly becoming a much larger percentage of our future work force have, together, forced a growing number of people to agree that changes in schools of a more fundamental or structural nature are necessary in order to have schools be successful with all students. Calls for schools to be "restructured" have come from numerous sources (and of course mean different things). The Carnegie Forum on Education and the Economy (1986), the National Governors' Association, the National Association of Advocates for Students, the Council of Chief State School Officers, the National Association of State Boards of Education, as well as the American Federation of Teachers and the National Education Association have all publicly stated the need for fundamental, not just marginal, school change — for school restructuring.

At the same time there have been individual proposals and projects to restructure schools including Ted Sizer's Coalition of Essential Schools, Mortimer Adler's Paideia Proposal, Henry Levin's Accelerated
Learning Schools, Robert Slavin's Cooperative Learning, and Johnson and Johnson's study, to name five. While the details of each of these proposals differ, they all agree that the current way a school is organized and how students are taught frequently hinder rather than encourage changes which might improve students' learning.

The goals and elements of these and other restructuring proposals vary widely. Ted Sanders, the current U.S. Under Secretary of Education, wrote as the past president of the Council of Chief State School Officers in his 1988 working paper to that organization:

In the absence of a coherent and unifying structure which makes apparent their relationships to one another and to the improvement of schools in general, there appears to be a supermarket filled with interesting products, allowing one to pick a teacher reform here, a structural reform there – potentially ignoring the need for comprehensiveness in approach (Sanders, 1988).

Despite this variety of "products" in the restructuring market, four major education variables or elements frequently appear in research and discussion about school restructuring:

1. School Governance – resulting more often in the decentralization of authority to the school site, thus allowing those closest to the student the flexibility to design the most appropriate educational setting and practice.

2. Nature and Organization of Curriculum and Instruction – changed in ways that provide a creative, flexible, and challenging education for all students, especially for those at risk, not rote learning of discrete facts and an emphasis solely on basic skills.

3. New Professional Roles for Educators – permitting professional educators at all levels to focus on educational success for all students and providing all the necessary support for education success, focusing on critical and higher order thinking skills, rather than emphasizing compliance with procedures and regulations.

4. Accountability – emphasizing performance-based outcomes of a kind that support a pedagogy of thinking and active learning instead of driving an education of minimal competencies (CCSSO, 1989).

Among the most commonly discussed elements of attempts to restructure public schools is that of greater school-site management and autonomy – the decentralization of decision-making from district office personnel to school-based teachers and other staff. Increased participation in school decision-making, it is argued, is necessary in order to provide the flexibility and variety required to appropriately restructure the learning environment. Teachers know the needs and constraints of their individual schools and, as professionals, can best organize the school-site variables of time, place, personnel, budget, and pedagogy as they relate to the students' learning. Changes that permit teachers to assume much more responsibility at the building level for how the school operates, free them to act more like professionals – to innovate, to experiment, to construct different arrangements of all sorts in their effort to improve learning based on their knowledge of teaching and their familiarity with their individual school community.

Several schools in Miami (Dade County), Florida, for example, are experimenting with school-based management and school-based decision making. One school copied the business sector's use of "quality circles" and non, with district encouragement, members of the staff meet in several groups to discuss, plan, and implement a broad range of activities formerly decided by the district office or solely by the principal. Both teachers and principal report much greater creativity in problem-solving and dramatic improvement in teacher morale and sense of professionalism. Dade County is not alone in this effort. A growing number of school districts across the country are piloting and experimenting with school-based decision-making of various sorts. Rochester, New York has received considerable publicity for its new teacher contract which abandons traditional union demands of seniority, for example, for dramatic salary increases (more than 40% over three years) tied to the Career in Teaching Program which can take new teachers from Intern to Resident to fully licensed Professional. Lead teachers in this system take on added responsibilities and work with those students with the most complex needs.

Hammond, Indiana – a former steel town, hit hard by a downturn in that industry – instituted its "School Improvement Process" where a growing number of decisions are now in the hands of school site committees made up of teachers, administrators, and community representatives. Several school teams
have rearranged blocks of time to allow greater concentration on reading or mathematics. One high school has established a voluntary teacher-mentor program to improve the quality of teaching.

The Chicago school system (the nation's third largest) is beginning what could be the most dramatic and comprehensive restructuring of governance, management and accountability that any district has faced in recent memory. A 112-page piece of legislation dissolves the current Chicago board of education and gives unprecedented influence to parent-led councils at each school. The central administration has been cut dramatically and schools will receive lump sum budgets to be arranged as school councils decide, subject to state and federal laws and collective bargaining agreements. Forty-six million dollars has shifted from the control of the central office to the local school councils who now decide how best to spend it.

The notion of parental choice has driven several districts, and now whole states, to develop systems of student assignment to schools based on the choice of the parents, Districts and states which develop school choice plans must face difficult and complex equity issues as they design their programs. As schools are restructured, other equity concerns must be addressed. How, for example, will schools incorporate categorical programs into new arrangements of time and teacher assignment? Are magnet school programs equally accessible to all students or do they discriminate based on race and income (e.g., wealthier families generally have access to more information about program availability and can arrange transportation when necessary)? Are the needs of language minority students adequately considered in restructured schools—needs which are more complex than simply providing instruction in English? What assurance of quality services will there be for students in special education if waivers for regulations are permitted by the district office? Ingrid Draper, Director of Special Education for the Detroit Public Schools, has given careful thought to this last question and has designed an innovative and effective educational program in that city, but others have not been as successful.

Another critical issue in the discussion of school restructuring is accountability. If school-site staff and other educators up the hierarchy are to be held accountable for student learning, what sorts of assessment tools should be put in place? Can district or statewide standardized achievement tests co-exist with school-based decision making? Sizer's Coalition of Essential Schools has developed a performance portfolio for student evaluation. Vermont is currently implementing a similar evaluation procedure, recognizing that an over-reliance on multiple choice, single correct-answer tests frequently drives a similar sort of teaching. Some states and districts differ widely on the types of assessment systems they use, yet the discussion about appropriate testing is heated and widespread.

UNANSWERED CONCERNS

A centrally important question which must be asked repeatedly is, "What is the purpose of restructuring the school?" Harold Howe II, former U.S. Commissioner of Education, has criticized the economic argument that largely drives the current reform movement. At a 1987 symposium at Harvard University on excellence and equity in education he noted:

It demands that schools produce excellence among the children of the poor for the sake of the nation's economic health. It wastes little time with concepts of equity or of our nation's need for independent minded citizens to make a democracy and complex society workable. Lip service is paid to these latter concepts, but after appropriate rhetoric has been supplied, school reform is back to the serious business of rescuing our corporations from Japanese competition. Very little has been said, in defining school reform's goals,...about developing among youth an interest in international understanding.

Is the purpose of restructuring schools merely to rearrange the players but to do little to change learning? In a restructured school this writer visited in Dade County, Florida, the use of "quality circles" for school-based management by the entire staff had done much to improve the teachers' morale and upgrade the physical plant. Both had deteriorated substantially and so this was a significant improvement. School spirit was reported as having improved by a very large margin. Yet, despite these important changes, the pattern of teaching — while somewhat improved — needed much more work. Except for a few "critical thinking" programs for children already doing well with classwork, most schoolwork was still based on a model of knowledge transmission, lecture and recitation — of minimal standards and basic skills. Test scores
had risen and student writing had improved, but are they the sole and appropriate measure of a successfully restructured school?

How schools are governed, how curriculum and instruction are organized and presented, how educators relate to children and youth and their families, and how educators and students are assessed must all be driven by one overriding concern -- improving the learning of all children, particularly those considered at risk of school failure. To do otherwise is both unjust and short-sighted. Montessori education offers an important model that has been used successfully with at-risk children.

MONTESSORI AND SCHOOL RESTRUCTURING FOR AT-RISK STUDENTS

The Montessori method provides the adult with both a clear understanding of children's development and a detailed and varied pedagogy to support that development and thus aid learning in its largest and best sense. That Montessori classrooms and whole schools are appearing increasingly in the public education sector bodes well for the schools and for the expansion of the Montessori movement. Of course the most important question, as Maria Montessori so often stressed, has to do with the children. Her experience with the children of the San Lorenzo slums in Rome underscores her concern for at-risk children and youth. What, then, is the effect of the expansion of the Montessori method in public schools for at-risk students?

Given the current climate and trends in education in the United States, Montessorians can provide significant assistance to improving the education of disadvantaged children in at least three major ways: action in the debate on early childhood education, support for restructured curriculum and instruction, and carefully designed assistance with the expansion of specialized programs and magnet schools. The last two are directly tied to the debate about improved learning for at-risk students. The first, though not necessarily an element of school restructuring, has much to do with later educational success for at-risk children and youth.

Early Childhood Education

This is an historic moment in the effort to ensure the provision of high quality early childhood and parent education and related services for young, at-risk children and their families. Senators and members of Congress on both sides of the aisle, a Republican President, business leaders, and virtually every national educational organization, are calling for new and expanded federal support for child care. There has never been such a consensus on this critical social need. While the various actors mentioned above support very different proposals, before this time they have never all agreed on the need. The combination of more women in the workforce, more adults in poverty (meaning more people working at very low wages), and more children in poverty, work together to create a dramatically increased need for good childcare services. Organizations like the National Association for the Education of Young Children (NAEYC) have prepared detailed guidelines of program quality. Their work, influenced in no small part by the work of Montessori, spells out what is required for "developmentally-appropriate" practice.

New coalitions have been formed in support of expanded childcare. The Act for Better Childcare (ABC) bill, currently before Congress, is the result of difficult work by hundreds of people. Montessorians have access to unusually well-developed methodology and materials for early childhood education. While the early childhood movement is in virtual universal agreement about the importance of "developmentally-appropriate practice," many childcare workers need assistance in how to make that notion concrete. Montessorians can play an important role in this national movement by becoming active in the political drive to support legislation like the ABC bill. Montessorians should join with the NAEYC, CDF, and other child advocacy groups for political action in that regard. Also, Montessorians should seek local daycare providers and offer to share knowledge about child development and educational practice. These connections should be genuine sharing, with each participant actively and honestly interested in learning what the other has to offer. There is much out there that is valuable for all to learn. Maria Montessori frequently emphasized the need for adult humility when working with children. That humility,
tempere® with concern for the well-being of all children, should influence relations with other educators working with young children.

Restructured Curriculum And Instruction

Of the four major elements found in the various proposals to restructure schools noted above, one has to do with fundamental changes in the nature and organization of curriculum and instruction. It is in this area that Montessorians, particularly at the elementary school level, can provide substantial assistance in the effort to improve public education. Traditional schooling is based on deep-seated beliefs about the validity of a range of educational variables. In fact, these beliefs maintain that the components of education are anything but variable. Common educational practices regarding the structure of knowledge (e.g., basic skills vs. higher order thinking skills), instructional activities (e.g., passive, receptive learning vs. engaged activity; the size and composition of the group; and the arrangement of time (e.g., learning “periods,” instructional day and year) are usually very limited. And yet this list is composed of educational “variables” which, by definition, means that they are changeable. The current range, hierarchy, composition, and organization of these educational variables are the result of identifiable historical circumstances—many of which are no longer relevant (e.g., the agriculturally-based school year which permits summer farm work appears arbitrary in urban Philadelphia, and the organization of schools that follow a 19th century factory model is wholly inappropriate for students who will live in the 21st century). Other educational practices are actually damaging (e.g., the widespread practice of tracking, which research shows reflects race and social class far better than innate ability to learn).

Educators in many places are not only beginning to examine the content of the curriculum which still too often projects biases regarding gender, race, social class, language, and ethnicity but are also examining the structure of the knowledge to be presented. Should students learn minimum competencies and basic skills (as district and state tests emphasize), or should they learn critical thinking skills and what Rexford Brown of the Education Commission of the States calls “thoughtfulness”? (Brown, 1988).

Time is too often used as if it were a fixed resource that students must learn within, instead of time being something flexible, fluid, and asymmetrical that conforms to the students’ learning needs. For example, many at-risk high school students must work at part time jobs to support families, and teenage parents need to care for their children, yet most schools have rigid hours of operation and set times for learning periods. The contradictions here are evident. Schools need to loosen the year’s schedule, the daily schedule, and the structure of time. Teaching and learning both become restricted and limited by the current structure of time. Many educators realize the difficulty which results from such organization, and some are experimenting with different arrangements of time, group size and composition, instructional activities, and structure of knowledge, but typically, schools function as they have for two centuries.

Montessori elementary teachers could offer a great deal to the public school educators who are involved in experiments with new arrangements of schooling and, in particular, with those who are struggling to improve curriculum. Likewise, current school restructuring efforts regarding governance and school based management could give much to Montessorians whose training offered few models of school management. If approached in a spirit of true respect and serious interest in learning, partnerships and exchanges between Montessori and public school teachers and administrators could prove to be very useful—particularly in areas with high concentrations of at-risk students. NAMTA member(s) or staff at the Washington Montessori Institute and staff of the American Federation of Teachers’ Center for School Restructuring—if they have not yet—should discuss how each could help the other in the effort to provide effective and appropriate education and related services to at-risk students and their families. These sorts of conversations and meetings could and should occur at the district level as well. Both the opportunity to learn from each other and the serious needs of at-risk students are too important to let preconceived notions of what the other does get in the way of useful dialogue. These conversations have begun in several cities but need to become more widespread and systematic.
Magnet Schools

There is a rapidly growing national discussion about parents' ability to choose the school their children will attend. President Bush has emphasized school choice as the main pillar of his education policy. One frequently used method of providing school choice is the development of magnet schools — schools with specialized programs which are supposed to attract students based on their interest in such programs. Magnet schools are perhaps best known from their use in the 1970s as tools for voluntary or court-ordered desegregation. Districts which have incorporated magnet schools for desegregation have had varying success. Nonetheless, many current proponents for school choice point to magnet schools as one way to allow parents to choose their children's school.

As the use of magnet schools (or alternative programs within schools) has spread, several districts have created Montessori schools as legitimate alternatives in the public system. On its face, this is a laudable move and one which deserves increased support. A large part of this book deals with important aspects of the design and implementation of such programs.

A very important caveat must be expressed, however, regarding uncritical and overly enthusiastic acceptance by Montessorians of these programs. While answering the long-heard call to incorporate the Montessori Method into the public schools, the development of Montessori magnet programs and schools deserves very careful scrutiny, especially with regard to the educational outcomes for at-risk students. Public education in the United States is a very political endeavor, and Montessorians need to understand well the policy issues involved. School choice, in particular, is a much-debated, complex notion with many possible outcomes. Magnet schools hold the potential for both positive and negative impacts on children, particularly for those at risk to later failure. Montessorians must be aware of the range of possible outcomes and ensure that those children and youth traditionally served poorly by public schools are not harmed by decisions to implement Montessori programs in the schools. The Hippocratic oath for physicians states that they should, at the very least, do no harm. This holds true for Montessorians as well.

There are several important considerations regarding equity in the use of magnet schools. In districts where magnet schools are used to provide choice, a number of critical questions must be answered. In theory, choice is supposed to force schools to improve — schools will earn their enrollments, encourage a wider range of educational options, and push low quality schools toward self-improvement. Those schools which do not meet parental preferences will be faced with declining enrollments and will either improve or be forced to close.

This market model has produced success and failure in New York City, for example, where "choice" has been available for some time. Community District 4 (East Harlem) is frequently cited as a success story regarding choice. Yet it must be pointed out in strong terms that choice works well in District 4 because it is part of an overall school improvement process that has been underway for fifteen years. Choice was not the motive force for change; it was an ingredient along with many other ingredients. Teachers and administrators over considerable time developed programs in their schools, created smaller, more personal units within the school, crafted an exemplary parent information system, and worked to improve the counseling efforts in their feeder elementary schools. Only late in this effort was parental choice added. Also, the district is densely populated and all schools are reasonably accessible. Problems remain, however. For example, the district’s bilingual schools and special education programs remain segregated from its schools of choice (Bastian, 1988). There is also concern that low income children still do not reach achievement levels as high as their more advantaged peers.
THE AT-RISK CHILD

THE MONTESSORI MISSION

District 1 has received much publicity as a positive example of choice. Yet, the city of which it is a part also has a systemwide high school magnet plan. New York City's choice plan has magnet schools compete with comprehensive neighborhood high schools and demonstrates unsurprising results. Researchers have noted that, over time, four tiers of schools developed based on a strict hierarchy of resources and opportunities. On the top are elite academic high schools, followed by specialized theme schools, vocational schools, and at the bottom are the neighborhood high schools. Magnet schools are generally integrated, but neighborhood schools are reported to be entirely segregated—with low income minority students and have access to few resources. Dropout rates in these schools for black and Latino students range from fifty to eighty percent. Ann Bastian, of the New York Foundation, has studied these schools and notes that New York provides an example of "false choices" because not all options are equal (ibid., 1989).

Programs of choice, if not carefully planned to suit the specific circumstances of the local community, can have a range of negative impacts. One frequently cited criticism is that certain schools will skim off the high achieving students and good teachers—frequently adopting screening and sorting mechanisms—draining resources from poorer schools. Civil rights mandates (i.e., bilingual education, special education, desegregation) may be eroded—as in the example of New York City—when resources are redirected to magnet schools thereby encouraging re-segregation. An overemphasis on test scores as "proof" of magnet school success in their competition for students can serve to erode further a pedagogy of critical thinking and development of the whole child while encouraging teaching to the test. Differential access to information (i.e., middle class and wealthy parents get to "know" more about school options than do low income minority parents) about magnet programs assures differential access to those schools.

In a systematic and detailed study of high school admission and promotion policies in four major cities—New York, Chicago, Boston, and Philadelphia—Donald Moore and Suzanne Davenport (1989) describe serious inequities occurring in magnet school programs in those cities. Their report, "The New Improved Sorting Machine," examines placement and labeling practices used in high school admission, within school tracking and grouping, and practices employed in promotion from grade to grade.

Moore and Davenport note that school systems (and any large organization) operate with a complex set of placement and labeling systems. In schools, the results of these practices over time have become controversial. The authors note four areas with implications for educational equity:

- Magnet schools and programs within schools have increased dramatically in all four school systems and have been praised by proponents of educational choice as a potent means for improving educational quality. Yet other researchers and analysts have argued that the admissions practice of many of these magnet schools are stacked against the average urban student and have created a set of virtually private schools within public school systems.

- Tracking and ability grouping within schools have been defended as ways of giving the most talented students, especially capable minority and low-income students, access to a challenging academic curriculum that will prepare them for college. Yet such grouping has been criticized as leaving lower track students with a school experience characterized by low expectations and rote learning.

- Special education has been expanded dramatically and advocated as a means for meeting special needs of students heretofore neglected by public schools. Yet its critics charge that special education often needlessly separates students from the mainstream educational program and that many of the placement and labeling decisions made about students who are supposedly mildly handicapped are capricious and do not lead to improved student performance.

- Many school systems have declared social promotion to be a root cause of poorly prepared high school graduates and have instituted stricter promotion policies, basing promotion from grade to grade on standardized tests measuring progress through system-wide curricula. Yet critics of retention conclude that there is decisive evidence that increased use of retention fails to improve student achievement and greatly increases the likelihood that students will drop out.

Their research offers a rich review of often subtle, unseen, and unintended practices which serve to foster inequities within the educational system, particularly within magnet programs. Montessorians who wish to ensure educational equity, and who are concerned about the quality of schooling for students...
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Considered at risk, would do well to review Moore and Davenport's report. Montessorians who are involved in preparing magnet programs can learn from the equity problems found in design and implementation of similar programs in these four cities.

All educators must be concerned with the provision of quality education for all children and youth. Those considered at risk do not have access to the quality of programs available to their wealthier peers. The rehabilitation of inner-city and rural schools, the lowering of class size, the rebuilding of decaying physical plants, the recruitment and appropriate training of a talented and representative teacher corps, the improvement of curriculum and instruction to be challenging and flexible, the access to a range of necessary social and health services, are all central and fundamental needs which must be met if educators are to be responsible to their profession and the at-risk children currently served poorly by that profession.

Bastian states the problem well:

- Optimally, choice will follow from a restructuring program that ensures that all students have quality alternatives from which to choose, all families will be fully informed of their options, all staff will be engaged by and trained for their school mission, and every participant will have equal access, both physical and cultural, to the school of choice.
- In the absence of ideal conditions, there are a number of potential problems to assess in establishing any choice plan. First and foremost, we should be concerned about the potential for the further segregation of students along the well entrenched lines of class, race, gender and handicap condition. This is not only an issue of whether choice plans are non-selective, or randomly accept non-resident applicants (Bastian, 1989).

Montessorians should continue to help improve the quality of education of all children in the public schools, but must be particularly cognizant of the special situation facing children and youth at risk and work doubly hard to ensure that these young people are appropriately served. Magnet schools, in particular instances, might be appropriate tools to use in the endeavor to meet the educational needs of at-risk students, but Montessorians must be diligent and ensure that the concerns noted above are addressed, and not be accomplices in perpetuating educational segregation. Rather, Montessorians must be a voice — in word and action — for at risk children and youth as was Maria Montessori decades ago in San Lorenzo.

FOOTNOTES

1 Every reader of this chapter should have on his or her desk a copy of the CDF book, A Vision of America's Future: An Agenda for the 1990s: A Children's Defense Fund, and should re-read it frequently.

2 At this writing, the bill has been held up by a committee, despite having been passed by both the House and Senate. The product of an unprecedented coalition of more than a hundred education and children's groups, the ABC bill offers hope for thousands of low income children and their families. Hopefully that bill will become law by the time this book goes to print.

3 The process of skimming has not been adequately researched. A review of educational literature related to skimming and magnet schools can be found in the unpublished dissertation, "The Impact of Non-Selective Magnet Schools on a Predominantly Black Community" (Tim Davis, University of Wisconsin-Milwaukee, 1988). Skimming is a complicated phenomenon in school systems with magnet programs which has been more talked about than studied. Those who write of skimming refer most often to studies which compare public and parochial schools or to studies demonstrating that social class is related to values and attitudes toward education or simply write of skimming in an essay format rather than citing evidence of what actually is taking place in cities with magnet school programs.

Often researchers have not been clear in defining the types of magnet programs they are writing about. Selective magnet schools using formal or informal selection criteria and non-selective magnet schools accepting all students on a lottery basis are often blurred together in generalized discussion.

Recent research by Donald Moore and associates which examined high schools in four large cities still did not distinguish selective from nonselective programs. His conclusions are tautological — schools with selection criteria are not better than off. His research also gathered no data on elementary schools. Other cities have attempted nonselective magnet school programs: Minneapolis, St. Paul, Milwaukee, St. Louis, and Denver.
REFERENCES


The Montessori school has a specific curriculum with specific materials which form an interrelated whole with many cross references. The following series of lists and outlines serves several purposes. The introduction to the "prepared environment" establishes a Montessori philosophy and attitude as a way of understanding the psychological use of the materials. The lists describe the necessary equipment needs for any Montessori school. The outlines are not definitive, but they give the non-Montessori trained administrator a sense of curriculum scope and sequence and of the comprehensive nature of the program. The lists of materials provide a minimal expectation of what should be included in a Montessori classroom.
THE PREPARED ENVIRONMENT

by Jean K. Miller, Ph.D.

INTRODUCTION

The prepared environment is an important aspect of Montessori. Its purpose is to provide the best possible conditions for the optimum functioning and development of the children for whom it is provided. Montessori is particularly concerned with the optimum development of infants, children and adolescents. Observation of developing human beings within prepared environments in many different countries of the world has enabled Montessorians over the years to develop and refine the concept of the prepared environment in order to better serve the universal needs of children. This increase in awareness of universal needs and the resulting rise in consciousness about how to meet those needs is a never ending process—part of the continuing development which is an outstanding characteristic of the Montessori movement.

UNIVERSAL NEEDS

The universal needs which are to be served by the prepared environment include both physical and psychic needs. Of the two, the physical needs are the most easily delineated. They include food, clothing, shelter, movement in space, self-preservation, and a secure physical territory in which to develop. The psychic needs include culture, belief systems, adornment (by means of which membership with one’s social group is achieved), a good self-image, love, and a secure emotional territory in which to develop.

HUMAN TENDENCIES

Human beings are endowed with universal, innate tendencies which serve to satisfy their vital needs. Human tendencies are aided in the fulfillment of the vital needs by the sensitive periods. These periods are times when children exhibit an intense interest in movement, language, order, etc. Human tendencies include movement, orientation, exploration, order, work-activity, exactness, repetition, control of one’s own error, self-control, self-perfection, mathematical mind/abstraction, creative imagination, communication, and independence.

Meeting the Needs and Tendencies in the Life of the Child

When considering how these needs and tendencies are to be met in the lives of young children, it is easy to see how the Montessori setting is an addition to, not a replacement of the home. The need for food, clothing and transportation is met primarily by the home, while both places provide shelter and opportunities for movement in space. Defense against disease and various dangers is also a function of both. In the Montessori setting adherence to health laws, a safe environment—secure from intruders—and the establishment of ground rules serve to provide a protective environment for physical development. In the preschool environment the ground rules are set by the teacher while in the elementary classes they are formulated by the children.

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The Task of the Child From Birth to Age Six

At birth children have the potentiality of becoming a member of any culture. By the age of six they have become an identifiable member of their culture whether it be American, Asian, European, etc. The task of each child from birth to age six is to construct a human being. In this process of construction children are oriented to their environment in their time, place and culture. Again, the home is the primary source of the raw material for this self-construction by children. The Montessori environment throws light on and thereby helps children to discover and focus on aspects of their societies' culture. For this reason the preschool Montessori environment provides practical life materials appropriate to the culture, uses botanical, zoological and geographical examples from the children's own surroundings and offers the best examples of music, art, etc., so that the children can accomplish this self-construction with the help of the best building materials the culture has to offer. Montessori elementary environments build on that which was begun in the preschool so children are helped to continue their development on a higher level.

Belief Systems

The belief system or religious form which a child's spiritual needs take is determined primarily by the home. Some private Montessori settings address themselves to a particular form.

Nature and Interdependence

Montessori environments should aid children in the development of an awareness, appreciation and sensitivity towards nature, and an understanding of the interdependence of all living and non-living things in the universe.

Clothing

For the younger child, the home determines the type of clothing and adornment which clearly indicate the parents' social group or the social group to which they aspire. Older children show their own taste and social identification by the clothing they select.

Self-Image

The self-image of a child is strongly conditioned by the home. The Montessori preschool works towards strengthening a good self-image by preparing an environment where a child can develop competencies which, in turn, build confidence and independence. These competencies are fostered by parallel and sequential materials which are clearly presented by an adult who has observed the child's needs and level of development. The adult adheres to the adage, "Help by demonstrating and clarifying, not by correcting", in order to protect and preserve the young child's developing feelings of competency. Materials and procedures are provided which foster independence. Various activities in the Practical Life area develop skills in self-care, and the exercises of grace and courtesy give the child confidence in social situations. Built-in control of error in materials makes it possible for children to figure things out for themselves rather than referring to an adult. Of course, if there are too many adults in the environment, the children are tempted to ask for help unnecessarily and remain unduly dependent.

The Importance of Love in the Environment

Love should be an important and powerful reality in any environment. Studies of well-cared-for infants in British orphanages during the Second World War showed that the love of a significant other was necessary for infants to preserve the will to live. Without love, they died. The love of the child for the parent and the love of the parent for the child are necessary for the true inner development of self-control in the child. In the Montessori preschool the environment is prepared with love for the child who will live in it. The
love of the teacher for the child is not the same as parental love, nor should it ever try to take the place of parental love. It is instead the love and concern of adults who wish to provide the best possible conditions for the child’s optimum functioning and development within the Montessori setting. This care and concern carries over into the environment of the elementary school.

Emotional Climate of the School Environment

There are many ingredients in providing a secure, emotional territory in which children can develop. There is the provision of a safe, physical environment. There is also the intangible quality of the “tone” of the prepared environment which is set by the principal for the whole school and by the teacher for his or her individual classroom. This “tone” may be either positive or negative in relation to the whole group or in relation to individual children. The teacher can choose to address himself or herself to either the best or the worst in any given child and by so doing “feeds” that part of the child. The correct choice for a Montessorian is to provide positive support so that the good within each child can grow and develop. Montessori said, “Never speak ill of a child in his presence or in his absence...,” because she understood that even speaking ill of an absent child would set up a feeling tone that would be sensed and responded to by the child when in the presence of those people who harbored an ill opinion of him or her. The prepared environment should support a positive emotional climate among the children by providing essential ground rules, the essence of which is that one is not free to harm oneself or others, or to disturb others or their work. The exercises of grace and courtesy are lessons in positive, social interactions which provide the means for interpreting and carrying out the ground rules in a positive manner.

Exploration

Just as the environment is prepared to meet the universal needs of children, so is it prepared to accommodate the universal tendencies which enable children to fulfill those needs. One of those tendencies is exploration. The environment is set up to enable children to explore various everyday tasks, to explore qualities of materials, to explore language and mathematics, to explore social relationships, etc. The tendency to orient oneself is helped by isolating qualities of things and, on the basis of sufficient experience, crystallizing those qualities with appropriate words. This gives children more possibilities for recognizing and labeling qualities in any environment in which they find themselves. The study of mathematics, geography, botany, etc., also aids children’s orientation to the wider environment outside of the Montessori classroom.

Order

The tendency for order allows the human mind to put things into relationships. It is the basis of constructive activity, language, sequential thought and planning. The prepared environment is an orderly environment. Related materials are grouped together and within each grouping is a logical, orderly sequence. Each material has its own place. The external order of the environment provides children with a secure framework. The external environment also helps children develop and become increasingly aware of their internal, mental order. When this has reached a certain level, the external order is no longer so vitally important for children. However, since this happens at different times for different children, the orderliness, inexactness, and completeness of the Montessori environment must be maintained, particularly for the sake of the children who still need the external order for the development of their mental clarity. In the elementary class where most children have or will soon have achieved a mental order, the external order is still important for the ease of functioning of the whole class.

Communication

Communication, both verbal and non-verbal, is another tendency of human beings. The prepared environment allows for the free interaction of the children, limited only by the ground rules, and it aids the
development of each child's self-expression through many activities and exercises. Various materials isolate parts of the child's language in order to bring clarity to the child's mind concerning the effective use of language.

Abstraction, Creative Imagination, Memory, Mathematical Mind

The human mind has a tendency for abstraction. This requires the exercise of memory, creative imagination, and the mathematical nature of the mind. Specific exercises within the prepared environment which mobilize and thereby aid the development of memory include games associated with the sensory materials, and commands which gradually increase the number and complexity of actions to be acted out. Imagination is fostered through the acquisition of a fund of real information during the years before six. This fund of facts serves as the basis for a real flowering of constructive imagination after the age of six. The mathematical mind is developed in a logical, orderly way with the help of the Montessori mathematics materials. These materials aid the understanding of various mathematical processes in such a way that the children come to an understanding of the processes themselves — if the materials have been properly presented and if the children are given the opportunity to work with the materials to their satisfaction. Besides building real comprehension, the activities enable the children to memorize many of the arithmetic facts without the feeling of drudgery usually associated with this task.

Repetition, Perfection, Augmentation

Spontaneous repetition with interest is another tendency which enables humans to take an item or idea and work it over and over until the item will exactly fit its purpose. This repetition is for the sake of perfection, not for the sake of repetition. Within the prepared environment the materials need to be exact so that the quality or concepts they have to reveal will be most readily discernible. Exactness in materials encourages the repetition necessary for this discernment to take place and corresponds to a truly human tendency and need. Incomplete, imperfect, and ill-maintained materials discourage repetition and even prevent choice for many children. While repetition can take various forms in the preschool, during the elementary age it often takes the form of augmentation of the work, rather than simply doing an activity the same way over and over.

Self-Perfection, Evaluation of Work

Moving towards self-perfection is the human tendency that enables the child to work as long as is necessary to approach the goal of perfection in movement or whatever the child needs to perfect. Self-control (the ability to be master of oneself, to do what one needs to do rather than be the prisoner of whims) aids the development of self-perfection while the human tendency to look for a control of error enables the person to realize where performance is less than perfect. During the preschool years, materials and exercises with a built-in control of error, utilized in environments where teachers allow mistakes as much as possible to be a private matter, help children look at mistakes as important pieces of information which they can use to improve their performance without embarrassment. In elementary classes, children meet weekly or biweekly with their teacher for individual conferences in which they are co-evaluators of their own work, thus developing both judgment and a feeling of ownership about their work.

PHYSICAL ASPECTS OF THE ENVIRONMENT

Thus far, the prepared environment has been considered in terms of how it meets the universal needs and tendencies of human beings. Now specific aspects of the environment will be considered.
The prepared environment

Curriculum resources

Classroom Size

Ideally the classroom environment should be 1500 square feet. This allows adequate space for the inclusion of all necessary areas as well as adequate space for freedom of movement for a class of 35 children. With fewer children, the shelves may be so arranged to block off extra space. The environment for three to six year olds should feel "homey." Too large a space makes the children feel lost. That feeling undermines concentration and orderly behavior. For elementary classes where the cohesion of the social group is vitally important, rooms that are too large for the number of occupants contribute to a loss of that cohesion.

Classroom Shape

Montessori recommended polygonal rooms—hexagonal or octagonal in shape. The sides of such spaces lend themselves to immediately adjacent, open side rooms and provide much more interest. When that is not possible, square or nearly square rooms are preferred over long, narrow rectangular rooms or a series of rooms where visibility of the whole class is limited or impossible.

Large and Small Motor Control

The environment itself should provide a control for children's movements. If there is no need to be careful, no consequence for careless movement, then there is no need to further refine motor control. Noise dampening flooring such as carpeting, immovable furniture, rubber tipped legs on furniture, and unbreakable objects do not foster this development. The use of furniture that is light in weight, a tile or wood floor and a number of breakable objects call for the development of finer and finer motor control. This is especially important at the preschool level where children are refining and perfecting their movements.

Child-Size Furniture

The furniture and furnishings should, of course, be appropriate in size for the children using them. Stairs should be deep enough so that very young children can step with both feet on each step. The height of each step as well as the height of the banister should be appropriate for children. Door handles should be low and easily manipulated, drinking fountains, sinks and toilets should be of appropriate size and height. Since there are three ages of children in the environment, there should ideally be several sizes of tables and chairs. Bodily discomforts, caused by such things as elbows raised to meet the table or dangling feet that cannot touch the floor, can be critical factors in shortening periods of concentration.

Tables, Chairs and Working Mats in the Preschool

At the preschool level there need not be a table for each child, but tables should be for individual use (not for two or more children). In addition to the individual tables there should be one large circular table which has space for six children, or two semicircular tables, or two trapezoidal tables which may be put together for group work. The latter would provide more flexibility in arrangement. Chairs for the circular table could include three regular chairs and three with arms. The total number of working spaces, counting both tables and working mats, should add up to a few more than there are children in the class. Tables and floor spaces should be interspersed with one another so there is both greater challenge of movement and more privacy available at the work spaces.

Tables, Chairs and Working Mats in the Elementary School

The elementary classroom has the opposite arrangement as far as tables, chairs and working mats are concerned because the children are now very sociable and their discussion of their work is important in aiding the development of the reasoning mind. Therefore, the tables are mainly for groups of two to six children who are working together. A few individual places are available for children who choose to work.
alone from time to time and for the child who has difficulty concentrating when other children are around. Mats are available for work that lends itself to working on the floor.

Colors of Furnishings

In the preschool classroom, the tables should be painted in attractive colors which easily show dust and dirt and thus invite cleaning by the children. For both the preschool and the elementary, pastel colors provide a pleasing background on which to place the materials, while brightly colored backgrounds, especially intense yellow, cause eye fatigue and thus shorten the period of concentration. Working mats should also be plain colors so that when materials are placed on them the eye naturally rests on the materials and does not have to strain to separate the materials from a busy background. This principle of providing a plain background so that the materials stand out should be followed in the walls, shelves, flooring and even in the clothing selected by the adult who will be demonstrating materials. Soft, muted colors in the furnishings, floor, walls and ceilings promote a feeling of calmness and relaxation. Since bright colors are contained within the materials, the materials are what attract the eye and focus the attention of the children.

Wooden Furniture

Wooden furniture and shelving are much preferable to metal and laminated plastic. The latter gives a very harsh feeling to the room while wood contributes a warmth to the ambiance of the environment. Wood also provides increased opportunities for the child to become involved in its care.

Lighting

Natural lighting is much preferred to artificial. When artificial lighting is necessary, it is best not to have fluorescent lights. The steady buzz contributes to fatigue and the rapid flickering and glare causes headaches in some people. If fluorescent lighting is required by state or local regulations, then use "full spectrum" light bulbs so that all the colors in natural lighting will be present. The best solution is, of course, to have adequate window space to let in natural light. The windows should be low enough so that the children may have a view of the outdoors.

Display of Materials

"The cupboards and shelves should...be placed so as to give prominence to certain materials. Some of them, for instance the pink tower, the broad stair, the long rods and the number rods, deserve a special place which makes them stand out." The materials on the shelves should be arranged in such a way that there is a clear delineation between one material and the next. This means that the shelves may not be too crowded with materials and that the materials must be neatly arranged, not one on top of the other. The shelves should be low enough so that the children may reach the materials without difficulty. Since materials are to be taken from the shelves for use, the bells and the tone bars, which are usually to be played where they are displayed, should be on their own special cabinet which is clearly not a shelf.

Plants

Living plants are to be included in the prepared environment. Some of the plants should clearly illustrate the parts of a plant, while the leaves of various plants should provide living illustrations of forms in the leaf cabinet. Flowering plants provide means to study the parts of a flower, different forms of corollas, etc. Real experience with live plants precedes the nomenclature material for the study of plants.
THE PREPARED ENVIRONMENT

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Animals

The same is true for animals. Real experience with live specimens precedes work with the nomenclature cards. There should be animals to represent each of the five classes of vertebrates (fish, amphibians, reptiles, birds and mammals), as well as representatives of the phyla of insects. If the classroom environment is small, all of these animals and insects need not be in the environment at the same time. Provision for proper maintenance may be made by including such environments as an aquarium, aquaterrarium, terrarium, insectarium, etc.

Display of Children’s Work

A display could be available so that the children can share their work if they choose.

The “Line” For Movement

The prepared environment should include a line on the floor large enough so that all the children can walk, march, skip or run together on it in time to musical accompaniments. There should be long straight sections going the length of the environment. The ends of the long sections may be connected by a gently curving line, never by broken straight lines. If necessary, the line may wind around permanently fixed obstacles such as shelves, however, the turns should not be too abrupt for rapidly moving children to maneuver safely. In the preschool class a smaller ellipse may be provided inside the larger line for the smallest children who tend to walk very slowly at first. For both preschool and elementary classes it is important to remember that the line is for movement, it is never for sitting. The line itself need not be wider than three quarters of an inch and it must be a soft color for it to be only a faint indication of where the feet are to go, rather than a visual distraction in the room.

Whole Class Meetings

In the preschool there need not be an area in the room where the whole class can sit down together. If this is needed, the environment is rearranged for this temporary purpose with the help of the children. Elementary children do need to sit together for class meetings, discussions, reports, etc. There may be an open area for this purpose, or the furniture may be rearranged as necessary.

Delineation of Work Space

The prepared environment provides children with clearly delineated work spaces as another way to aid concentration. The edges of the table tops and of the work mats show the areas within which the materials are to be contained and thus give focus to the children’s concentration. Wall to wall carpeting does not facilitate this kind of delineation as a working mat on top of a carpet does not make as clear a definition of the work space as does a working mat on a wooden or tile floor.

Mirrors

To help the children develop a concept of their own bodies and as a means to support self-care, a full length mirror could be provided as well as several smaller mirrors, each of which may be used in various grooming exercises.

Optimum Visual Stimulation

The overall appearance of the room should express Montessori’s stress on limitation to what is necessary and sufficient. Too many things in view fractures concentration, too few things fail to stimulate interest. Displays on walls should be limited to one picture or object for each section of a wall and should
isolate one thing at a time, e.g., one composer, one reproduction of a great painting, one piece of sculpture, one picture from nature, etc. These beautiful artifacts, prints, etc., should be at the children's eye level and should be rotated periodically. Alphabet cards, with or without pictures, balloons, clowns, etc., should not be placed on the walls.

Environmental Assistance for Self-Development

E. M. Standing sums it up very well: "In this environment only those things are allowed to be present which will assist development. Out of it must be kept anything that would act as an obstacle — not least a too interfering adult. Even such things as are neutral or irrelevant should be rigorously excluded. The constructive psychic energy granted by nature to the child for building up his personality is limited, therefore we must do everything we can to see that it is not scattered in activities of the wrong kind."

ELEMENTARY ENVIRONMENTS AND THE PURSUIT OF KNOWLEDGE

The environment of the elementary class is not confined to the school building. One of the important activities of the elementary age is research on a variety of topics. The resources available for this research in the classroom are deliberately restricted so that the students will have to go out of their classroom to find more. The school library must also prove to be incomplete so that there will be a reason to search further. Children may go in small groups with a responsible adult to a public library, a museum, a courthouse, etc., to get the information they desire. They also go out of the building to get supplies for special projects, food or other necessities for animals and plants in their classrooms, etc. The more they stretch themselves to get the information or supplies they need, the more enjoyable it seems to be. Not only do the students learn how to find the information they want, they also associate good feelings with this pursuit of knowledge.

THE TIME ENVIRONMENT – THE WORK CYCLE

One of the interesting aspects of Montessori education is that Montessori set up an environment for children in which they revealed characteristics which did not appear under other circumstances. One of these characteristics is the ability to work for long periods of time in concentrated activity. For this to occur, it is necessary that there be a minimum of three hours of unbroken time. The following illustration of a work cycle shows a "primitive curve of ordered work" during a class session that lasts three hours.

The straight line, which represents the three hours, is a baseline of no activity. The line above illustrates the length and depth of involvement in constructive activity. The numbered comments below correspond to the numbers in the illustration.

1. Many children will enter the class and choose something relatively simple and stay with it a short time, almost as if they are re-establishing feelings of competence.
2. Their next activity is generally more difficult and they stay with it longer.
3. This is followed by "false fatigue," a time when many children have put their work away and have not yet selected another activity.
4. If the teacher allows the children to take the time they need to experience the restlessness of the false fatigue, they will soon settle into their most difficult work choice of the cycle and stay with it the longest.
period of time. During this time their concentration is the deepest and they make the greatest strides in the development of skills and in the acquisition of knowledge. Montessori called this the great work period.

5. As the cycle nears its completion, the children put away their work and they appear to be refreshed and relaxed as they talk with one another.

When the time available is less than three hours, the great work period does not occur and the work cycle does not complete itself. To protect themselves from the frustration of having their great work period interrupted, the children either do not choose any work after the false fatigue or they choose something that involves only superficial involvement.

Teachers who are faced with a time frame that does not allow for a full work cycle in the preschool generally respond by shortening the children's work time to the approximate length of time that occurs before false fatigue. This is achieved by having the children begin and end the class session with long group times. Montessori believed that children of this age learn best through individual work that involves the sensorial manipulation of objects, therefore, these large group times do not follow Montessori principles. In addition, children who have difficulty sitting still may begin to feel like failures because they cannot manage those long group times.

In the elementary class, children unable to finish their work cycle may exhibit their frustration by showing an unwillingness or a disappointment in having to put their work away.

For additional information on the Work Cycle, see Spontaneous Activity in Education by Maria Montessori, pp. 87 to 110.

THE CURRICULUM AS A CONTINUUM IN RELATION TO INDIVIDUAL ACHIEVEMENT

In describing the activities and materials of the Montessori preschool and elementary levels, it is difficult to draw a distinct line between them. First, all the various parts of the curriculum (which are interrelated) are part of a continuum. Second, even under ideal Montessori circumstances, there is still a great deal of variation in the achievements of children, all of which fall into a normal range. Part of the Montessori philosophy is that children are treated as individuals and are not compared to each other. Some factors which affect achievement are listed below:

1. Age of child entering Montessori. Children entering at age five will miss most of their sensitive periods for certain kinds of development and will, therefore, not achieve as close to their potential for development as a child who enters between the ages of two and one half and three.
2. Consistency of attendance
3. Training of the teacher
4. Willingness of the teacher to do Montessori
5. Length of school year
6. Length of school day
7. Age at which children begin to stay all day (age 5 at the latest)
8. Environments used for one group of children per day (no double sessions)
9. Protection of the work cycle from interruptions and time encroachments. (See description of the work cycle above.)
10. Willingness of the administration to allow the conditions necessary for Montessori to happen.
11. What the child brings to the situation. A child who comes from a home situation where the language used is not the same as the language used at school will be "at a disadvantage" as will the child who comes from a home situation that is unstable, chaotic or abusive. The earlier these children begin Montessori and the longer they stay in Montessori, the more chance there is that Montessori can make a difference.

Whatever level of achievement has been reached by a child at any given time is the right level for that child, given the circumstances of his or her life and the conditions which existed in the class or classes.
previously attended. It is important to take each child where he or she is and to help him or her progress onwards from that point. Using labels, such as "remedial work," will only make the children feel that they are inadequate. Since children are very good at fulfilling the "prophecies" projected upon them, this could jeopardize their future achievement because they may come to believe that they are low achievers.

The following pages give a short introduction to the various areas found in Montessori classrooms and a listing of the materials necessary for equipping a classroom.

FOOTNOTES
1. *Errors and Their Correction* by A. M. Joosten (out of print)
3. Maria Montessori: Her Life and Work by E. M. Standing, page 267, Mentor Books

PUBLICATION SOURCES
*The Absorbent Mind* by Maria Montessori, Kalashetra Publications Press, Madras
*The Discovery of the Child* by Maria Montessori, Kalashetra Publications Press, Madras
*The Secret of Childhood* by Maria Montessori, Kalashetra Publications Press, Madras
*The Montessori Method* by Maria Montessori, Schocken Books, New York
*Spontaneous Activity in Education* by Maria Montessori, Schocken Book, New York
*The Human Tendencies and Montessori Education* by Mario M. Montessori, Association Montessori Internationale, Amsterdam
*Maria Montessori: Her Life and Work* by E. M. Standing, Mentor, New York
*Errors and Their Correction* by A. M. Joosten (out of print)
*The Environment, Its Arrangement and Maintenance* by A. M. Joosten (out of print)
*The Montessori House of Children, Its Function and Requirements* by A. M. Joosten (out of print)

LECTURE SOURCES
Eleanor Honegger, Centro Internazionale Studi Montessoriani, Bergamo, Italy
Margaret E. Stephenson, Washington Montessori Institute, Washington, D.C.
Mary Raudonis, Montessori Institute of Cleveland, Cleveland Heights, Ohio
INTRODUCTION

Practical life is the first area children see when entering the Montessori preschool classroom. The materials and activities of the practical life area, which are already familiar because many of them are seen at home, help children make the transition from home to school. Practical life is divided into five areas:

- Preliminary exercises help prepare the children to function independently in the classroom.
- Exercises for care of the person help children gain independence in their self-care.
- Exercises for care of the environment help children gain independence in the environment.
- Exercises of grace and courtesy (social relations) provide lessons on how to interact with others in one's culture.
- Control of movement exercises help children gain conscious control of their movements.

Qualities of Practical Life Materials and Exercises:

- The materials must be an appropriate size for children.
- The materials and exercises must be appropriate for the culture in which the child lives.
- The materials are color coded and placed on shelves. The color coding gives a clear indication of which items belong together in the exercise. The spacing (not crowding) on the shelves provides for visual separation of materials for different exercises. Because it is easy for the children to get the materials they need by themselves, this facilitates the development of independence.
- The materials must be attractive so that children are enticed to use them. In addition to being aesthetically pleasing, they must be clean, complete, and in perfect repair.
- The materials must be real rather than toys.
- The materials must have an observable application within the classroom environment. This is a very important, subtle psychological point. Sooner or later the child will see that this work is purposeful and has dignity. Practical life activities are not "make-work" projects or time fillers. Rather, practical life is real work and, as such, is an aid to life.
- Some materials must be breakable so that there is a reason to move carefully and thus develop greater control over one's movements.

Many materials and exercises will fulfill the above criteria. Others will not. An exercise that has children placing dress makers' pins in the holes of a salt shaker or one where children use tweezers to place beads on the small suction cups of a soap holder do not fit because these are not activities that we do in this culture and they have no observable purpose in the classroom environment. These are examples of "dead-end" time fillers.

Demonstrations of the exercises are given slowly and deliberately so that the children have the possibility of seeing and absorbing the movements. In preparation for the demonstrations, the teacher must analyze all the essential and minimal movements in an exercise and practice them extensively. When the teacher has a thorough knowledge of an exercise, he or she is free to focus on the child's response. The teacher is, therefore, more able to adapt the presentation in an appropriate manner to that individual child.
PRACTICAL LIFE
CURRICULUM RESOURCES

Purposes of the Practical Life Exercises:

Development of problem solving skills. This is done through exercises that give children the opportunity to work in an orderly, sequential way with materials which form a complete whole in themselves. Some evidence seems to suggest that cognitive style is set by the time the child turns four years of age. If this is so, then help in its formation needs to come before that age. The practical life exercises help children develop a cognitive style for approaching complex tasks. They give both "global" and "linear" style thinkers something to which they can attach themselves in any given exercise and the opportunity to strengthen the other style of thinking through interaction with the materials.

Coordination and refinement of movement. Carrying and manipulating the materials provides for ever increasing precision of movement which benefits both large and small motor coordination.

Concentration and increased complexity of tasks. The exercises proceed from simple to complex, or from exercises with few steps to exercises with many steps. This progression leads from short tasks which may be repeated over and over to tasks which take much longer to complete. This prepares children for academic work with many complex steps which require that the children be able to concentrate for a relatively long period of time in order to bring the task to a successful conclusion.

Independence. The activities are designed to help free children from dependence on adults. The ability to make a choice of one's activity is part of being an independent person. This is a skill that grows over time.

Positive self-image. Confidence in oneself and one's abilities is built naturally with practical life activities for there are, almost literally, no wrong ways to do them, only better and better ways.

Increased social responsibility. Completion of the exercise is part of the practical life routine. The exercise is complete when it has been put back in its place on the shelf and has been made ready for the next person. In addition to establishing the habit of completing one's tasks, it helps to develop consideration for other members of the class.

Willingness to accept a new challenge. "Points of interest" within a particular exercise are designed on the spot by the teacher to fit the needs of a particular child. The teacher must assess the child's performance on a task, pick one aspect that could be improved (making sure that it is within the child's capabilities), and then present it in an enticing manner: "This time when you wash the table, let's see if you can do it with no drips coming off this side of the table." The "points of interest" help children become more conscious, and, therefore, more in control of their movements.

Improved judgement. The exercises of practical life help children build up judgement and unify their physical and mental energies. The result is harmony and joy. These exercises provide the foundation on which the rest of the activities in the environment are built.

Initially, children engage themselves in the exercises of practical life for the pleasure that comes from performing the activities. As the children mature and become more and more aware of the little society that exists in their classroom and their responsibility to be a contributing member of that society, they begin to do these exercises for the sake of the class and that society. For example, a younger child may have spilled a large quantity of water on the floor. Children who have arrived at this new level of social consciousness come to the child's aid and help mop up the spill.

During the elementary years, children engage in a general cleaning of the room and the materials, and in making order as part of their responsibility to their classroom society. At first, the tasks that need to be done are decided upon by the class as a whole and the responsibility is divided among the class members. How often the assigned tasks change is, again, a decision that is made by the class. Sometimes a class will arrive at the highest level of responsibility which is keeping the class clean and in order without assigned tasks.

Jean K. Miller
PRACTICAL LIFE FOR THE PRESCHOOL
ACTIVITIES AND MATERIALS OVERVIEW

I. PRELIMINARY EXERCISES

Preparation for Using Water:
- Operating a Faucet
- Pouring Rice:
  - pitchers, small, glass
  - rice, long grain
  - tray, small, colored (5" x 7")

Exercises for Using Water:
- Pouring Water:
  - cloth, small
  - containers, small - different shapes & sizes
  - cup and saucer, small
  - funnel
  - glass, small
  - markers to indicate plant has been watered
  - pitchers, small
  - plants
  - sponge, small
  - tray, small (5" x 7")
  - vases, clear, opaque
  - watering can

Filling a Pitcher:
- pitchers, glass, beautiful
- pitcher, heavy, metal

Etc.

Exercises in Carrying:
- Carrying a Chair
- Carrying a Table
- Carrying Apparatus
- How to Carry, Roll and Unroll a Mat:
  - 1.640.00 - 1.644.00 carpets
    - red, green, blue, gray, brown
  - 1.650.00 stand for 5 carpets

Carrying Sharp Objects:
- 7.701.00 scissors w/rounded point 10.4 cm
- 7.708.00 six scissors storage block

Exercises in Cutting:
- Scissors and Paper
  - 5.678.00 cutting exercise sheets
  - 7.701.00 scissors w/rounded point 10.4 cm
  - 7.708.00 six scissors storage block

Knives with Rounded Points
Etc.

II. CARE OF THE PERSON

Dressing and Undressing (dressing frames):
- 0.001.00 buttoning frame, small buttons
- 0.002.00 buttoning frame, large buttons
- 0.003.00 bow tying frame
- 0.004.00 lacing frame
- 0.005.00 hook and eye frame
- 0.006.00 safety pin frame
- 0.007.00 snapping frame
- 0.008.00 zipping frame
- 0.009.00 buckling frame
- 0.010.00 shoe buttoning frame
- 0.011.00 shoe lacing frame
- 0.012.00 velcro closure frame

1.632.00 stand for dressing frames

Polishing Shoes:
- 4.003.00 dust/polishing cloth
- 4.014.00 shoe polishing brush set (Also included in 4.027.00)

4.047.00 basket for shoe polishing applicator
- apron
- basket
- brush, soft, hard
- buffer
- cloth, duster
- paper, large, white

Polish: black, brown, neutral

Combining Hair:
- chair
- comb for each child
- dressing table with mirror
- wall hanging case to hold combs
- waste basket

Washing Hands:
- 4.013.00 nail brush
- basin, glass
- dish, small
- fingernail brush
- pitcher, glass
- soap dish
- soap
- sponge, small
- towel, small, hand

Etc.

Hanging Up Clothes:
- clothes hanger or clothes rack

Checking Overall Appearance:
- full length mirror

Etc.
## III. CARE OF THE INDOOR ENVIRONMENT

### Folding:
- basket or tray in which cloths may lie flat
- 4 square cloths with stitching, approximately 10x10" or 12x12"

### Dusting:
- 4.009.00 dust/polishing cloth
- 4.010.00 basket for dusters
- 4.011.00 dust brush, soft
- 4.042.00 dust brush, hard

### Washing a Table:
- 4.005.00 floor cloth
  - apron
  - basin, circular
  - brush, small, scrubbing
  - pail with spout and handhold underneath
  - soap dish
  - soap, small piece
  - sponge, small
  - two quart pitcher
  - wash cloth for drying

### Polishing a Table:
- apron
- basket
- caster or butter pat dish
- cloth for applying polish
- cloth for rubbing in the polish
- cloth for final polishing
- place mat
- polish
- polish dispenser, small
- spoon, small

### Polishing Metal:
- 4.033.00 set brassware, containing 8 different miniatures (Items for polishing must be used elsewhere in the room. They do not sit with the materials for polishing. The items in this set could have a decorative function.)
- 4.034.00 Brasso brass polish

### Polishing Silver:
- apron
- basket
- brush, small
- cotton balls
- dish, small
- metal polish (glass wax)
- objects to polish
- oilcloth
- orange stick
- polishing cloth

### Arranging Flowers:
- 7.701.00 scissors with rounded point 10.4 cm
- 7.708.00 six scissor storage block
  - apron
  - basin
  - bucket
  - doilies, paper
  - drying cloth
  - funnel
  - oilcloth
  - pitchers:
    - medium sized
    - large
  - sponge
  - trays
  - vases

### Washing Cloths:
- basin:
  - circular
  - rectangular
- basket:
- clothes pins and line or drying rack
- pail with pouring lip and hand hold
- pitcher
- oilcloth
- scrub board
- soap
- soap dish

### Ironing:
- ironing board
- iron

### Preparing Food:
- apron
- bowl
- brush, vegetable
chopping knife
cloth, small
cutting board
potato peeler
small sponge
small cloth
towel
trays
Setting a Table:
dishes
flowers
glasses
napkins
pitcher
silverware
table cloth
vase
Clearing a Table:
same as for setting a table
Crumbling a Table:
crumber set
Etc.

IV. CARE OF THE OUTDOOR ENVIRONMENT
Sweeping Steps:
4.027.00 stand, practical life material, complete
   (shoe polishing brush set, two
   brooms, floor mop, rug beater,
   dust brush, dustpan)
   trash receptacle
   Picking Up Debris In The School Yard.
   trash bags
   trash container
Raking Leaves:
   container or compost pile for leaves
   rake
Planting Flowers, Vegetables:
   fertilizer (organic preferred)
   garden tools
   seeds

V. EXERCISES OF GRACE AND COURTESY
Blowing one’s nose
Covering one’s mouth for a sneeze or cough
How to yawn
Opening a door to receive someone and inviting them to come in
Shaking hands
How to talk softly but audibly
Offering an object to someone
Passing an object from one person to another
How to ask for something
How to accept
How to refuse
Thanking someone
Accepting thanks
Excusing one’s self
How to apologize
Passing behind so as not to disturb others
How and when to interrupt
Sitting down
Standing up
Etc.

VI. CONTROL OF MOVEMENT
Walking on the Line
(Note. The line is to be an unobtrusive indication of where to put the feet. It should be no more than three quarters of an inch wide and should be a color which almost blends into the floor. A light tan is preferable. Initially, the line is for walking. Later it is for marching, running, skipping, etc., in time to appropriate music. Therefore, it should be as large as the room permits it to be. Since it is for movement, the children should not associate it with the sedentary activity of sitting.)
Silence
## Practical Life for the Preschool
### Simple Inventory
#### Materials from Nienhuis

<table>
<thead>
<tr>
<th>Code</th>
<th>Item Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.001.00</td>
<td>buttoning frame, small buttons</td>
<td>0.00</td>
</tr>
<tr>
<td>0.002.00</td>
<td>buttoning frame, large buttons</td>
<td>0.00</td>
</tr>
<tr>
<td>0.003.00</td>
<td>bow tying frame</td>
<td>0.00</td>
</tr>
<tr>
<td>0.004.00</td>
<td>lacing frame</td>
<td>0.00</td>
</tr>
<tr>
<td>0.005.00</td>
<td>hook and eye frame</td>
<td>0.00</td>
</tr>
<tr>
<td>0.006.00</td>
<td>safety pin frame</td>
<td>0.00</td>
</tr>
<tr>
<td>0.007.00</td>
<td>snapping frame</td>
<td>0.00</td>
</tr>
<tr>
<td>0.008.00</td>
<td>zipping frame</td>
<td>0.00</td>
</tr>
<tr>
<td>0.009.00</td>
<td>buckling frame</td>
<td>1.63</td>
</tr>
<tr>
<td>0.010.00</td>
<td>shoe buttoning frame</td>
<td>0.01</td>
</tr>
<tr>
<td>0.011.00</td>
<td>shoe lacing frame</td>
<td>0.01</td>
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<tr>
<td>0.012.00</td>
<td>velcro closure frame</td>
<td>0.32</td>
</tr>
<tr>
<td>1.632.00</td>
<td>stand for dressing frames</td>
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<tr>
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<td>red carpet (2) (see language)</td>
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<td>1.643.00</td>
<td>gray carpet (2) (see language)</td>
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<tr>
<td>1.644.00</td>
<td>brown carpet (2) (see language)</td>
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<td>floor cloth (5)</td>
<td>4.00</td>
</tr>
<tr>
<td>4.009.00</td>
<td>dust/polishing cloth (2)</td>
<td>4.01</td>
</tr>
<tr>
<td>4.010.00</td>
<td>basket for dusters</td>
<td>4.01</td>
</tr>
<tr>
<td>4.011.00</td>
<td>dust brush, soft</td>
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</tr>
<tr>
<td>4.013.00</td>
<td>nail brush</td>
<td>4.01</td>
</tr>
<tr>
<td>4.014.00</td>
<td>shoe polishing set (also included in 4.027.00)</td>
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<tr>
<td>4.015.00</td>
<td>small dust brush</td>
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<td>4.017.00</td>
<td>stand, practical life material, complete</td>
<td>4.02</td>
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<tr>
<td>4.033.00</td>
<td>set brassware, containing 8 different</td>
<td>4.03</td>
</tr>
<tr>
<td></td>
<td>miniatures</td>
<td></td>
</tr>
<tr>
<td>4.034.00</td>
<td>Brasso brass polish (2)</td>
<td>4.04</td>
</tr>
<tr>
<td>4.042.00</td>
<td>dust brush, hard</td>
<td>4.04</td>
</tr>
<tr>
<td>4.047.00</td>
<td>basket for shoe polishing</td>
<td>4.05</td>
</tr>
<tr>
<td>5.678.00</td>
<td>cutting exercise sheets</td>
<td>7.70</td>
</tr>
<tr>
<td>7.701.00</td>
<td>scissors with rounded point - 10.4 cm (12)</td>
<td>7.70</td>
</tr>
<tr>
<td>7.708.00</td>
<td>six scissor storage block (2)</td>
<td>7.70</td>
</tr>
</tbody>
</table>
In addition to the materials available from Nienhuis, the Montessori manufacturer, Practical Life materials are available from:

- aprons, various sizes, fabrics & colors with various fasteners
- basins, various colors and shapes
- baskets, various sizes and shapes
- bowls, various sizes
- brushes:
  - hard, for shoes
  - scrub
  - soft, for shoes
  - other sizes, shapes and degrees of firmness
- buffer, for shoes
- buttons in container
- caster or butter pat dish
- chopping knife
- container for chalk
- cloths, small, various colors
- comb for each child
- confetti or sawdust in container
- containers, different shapes and sizes
- cotton balls
- cutting board
- cup and saucer, small
- dish, small
- dust cloths
- finger nail brush
- floor cloths, various sizes and colors
- folding cloths
- funnel
- glasses, various sizes
- handkerchief
- markers to indicate plant has been watered
- mirrors:
  - full length
  - vanity
- needle
- oilcloths, various colors
- orange sticks
- pails w/ spout & handhold underneath, various colors
- paper doilies
- paper, large, white
- place mats, various colors
- plants
- pin cushion
- pitchers:
  - beautiful glass
  - heavy metal
  - small glass
  - two quart
- polish dispenser, small
- polish, various kinds, as non-toxic as possible (Not to be used by children who still put things in their mouths.)
- potato peeler
- rice, long grain
- scissors:
- scrub board
- shoe polish:
  - neutral
  - brown
  - black
- soap
- soap dishes, various colors
- sponges, small, various colors
- spoons, small
- tissue
- thread
- towels, various sizes and colors
- trash bags
- trash container
- trash receptacle
- trays, various sizes and shapes
- vases:
  - clear
  - opaque
  - etc.
- vegetable brushes
- wall hanging case for combs
- wash cloths, various colors
- waste baskets
- watering can
INTRODUCTION

All children, no matter what their background, have accumulated thousands of sensory impressions by the time they enter a Montessori environment. The purpose of the sensorial materials available in the Montessori classroom is to help them sort out, clarify, and classify those impressions. In order to do this the sensorial materials have special qualities which are important and should be used to guide the selection of materials when equipping a Montessori environment. Those, along with some of the other qualities of the sensorial materials, are listed below.

Isolation of the Concept — Each sensorial material isolates only one quality or concept. Therefore children focus on one idea at a time, manipulate the concrete representation of that idea, abstract it and then, finally, apply the concept in other situations. It is important that the materials truly isolate a concept. For example, the pink tower must be a solid color rather than natural wood. The solid color enables the children's eyes to focus on the shapes of the pieces and their relationships to one another. A tower whose finish reveals the natural wood provides a distraction that the wood grain draws attention away from the shapes and their relationships.

Aesthetic Beauty — The beauty of the material invites use by the children.

Precision — The materials must be precise in order that the shapes and their relationships reveal themselves to the children and their interrelationships may be discovered (e.g., the corresponding dimensions of the pink tower and the broad stair).

It is important to maintain the aesthetic beauty, completeness, and precision of the materials. This is done first through the modeling of careful handling on the part of the adult in the environment, second through insisting that the children handle all materials carefully, and third, through touch-up painting as necessary. (Item 0.321.00, First Aid Kit, contains extras of the most often lost pieces of material. Items 9.500.00 through 9.509.00 are touch-up paints.) When materials have lost their precision and aesthetic beauty and it is no longer possible to repair them, it is time to purchase new ones. Schools should have a category in their budget for replacement of materials. The frequency of replacement will depend on the standard of handling set by the adults in the Children's House environments. Items incorporating absolute precision (pink tower, broad stair, red rods, red and blue rods, binomial and trinomial cubes) should not need to be replaced more often than every five years. Usually they will last much longer — but only with careful, respectful handling.

Limited in Number — Since the purpose of these materials is to help children clarify and classify the sense impressions they already have rather than introduce them to new ones, it is important that the materials be limited in number. If there are too many materials their very quantity will obscure the clarity sought by the children. If there are too few, areas where clarity is needed will be skipped. The materials listed in this section represent an amount that is just right for a Montessori preschool class.

Systematic — Each material builds on the concepts discovered in previous materials (i.e., primary colors are given first, secondary colors next, followed by tints and hues.)

Designed For Auto-Education — The materials act directly on the child and the child acts directly on the materials. Once a child knows how to use a material, he or she is free to work without the teacher, to explore and to discover what is inherent in that material. Since there is nothing extraneous or superfluous in the material, there is only the essence of the concept waiting to reveal itself to the child.
Control of Error — There are three different kinds of control utilized in the sensorial materials. The first is within the material itself. A perfect example is the cylinder blocks where each cylinder will fit precisely into only one hole in its block. The second is within the child. For example, from the first day a child enters a Montessori preschool class he or she sees and absorbs the regular seriation of the pink tower. When the child is introduced to the use of the pink tower, he or she has already built an internal guide which helps the child “know” when the tower has been built correctly. The third control is in the adult or another child. This is used when the child is unable to detect his or her error or lack of knowledge. A good example of when outside help is needed is for naming the geometric solids.

Jean K. Miller
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.012.A0</td>
<td>rough and smooth boards</td>
<td>0.045.00</td>
<td>squares, circles, triangles for superimposed figures</td>
</tr>
<tr>
<td>0.014.00</td>
<td>rough and smooth tablets</td>
<td>0.048.00</td>
<td>geometrical solids</td>
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<tr>
<td>0.014.B0</td>
<td>empty box for fabrics (3)</td>
<td>0.048.A0</td>
<td>bases for solids</td>
</tr>
<tr>
<td>0.015.00</td>
<td>smelling bottles</td>
<td>0.048.B0</td>
<td>basket for geometrical solids (2)</td>
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<tr>
<td>0.016.00</td>
<td>sound boxes</td>
<td>0.049.00</td>
<td>constructive triangles</td>
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<tr>
<td>0.017.00</td>
<td>baric tablets</td>
<td>0.051.00</td>
<td>color tablets, box 1</td>
</tr>
<tr>
<td>0.017.A0</td>
<td>blindfold (6)</td>
<td>0.052.00</td>
<td>color tablets, box 2</td>
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<tr>
<td>0.018.00</td>
<td>thermic bottles</td>
<td>0.053.00</td>
<td>color tablets, box 3</td>
</tr>
<tr>
<td>0.018.A0</td>
<td>thermic tablets</td>
<td>0.063.A0</td>
<td>bells (26) with 2 mallets and 1 damper (see music)</td>
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<tr>
<td>0.019.00</td>
<td>cylinder block (increase in height and diameter)</td>
<td>0.063.B0</td>
<td>two keyboards for bells (see music)</td>
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<tr>
<td>0.020.00</td>
<td>cylinder block (increase in diameter, height constant)</td>
<td>0.063.C0</td>
<td>wooden staff board with circles for the notes (see music)</td>
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<td>0.021.00</td>
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<td>0.063.D0</td>
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<td>0.022.00</td>
<td>cylinder block (increase in height, diameter constant)</td>
<td>0.063.E1</td>
<td>box with musical signs (see music)</td>
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<tr>
<td>0.023.00</td>
<td>knobless cylinders</td>
<td>0.063.F0</td>
<td>bell striker (3) (see music)</td>
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<tr>
<td>0.024.00</td>
<td>pink tower</td>
<td>0.063.G0</td>
<td>bell damper (see music)</td>
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<tr>
<td>0.025.00</td>
<td>broad stair</td>
<td>0.064.00</td>
<td>music strip boards (see music)</td>
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<tr>
<td>0.026.00</td>
<td>red rods</td>
<td>0.131.00</td>
<td>binomial cube</td>
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<tr>
<td>0.037.01</td>
<td>geometric cabinet (empty)</td>
<td>0.132.00</td>
<td>trinomial cube</td>
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<tr>
<td>0.037.02</td>
<td>contents, geometric cabinet</td>
<td>0.186.00</td>
<td>table of Pythagoras</td>
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<tr>
<td>0.038.00</td>
<td>demonstration tray for geometric cabinet</td>
<td>0.121.00</td>
<td>first aid kit (replacement pieces) (one school)</td>
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<td>0.038.A0</td>
<td>contents, demonstration tray</td>
<td>1.615.00</td>
<td>cabinet for bell material</td>
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<td>0.039.00</td>
<td>cards for geometrical cabinet</td>
<td>9.500.00</td>
<td>pink touch-up paint</td>
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<tr>
<td>0.040.00</td>
<td>cabinet with 6 compartments for the cards or</td>
<td>9.501.00</td>
<td>red touch-up paint</td>
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<tr>
<td>0.040.A0</td>
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<td>9.502.00</td>
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<tr>
<td>0.040.A0</td>
<td>box with 3 compartments for the botany cards</td>
<td>9.503.00</td>
<td>green touch-up paint</td>
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<tr>
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<td>botany cabinet (empty)</td>
<td>9.504.00</td>
<td>dark blue touch-up paint</td>
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<tr>
<td>0.041.A1</td>
<td>contents of botany cabinet</td>
<td>9.505.00</td>
<td>clear touch-up varnish</td>
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<tr>
<td>0.043.00</td>
<td>leaf cards</td>
<td>9.506.00</td>
<td>thinner for repair paint</td>
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<td></td>
<td>9.508.00</td>
<td>black touch-up paint</td>
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<td></td>
<td></td>
<td>9.509.00</td>
<td>light blue touch-up paint</td>
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### SENSORIAL MATERIALS FOR THE PRESCHOOL

**OTHER MATERIALS TO BUY OR MAKE**

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<thead>
<tr>
<th>Category</th>
<th>Items</th>
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<tbody>
<tr>
<td>Sensorial</td>
<td>bowl, small</td>
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<tr>
<td>Sensorial</td>
<td>cups, small</td>
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<tr>
<td>Sensorial</td>
<td>fabrics</td>
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<tr>
<td>Sensorial</td>
<td>grains of different kinds</td>
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<tr>
<td>Sensorial</td>
<td>jars for tasting (10)</td>
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<tr>
<td>Mystery Bag</td>
<td>mystery bag with selection of objects</td>
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<td>Pitchers</td>
<td>pitchers</td>
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<tr>
<td>Spoons</td>
<td>spoons</td>
</tr>
<tr>
<td>Towels</td>
<td>towel, terry cloth, small</td>
</tr>
<tr>
<td>Trays</td>
<td>trays</td>
</tr>
</tbody>
</table>
INTRODUCTION

Language is an important part of the entire Montessori curriculum. Its treatment as a separate subject comes only at the points at which it is necessary to give clarity to the children's minds—that is, to give them conscious awareness of their language so that they may be able to use it more effectively. Once children have an understanding that writing is a graphic form of their language and are secure in using written symbols themselves, these special points center around spelling, word study, penmanship, grammar, punctuation, and capitalization. The real experience in reading and writing comes through the children's work in other areas of the curriculum such as geography, history, botany, etc. In the elementary, overviews of curriculum are given through the use of the "Great Lessons." The Great Lessons provide a framework to the information the children gather as they read and research various topics of interest to them. The Great Lessons enable them to see relationships among the various pieces of information and how those pieces fit into the overview and lend excitement and interest as they discover more and more about the world through the integrated curriculum. Language is a tool for these discoveries. This is very different from the basal reader approach where expository reading selections present disjointed pieces of information and contrived stories, used to meet a particular skill, which has little or no redeeming literary value.

If the various aspects of language are made available to children at the appropriate sensitive periods, those aspects are eagerly seized upon and studied with fervor. If they are presented later, there is less interest, and more ingenuity must be employed to make the information attractive to children. Before age six, children enjoy the study of language for its own sake. Elementary age children want language as a tool—both for self-expression and for obtaining the information they want.

When language is properly approached in the Montessori preschool, writing usually comes before reading. Preliminary exercises help the children acquire the components necessary for writing to take place: control of pencil through work with the geometric forms of the metal insets, lightness of touch through work with the sandpaper touch boards and the sandpaper letters, association of sound, symbol and the muscular motions necessary for producing the symbols through work with the sandpaper letters, and practice in word analysis with the cutout pieces of the movable alphabet. Children combine all of these in their own way and in their own time when they begin handwriting. They may write for several months before discovering that they can read back their own writing. This leads to the realization that they can read other people's writing. Reading is thus attained through the children's own creative writing.

When children age five or older approach reading and writing for the first time, the two phenomena generally occur simultaneously. It is important that the children be given the opportunity to establish the habit of expressing themselves in writing. This is a delicate process during which the teacher must refrain from correcting the children's work as they become comfortable with written expression. Invented spellings, lack of punctuation and capitalization are fine at this stage. At the appropriate moment the study of spelling and grammar follows, as does word study and conscious reading. The latter is aided by the use of command cards. Instead of asking children to read aloud, they read a card and then act out the command. It is easy to see if the children have understood what they have read. The commands begin with one word verb commands and progress to sentences requiring one action, then two, then more. They may be done individually or in small groups in the form of charades. The children may also write commands for each other. The addition of adverbs changes the commands into interpretive readings. For example, "Shut the door," may become, "Shut the door happily," or "Shut the door fearfully." This may progress into little dialogues, small plays and, finally, big productions. The latter may be taken from good literature and
adapting by the children, or they may illustrate something the children are studying, such as the crossing of the land bridge from what is present-day Russia to Alaska by the original inhabitants of North America, the re-establishment of the boundaries of farmer's fields through the use of geometry after the annual flooding of the Nile River, or any other theme the children may wish to dramatize.

Classified nomenclature or vocabulary study in written form within other areas of the curriculum may begin as soon as a child knows the sounds of individual letters. The child has already worked with these vocabulary cards in a verbal naming process so the names for the objects pictured are already a part of his or her speaking vocabulary. The three-period lesson may be used to introduce the written words to the child. When the child works alone, he or she may sound out the initial letter of a word and intuit the rest of the word according to the accompanying picture. This material is prepared in the usual manner of picture cards, labels, definitions and booklets. It also provides an opportunity for children, who learn more easily by sight than by phonics, to greatly increase their reading vocabulary.

The reading of books follows much experience with reading classification, commands and puzzle words. The first books are simple and short and the subject must be familiar to the child. The child will be able to read these little books one after another, thus deriving a great deal of pleasure in this first encounter with the reading of books. This expands to reading in all areas of the classroom, literature and poetry (including the study of meter), and an introduction to the use of the library and reference works.

The study of grammar begins with the study of individual words, first in an experiential study with games in the preschool and later in a formal manner in the elementary with the more structured experiential exercises in the grammar. This expands to a study of the functions of groups of words and a specialized study of verbs. Related forms is a study of the child's own style of writing and the style of older authors, comparison of grammatical arrangements of different languages, and an historical study of the development of the language spoken by the children. At some point in the elementary, children begin to use several different grammar texts. Since grammarians do not agree on all classifications of words, lively discussions may result. With this, the children gain experience in gathering the opinions of several grammarians, making up their own minds about a word classification, and then defending their opinion during their discussions with their classmates.

Composition is begun by the children even before they are able to write with pencil and paper. It is done orally first through the practice of logical organization and augmentation with the question game. Written composition begins as soon as they are able to sound out words with the movable alphabet. They may set out their own thoughts with the movable alphabet, first in words, then phrases, sentences, dialogues, paragraphs and stories. Punctuation and capitalization may be introduced in this stage but spelling is not corrected (unless the child insists) because nothing is to get in the way of the child's flow of ideas. Spelling is studied separately, and as the study progresses the spelling in the compositions automatically improves. The same is true for grammar. The reason for studying spelling and grammar is to help the child in his or her creative self-expression.

Etymology is important in the elementary years. In addition to helping with comprehension and spelling, it is one way to keep language attached to historical development. Language contributes to the development of societies and cultures and it grows and changes as those societies and cultures grow and change. For this reason, children are also exposed to the story of the development of language in human culture. This keeps the study of language dynamic and alive.

Computer work, beginning with keyboard skills, is initiated when children enter the elementary. One or two computers in the classroom environment make the practicing of this skill available for the children's choice, just as are all other parts of the curriculum. A computer lab in a separate room is unnecessary and should be avoided because of the disruption that would create in the work cycle. Programs that develop keyboard skills should be straight keyboard programs without "entertainment" aspects such as games that devour letters if they are not typed fast enough. Children are generally interested in learning keyboard skills and do not need extraneous entertainments. It is recommended that the computer be regarded as a useful tool rather than as a toy. One of the important discoveries of Montessori was that knowledge or skill practice did not have to be "sugar coated" in order to be attractive to children - if the knowledge or skills
are offered to children when they were interested in acquiring them. Recommended use of computers in Montessori classes includes word processing and logo. The latter may be used as a complement to geometry work in the elementary years.

Jean K. Miller
## LANGUAGE FOR THE PRESCHOOL
### ACTIVITIES AND MATERIALS OVERVIEW

### I. EXPANSION OF LANGUAGE
#### A. Enrichment of Vocabulary - Spoken Language:
1. Objects in the environment
2. Sensational apparatus (qualities)
   - Positive, comparative, superlative
   (This written form comes later.)
3. Classified cards:
   - Phonetic pictures and labels, print
   - Phonetic pictures and labels, cursive

#### B. Language Training:
- Parallel activities - no special order
1. Story telling (true information)
2. Poetry
3. Self-expression
4. The Question Game

### II. WRITING
#### A. Sound Games:
- Objects in the environment

#### B. Sandpaper Letters:
- 0.054.B4 sandpaper letters, cursive, U.S.A.
- 0.054.AO box for sandpaper letters
- Set up for preparation:
  - 1 tray
  - 1 small bowl
  - A supply of small terry cloth towels
  - 1 small pitcher
  - Sandpaper letters grouped according to similarity of beginning stroke on a green lined background which shows placement on a line.
  - Double sandpaper letters which show joining of letters

#### C. Movable Alphabet:
- 1.640.00 to 1.644.00 carpets in 5 colors (2 of each color)
- 1.650.00 stand for 5 carpets (2)
- 0.059.A4 large movable alphabet letters only, cursive, U.S.A. (3 sets)
- 0.059.A3 large movable alphabet letters only, print, U.S.A.
- 0.059.C1 box for large movable alphabet, cursive, U.S.A. (3 boxes)
- 0.059.C3 box for large movable alphabet, print, U.S.A.

#### D. Metal Insets:
- 0.046.00 metal insets
- 0.047.00 stands for metal insets
- 1.630.00 wall frame for insets and supplies for inset exercises
- 5.679.00 inset paper, bulk, white, 6 reams (2)
- 7.023.00 paper box for 14x14 cm paper
  - (5-1/2x5-1/2") (2)
- 7.201.00 12 color/gross inset pencils

### III. READING I
#### A. Phonetic Object Game:
- 5.636.00 object box labels
- Box containing objects whose names are phonetic (change regularly)
CURRICULUM RESOURCES

(available from Montessori Services)
box containing printed tickets for the objects
pencil
slips of paper

### B. Phonetic Reading:
- **5.633.00** phonetic flash cards
- **5.634.00** phonetic pictures and labels, print (2)
- **5.634.10** phonetic pictures and labels, print (2)
- **5.635.00** phonetic reading cards, print
- **5.635.10** phonetic reading cards, cursive
- **5.649.10** first books

### C. Phonograms: (See 5.674.00 Word Lists for the American English Language)
- **5.636.00** object box labels (as above)
- **5.637.00** phonogram booklets
- **5.638.00** phonogram cards
- **5.639.00** phonogram cards
- **5.649.10** first books (as above)
- **0.060.A3** small movable alphabet, letters only, print. red (two or three)
- **0.060.A7** small movable alphabet, letters only, print, black (two or three)
- **0.060.C2** box for small movable alphabets (2)
- **5.649.10** object box labels (as above)

### IV. READING II

#### A. Word Study:
charts with printed lists of words
  - 1. suffixes
  - 2. prefixes
  - 3. word families
  - 4. compound words

movable alphabets, four or six, small, each a different color (see above)

#### B. Puzzle Words:
- **0.060.A4** small movable alphabet, yellow
- **0.060.C2** box for small movable alphabet
- **5.648.00** puzzle words
- **5.649.10** boxes or baskets

#### C. Reading Classification:
- **5.634.00** phonetic pictures and labels, print (2)
- **5.641.00** labels for Montessori apparatus
- **5.642.00** labels for fabrics
- **5.643.00** labels for fruits
- **5.644.00** labels for indoor environment
- **5.645.00** labels for vegetables
- **5.646.00** labels for herbs, seeds, etc.

- **5.647.00** labels for Montessori math materials
- **5.659.00** positive, comparative, superlative labels

#### D. First Books:
- **5.649.10** first books (as above)
- **5.650.00** easy reading booklets
- **5.651.00** illustrated poems

#### V. FUNCTION OF WORDS

##### A. Nouns:
- **0.249.06/0.249.07** farm
- **1.625.00** table for the farm
- **5.657.00** noun labels for the farm

##### B. Article:
- **5.655.00** grammar games - Set 1
  - box of small articles
  - box with printed tickets
  - pencil
  - slips of paper

##### C. Adjective:
- **0.110.00** plastic grammar symbols with box
- **0.111.00** grammar symbols
- **0.112.A0** grammar symbols box, 10 compartments
- **5.658.00** adjective phrases for the farm
  - box of printed slips describing each object
  - objects related to each other (i.e. farm)
  - pencil
  - scissors
  - slips of paper

##### D. The Logical Adjective Game:
- **0.111.00** grammar symbols (as above)
- **0.112.A0** box for grammar symbols (as above)
- **5.655.00** box material (handmade)

##### E. The Detective Adjective Game:
- **0.045.A0** detective adjective triangle exercise
- **0.111.00** grammar symbols (as above)
- **0.112.A0** box for grammar symbols (as above)
- **5.655.00** box material (handmade)

##### F. Conjunction:
- **0.111.00** grammar symbols (as above)
- **0.112.A0** box for grammar symbols (as above)
- **5.656.00** conjunctions and prepositions
  - articles, 3 or 4, having a relationship with one another
  - farm
  - ribbon
  - pencils, red and black
  - printed tickets
  - slips of paper

##### G. Preposition:
- **0.111.00** grammar symbols (as above)
- **0.112.A0** box for grammar symbols (as above)
VI. READING ANALYSIS

A. Simple Sentences:
- grammar symbols (as above)
- box for grammar symbols (as above)
- scissors with round point 10.5 cm.
- chart of prepared sentences
- black pencil
- printed sentence slips chosen from good authors, giving the child the possibility of interpretation
- slips of paper

B. Simple Sentences - Stage of Arrows with Questions:
- reading analysis (use first chart and box)
- circles, unmarked:
  - large red
  - medium black
  - small black
- first analysis charts

C. Simple Sentences with Extensions:
- reading analysis: two charts and four boxes
- two sets of printed sentences (1 for control)

D. Simple Sentences - Attributes and Appositive:
- reading analysis: two charts and four boxes
- two sets of printed sentences (1 for control)
**LANGUAGE FOR THE PRESCHOOL**

**SIMPLE INVENTORY**

**MATERIALS FROM NIENHUIS**

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<th>Quantity</th>
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<td>small movable alphabet letters, print, yellow</td>
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<td>stand for ten greenboards</td>
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<td>carpets in 5 colors</td>
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<td>triangles</td>
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**CURRICULUM SUPPORT MATERIALS**

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<td>labels for indoor environment</td>
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<td>labels for vegetables</td>
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<td>labels for herbs, seeds, etc.</td>
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<td>labels for Montessori math materials</td>
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<tr>
<td>Word Lists for American English Language</td>
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CURRICULUM RESOURCES

LANGUAGE FOR THE PRESCHOOL
OTHER MATERIALS TO BUY

- baskets for language cards
- books
- bowl, small (for set-up for preparing fingertips)
- boxes:
  - for object box exercises
  - for language cards
  - for preposition exercise
- chalk
- compasses
- erasers for chalk boards
- objects:
  - for object boxes
  - for article exercise
- paper:
  - long slips for writing examples in front of the child
- pastel colors 5.5" x 5.5" (for metal inset work)
- pencils, regular
- picture sources for language cards
- pitchers, small (for set up for preparing fingertips)
- protractors
- ribbon
- rulers
- towels, terry cloth (for set-up for preparing fingertips)
- trays:
  - for set-up for preparing fingertips
  - for metal insets
  - for small metal insets
- vase
LANGUAGE FOR THE PRESCHOOL
MATERIALS TO MAKE

arrows, black
charts:
  sandpaper letters grouped according to similarity of
    beginning stroke
suffixes
prefixes
word families
compound words
prepared sentences for reading analysis
circles:
  red
  black
commands:
  adverbial
    one action, two actions, more actions, etc.
sentences for reading analysis
tickets:
  article exercise
  logical adjective game
  logical adverb game
I. HISTORY OF LANGUAGE
   A. Written Language (Great Lesson: The Story of Communication in Signs) Includes pre-alphabetical signs, the alphabet, development of different “hands,” development of the printing press, etc.
      5.652.00 story of writing
      charts (handmade)
      other materials at teacher’s discretion and choice
   B. Spoken Language
      1. Theories of the beginning of speech (in story form)
      2. The development of languages throughout the ages to present day English
      charts (handmade)

II. GRAMMAR AND SYNTAX
   A. Word Study
      1. Affixes
         a. Suffixes
            0.060.A3 small movable alphabet letters, red, USA
            0.060.A4 small movable alphabet letters, yellow, USA
            0.060.A5 small movable alphabet letters, blue, USA
            0.060.A7 small movable alphabet letters, black, USA
            0.060.C2 box for small movable alphabet (4)
            7.201.00 12 color/gross inset pencils
            7.305.00 set of 11 colored pencil holders
            (as above)
            chart (handmade)
            colored inks
            dictionaries
            grammar books - for upper elementary work
         b. Prefixes
            0.060.A3 small movable alphabet letters, red, USA
            0.060.A4 small movable alphabet letters, yellow, USA
            0.060.A5 small movable alphabet letters, blue, USA
            0.060.A7 small movable alphabet letters, black, USA
            0.060.C2 box for small movable alphabet (4)
            7.201.00 2 color/gross inset pencils
            7.304.00 pencil holders
            7.305.00 set of 11 colored pencil holders
            (as above)
            chart (handmade)
            colored inks
            dictionaries
            grammar books - for upper elementary work
      2. Compound Words
      3. Word Families
      4. Synonyms (after verb grammar box)
      5. Antonyms
      6. Homonyms
      7. Possessives
      8. Contractions
      9. Abbreviations
   B. Parts of Speech - General plan of work includes...
CURRICULUM RESOURCES

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<td>0.103.01</td>
<td>filling boxes</td>
</tr>
<tr>
<td>0.104.01</td>
<td>set of printed grammar cards (includes 0.105.C1) and/or</td>
</tr>
<tr>
<td>0.104.A0</td>
<td>set of unprinted grammar cards and</td>
</tr>
<tr>
<td>0.105.C1</td>
<td>printed command cards complete</td>
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<tr>
<td>0.105.02</td>
<td>grammar box material outline</td>
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<tr>
<td>0.105.A1</td>
<td>set of command boxes</td>
</tr>
<tr>
<td>0.110.00</td>
<td>plastic grammar symbols (for work with grammar boxes)</td>
</tr>
<tr>
<td>0.111.00</td>
<td>paper grammar symbols. complete set (for children's own work) (2)</td>
</tr>
<tr>
<td>0.112.00</td>
<td>box for 15 grammar symbols (2)</td>
</tr>
</tbody>
</table>

In addition, extra grammar symbols should be ordered for the parts of speech most frequently used in the children's work.

<table>
<thead>
<tr>
<th>Category</th>
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<tr>
<td>0.102.01</td>
<td>verb grammar box (as above)</td>
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<tr>
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<td>verb filling boxes (as above)</td>
</tr>
<tr>
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</tr>
<tr>
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<td>grammar symbols</td>
</tr>
<tr>
<td>0.112.00</td>
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</table>

5.621.00 animals and their sounds charts (handmade) grammar books - for upper elementary work pyramids (same pyramid listed under noun)

4. Preposition

<table>
<thead>
<tr>
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<tr>
<td>0.102.01</td>
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<tr>
<td>0.103.01</td>
<td>preposition filling boxes (as above)</td>
</tr>
<tr>
<td>0.110.00</td>
<td>plastic grammar symbols</td>
</tr>
<tr>
<td>0.111.00</td>
<td>grammar symbols</td>
</tr>
<tr>
<td>0.112.00</td>
<td>box for 15 grammar symbols</td>
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</table>

5.655.00 conjunctions and prepositions grammar books - for upper elementary work

5. Adverb

<table>
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<tr>
<td>0.102.01</td>
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<tr>
<td>0.103.01</td>
<td>adverb filling boxes (as above)</td>
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<tr>
<td>0.110.00</td>
<td>plastic grammar symbols</td>
</tr>
<tr>
<td>0.111.00</td>
<td>grammar symbols</td>
</tr>
<tr>
<td>0.112.00</td>
<td>box for 15 grammar symbols</td>
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</table>

5.655.00 conjunctions and prepositions grammar books - for upper elementary work

6. Pronoun

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<tr>
<td>0.102.01</td>
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<tr>
<td>0.103.01</td>
<td>pronoun filling boxes (as above)</td>
</tr>
<tr>
<td>0.110.00</td>
<td>plastic grammar symbols</td>
</tr>
<tr>
<td>0.111.00</td>
<td>grammar symbols</td>
</tr>
<tr>
<td>0.112.00</td>
<td>box for 15 grammar symbols</td>
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</table>

5.655.00 conjunctions and prepositions grammar books - for upper elementary work

7. Conjunction

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<td>0.102.01</td>
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<tr>
<td>0.103.01</td>
<td>conjunction filling boxes (as above)</td>
</tr>
<tr>
<td>0.110.00</td>
<td>plastic grammar symbols</td>
</tr>
<tr>
<td>0.111.00</td>
<td>grammar symbols</td>
</tr>
<tr>
<td>0.112.00</td>
<td>box for 15 grammar symbols</td>
</tr>
</tbody>
</table>

5.655.00 conjunctions and prepositions grammar books - for upper elementary work

5.655.00 grammar games. set 1 (as above)
8. Interjection
   0.102.01 interjection grammar box (as above)
   0.103.01 interjection filling boxes (as above)
   0.110.00 plastic grammar symbols
   0.111.00 grammar symbols
   0.112.00 box for 15 grammar symbols
   grammar books - for upper elementary work

9. Aspects of the Verb
   card material (handmade)
   charts (handmade)
   grammar books

10. Summary Exercises
    charts (handmade)

C. Reading Analysis
    General materials for reading analysis include.
    0.108.01 reading analysis complete
    0.108.B1 reading analysis chart A

1. Simple Sentences
    0.108.01 reading analysis complete (box two and box three)
    0.108.B1 reading analysis chart A
        grammar books

2. Compound Sentences
    paper
    pencils (regular and red)
    scissors
    small labels (handmade)

3. Complex Sentences
    analysis chart B (handmade)
    analysis chart C (handmade)
    clause boxes 1 and 2 (handmade)
    paper
    pencil
    scissors
    small labels (handmade)

III. WRITTEN LANGUAGE (COMPOSITION)
    A. Free Expression
       1. Imaginative
       2. Factual (history, geography, biology, music, art, etc.)
       3. Descriptive
    B. Practice
       1. Form and Content
       2. Punctuation
       3. Spelling
       4. Capitalization
       5. Handwriting
          0.046.00 metal insets
          0.065.00 greenboard, blank (4)
          0.067.00 greenboard, lines, squares (3)
          0.068.00 greenboard, double lined (3)
          1.635.00 stand for 10 greenboards
          5.660.00 writing paper blue lined 2"x8.5"
          5.661.00 writing paper blue lined 4"x8.5"
          5.662.00 writing paper blue lined 4.25"x5.5"
          5.663.00 writing paper blue lined 2 75"x7"
          5.664.00 writing paper blue lined 7"x8.5"

          5.665.00 writing paper blue lined 8.5"x11"
          5.667.00 writing paper green lined 4"x7"
          5.668.00 writing paper green lined 7"x8.5"
          5.669.00 writing paper green lined 8.5"x11"
          7.023.00 box for 14cm x 14cm paper
          7.201.00 12 color/gross inset pencils (5)
          7.202.00 dozen red inset pencils (5)
          7.203.00 dozen dark blue inset pencils (5)
          7.204.00 dozen dark green inset pencils (5)
          7.211.00 dozen black inset pencils (5)
          7.304.00 pencil holders (5)
          7.305.00 set of 11 colored pencil holders
           colored inks
             feather quills
             ink blotters, small
             pencils, regular
             pen holders and nibs
             pen wipers
             pens

6. Illustration and Decoration
    C. Functional Cursive Writing
    D. Taking Notes
    E. Written Reports
    F. Letter Writing
    G. Diary
    H. Journal
    I. Poetry
    J. Drama
    K. Dialogue
        0.061.R1 small printed alphabet. blue
        0.061.R2 small printed alphabet. green
        0.061.R3 small printed alphabet. red
        0.061.C1 box for small printed alphabet (3)
    L. Essay
    M. Biography
    N. Autobiography
    O. Editing

IV. SPOKEN LANGUAGE
    A. Speeches
    B. Debates
    C. Discussion
    D. Reports
    E. Recitation
    F. Dialogue
    G. Drama

V. LITERATURE
    A. Articles and Books - read by the children silently
       1. Class library
       2. Public library
    B. Stories and Poetry Read by the Teacher
    C. Biographies of Writers
    D. Literature Time Lines
    E. The History of English Literature
    F. The History of American Literature
    G. The History of Children's Literature

VI. STYLE
    Materials used for the study of style have already been listed above under the parts of speech work.
    The materials include:
    0.110.00 plastic grammar symbols and/or
CURRICULUM RESOURCES

0.111.00 paper grammar symbols
0.112.00 box for 15 grammar symbols
A. Child's Own Writing
B. Writing of Others
C. Comparison of Style
D. Recognition of Style

VII. INTERPRETIVE READING
All materials for interpretive reading are handmade by the teacher.

VIII. RESEARCH
A. Skills for Researching
B. History of Languages
C. History of Writing
D. History of Literature

NOTE: All above go parallel.

IX. MISCELLANEOUS
A. Study of Paragraphs (main idea, topic sentence, supporting details, etc.)
B. Story Grammar
C. Literary Phrases (idioms, colloquialisms, metaphores, similies)
D. Other Materials (not listed above which are frequently needed):
   7.701.00 scissors with round point 10.4 cm (12) and/or
   7.702.00 scissors with sharp point 10.4 cm (12)
   7.708.00 six scissor storage block (2) boxes, clear plastic (for handmade card material) (6)
   small trays, as necessary
   strips of paper or adding machine tape

ERIC
These materials are essentially preschool materials, but they may be found in some elementary classes. According to Dr. Montessori’s advice, preschool materials should not be presented to elementary children except for very specific pieces which are to be given in such a way as to help fill any gaps in knowledge.

- 0.054.B4 sandpaper letters, cursive, U.S.A.
- 0.054.A0 box for sandpaper letters
- 0.105.B0 command box, natural finish (may be used for storage of 5.634.00 or 5.634.10.
  5.635.00 or 5.635.10, 5.638.00, 5.639.00,
  5.641.00, 5.642.00, 5.643.00, 5.644.00,
  5.645.00, 5.646.00, 5.647.00, 5.647.00,
  and 5.648.00) (13)
- 5.633.00 phonetic flash cards
- 5.634.00 phonetic pictures and labels, print (group into classified sets) and/or
  5.634.10 phonetic pictures and labels, cursive (group into classified sets)
- 5.635.00 phonetic reading cards, print and/or
- 5.635.10 phonetic reading cards, cursive
- 5.636.00 object box labels
- 5.637.00 phonogram booklets
- 5.638.00 phonogram cards
- 5.639.00 key spelling sorting cards
- 5.641.00 labels for Montessori apparatus
- 5.642.00 labels for 60 fabrics
- 5.643.0 labels for 60 fruits
- 5.644.00 labels for indoor environment
- 5.645.00 labels for 60 vegetables
- 5.646.00 labels for 60 herbs, seeds, spices, nuts and grains
- 5.647.00 labels for Montessori math apparatus
- 5.647.01 labels for environment
- 5.648.00 puzzle words
- 5.649.10 first books
- 5.650.00 easy reading booklets
- 5.651.00 illustrated poems
- 5.653.00 simple phonetic commands, set 1
- 5.654.00 simple phonetic commands, set 2

In addition to the above curriculum support materials, the 6 to 9 year old class may either borrow these items from a preschool class, or have its own.

- 0.249.06 base with fences for the farm
- 0.249.07 farm, or
- 1.625.00 table for the farm
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>0.045.A0</td>
<td>detective triangle game</td>
</tr>
<tr>
<td>0.046.00</td>
<td>metal insets</td>
</tr>
<tr>
<td>0.060.A3</td>
<td>small movable alphabet letters, red, USA</td>
</tr>
<tr>
<td>0.060.A4</td>
<td>small movable alphabet letters, yellow, USA</td>
</tr>
<tr>
<td>0.060.A5</td>
<td>small movable alphabet letters, blue, USA</td>
</tr>
<tr>
<td>0.060.A7</td>
<td>small movable alphabet letters, black, USA</td>
</tr>
<tr>
<td>0.060.C2</td>
<td>box for small movable alphabet (4)</td>
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<tr>
<td>0.061.C1</td>
<td>box for small printed alphabets (3)</td>
</tr>
<tr>
<td>0.061.R1</td>
<td>small printed alphabet, blue</td>
</tr>
<tr>
<td>0.061.R2</td>
<td>small printed alphabet, green</td>
</tr>
<tr>
<td>0.061.R3</td>
<td>small printed alphabet, red</td>
</tr>
<tr>
<td>0.066.00</td>
<td>greenboard, blank (4)</td>
</tr>
<tr>
<td>0.067.00</td>
<td>greenboard, lines, squares (3)</td>
</tr>
<tr>
<td>0.068.00</td>
<td>greenboard, double lined (3)</td>
</tr>
<tr>
<td>0.102.01</td>
<td>grammar boxes</td>
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<tr>
<td>0.103.01</td>
<td>filling boxes</td>
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<tr>
<td>0.104.01</td>
<td>set of printed grammar cards</td>
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<tr>
<td>0.104.A0</td>
<td>set of unpinned grammar cards</td>
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<tr>
<td>0.105.02</td>
<td>grammar box material outline</td>
</tr>
<tr>
<td>0.105.A1</td>
<td>set of command boxes</td>
</tr>
<tr>
<td>0.105.B0</td>
<td>command box, natural finish (up to 20)</td>
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<tr>
<td>0.108.B1</td>
<td>reading analysis chart</td>
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<tr>
<td>0.110.00</td>
<td>plastic grammar symbols</td>
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<td>0.111.00</td>
<td>grammar symbols, complete set (2)</td>
</tr>
<tr>
<td>0.111.A0</td>
<td>noun symbol per 100 (5)</td>
</tr>
<tr>
<td>0.111.B0</td>
<td>article symbol per 100 (5)</td>
</tr>
<tr>
<td>0.111.C0</td>
<td>adjective symbol per 100 (5)</td>
</tr>
<tr>
<td>0.111.E0</td>
<td>verb symbol per 100 (5)</td>
</tr>
<tr>
<td>0.111.F0</td>
<td>preposition symbol per 100 (4)</td>
</tr>
<tr>
<td>0.111.G0</td>
<td>adverb symbol per 100 (4)</td>
</tr>
<tr>
<td>0.111.H0</td>
<td>pronoun symbol per 100 (4)</td>
</tr>
<tr>
<td>0.111.I0</td>
<td>conjunction symbol per 100 (3)</td>
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<tr>
<td>0.111.J0</td>
<td>interjection symbol per 100 (2)</td>
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<tr>
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<td>box for 15 grammar symbols (2)</td>
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<tr>
<td>1.635.00</td>
<td>stand for 10 greenboards</td>
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<td>2.023.00</td>
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<td>7.201.00</td>
<td>12 color/gross inset pencils (3)</td>
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<td>7.202.00</td>
<td>dozen red inset pencils (5)</td>
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<td>7.233.00</td>
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<td>7.204.00</td>
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<td>7.211.00</td>
<td>dozen black inset pencils (5)</td>
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<td>7.304.00</td>
<td>pencil holders (5)</td>
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<tr>
<td>7.305.00</td>
<td>set of 11 colored pencil holders</td>
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<tr>
<td>7.701.00</td>
<td>scissors with round point 10.4 cm (6)</td>
</tr>
<tr>
<td>7.702.00</td>
<td>scissors with sharp point 10.4 cm (6)</td>
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<td>7.708.00</td>
<td>6 scissor storage block (2)</td>
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**CURRICULUM SUPPORT MATERIALS**

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<td>animals and their homes</td>
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<tr>
<td>5.621.00</td>
<td>animals and their sound</td>
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<tr>
<td>5.622.00</td>
<td>animals and their young</td>
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<tr>
<td>5.623.00</td>
<td>animal names</td>
</tr>
<tr>
<td>5.624.00</td>
<td>animals and their groups</td>
</tr>
<tr>
<td>5.626.00</td>
<td>object box labels</td>
</tr>
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<td>5.639.00</td>
<td>key spelling sorting cards</td>
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<tr>
<td>5.641.00</td>
<td>labels for Montessori apparatus</td>
</tr>
<tr>
<td>5.642.00</td>
<td>labels for 60 fabrics</td>
</tr>
<tr>
<td>5.643.00</td>
<td>labels for 60 fruits</td>
</tr>
<tr>
<td>5.644.00</td>
<td>labels for indoor environment</td>
</tr>
<tr>
<td>5.645.00</td>
<td>labels for 60 vegetables</td>
</tr>
<tr>
<td>5.646.00</td>
<td>labels for 60 herbs, seeds, spices, nuts and grains</td>
</tr>
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<td>labels for environment</td>
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<td>simple phonetic commands, set 2</td>
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<td>grammar games, set 1</td>
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<tr>
<td>5.658.00</td>
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<td>positive, comparative, superlative</td>
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<tr>
<td>5.661.00</td>
<td>writing paper blue lined, 4&quot; x 8-1/2&quot; (2)</td>
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<td>writing paper blue lined, 4-1/4&quot; x 5-1/2&quot; (2)</td>
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<tr>
<td>5.663.00</td>
<td>writing paper blue lined, 2-3/4&quot; x 7&quot; (2)</td>
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<tr>
<td>5.664.00</td>
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</tr>
<tr>
<td>5.665.00</td>
<td>writing paper blue lined, 8-1/2&quot; x 11&quot; (2)</td>
</tr>
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<td>5.668.00</td>
<td>writing paper green lined, 7&quot; x 8-1/2&quot; (2)</td>
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<tr>
<td>5.669.00</td>
<td>writing paper green lined, 8-1/2&quot; x 11&quot; (2)</td>
</tr>
</tbody>
</table>
LANGUAGE FOR THE ELEMENTARY
OTHER MATERIALS TO BUY

ball, red (should bounce well)
boxes, clear plastic
dictionaries
feather quills (2)
grammar books, one each from several different publishers
house environment

ink blotter, small
ink, packet with 8 bottles of colored inks
dpaper, roll of adding machine tape or strips of paper
pen holders and nibs
pencils, regular
pens
tray, white
LANGUAGE FOR THE ELEMENTARY MATERIALS TO MAKE

booklets for singular and plural card materials
circles, about 15 in a box
charts
clause analysis - 2 boxes
collection of objects of the same kind

commands
house environment
penwipers - circular in shape
pyramid, 3 dimensional, black
squares, about 30 in a box
verb materials
MATHEMATICS

CURRICULUM RESOURCES

INTRODUCTION

Montessori materials are useful as self-teaching tools because the concept or fact to be studied is isolated with each of the materials. In Montessori terminology this is called “isolation of the difficulty.” To give an initial concept, the material should focus on only the concept in question. For example, to introduce the idea of a cube, a plain wooden cube would be used rather than a cube-shaped object such as a jack-in-the-box. The idea of a jack in the-box would overpower the idea of a cube and, thus, introduce an idea very different from the desired concept. Montessori felt it was better to use a material with little or no personality of its own when introducing new concepts. For this reason numbers are introduced with colored rods rather than with kittens, ducks and birds. Introducing animals into the lesson brings an extraneous idea that diverts attention from the concept of number. When the concept is firmly established it can be applied to other things such as counting kittens, ducks and birds.

Each difficulty is also isolated in turn in a graded sequence. Various aspects of mathematics, many of which run parallel to each other and each of which have their own graded sequence, include:

1. Perception of differences
2. Perception of similarities
3. Sensorial experience of a graded series (seriation)
4. Rote counting
5. Quantities and symbols for zero to ten
6a. Overview and functioning of the base ten system from 0 to 9999
6b. Linear counting to 1000
7. The idea of the four operations: addition, subtraction, multiplication, division
8. Memorization of the facts for addition, subtraction, multiplication, division
9. Abstraction of various mathematical processes

While 6a is generally introduced first, 6a and 6b proceed in parallel fashion. Once a child has a firm foundation of concrete experience using operations in number 7, work may begin with memorization of facts for the operations and other materials may be used which will help move the child towards abstraction of the process.

In order for details to be seen in their relationship to the whole rather than in meaningless isolation, initial vocabulary and concepts which make possible a view of the whole system are given as soon as possible. After a view of the whole, one can proceed to the details. In the case of mathematics, there is first perception of differences and similarities and sensorial experience with the concept of a graded series. Then there is the introduction of the initial vocabulary and concepts of zero to ten. If a child knows the numerals from zero to nine, he or she knows all the numerals used in our decimal number system. This makes possible a view of the whole number system which is then given. This whole view gives the idea of place value and the function of exchange. When the child has grasped this, addition, subtraction, multiplication and division may be presented using large quantities with concrete materials. The understanding of the four processes comes through the manipulation of concrete materials. At this point writing on paper in an abstract fashion would not be appropriate.

Without memorization of the facts, children would be bound forever to the materials or to calculators. The facts (2 + 2 = 4, 7 + 8 = 15, etc.) are as important for work in higher mathematics as the letters of the alphabet are for reading. While calculators have taken much of the tedious, repetitive computations out of
math work, knowledge of operations and processes and how they work is essential if children are to be given the opportunity to think creatively with mathematics.

There are many materials and exercises for memorization of math facts. This need not be a dull, dry process. With various activities and new points of interest, this can be accomplished relatively easily if undertaken at ages four, five and six.

In the memorization process it is important to have the answers available at all times so that the children need not count or guess to find the answers. They have already understood the processes and should now focus on the facts. Their thinking processes should be $7 + 8 = 15$ rather than $7 + 8 = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15$. It is the repetition of correct information that aids the process of memorization.

When children have reached this stage, they have all the tools and skills necessary for reaching abstraction. They understand quantity and symbol, the number system (place value and the function of exchange), the idea of the four processes, and the facts. Further manipulation of concrete materials leads the children to make their own abstractions. When children reach abstraction, their mental processes generally work so fast that they cannot be bothered with the time it takes to manipulate the materials.

When a proper Montessori situation has been provided (children enter by age three, environment is properly equipped, teacher is properly trained and fully implements Montessori, work cycle is respected, etc.) then, by the end of the preschool, most children will have worked through the first seven steps of the mathematical sequence. This means that they will have a concrete understanding of the processes of addition, subtraction, multiplication and division. They will also have begun the memorization of facts and they will be working with materials that will help lead them to abstraction. These materials include the bead frame (addition, subtraction and multiplication), measurement, long division material and fractions (all four processes). These materials overlap into the elementary as necessary. The sensorial experience at the preschool level provides children with an internalized understanding of process as well as great pleasure and joy in their understanding of mathematics.

When children enter the elementary, mathematics is put into an historical perspective with the telling of the Story of Numbers. This story is one of the five great lessons which are given at the beginning of each school year in order to set the stage for the drama of cosmic education. For the technical aspects of mathematics, hands-on use of materials continues in the elementary. Each new process is presented with materials so that the children proceed from sensorial experience to abstraction in a series of steps carefully constructed so that they are able to make their own discoveries and abstractions. Careful, precise preparation, both of the teacher during his or her Montessori training and by the Montessori teacher as he or she prepares lessons for the children, is essential in this guided-discovery approach.

Jean K. Miller
# Mathematics for the Preschool

## Activities and Materials Overview

### I. Numbers to Ten

**A. Number Rods:**
- 0.027.00 numerical rods

**B. Sandpaper Numerals (Figures):**
- 0.028.14 sandpaper figures, cursive, U.S.A.
- 0.028.A0 box for the sandpaper figures

**C. Number Rods and Cards:**
- 0.027.00 numerical rods (same as above)
- 0.033.04 printed figures, cursive, U.S.A.
- 0.033.A0 box for printed figures

**D. Spindle Boxes:**
- 0.032.04 spindle boxes, cursive, U.S.A.
- 0.032.B0 box for loose spindles
- 0.032.A0 extra spindles (10)
- ribbons or rubber bands

**E. Memory Game of Numbers:**
- 5.580.00 numerals 0 to 10
- basket

**F. Cards and Counters:**
- 0.033.04 printed figures, cursive, U.S.A.
- 0.033.A0 box for printed figures (2)
- 0.034.01 plastic counters, red

### II. The Decimal System

**A. Introduction to Beads:**
- 0.074.00 individual wooden hundred square (order at least 12)
- 0.075.00 individual wooden thousand cube (order at least 12)
- 0.076.M0 box with 45 golden ten bars, individual beads
- 0.077.M0 plastic box containing 100 unit beads, like individual beads
- 0.081.00 wooden tray with unit cup (order 5)
- 0.084.AM one golden bead square
- 0.085.M0 one golden bead cube
- 0.252.A1 introduction decimal system, tray alone

**B. Introduction to Cards:**
- 0.072.C0 large number cards 1-9000, printed on plastic
- 0.069.A0 box for large number cards

**C. Formation of Complex Numbers with Beads and Cards:**
- 0.069.A0 box for large number cards
- 0.069.C0 large number cards 1-1000, printed on plastic
- 0.081.00 wooden tray with unit cup (order 3)
- 0.081.A0 units cup, golden color
- 0.252.M0 introduction decimal system, individual beads
- bowl

**D. Collective Exercises - Change:**
- 0.074.00 individual wooden hundred square (order 99)
- 0.075.00 individual wooden thousand cube (order 9)
- 0.076.M0 box with 45 golden ten bars, individual beads (order 3 boxes)
- 0.077.M0 plastic box containing 100 unit beads, like individual beads
- 0.081.00 wooden tray with unit cup (order 1)
- bowls, 2, for up to 99 unit beads

**E. Collective Exercises: (Order one set of each of the following for a class of 25 children, two sets of each for a class of 35 children.)**
- 0.069.A0 box for large number cards
- 0.070.A0 box for small number cards (order 4 for each set)
- 0.070.C0 small number cards 1-3000, printed on plastic (order 3 for each set)
- 0.071.C0 small number cards 1-9000, printed on plastic
- 0.072.C0 large number cards 1-9000, printed on plastic
- 0.074.00 individual wooden hundred square (order 50 for each set)
- 0.075.00 individual wooden thousand cube (order 12 for each set)
- 0.076.M0 box with 45 golden ten bars, individual beads (order 3 boxes for each set)
- 0.077.M0 plastic box containing 100 unit beads, like individual beads

**Note:** If there needs to be two sets, divide the beads into two containers, so there are 50 beads for each set.

- 0.081.00 wooden tray with unit cup (order 3 for each set)
- 0.260.00 box with wooden signs for addition, subtraction, multiplication, division, etc.

**F. The Stamp Game:**
- 0.082.00 stamp exercise
- 5.582.00 stamp exercise paper, 6 problems
- 5.583.00 stamp exercise paper, 15 problems
- 5.596.00 quadrille paper 1” sq. 8.5x6”
- 5.597.00 quadrille paper 1” sq. 8.5x11”
- 5.598.00 quadrille paper 3/4” sq. 5.5x8”
- 5.600.00 quadrille paper 3/4” sq. 8.5x11”
- 5.603.00 quadrille paper 1” sq. 8.5x11”

**Note:** Choice of paper depends on manual skill of each child. Use small numeral cards from the golden bead material until a child can write the
numerals easily and correctly. pencil, regular ruler, 6 inch

G. The Dot Game:
- 0.050.01 dot exercise and/or
- 0.050.A0 dot exercise sheets (5)
markers, washable:
  - black
  - another color (not green, blue or red)
pencils:
  - black, another color (not green, blue or red)

H. Word Problems:
Note: These are handmade by each individual teacher.

III. TEENS AND TENS
A. Teen Boards:
- 0.030.1M box with bead stair 1-9 and 10 ten bars, individual beads (2)
- 0.030.03 Seguin boards and numerals, print. U.S.A.
felt mat

B. Ten Boards:
- 0.031.03 Seguin boards and numerals, print. U.S.A.
- 0.031.0M box with 9 ten bead bars and 9 unit beads, individual beads
felt mat

IV. LINEAR COUNTING
A. 00 and 1000 Chains
- 0.086.00 box with arrows
- 0.086.M0 complete set bead material (cubes, squares, chains), individual beads
- 1.666.M0 frame for complete bead material

B. Skip Counting:
- 0.086.00 box with arrows (as above)
- 0.086.M0 complete set bead material (cubes, squares, chains), individual beads (as above)
- 1.666.M0 frame for complete bead material (as above)

V. MEMORIZATION
A. Addition
- 0.092.00 addition strip board with strips
- 0.142.A0 addition charts with the blank chart and box of answers.
- 0.142.F1 four boxes with plastic chips
- 0.290.M0 snake game, addition. individual beads
- 5.595.21 addition tables booklet 1, per 40 (order 2)
- 5.595.22 addition tables booklet 2, per 40
- 5.595.23 addition tables booklet 3, per 40
- 5.586.00 beginning math paper
- 5.587.00 chart problem paper
- 5.588.00 circle problem paper
- 5.596.00 quadrille paper 1" sq. 8.5x6"
- 5.598.00 quadrille paper 3/4" sq. 5.5x8"

B. Subtraction:
- 0.092.A0 subtraction strip board with strips
- 0.142.B0 subtraction charts with the blank chart and box of answers
- 0.142.F1 four boxes with plastic chips
- 0.291.M0 snake game, subtraction. individual beads
- 5.595.31 subtraction tables booklet 1, per 24 (order 3)
- 5.595.32 subtraction tables booklet 2, per 40
- 5.595.33 subtraction tables booklet 3, per 40
- 5.586.00 beginning math paper
- 5.587.00 chart problem paper
- 5.588.00 circle problem paper
- 5.596.00 quadrille paper 1" sq. 8.5x6"
- 5.598.00 quadrille paper 3/4" sq. 5.5x8"

C. Multiplication:
- 0.076.00 box with 45 golden ten bars. connected beads (5 boxes,
- 0.087.00 multiplication board, cards in box, 100 red beads in box
- 0.142.C4 multiplication charts with the blank chart and box of answers
- 0.142.F1 four boxes with plastic chips
- 0.190.M0 table of Pythagoras (borrow from Sensorial)
- 0.190.M0 box with 55 bead bars from 1 to 10. individual beads (2 boxes)
- 5.595.41 multiplication tables booklet 1, per 40 (order 2)
- 5.595.42 multiplication tables booklet 2, per 40
- 5.595.43 multiplication tables booklet 3, per 40
- 5.586.00 beginning math paper
- 5.587.00 chart problem paper
- 5.588.00 circle problem paper
- 5.596.00 quadrille paper 1" sq. 8.5x6"
- 5.597.00 quadrille paper 1" sq. 8.5x11"
- 5.598.00 quadrille paper 3/4" sq. 5.5x9"
- 5.599.00 quadrille paper 3/4" sq. 8.5x8.5"
- 5.600.00 quadrille paper 3/4" sq. 8.5x11"
- 5.601.00 quadrille paper 1/2" sq. 3x5.5"
- 5.602.00 quadrille paper 1/2" sq. 5.5x5.5"
- 5.603.00 quadrille paper 1/2" sq. 8.5x11"
  - baskets, large, for bead bar multiplication
  - baskets, yellow rimmed, 3. for problem tickets
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Felt mat for multiplication with bead bars</td>
<td>0.095.A2</td>
</tr>
<tr>
<td>Pencil:</td>
<td></td>
</tr>
<tr>
<td>Red regular</td>
<td></td>
</tr>
<tr>
<td>Problems, folded tickets, on yellow card stock, 3 sets</td>
<td></td>
</tr>
<tr>
<td>Division:</td>
<td></td>
</tr>
<tr>
<td>0.096.A0 Division board with skittles and beads</td>
<td></td>
</tr>
<tr>
<td>0.138.M0 Box containing 20 sets of bead bars from 1-9, individual beads</td>
<td></td>
</tr>
<tr>
<td>0.142.D1 Division charts with the blank chart and box of answers</td>
<td></td>
</tr>
<tr>
<td>0.142.F1 Four ox with plastic chips</td>
<td></td>
</tr>
<tr>
<td>5.595.50 Division tables per ream</td>
<td></td>
</tr>
<tr>
<td>5.595.51 Division tables booklets per 5 (order 6)</td>
<td></td>
</tr>
<tr>
<td>5.597.00 Quadriple paper 1&quot; sq. 8.5x11&quot;</td>
<td></td>
</tr>
<tr>
<td>5.600.00 Quadriple paper 3/4&quot; sq. 8.5x11&quot;</td>
<td></td>
</tr>
<tr>
<td>5.603.00 Quadriple paper 1/2&quot; sq. 8.5x11&quot;</td>
<td></td>
</tr>
<tr>
<td>Baskets, blue rimmed, 2 for problem tickets, pencil, regular</td>
<td></td>
</tr>
<tr>
<td>Ruler, 6 inches</td>
<td></td>
</tr>
<tr>
<td>Fractions:</td>
<td></td>
</tr>
<tr>
<td>0.097.00 Set of extra skittles (as above)</td>
<td></td>
</tr>
<tr>
<td>0.113.00 Skittles, one undivided, the others divided into 2, 3 and 4 parts</td>
<td></td>
</tr>
<tr>
<td>0.113.A0 Stand for skittles</td>
<td></td>
</tr>
<tr>
<td>0.114.00 Fraction circles</td>
<td></td>
</tr>
<tr>
<td>0.114.A0 Stands for fraction circles</td>
<td></td>
</tr>
<tr>
<td>0.115.00 Nine squares</td>
<td></td>
</tr>
<tr>
<td>0.116.00 Four triangles</td>
<td></td>
</tr>
<tr>
<td>1.666.00 Small fraction cabinet for storage of above</td>
<td></td>
</tr>
<tr>
<td>5.605.00 Fraction labels</td>
<td></td>
</tr>
<tr>
<td>5.606.00 Fraction problems</td>
<td></td>
</tr>
<tr>
<td>5.607.10 Fraction equivalence research sheets boxes, plastic, 3, for fraction labels (5.605.00) boxes, plastic, 5, for fraction problems (5.606.00) pencil, regular</td>
<td></td>
</tr>
</tbody>
</table>

**VI. THE PASSAGE TO ABSTRACTION - PROBLEMS**

| A. Small Bead Frame:                                                            |        |
| Small bead frame (order 3)                                                      | 0.093.00 |
| Paper for small bead frame 50 sheets (2)                                        | 0.153.01 |
| Pencil, regular                                                                 |        |
| B. Large Bead Frame:                                                            |        |
| Large bead frame (order 2)                                                      | 0.094.00 |
| Wooden geometrical hierarchy of numbers (may be borrowed from the elementary class) | 0.132.A0 |
| Paper for large bead frame 50 sheets (2)                                       | 0.154.01 |
| Pencil, regular                                                                 |        |
| C. Division with Racks and Tubes:                                               |        |
| Complete division material                                                      | 0.095.00 |
| Individual plastic tubes for replacements (10)                                 | 0.095.A0 |
| 100 green beads for replacements                                                | 0.095.B0 |
| 100 blue beads for replacements                                                 | 0.095.B1 |
| 100 red beads for replacements                                                  | 0.095.B2 |
| Set of 100 skittles for replacements                                            | 0.097.00 |
| Quadriple paper 1" sq. 8.5x11"                                                  | 5.597.00 |
| Quadriple paper 3/4" sq. 8.5x11"                                               | 5.600.00 |
| Quadriple paper 1/2" sq. 8.5x11"                                               | 5.603.00 |
| Basket, blue rimmed, 2 for problem tickets, pencil, regular                    |        |
| Ruler, 6 inches                                                                |        |
| **E. Measurement:**                                                            |        |
| 1. Length:                                                                     |        |
| English measure ruler                                                          |        |
| Meter stick                                                                     |        |
| Metric ruler                                                                    |        |
| Yardstick                                                                       |        |
| 2. Liquid Volume:                                                              |        |
| English measure containers                                                      |        |
| 3. Weight:                                                                     |        |
| Ten weights in a wooden storage box                                            | 9.124.00 |
| Balance scale, metal bathroom scale in pounds                                  | 9.128.B0 |
| Brass English measure weights                                                  |        |
| 4. Temperature:                                                                |        |
| Thermometer in Fahrenheit                                                      |        |
| 5. Clock:                                                                      |        |
| Clock exercises in box                                                          | 3.101.01 |
| Clock and box with movable figures                                             | 3.102.00 |
| Rubber stamp of clock clock with gears                                         | 3.105.00 |
| Ink pad                                                                        |        |
| Paper                                                                          |        |
| Money:                                                                         |        |
| Money, real                                                                    |        |
### MATHEMATICS FOR THE PRESCHOOL
#### SIMPLE INVENTORY

**MATERIALS FROM NIENHUIS**

<table>
<thead>
<tr>
<th>Code</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.027.00</td>
<td>numerical rods</td>
</tr>
<tr>
<td>0.028.14</td>
<td>sandpaper figures, cursive, U.S.A.</td>
</tr>
<tr>
<td>0.028.A0</td>
<td>box for the sandpaper figures</td>
</tr>
<tr>
<td>0.030.A0</td>
<td>box with bead stair 1-9 and 9 ten bars, individual beads (2)</td>
</tr>
<tr>
<td>0.030.03</td>
<td>Seguin boards and numerals, print, teens</td>
</tr>
<tr>
<td>0.031.03</td>
<td>Seguin boards and numerals, print, tens</td>
</tr>
<tr>
<td>0.031.AM</td>
<td>box with 9 ten bead bars and 9 unit beads, individual beads</td>
</tr>
<tr>
<td>0.032.04</td>
<td>spindle boxes, cursive, U.S.A.</td>
</tr>
<tr>
<td>0.032.A0</td>
<td>extra spindles (10)</td>
</tr>
<tr>
<td>0.033.04</td>
<td>printed figures, cursive, U.S.A. (3)</td>
</tr>
<tr>
<td>0.033.A0</td>
<td>box for printed figures (2)</td>
</tr>
<tr>
<td>0.034.01</td>
<td>plastic counters, red</td>
</tr>
<tr>
<td>0.050.01</td>
<td>dot exercise, anchor</td>
</tr>
<tr>
<td>0.050.A0</td>
<td>dot exercise sheets</td>
</tr>
<tr>
<td>0.069.A0</td>
<td>box for large number cards (4)</td>
</tr>
<tr>
<td>0.069.C0</td>
<td>large number cards 1-1000, printed on plastic</td>
</tr>
<tr>
<td>0.070.A0</td>
<td>box for small number cards (10)</td>
</tr>
<tr>
<td>0.070.C0</td>
<td>small number cards 1-3000, printed on plastic</td>
</tr>
<tr>
<td>0.071.C0</td>
<td>small number cards 1-9000, printed on plastic</td>
</tr>
<tr>
<td>0.072.C0</td>
<td>large number cards 1-9000, printed on plastic</td>
</tr>
<tr>
<td>0.074.00</td>
<td>individual wooden hundred square (order at least 211)</td>
</tr>
<tr>
<td>0.075.00</td>
<td>individual wooden thousand cube (order at least 45)</td>
</tr>
<tr>
<td>0.076.M0</td>
<td>box with 45 golden ten bars, individual beads (12)</td>
</tr>
<tr>
<td>0.077.M0</td>
<td>plastic box containing 100 unit beads, like individual beads (3)</td>
</tr>
<tr>
<td>0.081.00</td>
<td>wooden tray with unit cup (order 15)</td>
</tr>
<tr>
<td>0.082.00</td>
<td>stamp exercise</td>
</tr>
<tr>
<td>0.085.M0</td>
<td>golden bead cube with individual beads</td>
</tr>
<tr>
<td>0.086.M0</td>
<td>complete set bead matenal (cubes, squares, chains), individual beads</td>
</tr>
<tr>
<td>0.086.B0</td>
<td>boxes with arrows, 20</td>
</tr>
<tr>
<td>0.087.00</td>
<td>multiplication board, cards in box</td>
</tr>
<tr>
<td>0.092.00</td>
<td>addition strip board with strips</td>
</tr>
<tr>
<td>0.092.A0</td>
<td>subtraction strip board with strips</td>
</tr>
<tr>
<td>0.093.00</td>
<td>small bead frame (order 3)</td>
</tr>
<tr>
<td>0.094.00</td>
<td>large bead frame (order 2)</td>
</tr>
<tr>
<td>0.095.00</td>
<td>complete division material</td>
</tr>
<tr>
<td>0.095.A0</td>
<td>individual plastic tubes for replacements (10)</td>
</tr>
<tr>
<td>0.095.B0</td>
<td>green beads for replacements, 100</td>
</tr>
<tr>
<td>0.095.B1</td>
<td>blue beads for replacements, 100</td>
</tr>
<tr>
<td>0.095.B2</td>
<td>red beads for replacements, 100</td>
</tr>
<tr>
<td>0.096.A0</td>
<td>division board with skittles and beads</td>
</tr>
<tr>
<td>0.097.00</td>
<td>set of 100 skittles for replacements</td>
</tr>
<tr>
<td>0.113.00</td>
<td>skittles, one undivided, the others divided into 2, 3 and 4 parts</td>
</tr>
<tr>
<td>0.113.A0</td>
<td>stand for skittles</td>
</tr>
<tr>
<td>0.114.00</td>
<td>fraction circles</td>
</tr>
<tr>
<td>0.114.A0</td>
<td>stands for fraction circles</td>
</tr>
<tr>
<td>0.115.00</td>
<td>nine squares</td>
</tr>
<tr>
<td>0.116.00</td>
<td>four triangles</td>
</tr>
<tr>
<td>0.138.M0</td>
<td>box containing 20 sets of bead bars from 1 to 9, individual beads</td>
</tr>
<tr>
<td>0.142.A0</td>
<td>addition charts with the blank charts and box of answers</td>
</tr>
<tr>
<td>0.142.B0</td>
<td>subtraction charts with the blank chart and box of answers</td>
</tr>
<tr>
<td>0.142.C4</td>
<td>multiplication charts with the blank chart and box of answers</td>
</tr>
<tr>
<td>0.142.D1</td>
<td>division charts with the blank chart and box of answers</td>
</tr>
<tr>
<td>0.142.F1</td>
<td>four boxes with plastic chips (of problems with answer tiles) for addition, subtraction, multiplication and division for use with the finger charts and blank charts</td>
</tr>
<tr>
<td>0.153.01</td>
<td>paper for small bead frame 50 sheets (2)</td>
</tr>
<tr>
<td>0.154.01</td>
<td>paper for large bead frame 50 sheets (2)</td>
</tr>
<tr>
<td>0.190.M0</td>
<td>box with 55 bead bars from 1 to 10, individual beads (order 2 boxes)</td>
</tr>
<tr>
<td>0.252.M0</td>
<td>introduction decimal system, individual beads (2)</td>
</tr>
<tr>
<td>0.260.00</td>
<td>box w wooden signs for addition, subtraction, multiplication, division, etc</td>
</tr>
<tr>
<td>0.290.M0</td>
<td>snake game, addition, individual beads</td>
</tr>
<tr>
<td>0.291.M0</td>
<td>snake game, subtraction, individual beads</td>
</tr>
<tr>
<td>1.560.M0</td>
<td>wall frame for bead material</td>
</tr>
<tr>
<td>1.666.00</td>
<td>small fraction cabinet</td>
</tr>
<tr>
<td>3.101.01</td>
<td>clock exercises in box</td>
</tr>
<tr>
<td>3.102.00</td>
<td>clock and box with movable figures</td>
</tr>
<tr>
<td>3.105.00</td>
<td>rubber stamp of clock</td>
</tr>
<tr>
<td>9.124.00</td>
<td>ten weights in a wooden storage box</td>
</tr>
<tr>
<td>9.128.B0</td>
<td>balance scale, metal</td>
</tr>
</tbody>
</table>

**NOTE** New items (not on order sheets published before February 1990)

- 0.081.A0 units cup, golden color
- 0.084.AM one golden bead square
- 0.252.A1 introduction decimal system, tray alone

### CURRICULUM SUPPORT MATERIALS

<table>
<thead>
<tr>
<th>Code</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.580.00</td>
<td>numerals 0 to 10 (6)</td>
</tr>
<tr>
<td>5.582.00</td>
<td>stamp exercise paper, 6 problems (2)</td>
</tr>
<tr>
<td>5.583.00</td>
<td>stamp exercise paper, 15 problems (2)</td>
</tr>
<tr>
<td>5.585.00</td>
<td>beginning math paper (3)</td>
</tr>
<tr>
<td>5.587.00</td>
<td>chart problem paper (2)</td>
</tr>
<tr>
<td>5.588.00</td>
<td>circle problem paper (2)</td>
</tr>
<tr>
<td>5.595.21</td>
<td>addition tables booklet 1, per 40 (2)</td>
</tr>
<tr>
<td>5.595.22</td>
<td>addition tables booklet 2, per 40</td>
</tr>
<tr>
<td>5.595.23</td>
<td>addition tables booklet 3, per 40</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
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</tr>
<tr>
<td>5.595.31</td>
<td>Subtraction tables booklet 1, per 24 (3)</td>
</tr>
<tr>
<td>5.595.32</td>
<td>Subtraction tables booklet 2, per 40</td>
</tr>
<tr>
<td>5.595.33</td>
<td>Subtraction tables booklet 3, per 40</td>
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<tr>
<td>5.595.41</td>
<td>Multiplication tables booklet 1, per 40 (2)</td>
</tr>
<tr>
<td>5.595.42</td>
<td>Multiplication tables booklet 2, per 40</td>
</tr>
<tr>
<td>5.595.43</td>
<td>Multiplication tables booklet 3, per 40</td>
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<tr>
<td>5.595.50</td>
<td>Division tables paper per ream</td>
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<tr>
<td>5.595.51</td>
<td>Division tables booklet, per 5 (6)</td>
</tr>
<tr>
<td>5.596.00</td>
<td>Quadrille paper 1” sq. 8.5x6” (4)</td>
</tr>
<tr>
<td>5.597.00</td>
<td>Quadrille paper 1” sq. 8.5x11” (4)</td>
</tr>
<tr>
<td>5.598.00</td>
<td>Quadrille paper 3/4” sq. 5.5x8” (4)</td>
</tr>
<tr>
<td>5.599.00</td>
<td>Quadrille paper 3/4” sq. 8.5x8.5”</td>
</tr>
<tr>
<td>5.600.00</td>
<td>Quadrille paper 3/4” sq. 8.5x11” (4)</td>
</tr>
<tr>
<td>5.601.00</td>
<td>Quadrille paper 1/2” sq. 3x5.5” (3)</td>
</tr>
<tr>
<td>5.602.00</td>
<td>Quadrille paper 1/2” sq. 5.5x5.5”</td>
</tr>
<tr>
<td>5.603.00</td>
<td>Quadrille paper 1/2” sq. 8.5x11” (4)</td>
</tr>
<tr>
<td>5.605.00</td>
<td>Fraction labels</td>
</tr>
<tr>
<td>5.606.00</td>
<td>Fraction problems</td>
</tr>
</tbody>
</table>
MATHEMATICS FOR THE PRESCHOOL
OTHER MATERIALS TO BUY

Note: All baskets, cups and trays are available from Montessori Services.

baskets for:
4 sets addition problems (put a red rim around the baskets)
2 sets subtraction problems (put a green rim around the baskets)
3 sets multiplication problems (put a yellow rim around the baskets)
2 sets division problems (put a blue rim around the baskets)
bead bars for multiplication with bead bars (large basket)
memory game of numbers
bathroom scale in pounds

bowls:
small, for formation of complex numbers with beads and cards
2 large bowls (for up to 50 unit beads) for collective exercises

boxes:
2 plastic, for 50 units for the collective exercises
4 plastic, to hold small numeral cards (5.580.00) for collective exercises
3 plastic, for fraction labels (5.605.00)
1 box for each operation
1 box for a mixed set

钟 with gears
cup for 81 beads for division memorization
English measure containers
English measure ruler
English measure weights, brass

felt mats for:
teen boards
ten boards
addition snake game
subtraction snake game
multiplication with bead bars
ink pad
markers, washable, for the dot board (black and a color other than green, blue or red)

meter stick
metric ruler
money, real
paper
pencils, regular, for:
stamp game
dot game
bead frames
racks and tubes
fractions
memorization exercises

pencils, colored for:
division memorization, red
dot game (not green, blue or red)

ribbons for:
spindle boxes (could also use rubber bands)
division with the collective exercises, 18 bows of green, 9 each of blue and red

rulers, 6 inch, for:
stamp game
division memorization
thermometer in Fahrenheit
tickets, folded problem:
4 sets addition (on red card stock)
2 sets subtraction (on green card stock)
3 sets multiplication (on yellow card stock)
2 sets division (on blue card stock)
1 set mixed on white card stock

trays, 2 large for collective exercises
yardstick
word problems
MATHEMATICS FOR THE ELEMENTARY
ACTIVITIES AND MATERIALS OVERVIEW

I. INTRODUCTION
   Great Lesson - The Story of Numbers
   charts (handmade)

II. EARLY WORK: CONCEPTS, PROPERTIES, NUMERATION
   A. Numbers to 1,000,000
      0.132.A0 geometrical representation of the hierarchy of numbers
      card material (handmade) in long wicker basket
   B. Commutative and Distributive Laws
      0.070.A0 box for small number cards (2)
      0.071.A0 small number cards 1-9000 (2)
      0.074.A0 individual wooden hundred square (45)
      0.075.A0 individual thousand cube (12)
      0.076.M0 box with 45 golden ten bars, indiv. beads (3)
      0.077.M0 plastic box containing 100 unit beads, like individual beads
      0.081.B0 wooden tray with unit cup (3)
      0.138.B0 box of color coded plastic chips (3) (may be handmade)
      0.190.M0 bead stair in sectioned box, 55 of each bar
      0.260.A0 box with arithmetic signs (may be handmade)
      bowl (to hold up to 100 unit beads)
      envelopes. small manila
      felt mat
      paper slips in basket
      parentheses (handmade)
   C. Multiples
      0.086.B0 boxes. 20, with arrows for 0.086.M0
      0.086.M0 complete set bead material, individual beads
      0.159.B0 multiple sheets, tables A and B
      0.160.B0 factor sheets, table C
      0.161.B0 multiple paper
      0.190.M0 box with 55 bead bars from 1 to 10 (3)
      1.666.M0 frame for complete bead material control charts for calculation of multiples (tables A, B, C) (handmade)
      felt mat
      multiple charts (handmade)
      paper, plain
      pencils, colored
   D. Factors
      0.135.B0 peg board (3)
      0.136.B0 pegs for 0.135.B0 (3) (as above)
      paper
      pencil
      strips, grey (handmade) in long wicker basket
      tickets, white (handmade)
      word problems
   E. Lowest Common Multiple
      0.135.B0 peg board (3) (as above)
      0.136.B0 pegs for 0.135.B0 (3) (as above)
      small white strips in long wicker basket
      paper
      pencil
      word problems (handmade)
   F. Greatest Common Factor
      0.135.B0 peg board (3) (as above)
      0.136.B0 pegs for 0.135.B0 (3) (as above)
      blank tickets in basket
      pencil
      strips, grey, in long wicker basket
      word problems (handmade)
   G. Divisibility
      0.074.B0 individual wooden hundred square (45) (as above)
      0.075.B0 individual thousand cube (12) (as above)
      0.076.M0 box with 45 golden ten bars, individual beads (3) (as above)
      0.077.M0 plastic box containing 100 unit beads, like individual beads (as above)
      0.081.B0 wooden tray with unit cup (3) (as above)
      bowl (to hold up to 100 unit beads)
      felt mat
      notebook, small paper
      pencil
      word problems (handmade)
   H. Measurement:
      1. History of Measurement - illustrations as necessary
      2. Decimal Fraction Board
         0.140.B0 decimal fraction board tickets (handmade) in container
      3. Length:
         English measure ruler
         meter stick
         metric ruler
         yardstick
      4. Liquid Volume:
         English measure containers
         metric containers (1000 ml. 100 ml. 10 ml)
      5. Weight
         9.124.B0 ten weights in a wooden storage box
         9.128.B0 balance scale, metal bathroom scale in kilograms
         bathroom scale in pounds
         English measure weights. brass
      6. Temperature:
         thermometers in Celsius
         thermometers in Fahrenheit
CURRICULUM RESOURCES

7. Clock:
   3.101.01 clock exercises in box
   3.102.00 clock and box with movable figures
   3.105.00 rubber stamp of clock
   clock with gears
   ink pad
   paper

8. Angles:
   0.114.00 fraction circles
   0.114.A0 stand for fraction circles
   0.124.00 instrument for measurement of angles
   0.125.00 instrument for reduction of common fraction into decimal fractions
   1.665.00 large fraction cabinet

9. Money:
   money, real, preferably from several different countries
   newspaper - with exchange rates

10. Word Problems, for all measurement categories listed above (handmade)

III. OPERATIONS: FIRST WORK

A. Long Multiplication
   1. Large Bead Frame
      0.094.00 large bead frame (3)
      0.154.01 large bead frame paper per 50 (6)
      pencils:
      red
      regular
      7.701.00 scissors with rounded point - 10.4 cm. or
      7.702.00 scissors with sharp point 10.4 cm.
      7.708.00 six scissor storage block
      paper, regular
      pencil
      white strips of paper in long wicker basket

   2. Flat Bead Frame
      0.099.00 flat bead frame (2)
      0.138.B0 box of color coded chips (2)
      (may be handmade)
      5.596.00 1" square, 8.5" x 6"
      5.597.00 1" square, 8.5" x 11"
      5.598.00 3/4" square, 8.5" x 8"
      5.600.00 3/4" square, 8.5" x 11"
      5.603.C 1/2" square, 8.5" x 11"
      cardboard, strips, in long wicker basket
      pencil
      ruler
      tickets, blank

   3. Bank Game
      0.073.00 bank game (2)
      0.138.B0 box of color coded plastic chips (2) (may be handmade, as above)
      grey cards with double zero (hand made)

   4. Checkerboard
      0.137.01 checkerboard (2)

      0.138.M0 box with 20 sets bead bars from 1 to 9 and small plastic numbers (2)
      paper:
      graph
      plain
      pencils:
      colored (green, blue, red)
      regular
      straightedge

B. Long Division
   1. Long Division Material
      0.095.00 long division material (2)
      0.095.A0 replacement tubes (10)
      0.095.B0 plastic box containing 100 green beads (for replacement)
      0.095.B1 plastic box containing 100 blue beads (for replacement)
      0.095.B2 plastic box containing 100 red beads (for replacement)
      paper:
      graph
      plain
      pencil

   2. Stamp Exercise
      0.082.00 stamp exercise
      5.596.00 1" square, 8.5" x 6"
      5.597.00 1" square, 8.5" x 11"
      5.598.00 3/4" square, 8.5" x 8"
      5.600.00 3/4" square, 8.5" x 11"
      5.603.C 1/2" square, 8.5" x 11"
      cardboard, strips, in long wicker basket
      pencil
      ruler
      tickets, blank

C. Squares and Cubes of Numbers
   0.086.M0 complete set bead material, individual beads (as above)
   0.190.M0 box with 55 bead bars from 1 to 10, individual beads (3) (as above)
   1.666.M0 frame for complete bead material (as above)
   envelopes, 10, containing labeled squares and rectangles for numerical decanomial (handmade)
   felt mat
   paper:
   graph (8-1/2" x 11") and (22"x28")
   plain
   pencils:
   colored
   regular
   tickets, blank

*These exercises are included for the children who did not master them in their preschool class.
IV. FRACTIONS
0.097.00 skittles (as above)
0.113.00 fraction skittles (as above)
0.113.A0 stand for fraction skittles (as above)
0.114.00 fraction circles (as above)
0.114.A0 stand for fraction circles (as above)
0.124.00 instrument for measurement of angles (as above)
0.135.00 peg board (as above)
0.136.00 pegs for 0.135.00 (as above)
1.665.00 box with 5 sets red plastic fraction circles
5.605.00 fraction labels (in pull drawer cabinet)
5.606.00 fraction problems (in pull drawer cabinet)
5.607.10 fraction equivalence research sheets
7.701.00 scissors with rounded point - 10.4 cm.
7.702.00 scissors with sharp point 10.4 cm.
7.708.00 six scissor storage block

fraction charts (handmade)
marker, black, that will mark on plastic paper:
    graph
    plain paper
plastic, clear, for making grids
problems (handmade) (in pull drawer cabinet)
other problems
word problems
straightedge
strips, black, of cardboard in long wicker basket
tickets, blank, or white strips of paper and scissors in basket

V. DECIMAL FRACTIONS
0.073.00 bank game (cards from)
0.097.00 skittles (Note. use some as they are. paint a few others light blue, pink and light green)
0.114.00 fraction circles (as above)
0.114.A0 stand for fraction circles (as above)
0.125.00 instrument for reduction of common fractions to decimal fractions
0.138.M0 box with 20 sets bead bars from 1 to 9 and small plastic numbers (as above)
0.139.01 decimal fractions (wooden beads and cards for use with 0.140.00)
0.140.01 decimal board (as above)
0.182.01 decimal checkerboard
1.665.00 fraction cabinet (as above)

"candelabra" (handmade)
"crown" (handmade)
felt mat
felt squares
fraction strips. 3 (handmade)
paper.
    graph
    plain paper discs. small, black (handmade)

"propeller" (handmade)
tickets, blank, or strips of white paper and scissors in long wicker basket
zero cards, grey decimal (handmade)

VI. OPERATIONS CONTINUED
A. Squaring
0 060.A3 small movable alphabet. red. USA
0 060.A4 small movable alphabet. yellow. USA
0 060.A5 small movable alphabet. blue. USA
0 060.A6 small movable alphabet. green. USA
0 060.A7 small movable alphabet. black. USA
0 060.C2 box for small movable alphabet, pint (5) (same as listed under language)
0 073.00 bank game (colored category cards 1 3000) (as above)
0 074.00 individual wooden hundred square (45) (as above)
0 075.00 individual thousand cube (12) (as above)
0 076.M0 box with 45 golden ten bars. individual beads (3) (as above)
0 077.M0 plastic box containing 100 unit beads. like individual beads (as above)
0 081.00 wooden tray with unit cup (3) (as above)
0 086.M0 complete set bead material. individual beads (bead squares) (as above)
0 095.B0 plastic box containing 100 green beads (as above)
0 095.B1 plastic box containing 100 blue beads (as above)
0 095.B2 plastic box containing 100 red beads (as above)
0 133.00 small square root board
0 134.00 patterns for square root
0 135.00 peg board (as above)
0 136.00 pegs for 0.135.00 (as above)
0 138.M0 box with 20 sets bead bars from 1 to 9 and small plastic numbers
0 260.00 box containing wooden arithmetic signs
1 666.M0 frame for complete bead material (as above)
5.604.00 one hundred circle paper
    felt mat
    graph paper
    pencils:
        colored
        regular
    rubber bands. colored
    tickets. blank

B. Cubing
0 086.M0 complete set bead material. individual beads (bead squares) (as above)
0 131.00 binomial cube
0 132.00 trinomial cube
### CURRICULUM RESOURCES

#### VIII. POWERS OF NUMBERS
- **0.130.00** powers of two
- **0.132.00** geometric representation of the hierarchy of numbers (as above)
- **0.189.00** cube root material (as above)
- **0.192.00** 1000 cubes 1x1x1cm (as above)
- problem tickets (handmade)
- strips from the decimal board (handmade)
- tickets, blank or white strips of paper and scissors in long wicker basket

#### IX. OTHER BASE SYSTEMS
- **0.086.00** complete set bead material (bead squares and cubes) (as above)
- **0.095.00** plastic box containing 100 green beads (as above)
- **0.190.00** bead stair in sectioned box. 55 of each bar (as above)
- **1.666.00** frame for complete bead material (as above)
- boards for other base systems. 2 (handmade)

#### X. WORD PROBLEMS
This section includes word problems that are not included in other areas of the mathematics curriculum.

#### A. Distance, Velocity, Time
- **0.074.00** individual wooden hundred square (as above)
- **0.075.00** individual thousand cube (12) (as above)
- **0.076.00** box with 45 golden ten bars individual beads (as above)
- **0.077.00** plastic box containing 100 unit beads. like individual beads (as above)
- **0.081.00** wooden tray with unit cup (3) (as above)
- **0.097.00** green skittles (as above)
- **0.098.00** bowl (to hold up to 100 unit beads)
- **0.107.00** chalk

#### XI. INTRODUCTION TO ALGEBRA

#### A. Ratio
- **0.190.00** bead stair in sectioned box. 55 of each bar (as above)
- geography stamps
- labels/tickets (handmade)
- objects in the environment
- word problems (handmade)

#### B. Proportion
- **0.086.00** complete set bead material (bead squares) (as above)
- **0.114.00** traction circles (as above)
- **0.114.00** stand for fraction circles (as above)
- **0.115.00** nine squares
- **0.116.00** four triangles
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powers of two (as above)</td>
<td>0.130.00</td>
</tr>
<tr>
<td>Peg board (as above)</td>
<td>0.135.00</td>
</tr>
<tr>
<td>Pegs for peg board (0.135.00) (as above)</td>
<td>0.136.00</td>
</tr>
<tr>
<td>Bead star in sectioned box, 55 of each bar (as above)</td>
<td>0.90</td>
</tr>
<tr>
<td>Box with arithmetic signs (as above)</td>
<td>0.260.00</td>
</tr>
<tr>
<td>Frame for complete bead material (as above)</td>
<td>1.666.00</td>
</tr>
<tr>
<td>Charts (handmade)</td>
<td></td>
</tr>
<tr>
<td>Garden</td>
<td></td>
</tr>
<tr>
<td>Water tank</td>
<td></td>
</tr>
<tr>
<td>Felt mat</td>
<td></td>
</tr>
<tr>
<td>Geography stamps</td>
<td></td>
</tr>
<tr>
<td>Parentheses (handmade)</td>
<td></td>
</tr>
<tr>
<td>Prepared tickets (handmade)</td>
<td></td>
</tr>
<tr>
<td>Strips, cardboard (handmade) in long wicker basket</td>
<td></td>
</tr>
<tr>
<td>Word problems (handmade)</td>
<td></td>
</tr>
</tbody>
</table>
### Preschool Materials Sometimes Used in Elementary Classrooms

**Simple Inventory**

**Materials from Nienhuis**

Many of these materials are essentially preschool materials, but they may be found in some elementary classes. According to Dr. Montessori's advice, preschool materials should not be presented to elementary children except for very specific pieces which are to be given in such a way as to help fill any gaps in knowledge.

#### A. Concepts

<table>
<thead>
<tr>
<th>Decimal System</th>
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<tbody>
<tr>
<td>0.069 A0</td>
<td>box for large number cards (1)</td>
</tr>
<tr>
<td>0.070 A0</td>
<td>box for small number cards (6)</td>
</tr>
<tr>
<td>0.070 C0</td>
<td>small number cards 1-3000, printed on plastic (2)</td>
</tr>
<tr>
<td>0.071 C0</td>
<td>small number cards 1-9000, printed on plastic (4)</td>
</tr>
<tr>
<td>0.072 C0</td>
<td>large number cards 1-9000, printed on plastic (1)</td>
</tr>
<tr>
<td>0.074 00</td>
<td>wooden squares (45)</td>
</tr>
<tr>
<td>0.075 00</td>
<td>wooden cubes (12)</td>
</tr>
<tr>
<td>0.076 M0</td>
<td>golden bead 10 bars, boxes</td>
</tr>
<tr>
<td>0.077 M0</td>
<td>plastic box containing 100 unit beads, like individual beads</td>
</tr>
<tr>
<td>0.081 00</td>
<td>wooden tray (3)</td>
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<table>
<thead>
<tr>
<th>Stamp Exercise</th>
<th></th>
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<tbody>
<tr>
<td>0.082 00</td>
<td>stamp exercise</td>
</tr>
<tr>
<td>0.582 00</td>
<td>stamp exercise paper 6 problems</td>
</tr>
<tr>
<td>0.583 00</td>
<td>stamp exercise paper 15 problems</td>
</tr>
<tr>
<td>0.584 00</td>
<td>dot exercise sheets</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Hundred Board</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.086 00</td>
<td>hundred board</td>
</tr>
<tr>
<td>0.087 00</td>
<td>control chart for 100 board</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Small Bead Frame</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.093 00</td>
<td>small bead frame (2)</td>
</tr>
<tr>
<td>0.153 01</td>
<td>small bead frame paper per 50 (3)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Skip Counting</th>
<th></th>
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<tbody>
<tr>
<td>0.088 B0</td>
<td>boxes 20 with arrows for bead material</td>
</tr>
<tr>
<td>0.089 M0</td>
<td>complete bead material, individual beads</td>
</tr>
<tr>
<td>1.066 M0</td>
<td>frame for complete bead material</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Curriculum Support Material</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5.584 00</td>
<td>math function command cards</td>
</tr>
</tbody>
</table>

#### B Memorization

### Addition

<table>
<thead>
<tr>
<th>Snake Game</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.090 M0</td>
<td>short bead stair box containing 5 of each bead bar (2) for replacements</td>
</tr>
<tr>
<td>0.090 M0</td>
<td>black and white bead stairs for replacements</td>
</tr>
<tr>
<td>0.291 M0</td>
<td>snake game addition individual beads</td>
</tr>
</tbody>
</table>

### Subtraction

<table>
<thead>
<tr>
<th>Negative Snake</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.029 M0</td>
<td>negative bead bars</td>
</tr>
<tr>
<td>0.291 M0</td>
<td>snake game, subtraction, individual beads</td>
</tr>
<tr>
<td>0.092 A0</td>
<td>subtraction strip board with strips</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5.595.31</td>
<td>Subtraction tables booklet 1. per 24 (3)</td>
</tr>
<tr>
<td>5.595.32</td>
<td>Subtraction tables booklet 2. per 40</td>
</tr>
<tr>
<td>5.595.33</td>
<td>Subtraction tables booklet 3. per 40</td>
</tr>
<tr>
<td>5.587.00</td>
<td>Chart problem paper</td>
</tr>
<tr>
<td>5.588.00</td>
<td>Circle problem paper</td>
</tr>
<tr>
<td></td>
<td>Folded slips of paper of subtraction problems (handmade) (in pull drawer cabinet)</td>
</tr>
<tr>
<td></td>
<td>Pencil</td>
</tr>
<tr>
<td></td>
<td>Subtraction charts I and II</td>
</tr>
<tr>
<td></td>
<td>0.142.B0 Subtraction charts including the blank chart and box of answers (as above)</td>
</tr>
<tr>
<td></td>
<td>0.142.F1 Four boxes with chips of problems with answer tiles (as above)</td>
</tr>
<tr>
<td></td>
<td>0.190.M0 Bead stair in sectioned box, 55 of each bar (as above)</td>
</tr>
<tr>
<td>5.587.C9</td>
<td>Chart problem paper</td>
</tr>
<tr>
<td>5.588.00</td>
<td>Circle problem paper</td>
</tr>
<tr>
<td>5.589.10</td>
<td>Place holder problems box middle (in pull drawer cabinet) (as above)</td>
</tr>
<tr>
<td>5.590.10</td>
<td>Place holder problems box first (in pull drawer cabinet) (as above)</td>
</tr>
<tr>
<td>5.594.10</td>
<td>&gt;=&lt; problem sets (in pull drawer cabinet) (as above)</td>
</tr>
<tr>
<td>5.586.00</td>
<td>Beginning math paper</td>
</tr>
<tr>
<td>5.596.00</td>
<td>Quadrille paper 1” sq. 8.5x6”</td>
</tr>
<tr>
<td>5.598.00</td>
<td>Quadrille paper 3/4” sq. 5.5x8”</td>
</tr>
<tr>
<td>5.600.00</td>
<td>Quadrille paper 3/4” sq. 8.5” x 11”</td>
</tr>
<tr>
<td>5.601.00</td>
<td>Quadrille paper 1/2” sq. 3x5 1/2”</td>
</tr>
<tr>
<td></td>
<td>Parentheses (handmade) in pull drawer cabinet problem tickets: problems. subtraction (handmade) (in pull drawer cabinet)</td>
</tr>
<tr>
<td></td>
<td>Other special ases, tables (handmade)</td>
</tr>
<tr>
<td></td>
<td>Strips of paper and scissors in long wicker basket</td>
</tr>
<tr>
<td></td>
<td>Addition and Subtraction</td>
</tr>
<tr>
<td>5.592.00</td>
<td>Missing sign of the operation problems in pull drawer cabinet</td>
</tr>
<tr>
<td>5.593.00</td>
<td>Missing sign paper</td>
</tr>
<tr>
<td>5.594.10</td>
<td>&gt;=&lt; problem sets in pull drawer cabinet (as above)</td>
</tr>
<tr>
<td>5.595.10</td>
<td>&gt;=&lt; blank problem paper</td>
</tr>
</tbody>
</table>

4. Multiplication
   a. With Bead Bars
      0.076.M0 Box with 45 golden ten bars, 100 beads in box
      0.186.M0 Table of Pythagoras
      0.190.M0 Box with 55 bead bars from 1 to 10, individual beads (2)
      0.191.00 Printed forms for decanomial (2)
      5.591.00 Commutative problems (in pull drawer cabinet) (as above)
      5.592.00 Table of Pythagoras
      5.593.00 Commutative problems (in pull drawer cabinet) (as above)
      5.594.00 Numerical decanomial (handmade) in envelopes
      5.595.00 Algebraic decanomial (handmade) in envelopes
      5.596.00 Beginning math paper
      5.597.00 Quadrille paper 1” sq. 8.5x6”
      5.598.00 Quadrille paper 3/4” sq. 5.5x8”
      5.599.00 Quadrille paper 3/4” sq. 8.5x8.5”
   b. Multiplication Board
      0.087.00 Multiplication board, cards in box, 100 beads in box
      0.142.C4 Multiplication charts with blank chart and box of answers (as above)
      5.595.41 Multiplication tables booklet 1. per 40 (2)
      5.595.42 Multiplication tables booklet 2. per 40 (2)
      5.595.43 Multiplication tables booklet 3. per 40 (2)
      5.595.44 Multiplication charts including the blank chart and box of answers (as above)
      0.142.F1 Four boxes with plastic chips of problems with answer tiles (as above)
      0.157.A0 Control chart for Pythagoras board
   c. Multiplication Charts III, IV and V (blank)
      0.142.C4 Multiplication charts including the blank chart and box of answers (as above)
      0.142.F1 Four boxes with plastic chips of problems with answer tiles (as above)
      0.157.A0 Control chart for Pythagoras board
   d. Subtraction Chart III (Blank)
      0.142.B0 Subtraction charts including the blank chart and box of answers (as above)
      0.142.F1 Four boxes with plastic chips of problems with answer tiles (as above)
      0.157.A0 Control chart for Pythagoras board
   e. Addition and Subtraction
      5.592.00 Missing sign of the operation problems in pull drawer cabinet
      5.593.00 Missing sign paper
      5.594.10 >=< problem sets in pull drawer cabinet (as above)
CURRICULUM RESOURCES

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.600.00</td>
<td>quadrille paper 3 4&quot; sq. 8.5x11&quot;</td>
<td>5.600.00</td>
</tr>
<tr>
<td>5.601.00</td>
<td>quadrille paper 1 2&quot; sq. 3x5.5&quot;</td>
<td>5.601.00</td>
</tr>
<tr>
<td>5.602.00</td>
<td>quadrille paper 1 2&quot; sq. 5.5x5.5&quot;</td>
<td>5.602.00</td>
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<tr>
<td>5.603.00</td>
<td>quadrille paper 1 2&quot; sq. 8.5x11&quot;</td>
<td>5.603.00</td>
</tr>
<tr>
<td></td>
<td>parentheses (handmade) (in pull drawer cabinet)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pencil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>problem tickets.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>multiplication problems (handmade)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(in pull drawer cabinet)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>other special cases, tables (handmade)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tickets for changing 1st control chart</td>
<td></td>
</tr>
<tr>
<td></td>
<td>to 2nd (handmade) (in pull drawer cabinet)</td>
<td></td>
</tr>
<tr>
<td>5.593.00</td>
<td>missing sign paper</td>
<td>5.593.00</td>
</tr>
<tr>
<td>5.584.10</td>
<td>== problem sets (in pull drawer cabinet)</td>
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</tr>
<tr>
<td>5.595.10</td>
<td>&gt;&gt;&gt; blank problem paper</td>
<td>5.595.10</td>
</tr>
<tr>
<td>5.600.00</td>
<td>quadrille paper 3 4&quot; sq. 8.5x11&quot;</td>
<td>5.600.00</td>
</tr>
<tr>
<td>5.601.00</td>
<td>quadrille paper 1 2&quot; sq. 3x5.5&quot;</td>
<td>5.601.00</td>
</tr>
<tr>
<td></td>
<td>quadrille paper 1 2&quot; sq. 5.5x5.5&quot;</td>
<td>5.602.00</td>
</tr>
<tr>
<td></td>
<td>quadrille paper 1 2&quot; sq. 8.5x11&quot;</td>
<td>5.603.00</td>
</tr>
<tr>
<td></td>
<td>pencil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>problem tickets.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>multiplication problems (handmade)</td>
<td></td>
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<tr>
<td></td>
<td>(in pull drawer cabinet)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>other special cases, tables (handmade)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tickets for changing 1st control chart</td>
<td></td>
</tr>
<tr>
<td></td>
<td>to 2nd (handmade) (in pull drawer cabinet)</td>
<td></td>
</tr>
<tr>
<td>0.142.D1</td>
<td>division charts including the blank chart and box of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>answers.</td>
<td></td>
</tr>
<tr>
<td>0.142.F1</td>
<td>four boxes with chips of problems with answer tiles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(as above)</td>
<td></td>
</tr>
<tr>
<td>5.597.00</td>
<td>quadrille paper 1 2&quot; sq. 8.5x11&quot;</td>
<td>5.597.00</td>
</tr>
<tr>
<td>5.600.00</td>
<td>quadrille paper 3 4&quot; sq. 8.5x11&quot;</td>
<td>5.600.00</td>
</tr>
<tr>
<td>5.603.00</td>
<td>quadrille paper 1 2&quot; sq. 8.5x11&quot;</td>
<td>5.603.00</td>
</tr>
<tr>
<td></td>
<td>pencil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tickets, division problems (handmade), with remainders (in pull drawer cabinet)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>special cases, tables (handmade)</td>
<td></td>
</tr>
<tr>
<td>6. Addition, Subtraction, Multiplication and Division</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.138.M0</td>
<td>box containing 20 sets of bead bars from 1 to 9, individual beads</td>
<td>0.138.M0</td>
</tr>
<tr>
<td>5.592.00</td>
<td>missing sign of the operation</td>
<td>5.592.00</td>
</tr>
<tr>
<td>5.593.00</td>
<td>missing sign paper</td>
<td>5.593.00</td>
</tr>
<tr>
<td>5.594.10</td>
<td>== problem sets in pull drawer cabinet</td>
<td>5.594.10</td>
</tr>
<tr>
<td>5.595.10</td>
<td>&gt;&gt;&gt; blank problem paper</td>
<td>5.595.10</td>
</tr>
<tr>
<td></td>
<td>twelve ways to write three numbers (handmade tickets and paper)</td>
<td></td>
</tr>
</tbody>
</table>
MATHEMATICS FOR THE ELEMENTARY
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.029.M0 negative bead bars
0.060.A3 small movable alphabet, red USA (same as listed under language)
0.060.A4 small movable alphabet yellow, USA (same as listed under language)
0.060.A5 small movable alphabet, blue USA (same as listed under language)
0.060.A7 small movable alphabet, black USA (same as listed under language)
0.060.C2 box for small movable alphabet, print (4)
0.070.A0 box for small number cards (7)
0.071.C0 small number cards (1-9000) printed on plastic (3)
0.073.00 bank game (2 sets)
0.074.00 wooden hundred squares (45)
0.075.00 wooden thousand cubes (12)
0.076.M0 golden bead ten bars (3)
0.077.M0 plastic box containing 100 golden beads, like individual beads
0.081.00 wooden tray with unit cup (2)
0.082.00 stamp exercise
0.086.B0 twenty boxes with arrows for 0.086 M0 complete set bead material, individual beads
0.091.M0 black and white bead stairs
0.094.00 large bead frame (3)
0.095.00 long division material (2)
0.095.A0 replacement beads (10)
0.095.B0 plastic box containing 100 green beads (2)
0.095.B1 plastic box containing 100 blue beads
0.095.B2 plastic box containing 100 red beads
0.097.00 skittles (50 green, 25 blue, 25 red) (2)
0.099.00 flat bead frame (2)
0.113.00 fraction skittles
0.113.A0 stand for fraction skittles
0.114.00 fraction circles
0.114.A0 stand for fraction circles
0.115.00 nine squares
0.116.00 four triangles
0.124.00 instrument for measurement of angles
0.125.00 instrument for reduction of common fractions into decimal fractions
0.130.00 powers of two
0.151.00 binomial cube
0.152.00 trinomial cube
0.152.A0 geometrical representation of the hierarchy of numbers
0.133.00 small square root board
0.134.01 patterns for square root
0.135.00 peg board (3)
0.136.00 pegs for 0 135 00 (3)
0.137.01 checkerboard (2)
0.138.B0 box of color coded plastic chips (5)
0.138.M0 bead stair in sectioned box, 20 of each bar (4)
0.139.01 decimal fractions (wooden, beads and cards for use with 0.140 00)
0.143.01 decimal fraction board (yellow decimal board)
0.154.01 paper for large bead frame 50 (at least 6)
0.159.00 multiple sheets A and B
0.160.01 factor sheets
0.161.01 multiple paper
0.182.01 decimal checkerboard
0.185.00 box with 5 sets red plastic fraction circles
0.186.00 table of Pythagoras
0.187.00 arithmetical trinomial cube
0.188.A0 box with 250 cubes 2x2x2 cm.
0.189.00 cube root material
0.190.M0 bead stair in sectioned box, 55 of each bar (3)
0.192.00 box with 1000 cubes 1x1x1 cm.
0.195.01 clear plastic envelopes (25)
0.195.B0 container with vertical divisions
0.260.00 box with arithmetical signs (3)
0.291.M0 snake game, subtraction
1.665.00 large fraction cabinet
1.666.M0 frame for complete bead material
3.101.00 clock exercises in box
3.102.00 clock and box with movable figures
3.105.00 rubber stamp of clock
7.31.00 pencil holders (10)
7.701.00 scissors with rounded point 10.4 cm (6) (see language)
7.702.00 scissors with sharp point 10.4 cm (6) (see language)
7.708.00 six scissor storage block (see language)
9.124.00 ten weights in wooden storage box
9.128.B0 balance scale, metal

CURRICULUM SUPPORT MATERIALS
5.596.00 quadrille paper 1" sq. 8.5 x 6" (4)
5.597.00 quadrille paper 1" sq. 8.5 x 11" (4)
5.598.00 quadrille paper 3" sq. 5.5 x 8" (4)
5.599.00 quadrille paper 3" sq. 8.5 x 8.5" (4)
5.600.00 quadrille paper 3.4" sq. 8.5 x 11" (4)
5.601.00 quadrille paper 1.2" sq. 3 x 5.5" (3)
5.602.00 quadrille paper 1.2" sq. 5.5 x 5.5" (2)
5.603.00 quadrille paper 1.2" sq. 8.5 x 11" (4)
5.604.00 one hundred circle paper (2)
5.605.00 fraction labels
5.606.00 fraction problems
5.607.10 fraction equivalence research sheets
MATHEMATICS FOR THE ELEMENTARY
OTHER MATERIALS TO BUY

baskets:
long wicker, for 8" paper strips (Montessori Services)
assorted sizes and shapes for blank tickets, labels, etc.
bowl (to hold 100 unit beads)
boxes plastic, for word problems, tickets, etc. (Montessori Services)
cabinets, pull drawer, for problems
chalk
clock
colored felt mats
15"x30" 2 yellow, 1 green, 1 blue
30"x30" yellow
cups clear plastic
labeled with negative sign (2)
or green unit beads (1)
envelopes:
manilla:
3"x5-1/2" (6)
3-1/2"x6-1/2" (20)
white
3-1/2"x6-1/2" (2)
felt mats, plain colors:
yellow
blue
etc.
felt squares (3 inches square)
red, blue, green, pink, light blue, light green
geography stamps
liquid volume
metric containers (1000 ml, 100 ml, 10 ml)
English containers
magic marker, black, with fine point, to write on clear plastic
meter stick
money:
USA
foreign
napkin holders or other holders for envelopes (not listed in curriculum outline)
newspapers (with exchange rates)
notebooks, small
paper:
plain
graph (8-1/2" x 11" and 22" x 28")
pencils:
regular
colored
plastic, clear
pull drawer cabinets, for tickets, labels, etc
rubber bands, colored
rulers:
English
metric
scale, balance with sets of:
English weights
metric weights
scales: bathroom
pounds
kilograms
scissors
stacking trays, 9"x16" (10) for holding various kinds of papers (not mentioned in curriculum outline)
straightedge
thermometers:
Celsius
Fahrenheit
trays for scissors, containers with tickets, etc. (not mentioned in curriculum outline)
yardstick
MATHEMATICS FOR THE ELEMENTARY
MATERIALS TO MAKE

boards for number bases (2)
charts, (handmade)
  control charts for calculation of multiples (tables A, B, C)
  garden chart with 2 pick axes
  history of numbers
  multiple charts
  squaring and cubing
  water chart
  history of measurement (find or make as many as needed for the story)
crown, silver colored
decanomial:
  numerical
  algebraic
envelopes, 10, containing labeled squares and rectangles for numerical decanomial
fraction charts (handmade)
fraction strips, 3 different
label cards/tickets:
  binomial cube, algebraic
  blank
  changing 1st multiplication control chart to 2nd cubing
decimal zero cards for decimal fractions (grey)
double zero cards for bank game (grey)
factors
fractions
geometrical representation of the hierarchy of numbers
interest, percent
measurement
metric measures
ratio, proportion
squaring
trinomial cube, algebraic
trinomial cube, numerical

velocity, distance, time
twelve ways to write 3 numbers
paper discs, small, black
paper forms:
  sectioned, for division (dividend, divisor, quotient, remainder)
twelve ways to write 3 numbers
parentheses
plastic pieces, clear, with black lines
problem tickets:
  fractions:
    addition
    subtraction
    multiplication
    division
  special cases:
    addition
    subtraction
    multiplication
    division
propeller (to illustrate decimals)
strips:
  paper, long white
cardboard, black, 4-1/2"x1-2" (11)
cardboard, grey, 8-1/2"x1-2" (13)
cardboard, 3, and "candelabra" for the yellow decimal board
word problems:
  distance, velocity, time
divisibility
factoring
fractions
GCF
interest, percent
LCM
measurement
ratio, proportion
etc.
INTRODUCTION

Presentations of geometry in Montessori follow the historical development of the subject. Since geometry began as a concrete experience with abstractions following at a later time, the children work through the same sequence. At the preschool level geometry is experienced sensorially through manipulation of both plane and solid geometric figures. Preschool geometric materials are listed in the Sensorial section. These materials foster a creative activity that involves two and three dimensional construction of various forms, artistic drawings and ornamentation. The foundation of the study of geometry is familiarity through sensorial experience during the preschool years. As much geometry nomenclature is supplied as the children are able to assimilate during their sensitive period for language acquisition so they will be ready for the geometry work at the elementary level.

Indirect preparation for geometry in mathematics includes sensorial exploration of cube-line-square cube, and point-line-surface-solid in the work with the golden bead material and the bead cabinet. Geometry, arithmetic and algebra are interrelated in a Montessori environment as much as possible. Geometry is used in arithmetic and algebra as a clarifying device to reveal relationships and the logic of various mathematical and algebraic processes. The first general implication of geometry in multiplication is shown in the multiplication of a number by itself (geometric result is a square) and the multiplication of two different numbers (geometric result is a rectangle). This leads eventually to the logic involved in the extraction of square root and cube root. Children take great joy in intellectual activity of this kind during their elementary years.

Work in geometry makes use of the guided discovery approach so that the children can discover the relationships, theorems and formulae themselves. Research is showing that information gained in this manner seems to be more readily retained in long-term memory than information given to children and then memorized by them.

Geometry work is related to the historical development of geometry. As the children make their own discoveries, they are interested in learning about the people who first made those discoveries. Often this leads to the creation and production of dramatic plays about those discoveries.

Creative expression in art through geometry is an integral part of the study of geometry from beginning to end. The education of the eye and hand to shape, form and dimension is a necessary part of the education of the artistic individual.

In addition to the enjoyment children exhibit in the study of geometry, it also provides them with a stimulus for intellectual development by giving experience with logical reasoning, deduction, and the forming of abstractions.

Areas of work in geometry include:
1. Sensorial exploration of plane and solid geometric figures
2. Classified nomenclature for lines, angles and polygons
3. Equality, similarity and equivalence
4. Area
5. Volume
Each of the areas above begins with sensorial experience and proceeds to abstraction. The areas overlap and proceed in parallel fashion.

Jean K. Miller
GEOMETRY FOR THE ELEMENTARY
ACTIVITIES AND MATERIALS OVERVIEW

I. THE STORY OF GEOMETRY

II. PRELIMINARY EXERCISES

(Many of these exercises overlap with preschool geometry while others are more advanced.)

0.037.01 geometric cabinet
0.037.02 contents of geometric cabinet
0.038.00 demonstration tray
0.038.A0 contents of demonstration tray
0.040.00 cabinet with 6 compartments
0.045.00 circles, squares, triangles
0.045.A0 detective adjective triangle exercise
0.048.00 geometric solids
0.048.A0 bases with box
0.048.B0 basket for solids (2)
0.049.00 constructive triangles
0.049.F0 box with 12 blue triangles
5.608.00 geometric cabinet matching cards
5.609.00 geometric cabinet control chart
5.610.00 geometric cabinet labels
5.611.00 geometric cabinet advanced triangle labels
5.612.00 detective adjective exercise labels
5.613.00 commands for geometric cabinet
5.614.00 geometric forms and commands for Venn diagrams
5.615.00 commands for geometric solids
5.616.00 geometry terms illustrated

III. EQUAL - SIMILAR - EQUIVALENT

A. Concept With Iron Material
0.115.00 squares, 9 plates
0.116.00 triangles, 4 plates
1.665.00 large fraction cabinet
1.665.A0 stands for fraction circles (see math)

B. Concept With Constructive Triangles
0.049.00 constructive triangles (as above)
0.049.F0 blue triangles, 12 identical

IV. INTRODUCTION TO POLYGONS

0.194.00 box with geometrical sticks
0.194.A0 large working board for geometrical sticks

V. ANGLES
0.114.00 fraction circles (see math)
0.114.A0 stands for fraction circles (see math)
0.124.00 instrument measurement angles (see math)
0.194.00 box with geometrical sticks (as above)
0.194.A0 large working board for geometrical sticks (as above)
1.665.00 large fraction cabinet (as above)
carpenter's square
compass
nomenclature materials (handmade)
paper:
  - plain, large sheets
  - regular, 8.5" x 11"
pencils:
  - colored (or crayons)
  - regular
protractor (full circle)
push pins, different colors
ruler

VI. INScribed AND CIRCumscribed FIGURES

0.114.00 fraction circles
0.114.A0 stand for fraction circles
0.115.00 squares, nine plates
0.116.00 triangles, four plates
0.117.00 small triangle
0.117.A0 small trapezoid
0.118.00 inscribed and concentric figures
0.119.00 triangles inscribed in circle
1.665.00 large fraction cabinet (as above)
paper
carpenter's square
child symbols, three pairs (handmade)
food coloring
nomenclature materials (handmade)
transparent jars, large (2)
water

VII. LINES

0.194.00 box with geometrical sticks (as above)
0.194.A0 large working board for geometrical sticks (as above)
carpenter's square
child symbols, three pairs (handmade)
food coloring
nomenclature materials (handmade)
transparent jars, large (2)
water

VIII. EQUIVALENCE

0.049.00 constructive triangles (as above)
0.122.00 equivalent figures, 13 plates
0.123.00 Theorem of Pythagoras. 3 plates
1.665.00 large fraction cabinet (as above)
geometry charts (handmade)
triangles (handmade)

IX. POLYGONS AND CIRCLES

A. Polygons
0.049.00 constructive triangles (triangular boxes)

CURRICULUM RESOURCES

0.194.00  box with geometrical sticks (as above)
0.194.A0  large working board for geometrical sticks (as above)
carpenter's square
height stand for plane figures (handmade)
nomenclature materials (handmade)
plane geometric figures made of paper, different sizes and shapes
triangles (handmade)
quadrilaterals (handmade)
polygons (handmade)

B. The Circle  
0.114.00  fraction circles (see math)
0.114.A0  stands for fraction circles (see math)
0.119.00  triangle inscribed in circle
0.194.00  box with geometrical sticks (as above)
0.194.A0  large working board for geometrical sticks (as above)
1.665.00  large fraction cabinet (as above)
nomenclature materials (handmade)
paper circles of different sizes (handmade)

X. AREA  
A. Plane Figures  
0.122.00  equivalent figures. 13 plates (as above)
0.127.00  yellow triangles for area
1.665.00  large fraction cabinet (as above)
height stand for plane figures
paper
parentheses (handmade)
pencil
prepared tickets (handmade)

B. Circle  
0.037.01 and 0.037.02 geometric cabinet and contents (as above)
0.114.00  fraction circles (see math)
0.114.A0  stands for fraction circles (see math)
0.118.00  material for inscribed and conc. ntric figures
0.119.00  triangle inscribed in a circle
0.194.00  box with geometrical sticks (as above)
0.194.A0  large working board for geometrical sticks (as above)
1.665.00  large fraction cabinet (as above)
carpenter's square
chalk
circles, paper, different sizes (handmade)
newsprint

C. Relationship Between Apothem to the Side of a Plane Figure  
paper
paper polygons of different types. 3 sizes of each kind. each 10 times larger than the last (handmade)
pencil
ruler

Xi. SOLID GEOMETRY  
A. Prisms  
0.024.00  pink tower (borrow from preschool)
0.188.00  calculation of volume set
0.192.00  wooden box containing 1000 cubes 1x1x1cm. (see math)
tickets:
blank (handmade)
prepared (handmade)

B. Pyramid  
0.128.00  set of 3 metal containers
sand
tickets.
blank (handmade)
prepared (handmade)

C. Solids of Rotation  
0.037.01  geometric cabinet (as above)
0.037.02  contents of geometric cabinet (as above)
equilateral cylinder - diameter and height the same (handmade)
sand, fine grained
shallow tray

D. Lateral and Total Area of Solids  
0.048.00  geometric solids (as above)
0.048.B0  basket for solids (2) (as above)
0.049.00  constructive triangles (4 red equilateral triangles) (as above)
chalk
crayon
icosahedron - 20 sided polygon (handmade)
newsprint
nomenclature cards for geometric solids (handmade)
pencil
plumb line
pyramid made of straws with corresponding paper triangles (handmade)
ruler, long
yarn
GEOMETRY FOR THE ELEMENTARY
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.024.00 pink tower (borrow from preschool class)
0.037.01 geometric cabinet
0.037.02 contents of geometric cabinet
0.038.00 demonstration tray
0.038.A0 contents of demonstration tray
0.039.00 geometric cards
0.045.00 circles, squares, triangles
0.045.A0 detective adjective triangle exercise (see language)
0.048.00 geometric solids
0.048.A0 bases with box
0.048.B0 basket for solids
0.049.00 constructive triangles
0.049.A0 empty rectangular box
0.049.F0 box with 12 blue triangles
0.114.00 fraction circles (see math)
0.114.A0 stands for fraction circles (see math)
0.115.00 nine squares (see math)
0.116.00 four triangles (see math)
0.117.00 small triangle
0.117.A0 small trapezoid
0.118.00 inscribed and concentric figures
0.119.00 triangle inscribed in circle
0.122.00 equivalent figures, 13 plates
0.123.00 theorem of Pythagoras, 3 plates
0.124.00 instrument measurement angles (see math)
0.127.00 yellow triangles for area
0.128.00 metal volume material
0.188.00 calculation of volume set
0.192.00 wooden box containing 1000 cubes 1x1x1 cm.
0.194.00 box with geometrical sticks
0.194.A0 large working board for geometrical sticks
1.665.00 large fraction cabinet (see math)

CURRICULUM SUPPORT MATERIALS

5.608.00 geometric cabinet matching cards
5.609.00 geometric cabinet control chart
5.610.00 geometric cabinet labels
5.611.00 geometric cabinet advanced triangle labels
5.612.00 detective adjective exercise labels (see language)
5.613.00 commands for geometric cabinet
5.614.00 geometric forms and commands for Venn diagrams
5.615.00 commands for geometric solids
5.616.00 geometry terms illustrated
### CURRICULUM RESOURCES

#### GEOMETRY FOR THE ELEMENTARY

**OTHER MATERIALS TO BUY**

- basket, small wicker
- box, cardboard, 9"x2"
- carpenter's square
- chalk
- compasses
- construction paper, colored
- crayons:
  - regular
  - fluorescent
- food coloring
- glass to hold soda straws
- glass jar, transparent, large (2)
- newsprint
- paper:
  - graph
  - lined
  - plain, 8.5" x 11"
  - plain, large
- pencil lead for protractors
- pencils:
  - regular
  - colored
- protractors (full circle)
- push pins, different colors
- rulers:
  - various sizes
  - one at least 18 inches
- sand
- scissors
- soda straws
- tangrams
- tapestry needle
- trays:
  - small, stacking
  - large, shallow
- yarn
GEOMETRY FOR THE ELEMENTARY
MATERIALS TO MAKE

- area of the circle
- child symbols, 3 pairs
- equilateral cylinder, diameter and height the same
genome charts, 61
-height stand for plane figures
-hexagons, 3 sizes
-icosahedron (20 sided polygon)
nomenclature cards and booklets
-paper circles
-paper strips, 1"x8"
-parentheses
-plane geometric paper figures, different sizes and
  shapes:
    - circles
    - triangles
    - trapezoids
    - rectangles
    - other quadrilaterals

- polygons
- polygons, various types, 3 of each, each 10 times
  larger than the last
-plumb line
-polygons for the sum of angles
-pyramids made of soda straws with green and white
  triangles
-quadrilaterals for the sum of angles
-spirograph
-stories about geometry
-theorem of Pythagoras, extra triangles
-tickets:
  - blank
  - white paper, 1" square
  - letters, equal signs, addition signs, fraction line
  - formula of the area of a circle
  - trapezoids
  - triangles for the sum of angles
INTRODUCTION

Montessori understood that giving too much in a curriculum could have just as detrimental an effect on children's development as giving too little. Her goal was simply to provide a "means to development" so that children could use what they need for their self-development.

In the preschool, all of the areas traditionally called science and social studies are treated as language extensions into culture. Children are exposed to as many facts as possible concerning What and Where. When they enter the elementary, this fund of facts makes it possible for them to take off in further exploration of these areas rather than having to start at the beginning. As the "logical, reasoning" mind emerges, the children use the information in new ways, find the interrelationships between and among the various areas, and expand their knowledge. The elementary children want to deal with Why, How, and When. The accumulation of facts in the preschool makes it possible for them to begin this new exploration immediately.

The elementary curriculum that has evolved (and continues to evolve) in the Montessori movement strikes a balance between the two extremes (of giving either too much or too little information) by providing a skeletal curricular framework that is both open-ended and interrelated.

Science and social science subjects such as anthropology, astronomy, biology, chemistry, economics, geography, geology, government, history, philosophy, physics, political behavior, political science, and sociology are not broken down into separate subject matters, but are totally integrated within the curriculum. The development of historical understanding and skills in mathematics (including arithmetic, geometry, and algebra), language, arts and crafts, music, gymnastics, etc., is integrated with the rest of the curriculum.

This totally integrated curriculum is referred to by Dr. Montessori as cosmic education. Cosmic education provides whole views of the integrated curriculum into which details may be placed in their relation to the whole. In this manner, education becomes a coherent whole rather than a conglomeration of unrelated bits of information. It serves the need of both global and linear thinkers and helps each individual to relate his or her predominant style of thinking to the other style.

Five "great lessons" set the stage for the presentation of this integrated curriculum. The stories deal with the development of the universe, solar system and earth, the development of life on earth, the coming of human beings, and the development of language and mathematics.

A short summary of the contributions of some of the particular disciplines within the curriculum is given below, followed by a more detailed description of the areas of history, geography, science, and biology.

Montessori history follows the development of the universe, solar system, life on earth, the development of human beings, early civilizations, and recorded history. The child sees the long labor of humans to accomplish all that is here for us to enjoy in the present.

Montessori biology is structured in such a way as to give children a means of classification so they can structure and relate the facts of biology. The study should reveal that classification follows evolution. The ultimate goal is an ecological view of life and a feeling of responsibility for the environment.
The study of geography is designed to show how the physical configurations of the earth contribute to the history of all people. The study of physical geography is the basis for the study of economic geography — which shows the interdependence of all nations and people.

The first science experiments are designed to give children basic knowledge which will make possible the understanding of the development of the solar system, the earth and its configurations, life on earth, and the needs of plants and animals. Although each individual life on earth (both plant and animal) seems to be selfishly fighting for its own survival, each takes only what it needs and, in its turn, makes its contribution to the ecological whole.

Additional presentations on the development of language, mathematics, geometry, commerce, architecture, music and art, as well as the great revolutions (agricultural, urban, industrial, and information) all contribute to the unfolding of the human drama on earth.

The hoped-for result is that the children will see the struggle of life to develop itself. This struggle and long labor has benefited those children and each of them has a place in that development and a responsibility to further it.

One especially important material serves as an organizing center for the "Human Relations" curriculum. This is a chart entitled, "Fundamental Needs." It is introduced as early as possible in the elementary school. Preparation for it begins at the preschool level. Discussions around this chart help children see that the needs of human beings in all places on the earth and in all times in history are the same. When children can see that all human beings share the same needs, then they can respect and appreciate the variety of ways in which the needs are met. This emphasis on common needs helps in the development of a feeling of brotherhood and sisterhood with all peoples on earth.

In the study of history, the fundamental needs are used as a guide for the children's research into how people throughout history met those needs. In biology, the children look at the contribution of flora and fauna to the satisfaction of human needs. In geography, the children examine the influence of physical geography on meteors, those needs as well as the influence of climate, seasons, natural resources, etc. The contributions of physics and science are also considered, as are the cultural manifestations of music and art.

The organizing center provided by the fundamental needs chart keeps the various areas of the curricula integrated, promotes an ecological view of life on earth, and helps children assume a responsible place in history.

HISTORY — THE FOUNDATION OF COSMIC EDUCATION

The study of history provides a chronological framework which gives order to information acquired in all other areas of study. In this way it provides the foundation for cosmic education. The study of geography, science, biology and all subjects related to them flow naturally out of the study of history. In the same way, any beginning point in any of the various subjects can flow naturally back to history or to any of the other areas as the children proceed with this interdisciplinary approach.

In order to enable children to study history, we must help them acquire both an understanding of the passage of time and the ability to conceptualize time in a linear fashion. This work begins in the preschool and lays the foundation for the work done in the elementary.

Preschool activities which contribute to a concept of the passage of time and its expression in linear form include various periodic activities such as weighing and measuring the children, birthday observations, measuring plants, drawing successive stages of plant growth, weighing animals, etc. These are best done on a regular basis if one of their purposes is to help children acquire an understanding of time.

Activities with a calendar may include keeping a daily record of the weather on a large calendar which shows a month at a time. Each day's passage may also be noted on calendars with tear off pages for each day. The pages which are torn off are attached to each other in a line. In the elementary this may be done with three different sized calendars. The resulting three lines will be different lengths, however, they all show the
passage of the same length of time. This will help the children understand that one can choose any unit of space to represent a period of time.

Telling time with a clock plays an important part in building a concept of time. When children can recognize the times on the hour and half hour, a clock with a rectified circumference may be used to show that the circumference of the clock may be stretched out to show time in a linear form. Then follows a series of time lines:

1. A 24 hour day with the hour as the unit of measurement
2. A week with the day as the unit of measurement
3. A month with the day as the unit of measurement
4. A child's life with the year as the unit of measurement. For each year there is one picture of the child and a short paragraph about an important occasion during the year. Parental help will be needed for this time line.
5. A chart showing the ages of the members of the child's family with the year as the unit of measurement (if parents will share this information)
6. A line of the child's life with the month as the unit of measurement (birthdays are prominently marked)
7. A time line for past, present and future which may be used for:
   - sequence pictures (preschool)
   - grammar exercises using tenses of the verb (elementary)
   - events chart

Except for the last two exercises, the units of measurement represent progressively larger units of time in order to lead the child toward the time lines for the study of the development of life on earth and human history.

Then follows the B.C. – A.D. Time Line which goes from 2000 B.C. to A.D. 2000. It shows elementary age children how the years are numbered. Other ways of measuring time are also explored with the Jewish calendar and the Chinese calendar.

The study of geologic time or natural history begins in the elementary with the story of the beginning of the universe, the creation of the solar system and earth, the laws which determine the behavior of matter, and the changes that have taken place on earth. The Black Strip emphasizes the immensity of time: the earth has existed, in relation to the amount of time human beings have existed. The Clock of the Eras shows the relative lengths of time of the different eras of earth history, and the Time Line of Life shows the development of life on earth up to the coming of human beings. These materials are impressionistic and do not give exact dates. Their purpose is to show the time it took to furnish the earth and to arouse the interest of the children to explore further.

Next comes the study of human beings from the time of their appearance on earth until written records appear. The study begins with the chart of the Fundamental Needs of Human Beings. Preparation for this chart begins in the preschool through the use of pictures in geography and with card material which illustrates the fundamental needs and the way the needs have been met over time. A few sets of these same cards are used by the elementary children with the time line from 10,000 B.C. to A.D. 2000. The children then proceed to research and make their own cards for the time line.

Other materials used in this section include the Hand Chart, two time lines of human beings, and the History Question Charts.

The section concerning written history goes from the invention of writing to the present day. The study begins with the Great River Civilizations (Sumeria, Egypt, Indus Valley, the Shang Dynasty, Aztecs, Mayans, Incas) and then follows the development of Western civilization until it arrives at the state and local area in which the school resides. (If the school were in a non-western nation, the study would move from the Great River Civilizations to the nation in which the school was located.) History Question Charts continue to be used as do Migration Charts.
All of the great lessons described above are given during the early weeks of the fall semester. What follows in the way of lessons prepared by the teacher is a response to the children's interests. In addition, the study of the history of the state in which the school is located must be included if required by the state.

**GEOGRAPHY**

**Introduction**

The study of geography is composed of several different interconnecting areas which may be shown as follows:

```
Economic

Scientific understanding

Political

Physical

Mapping and graphing
```

The study of physical geography is related to political geography so that children will understand how the physical features of the land contribute to political boundaries, location of cities, agriculture, etc. An understanding of physical and political geography gives children the basis for understanding the economics of each country. Mapping and graphing skills make it possible to record and analyze physical, political and economic geography.

One of the ultimate goals is to show the interdependence of human beings and nations and the greater good that comes through cooperation and peace rather than through self interest and war.

**BIOLOGY**

Familiarization with classification schemes found in biology provides another mental tool for ordering and relating information. An understanding of classification schemes also will be relevant later for computer programming.

In the preschool, opportunities are provided which familiarize children with plants and animals, their needs, parts, and their relationships within a simple classification framework. The more information the children accumulate during their preschool years, the more facts they have to work with in the elementary as they pursue their natural interest in biology. When they reach the elementary age, new mental capabilities enable them to compare and contrast previously acquired information and to explore the facts of biology in a new way. Without this information they have to begin almost from scratch. This can be a time consuming process and it can become tedious when the children would have preferred to be using their new-found mental power. The drive to use a new mental capability is the greatest when it is just emerging. When it is not allowed to be exercised, then it does not develop to its potential. For this reason it is important that children be enabled to acquire as much information as possible at the time in their lives when the acquisition of facts can be most easily accomplished. That time, when children can absorb information in a seemingly effortless manner, is during the preschool years.
With a base of real information and their new-found mental powers, elementary children go into a more detailed study of plants and animals, their needs and their relationships in both classification schemes and in an ecological sense.

Jean K. Miller
## HISTORY FOR THE ELEMENTARY (Some Preschool)
### ACTIVITIES AND MATERIALS OVERVIEW

### I. NATURAL HISTORY

#### A. The Black Strip
- dowel strip, black (handmade)

#### B. Clock of the Eras
- chart (handmade)

#### C. Time Line of Life
- impressionistic charts
- fossils
- time line: (hand colored)
  - blank chart
  - full chart
  - separate pictures and labels

### II. THE LINEAR MEASUREMENT OF TIME

#### A. The Clock (preschool)*
- 3.101.01 clock exercise in box (see math)
- 3.102.00 clock and box with movable figures (see math)
- 3.105.00 rubber stamp of clock (see math)
  - globe
  - paper: 5.5" x 5.5"
  - paper, roll (adding machine tape)
  - pencils:
    - colored
    - regular
  - wooden materials for telling time

#### B. Days of the Week (Preschool)*
- 5.541.00 naming days and months

#### C. Months of the Year (Preschool)*
- 5.541.00 naming days and months
- 5.626.00 calendar, blank
  - calendars:
    - blank calendar sheets in three sizes, one page per day
    - light source
    - twelve months on one long strip (handmade)
    - twelve individual months (handmade)

#### D. Class Diary
- 5.626.00 calendar, blank
  - paper
  - pencil

#### E. History of Children’s Names
- books which give history and meaning of names such as "What to Name the Baby"
  - tickets (handmade)

### F. Personal Time Lines
- glue
- paper:
  - blank
  - large sheets
  - one inch strips cut from lined paper
  - pencils
  - photographs
  - quadrille paper

### G. B.C. and A.D. Time Line
- adding machine tape
- pencils:
  - colored
  - regular
- symbol for division between B.C. and A.D.

### III. PRE-HISTORY

#### A. The Hand Chart
- artifacts
  - strip, black (handmade)

#### B. The First Time Line of Human Beings
- artifacts
- books
- pictures

#### C. Fundamental Needs Charts
- impressionistic charts
- nomenclature materials (handmade)

#### D. Second Time Line of Human Beings
- artifacts

#### E. History Question Charts
- card material for one culture (handmade)
- charts

### IV. WRITTEN HISTORY

#### A. The Growth of Culture
- impressionistic charts (migration charts)
- pictures

#### B. Study of Other Civilizations
- artifacts

#### C. Study of Child’s Own Civilization
- American history time line
  - blank chart
  - full chart
  - movable pieces
- artifacts
  - black strip (handmade)
  - cards for history question charts
  - original Americans chart (handmade)

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*These exercises are included for the children who did not master them in their preschool classes.
HISTORY FOR THE ELEMENTARY
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.105.80 command card box (Use for storage of card material. Quantity depends on amount of handmade material)(6)*
0.195.01 clear plastic envelopes (6)*
3.101.00 clock exercise in box (see math)*
3.102.00 clock and box with movable figures (see math)*
3.105.00 rubber stamp of clock (see math)*

* These exercises are included for the children who did not master them in their preschool classes.
American history time line
artifacts
boxes:
cardboard
3-1/2"x3-1/2"x1"
7"x10"x1-1/2"
calendars, in 3 sizes, page per day
envelopes, small manilla
3"x5-1/2"
9"x12"
file folders
fossils
ink pad, ed ink
paper, for g rolls, for making time lines
orange stick
stapler
trays
5"x7-1/2"
9-1/2"x12"
HISTORY FOR THE ELEMENTARY
MATERIALS TO MAKE

- calendar sheets, so children can make their own calendars
- charts
- names of the children in the class and their meanings
- nomenclature materials
- months of the year on one long strip
- time lines
## GEOMETRY FOR THE PRESCHOOL
### ACTIVITIES AND MATERIALS OVERVIEW

#### I. LAND AND WATER FORMS

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>Sandpaper Globe</td>
<td>0.230.00</td>
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<tr>
<td><strong>B. Land and Water Form Models</strong></td>
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<tr>
<td>developing trays, 5&quot; x 7&quot;</td>
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<tr>
<td>clay or plasticine</td>
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<tr>
<td>oilcloth</td>
<td></td>
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<tr>
<td>food coloring, blue</td>
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<tr>
<td>spoon</td>
<td></td>
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<tr>
<td>pitcher</td>
<td></td>
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<td>pitchers</td>
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<tr>
<td>pencils</td>
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<tr>
<td><strong>C. Land and Water Form Cards</strong></td>
<td>5.500.00</td>
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<td>islands</td>
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<td>lakes</td>
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<td>peninsulas</td>
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<td>gulfs</td>
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<td>isthmus</td>
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<td>caps</td>
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<td>bays</td>
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<td>archipelagos</td>
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<tr>
<td>systems of lakes</td>
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<td><strong>D. Land and Water Form Pictures</strong></td>
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<td>systems of lakes</td>
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<td><strong>E. Outline and Waterways Maps</strong></td>
<td>1.626.00</td>
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<tr>
<td>map cabinet for paper maps</td>
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<tr>
<td>world maps, outlines only, 11&quot; x 17&quot;</td>
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<td>United States outline</td>
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<td>pencils, colored blue</td>
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<td><strong>F. World Maps with Land and Water Forms Marked</strong></td>
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<td><strong>G. Land and Water Form Definition Booklets and Cards</strong></td>
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<td>(same size as above)</td>
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C. Geography Pictures
- Geography folders for each continent
- Artifacts from different continents and countries

D. Wooden Maps with Flags
- Four maps of Europe control map (handmade)
- Four maps of North America control map (handmade)
- Four maps of South America control map (handmade)

E. Flags
- Flag stand complete Asia
- Flag stand complete Europe
- Flag stand complete North and South America
- Parts of the flag cards
- Flag paper
- Parts of the flag descriptions

III. MISCELLANEOUS
A. Days and Months
- Naming days and months
- Names of the months

B. Directions
- Compass directions

C. Hemispheres
- Earth labels
GEOGRAPHY FOR THE PRESCHOOL
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

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Items not appearing on Nienhuis order sheets before January 1990

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GEOGRAPHY FOR THE PRESCHOOL
OTHER MATERIALS TO BUY OR FIND

- artifacts from different countries
- clay or plasticine
- developing trays, 5" x 7"
- drying cloth
- food coloring, blue
- oilcloth
- pitcher
- pencils, colored
  - red
  - blue
- spoon
MATERIALS TO MAKE

geography folders for each continent
First folder (one for each continent) general pictures which show
- fundamental needs of human beings
- flora
- fauna
Second folder (one for each continent, 5 envelopes in each) which give more detail of the above
Third folder (country in which school is located) general assortment as in the first folder
Fourth folder (country in which school is located) classified around one topic
Later, folders three and four may be organized for different countries.

land and water form models (use earthy-colored clay or plasticine in 5" x 7" developing trays with pouring lips) Do not paint the forms. Make shapes which correspond to the forms in the land and water form cards (item no. 5.500.00).

picture collections:
- islands
- lakes
- peninsulas
- gulls
- isthmi
- straits
- capes
- bays
- archipelagos
- systems of lakes
**GEOGRAPHY FOR THE ELEMENTARY ACTIVITIES AND MATERIALS OVERVIEW**

### I. PRELIMINARY EXERCISES

- **0.105.80 command box, natural finish (3)**
  - for command cards (5.502.00, 5.504.00) for parts of the flag (5.538.00, 5.540.00)
- **0.173.01 cabinet of maps of the world parts with flags, control map and self-sticking names**
- **0.173.19 set of name cards, self-sticking (for control maps)**
- **0.195.01 clear plastic envelopes (4) (for 5.500.00, 5.501.00)**
- **0.195.80 container with vertical divisions (5) for land and water forms (5.500.00, 5.501.00)**
- **0.230.00 sandpaper globe (preschool)**
- **0.231.00 painted globe (preschool)**
- **0.232.00 stand with flags of Asia (preschool)**
- **0.233.00 stand with flags of Europe (preschool)**
- **0.233.A0 stand with flags of North and South America (preschool)**
- **1.626.00 map cabinet for 11" x 17" paper maps (4)**
- **5.500.00 basic land and water forms**
- **5.501.00 land and water descriptions**
- **5.502.00 command cards, set 1**
- **5.503.00 land and water form labels**
- **5.504.00 command cards, set 2**
- **5.530.00 South America, waterways marked, 11"x17"**
- **5.531.00 South America, political boundaries, 11"x17"**
- **5.532.00 United States, outlines only, 11"x17"**
- **5.533.00 United States, waterways marked, 11"x17"**
- **5.534.00 United States, political boundaries, 11"x17"**
- **5.537.00 compass directions**
- **5.538.00 parts of the flag cards**
- **5.539.00 flag paper**
- **5.540.00 parts of the flag descriptions**
- **5.541.00 naming days and months**
- **5.542.00 earth labels**
- **5.573.00 continental United States and Alaska**
- **5.574.00 country capital labels**
- **5.575.00 names of the months**
- **5.577.00 physical features of the world**
- **5.578.00 set of eight cardboard maps (world, Africa, Asia, Australia, Europe, North America, South America, United States) (2)**
- **5.625.00 weather symbols matching cards**

### II. THE BEGINNING

Note: Materials for a particular exercise are not set up on their own individual tray in the elementary class. Rather, the children have to think through and get all the materials they need from the supply that is kept on a shelf. Chemicals are locked in a closet and are taken out only under the direction of the teacher. The teacher remains with the children through the time it takes to do experiments that require the use of chemicals that could cause harm if misused.

**A. Great Lesson**

- **ammonium dichromate**
- **bowls, glass, with transparent sides (2)**
- **charts, impressionistic (handmade)**
- **dishes, small metal (3)**
- **ice**
- **iron, small piece**
- **lead shot**
- **matches, fireplace**
- **oils**
- **perfume with bad smell**
- **paraffin**
- **paper, torn into small pieces. in small container**
- **perfume with bad smell**
- **solder**
- **test tubes**

* These exercises are included for the children who did not master them in their preschool class.
tray
volcano
water
wax
wood, piece which may be broken

B. Composition of the Earth
chart, impressionistic (handmade)
magnet, large
paper, black
weight, iron
yardstick

III. THE NATURE OF THE ELEMENTS
A. Properties of the Three States of Matter
basin
bowl, glass, with cold water
containers, clear, of various sizes and shapes
food coloring
glass, empty
hot plate or sterno stove
lead shot, in transparent glass container
lead solder
paper, thin sheet
perfume, bad smelling, in spray bottle
pitcher, glass
pitcher, plastic, with holes covered by removable
tape
objects, solid (some heavy - wood, clay, tile, rock,
brick, etc.)
teaspoon
trays

B. Further States of Matter
bricks or blocks of wood, (2)
Bunsen burner or sterno stove
clay in rectangular shape
eraser in rectangular shape
honey
matches
oil
sheet of clear glass (edges taped) or
Plexiglass (6.5" x 12")
spheres:
clay
rubber
Styrofoam
wood
test tubes
test tube rack
tongs
trays
water
weights, set of
wood, balsa, same lengths but 3
different thicknesses
wood, rectangular piece

C. Different Ways of Combining
absorbent pad
ammonia
beaker
chalk powder
corks
cupric sulfate (powdered)
custard cup, Pyrex
dishes, Pyrex (4)
glasses, (2)
handkerchief, white
hydrochloric acid
iron filings
lead nitrate
labels, prepared
marble chip
magnet, strong
matches
metal plate
pitcher containing water
potassium dichromate
rods, glass stirring, (2)
salt
sand, clean
saucer, ceramic
spoon
sulphur (or flour)
sugar
sulfuric acid
test tubes, Pyrex
test tube rack
tongs
trays
tray with a heat protected top

D. Attraction of the Earth and Gravity
bowl, large glass
bricks, (4)
Bunsen burner or sterno stove
cork
honey
magnet, strong
marbles
objects, various:
some magnetic (some heavy)
some non-magnetic
oil
paper clips
ping pong balls
sand, clean
test tubes, Pyrex (3)
trays
water
wood, thin board

E. Composition of the Earth
chart, impressionistic (handmade)
honey or molasses
iron weight
oil
magnet, large
paper, black
test tubes, Pyrex
water
yardstick
IV. SUN AND EARTH

A. Rotation of the Earth and Its Effects
- globe, sandpaper
- charts, impressionistic (handmade)
- clock symbols, 24
- lamp with bulb, no shade
- paper, narrow strip
- twelve black strips
- twelve white strips
- weight, tied to a string

B. Perpendicular and Oblique Rays
- chalk, white
- charts, impressionistic (handmade)
- clay, flat rectangle
- sphere
- flashlight
- magnifying glass
- paper, black
- white
- toothpicks

C. Solstices and Seasons
- globe, sandpaper
- charts, impressionistic (handmade)
- clay, sphere
- small piece
- globe, large
- knitting needle
- labels, handmade
- lamp with bulb, no shade
- paper, strips:
  - blue
  - brown
  - green
  - pink
  - red
  - white
- pin, straight, with colored head
- suns, handmade

D. Protection of the Atmosphere and the Rains
- bowl, large glass
- Bunsen burner, hot plate or sterno stove
- charts, impressionistic (handmade)
- hair dryer
- pad, heat proof
- pitcher, small
- sauce pan, small
- saucer
- spoon, metal
- tray
- water

funnel, glass
incense, stick
matches
paper circles
paper spirals
pencils, (2)
pin, stick
pitcher, small
pole in metal base
tray
tube, cardboard, with rectangular piece cut from one end
water

B. Effect of Heat on Land
- bowls, Pyrex (2)
- charts, impressionistic (handmade)
- clock, watch or oven timer
- hot pads
- mat, heat proof
- metal covering plate for stove
- refrigerator
- sand
- sterno stove
- thermometers (2)
- tongs
- tray
- water

C. Seasonal Changes
- arrows, red and blue (handmade)
- charts, impressionistic (handmade)
- sun (handmade)

D. Oceanic Current
- basin, large
- bowl, transparent glass
- brick or rock
- charts, impressionistic (handmade)
- flask, Pyrex
- ice cubes
- metal covering plate for stove
- pad, heat proof
- pitcher, small
- sawdust
- sterno stove
- tubing
- water, warm
- water, cold, colored
- specimens, wind-eroded rocks

E. Wind as Sculptor
- chart, impressionistic (handmade)
- pictures of rock formations

VI. WORK OF WATER

A. The River
- aluminum foil
- bowl or pan, clear glass
- chalk powder
- charts, impressionistic (handmade)
CURRICULUM RESOURCES

clay

hose or plastic tubing with funnel on one end

map, North America, with transparent overlays (handmade)

newspaper

pebbles

river model (handmade)

rocks, small

sand, regular

several different colors and sizes

water

B. Rain

boards on which to build models (3)

chart, impressionistic (handmade)

clay

moss

rock

sand

water

watering can

C. Waves

basin or tub, large

clay

sand

plywood

water

wood, small board

D. Ice

bottle, thin glass

charts, impressionistic (handmade)

freezer

tray

water

E. Water Cycle

charts, impressionistic (handmade)

F. Spread of Vegetation

chart, impressionistic (handmade)

plants, different kinds, live specimens and pictures

G. People in Different Zones

0.195.01 clear plastic envelopes (6)

0.195.B0 container with vertical divisions (3)

charts, impressionistic (handmade)

nomenclature material, peoples of the arctic, tropics, desert

H. Composition of the Earth

0.188.B0 five yellow prisms

0.188.C0 grey rectangular prism

0.188.D0 two green rhombic prisms, ends covered with striped paper of different colors

0.188.E0 two blue hexagonal prisms, ends covered with striped paper of different colors

bag, plastic ziplock

bowl, glass

charts, impressionistic (handmade)

coffee grounds

text of different colors

flask with cork with hole

funnel, glass

hot plate

pictures of mountains of different types

rock, heavy

teady

water

wood, small flat piece

VII. ECONOMIC GEOGRAPHY

A. Production and Consumption

5.505.00 world 17" x 22"

5.508.00 world, 11" x 17"

5.514.00 Africa 11" x 17"

5.517.00 Asia 11" x 17"

5.520.00 Australia 11" x 17"

5.523.00 Europe 11" x 17"

5.526.00 North America 11" x 17"

5.529.00 South America 11" x 17"

5.532.00 United States 11" x 17"

state in which school is located

books, source (almanacs, encyclopaedias, atlases, agricultural charts, natural resource charts, etc.)

glue

paper:

plain

lined

quadrille

pencil:

regular

colored

products, natural resources and raw materials

stamps

scissors

stamp pad, inked

B. Imports and Exports

The following maps are used to make examples.

5.505.00 world 17" x 22"

5.508.00 world, 11" x 17"

charts, impressionistic (handmade)

C. Interdependencies

0.105.B0 command box, natural finish (3)

card material, 6 sets (handmade)

paper, large sheets, white

pencils, colored

pot, small
VIII. NOMENCLATURE

A. Mountains
- 0.195.01 clear plastic envelopes (2)
- 0.195.B0 container with vertical divisions
- 5.505.00 world 17" x 22"
- 5.508.00 world 11" x 17"
- 5.514.00 Africa 11" x 17"
- 5.517.00 Asia 11" x 17"
- 5.520.00 Australia 11" x 17"
- 5.523.00 Europe 11" x 17"
- 5.526.00 North America 11" x 17"
- 5.529.00 South America 11" x 17"
- 5.532.00 United States 11" x 17"
  - clay
  - glue
  - labels (handmade)
  - maps, outline:
  - nomenclature materials (handmade)
  - paper, heavy, for making models of mountains
  - paper, strips
  - pencils, colored
  - plywood
  - scissors
  - toothpicks
  - water
  - watering can

B. Rivers
- 0.195.01 clear plastic envelopes (2)
- 0.195.B0 container with vertical divisions
  - nomenclature materials (handmade)
  - other materials from "Work of Water" (see above)

C. Coastlines
- 0.195.01 clear plastic envelopes (2)
- 0.195.B0 container with vertical divisions
  - nomenclature materials (handmade)

D. Inland Land Formations
- 0.195.01 clear plastic envelopes (2)
- 0.195.B0 container with vertical divisions
  - nomenclature materials (handmade)

IX. EXPERIMENTS
- cards, experiments (handmade)
- file boxes for 5" x 8" experiment cards
# Geography and Science for the Elementary

Simple Inventory from Nienhuis

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.105.B0</td>
<td>Command box, natural finish (5)</td>
<td></td>
</tr>
<tr>
<td>0.173.01</td>
<td>Cabinet of maps of the world parts with flags, control maps and self-sticking names</td>
<td></td>
</tr>
<tr>
<td>0.173.19</td>
<td>Set of name cards, self-sticking-for control maps</td>
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</tr>
<tr>
<td>0.188.B0</td>
<td>Five yellow prisms</td>
<td></td>
</tr>
<tr>
<td>0.188.C0</td>
<td>Grey rectangular prism</td>
<td></td>
</tr>
<tr>
<td>0.188.D0</td>
<td>Two green rhombic prisms</td>
<td></td>
</tr>
<tr>
<td>0.188.E0</td>
<td>Two blue hexagonal prisms</td>
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<tr>
<td>0.195.01</td>
<td>Clear plastic envelopes (25)</td>
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<td>0.195.B0</td>
<td>Container with vertical divisions (10)</td>
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<td>0.203.00</td>
<td>Sandpaper globe</td>
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<td>0.231.00</td>
<td>Painted globe</td>
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<tr>
<td>0.232.00</td>
<td>Stand with flags of Asia</td>
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<tr>
<td>0.233.00</td>
<td>Stand with flags of Europe</td>
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</tr>
<tr>
<td>0.233.A0</td>
<td>Stand with flags of North and South America</td>
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<td>Map cabinet for 11&quot;x17&quot; paper maps (4)</td>
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<tr>
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<td>Scissors with rounded point, 10.4 cm. (6) (see math)</td>
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<tr>
<td>7.702.00</td>
<td>Scissors with sharp point, 10.4 cm. (6) (see math)</td>
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<tr>
<td>7.708.00</td>
<td>Six scissor storage block (2) (see math)</td>
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<td>Code</td>
<td>Description</td>
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<td>5.500.00</td>
<td>basic land and water forms</td>
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<td>5.501.00</td>
<td>land and water descriptions</td>
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<td>command cards, set 1</td>
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<td>5.503.00</td>
<td>land and water form labels</td>
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<td>world maps, outlines only 17&quot;x22&quot;</td>
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<tr>
<td>5.506.00</td>
<td>world maps, political boundaries 17&quot;x22&quot;</td>
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<tr>
<td>5.507.00</td>
<td>world maps, political boundaries &amp; waterways 17&quot;x22&quot;</td>
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<tr>
<td>5.509.00</td>
<td>world maps, political boundaries 11&quot;x17&quot;</td>
<td></td>
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<tr>
<td>5.510.00</td>
<td>world maps, political boundaries &amp; waterways 11&quot;x17&quot;</td>
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<td>5.511.00</td>
<td>hemisphere maps and labels set</td>
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<td>5.512.00</td>
<td>world unlabeled control map</td>
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<td>5.512.10</td>
<td>world labeled control map</td>
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<td>Africa, outlines only 11&quot;x17&quot;</td>
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<tr>
<td>5.515.00</td>
<td>Africa, waterways marked 11&quot;x17&quot;</td>
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<tr>
<td>5.516.00</td>
<td>Africa, political boundaries 11&quot;x17&quot;</td>
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<tr>
<td>5.517.00</td>
<td>Asia, outlines only 11&quot;x17&quot;</td>
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<tr>
<td>5.518.00</td>
<td>Asia, waterways marked 11&quot;x17&quot;</td>
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<tr>
<td>5.519.00</td>
<td>Asia, political boundaries 11&quot;x17&quot;</td>
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<td>Australia, outlines only 11&quot;x17&quot;</td>
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<td>5.521.00</td>
<td>Australia, waterways marked 11&quot;x17&quot;</td>
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<td>5.522.00</td>
<td>Australia, political boundaries 11&quot;x17&quot;</td>
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<td>5.524.00</td>
<td>Europe, waterways marked 11&quot;x17&quot;</td>
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<td>5.525.00</td>
<td>Europe, political boundaries 11&quot;x17&quot;</td>
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<td>North America, outlines only 11&quot;x17&quot;</td>
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<td>5.527.00</td>
<td>North America, waterways marked 11&quot;x17&quot;</td>
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<td>5.528.00</td>
<td>North America, political boundaries 11&quot;x17&quot;</td>
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<td>South America, outlines only 11&quot;x17&quot;</td>
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<td>5.530.00</td>
<td>South America, waterways marked 11&quot;x17&quot;</td>
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<td>South America, political boundaries 11&quot;x17&quot;</td>
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<td>United States, outlines only 11&quot;x17&quot;</td>
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<tr>
<td>5.533.00</td>
<td>United States, waterways marked 11&quot;x17&quot;</td>
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<tr>
<td>5.534.00</td>
<td>United States, political boundaries 11&quot;x17&quot;</td>
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<td>5.537.00</td>
<td>compass directions</td>
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<td>5.538.00</td>
<td>parts of the flag cards</td>
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<td>5.539.00</td>
<td>flag paper</td>
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<td>parts of the flag descriptions</td>
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<td>5.541.00</td>
<td>naming days and months</td>
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<td>5.542.00</td>
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<td>5.573.00</td>
<td>continental United States and Alaska</td>
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<td>country capital labels</td>
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<td>5.575.00</td>
<td>names of the months</td>
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<td>5.577.00</td>
<td>physical features of the world</td>
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<tr>
<td>5.578.00</td>
<td>set of eight cardboard maps (world, Africa, Asia, Australia, Europe, North America, South America, United States) (2)</td>
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</tr>
<tr>
<td>5.625.00</td>
<td>weather symbol matching cards</td>
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</tbody>
</table>
### GEOGRAPHY AND SCIENCE FOR THE ELEMENTARY

#### OTHER MATERIALS TO BUY OR FIND

<table>
<thead>
<tr>
<th>Item</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absorbent pad</td>
<td></td>
</tr>
<tr>
<td>Alcohol, denatured</td>
<td></td>
</tr>
<tr>
<td>Alcohol, lamp</td>
<td></td>
</tr>
<tr>
<td>Aluminum foil</td>
<td></td>
</tr>
<tr>
<td>Ammonia</td>
<td></td>
</tr>
<tr>
<td>Ammonium dichromate</td>
<td>antidotes in fixed, unlocked location</td>
</tr>
<tr>
<td>Bags, plastic zip lock, 10-1/2&quot;x11-1/2&quot;</td>
<td></td>
</tr>
<tr>
<td>Baking soda (for experiments and for emergencies)</td>
<td></td>
</tr>
<tr>
<td>Balls:</td>
<td>ping-pong</td>
</tr>
<tr>
<td></td>
<td>rubber</td>
</tr>
<tr>
<td></td>
<td>Styrofoam</td>
</tr>
<tr>
<td>Basins of various sizes</td>
<td></td>
</tr>
<tr>
<td>Beakers of various sizes (at least 3 of same size)</td>
<td></td>
</tr>
<tr>
<td>Books:</td>
<td>almanacs</td>
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<tr>
<td></td>
<td>encyclopaedias</td>
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<tr>
<td></td>
<td>atlases</td>
</tr>
<tr>
<td></td>
<td>etc.</td>
</tr>
<tr>
<td>Bottle brushes of various sizes*</td>
<td></td>
</tr>
<tr>
<td>Bottle, thin glass</td>
<td></td>
</tr>
<tr>
<td>Bowls:</td>
<td>foil (3)</td>
</tr>
<tr>
<td></td>
<td>clear plastic</td>
</tr>
<tr>
<td></td>
<td>metal</td>
</tr>
<tr>
<td></td>
<td>glass, large</td>
</tr>
<tr>
<td></td>
<td>glass with transparent sides</td>
</tr>
<tr>
<td></td>
<td>Pyrex (2)</td>
</tr>
<tr>
<td>Boxes:</td>
<td>metal, with hinged cover</td>
</tr>
<tr>
<td></td>
<td>plastic, clear</td>
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<tr>
<td></td>
<td>plastic, clear, circular</td>
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<tr>
<td></td>
<td>bread lin, clear glass Pyrex, 4-1/2&quot;x8-1/2&quot;</td>
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<tr>
<td>Bricks (5)</td>
<td></td>
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<tr>
<td>Bucket*</td>
<td></td>
</tr>
<tr>
<td>Bunsen burner and propane</td>
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</tr>
<tr>
<td>Cabinets:</td>
<td>for 11&quot;x17&quot; paper maps</td>
</tr>
<tr>
<td></td>
<td>small 10 drawer, for small objects (3)*</td>
</tr>
<tr>
<td>Candles</td>
<td></td>
</tr>
<tr>
<td>Chalk, white</td>
<td></td>
</tr>
<tr>
<td>Chalk powder</td>
<td></td>
</tr>
<tr>
<td>Charts:</td>
<td>agricultural</td>
</tr>
<tr>
<td></td>
<td>natural resources</td>
</tr>
<tr>
<td></td>
<td>etc.</td>
</tr>
<tr>
<td>Chemicals, as necessary for experiments</td>
<td></td>
</tr>
<tr>
<td>Clay, in covered bucket</td>
<td></td>
</tr>
<tr>
<td>Clock, watch or oven timer</td>
<td></td>
</tr>
<tr>
<td>Clothespins, 3 wooden with one long arm (for holding test tubes)*</td>
<td></td>
</tr>
<tr>
<td>Coasters*</td>
<td></td>
</tr>
<tr>
<td>Coffee grounds</td>
<td></td>
</tr>
<tr>
<td>Containers:</td>
<td>plastic, freezer</td>
</tr>
<tr>
<td></td>
<td>glass, transparent, various sizes and shapes</td>
</tr>
<tr>
<td>Cord, extension*</td>
<td></td>
</tr>
<tr>
<td>Corks:</td>
<td>various sizes</td>
</tr>
<tr>
<td></td>
<td>various sizes with center hole for tubing</td>
</tr>
<tr>
<td>Cotton balls</td>
<td></td>
</tr>
<tr>
<td>Cup and saucer*</td>
<td></td>
</tr>
<tr>
<td>Cupric sulfate, powdered</td>
<td></td>
</tr>
<tr>
<td>Cups, measuring, 1/4, 1/3, 1/2, 1 1/2nd 2 cup capacity*</td>
<td></td>
</tr>
<tr>
<td>Cups, Pyrex custard 2 sizes (6)</td>
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<tr>
<td>Detergent, liquid*</td>
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<tr>
<td>Dishes:</td>
<td>glass, Pyrex (4)</td>
</tr>
<tr>
<td></td>
<td>small metal (3)</td>
</tr>
<tr>
<td>Dolls in national costume</td>
<td></td>
</tr>
<tr>
<td>Eraser, rectangular shape</td>
<td></td>
</tr>
<tr>
<td>Eye droppers*</td>
<td></td>
</tr>
<tr>
<td>Felt:</td>
<td>various colors, 18&quot;x7&quot;</td>
</tr>
<tr>
<td></td>
<td>various colors, strips</td>
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<tr>
<td>File boxes for 5&quot;x8&quot;</td>
<td>experiment cards</td>
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<tr>
<td>First aid box - in fixed, unlocked location*</td>
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<tr>
<td>Flashlight</td>
<td></td>
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<tr>
<td>Flasks of various sizes</td>
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</tr>
<tr>
<td>Flir</td>
<td>food coloring</td>
</tr>
<tr>
<td>Forceps*</td>
<td></td>
</tr>
<tr>
<td>Freezer</td>
<td></td>
</tr>
<tr>
<td>Funnels of various sizes:</td>
<td>clear glass</td>
</tr>
<tr>
<td></td>
<td>metal</td>
</tr>
<tr>
<td>Glass, piece of clear, 6-1/2&quot;x12&quot; (tape around the edges)</td>
<td></td>
</tr>
<tr>
<td>Glasses:</td>
<td>small, clear glass (6)</td>
</tr>
<tr>
<td></td>
<td>regular size (2)</td>
</tr>
<tr>
<td>Globe of world, large</td>
<td></td>
</tr>
<tr>
<td>Gloves, disposable, rubber</td>
<td></td>
</tr>
<tr>
<td>Glue</td>
<td></td>
</tr>
<tr>
<td>Glue stick</td>
<td></td>
</tr>
<tr>
<td>Hair dryer</td>
<td></td>
</tr>
<tr>
<td>Handkerchief</td>
<td></td>
</tr>
<tr>
<td>Honey</td>
<td></td>
</tr>
<tr>
<td>Hot pads</td>
<td></td>
</tr>
<tr>
<td>Hot plate</td>
<td></td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td></td>
</tr>
<tr>
<td>Incense, sticks</td>
<td></td>
</tr>
<tr>
<td>Ink pads</td>
<td></td>
</tr>
<tr>
<td>Iron:</td>
<td>bar, 12&quot; long, 3/8&quot; diameter</td>
</tr>
<tr>
<td></td>
<td>steel</td>
</tr>
<tr>
<td></td>
<td>fillings</td>
</tr>
<tr>
<td></td>
<td>small piece</td>
</tr>
<tr>
<td></td>
<td>weight</td>
</tr>
</tbody>
</table>
CURRICULUM RESOURCES

jars of various sizes and shapes
kettle, 3 cup size*
knitting needle, large
lamp with bulb, no shade
lead nitrate
lead, shot
lid, metal paint can*
magic markers, water base (6 colors)*
magnets:
  horseshoe
cow
magnifying glasses
maps, state in which school is located
marble chips
marbles
mat, heat proof
matches:
  fireplace
  wooden kitchen
metal covering plate for stove
metal plate
molasses
moss
nails of assorted sizes
newspaper
nuts
objects:
  brick
  clay
  iron
  non-iron
  plastic
  rock
  tile
  wood
oil, cooking
pad, heat proof
pans:
  clear glass Pyrex, 6"x10"
  dish
paper clips
paper:
  black
  graph (quadrille)
  heavy, for making mountain ranges
  lined
  plain, thin
  small, torn pieces
  white sheets, 8.5" x 11"
  white sheets, large
paraffin
pebbles
pencils:
  regular, at least 2
  colored
perfume, bad smelling
periodic table of the elements*
pins with colored heads
pitchers:
  2 quart, plastic, no holes
  2 quart, plastic, holes with tape
glass
small
plants, different kinds:
  live specimens
  pictures
plasticine:
  small supply
  in ball shape
pole in metal base
pot, small
potassium dichromate
prism
products, natural resources and raw materials stamps
refrigerator
rock, heavy
rocks, small
rods, glass, stirring (6)
salt
sand: (for experiments and for emergencies)
  in pail with trowel and scoop
  in different colors
  clear, high quality
sausage, small
saucers:
  ceramic
  plastic (4)
sawdust
scale, balance, with weights*
screen protector for top of burner*
sheets, heat resistant for stove top protection, 17"x19"
silverware tray (4 compartments)*
slides for microscope*
slide covers*
solder, lead
specimens, rocks
sponges*
spoons:
  soup (2)
  with slender bowl
  measuring
  metal
  teaspoon
sprinkling can
stamp pad, inked
stand, metal with perpendicular bar, with metal ring
attachments*
sterno
sterno stove
stoppers*
stove, small collapsible camp*
strainer, small*
sugar
sulfuric acid
sulphur
table knife*
tapes, mystic
teapot
terra cotta, broken pieces
test tubes, Pyrex (9)
test tube holders with space for 6 test tubes (3)
thermometers
thermos, wide mouth, 3-1/2" high, 4" diameter
thread
longs
toothpicks
trays, metal:
12"x17" (2)
10-1/2"x15" (4) cookie sheets
11"x14" (4)
9"x12"
5"x7" (3)
with heat protected top
tubes:
clear plastic
shower head at one end, cone shape at other end
cardboard, 12" tall, 2-1/2" diameter with rectangular piece cut from one end
twine, rough
water (for experiments and for emergencies)
cold
hot
room temperature
watering can
weights:
set for balance scale
tied to a string
iron
wood:
balsa, all pieces same length and 3 inches wide, but 3 different thicknesses
blocks, size of brick (2)
boards on which to build models, 18" x 18" (3)
broken pieces
piece to break
plywood 12" x 18"
rectangular piece
small board
small flat piece
sphere
strips, small
strips, 1/4" sq
thin board
yardstick

* Materials in the general supply for geography which are not included in the activities and materials list.
GEOGRAPHY AND SCIENCE FOR THE ELEMENTARY
MATERIALS TO MAKE OR FIND

arrows:
  blue
  red
bowl, red, drawing
card material, 6 sets
charts, impressionistic 22"x28" (approximately 100)
circles
clock symbols (24)
economic geography folders
ice
ice cubes
labels:
  cities of United States
  on 3"x5" cards for results of experiments
  for charts
  for mountains
  etc.
maps:
  North America with overlays
  state in which school is located, products of
  study of a nation

United States, products of
mountains:
  clay, with labels
  paper, cut out, of the United States
  pictures, find and mount
nomenclature materials
paper items:
  black strips
circles
spirals
strips
strips for geography chart:
  blue
  brown
  green
  pink
  red
  white
  white strips
  yellow, 3"x2-1/2"
pictures, rock formations
river model
smokestack (cardboard tube)
spirals, paper
suns
volcano
CURRICULUM RESOURCES

BIOLOGY FOR THE PRESCHOOL
ACTIVITIES AND MATERIALS OVERVIEW

I. Botany
A. Familiarization - caring for live plants in the environment
   5.662.00 writing paper blue lined 4.25" x 5.5"
   5.665.00 writing paper blue lined 8.5" x 11"
   5.667.00 writing paper green lined 4" x 7"
   5.669.00 writing paper green lined 8.5" x 11"

   Note: all of the above paper may be used for drawing successive stages of plant growth
   fertilizer
   garden soil
   light source
   mister
   peat
   pebbles
   plants, live
   pottery
   saucers or pans on which to set plant pots
   stand(s) for plants
   vermiculite
   water
   watering can

B. Needs of Plants
   cotton. sterile
   garden soil
   labels (handmade)
   trays
   saucers with cotton
   seeds
   water
   watering can

C. Plant Stories
   folders with pockets (different folder for each plant)
   labels (handmade)
   pictures (find and mount)
   text for pictures (handmade)
   Who am I? sets (handmade)

D. The Leaf
   0.041 A0, 0.041.A1 leaf cabinet and contents (see Sensorial)
   0.043.00 leaf cards (see Sensorial)
   0.044.00 cabinet with three compartments (see Sensorial)
   5.627.00 botany matching cards
   5.628.00 botany control chart
   5.629.00 parts of a leaf
   5.631.00 botany cabinet labels
   leaf specimens
   magnifying glass
   plants, live
   tray
   water

E. The Flower
   5.630.00 parts of a flower

F. Nomenclature materials
   0.195.00 botany cards (2)
   0.195.A1 printed names for 0.195.00 (2)
   0.195.B0 box for cards (4)
   0.196.00 botany cards set 2 (2)
   0.196.A1 printed names for 0.196.00 (2)
   0.196.B0 boxes: (2)
   0.197.00 botany cards set 3 (2)
   0.197.A1 printed names for 0.197.00 (2)
   0.197.B0 boxes: (2)
   definitions/descriptions (handmade)

G. Botany books for additional information

II. Zoology
A. Familiarization - caring for live animals in the environment
   5.617.00 heading cards for sorting exercises
   5.618.00 parts of the human body, external
   5.619.00 parts of the human body, external, paper
   6.620.00 animals and their homes
   6.621.00 animals and their voices
   6.622.00 animals and their young
   6.623.00 animal names
   6.624.00 animals and their groups
   aquariums and all necessary equipment, as appropriate
   bedding, as appropriate
   cages, as appropriate
   food, as appropriate
   newspaper
   specimens

B. Animal Stories
   folders with pockets (different folder for each animal)
   labels (handmade)
   pictures (find and mount)
   text for pictures (handmade)
   Who am I? sets (handmade)

C. Nomenclature
   0.195.B0 - box for cards, 5 (for external parts)
   external parts of vertebrates (handmade)
   heading cards (handmade)

D. Zoology books for additional information

III. Classification Exercises
A. Living - non-living
   real objects
   pictures

B. Plant - animal
   real plants and animals
   pictures

C. Etc., as far as interest allows
## CURRICULUM RESOURCES

### BIOLOGY FOR THE PRESCHOOL

#### SIMPLE INVENTORY - MATERIALS FROM NIENHUIS

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>0.041.A0</td>
<td>leaf cabinet</td>
</tr>
<tr>
<td>0.041.A1</td>
<td>contents of leaf cabinet</td>
</tr>
<tr>
<td>0.043.00</td>
<td>leaf cards</td>
</tr>
<tr>
<td>0.044.00</td>
<td>cabinet with 3 compartments</td>
</tr>
<tr>
<td>0.195.00</td>
<td>botany cards set 1 (2)</td>
</tr>
<tr>
<td>0.195.A1</td>
<td>printed names for 0.195.00 (2)</td>
</tr>
<tr>
<td>0.195.B0</td>
<td>boxes (9)</td>
</tr>
<tr>
<td>0.196.00</td>
<td>botany cards set 2 (2)</td>
</tr>
<tr>
<td>0.196.A1</td>
<td>printed names for 0.196.00 (2)</td>
</tr>
<tr>
<td>0.196.B0</td>
<td>boxes: (2)</td>
</tr>
<tr>
<td>0.197.00</td>
<td>botany cards set 3 (2)</td>
</tr>
<tr>
<td>0.197.A1</td>
<td>printed names for 0.197.00 (2)</td>
</tr>
<tr>
<td>0.197.B0</td>
<td>boxes: (2)</td>
</tr>
</tbody>
</table>

### CURRICULUM SUPPORT MATERIALS

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.617.00</td>
<td>heading cards for sorting exercises</td>
</tr>
<tr>
<td>5.618.00</td>
<td>parts of the human body, external</td>
</tr>
<tr>
<td>5.619.00</td>
<td>parts of the human body, external, paper</td>
</tr>
<tr>
<td>5.620.00</td>
<td>animals and their homes</td>
</tr>
<tr>
<td>5.621.00</td>
<td>animals and their voices</td>
</tr>
<tr>
<td>5.622.00</td>
<td>animals and their young</td>
</tr>
<tr>
<td>5.623.00</td>
<td>animal names</td>
</tr>
<tr>
<td>5.624.00</td>
<td>animals and their groups</td>
</tr>
<tr>
<td>5.627.00</td>
<td>botany cabinet matching cards</td>
</tr>
<tr>
<td>5.628.00</td>
<td>botany cabinet control chart</td>
</tr>
<tr>
<td>5.629.00</td>
<td>parts of a leaf</td>
</tr>
<tr>
<td>5.630.00</td>
<td>parts of a flower</td>
</tr>
<tr>
<td>5.631.00</td>
<td>botany cabinet labels</td>
</tr>
<tr>
<td>5.662.00</td>
<td>writing paper blue lined 4.25&quot; x 5.5&quot;</td>
</tr>
<tr>
<td>5.665.00</td>
<td>writing paper blue lined 8.5&quot; x 11&quot;</td>
</tr>
<tr>
<td>5.667.00</td>
<td>writing paper green lined 4&quot; x 7&quot;</td>
</tr>
<tr>
<td>5.669.00</td>
<td>writing paper green lined 8.5&quot; x 11&quot;</td>
</tr>
</tbody>
</table>
### Curriculum Resources

#### Biology for the Preschool

**Other Materials to Buy or Obtain**

- Animals, live
- Aquarium(s)
  - Aquarium nets, heater, lights, gravel, etc.
- Bedding for animals, as appropriate
- Books, for additional information
- Bowls, various sizes, various materials*
- Buckets/pails*
- Cage(s) for animals
- Cotton, sterile
- Fertilizer
- First aid kit*
- Flower pots, various sizes and shapes*
- Food for various pets and plants in the classroom
- Garden soil
- Herbarium*
- Leaf and flower press*
- Leaf specimens
- Light source for plants
- Magnifying glass
- Mini set of gardening tools*
- Mister*
- Moss, sphagnum*
- Newspaper

- Paper: black*
  - in various colors*
  - plain white*
- Paring knife*
- Peat
- Pebbles
- Pencils*
- Plants, live
- Pottery
- Sand*
- Saucers or pans on which to set plants
- Scissors*
- Seeds for planting (corn, beans, etc.)
- Specimens, as interest dictates
- Stands for plants
- Terrarium*
- Toothpicks*
- Trays - various sizes, shapes and materials
- Vermiculite
- Water
- Watering can

*General supplies, usually not specified in the curriculum outline.*
BIOLOGY FOR THE PRESCHOOL
MATERIALS TO MAKE

folders with information and pictures
  animals
  plants
heading cards
labels
nomenclature materials:
  botany
  zoology
picture cards and labels:
  fish
  amphibians
  reptiles
  birds

mammals
plants
living - non-living
plant - animal
e tc.
text for pictures
Who am I? sets
animals
plants
<table>
<thead>
<tr>
<th>CURRICULUM RESOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURRICULUM SUPPORT MATERIALS</td>
</tr>
<tr>
<td>0.041.A0 leaf cabinet (see sensorial)</td>
</tr>
<tr>
<td>0.041.A1 contents of leaf cabinet (see sensorial)</td>
</tr>
<tr>
<td>0.195.00 botany cards set 1 (2) (see sensorial)</td>
</tr>
<tr>
<td>0.195.A1 printed names (2) (see sensorial)</td>
</tr>
<tr>
<td>0.195.B0 boxes (13)</td>
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<tr>
<td>0.196.00 botany cards set 2 (2)</td>
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<tr>
<td>0.196.A1 printed names (2)</td>
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<tr>
<td>0.196.B0 boxes (2)</td>
</tr>
<tr>
<td>0.197.00 botany cards set 3 (2)</td>
</tr>
<tr>
<td>0.197.A1 printed names (2)</td>
</tr>
<tr>
<td>0.197.B0 boxes (2)</td>
</tr>
<tr>
<td>5.617.00 heading cards for sorting exercises</td>
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<tr>
<td>5.618.00 parts of the human body, external</td>
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<td>5.619.00 parts of the human body, external, paper</td>
</tr>
<tr>
<td>5.620.00 animals and their homes (see Language)</td>
</tr>
<tr>
<td>5.621.00 animals and their voices (see Language)</td>
</tr>
<tr>
<td>5.622.00 animals and their young (see Language)</td>
</tr>
<tr>
<td>5.623.00 animal names (see Language)</td>
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<tr>
<td>5.624.00 animals and their groups (see Language)</td>
</tr>
<tr>
<td>5.627.00 botany matching cards</td>
</tr>
<tr>
<td>5.628.00 botany control chart</td>
</tr>
<tr>
<td>5.629.00 parts of a leaf</td>
</tr>
<tr>
<td>5.630.00 parts of a flower</td>
</tr>
<tr>
<td>5.631.00 botany cabinet labels</td>
</tr>
</tbody>
</table>
BIOLOGY FOR THE ELEMENTARY
OTHER MATERIALS TO BUY OR FIND

- aquarium(s)
- aquarium nets, heater, lights, gravel, etc.
- bags, clear plastic, zip lock
- basket, wire
- bedding for animals, as appropriate
- blotter paper
- books, botany and zoology - for further research
- bowls, various sizes, various materials
- box, file, for botany experiment cards
- buckets/pails
- cabinet, small pull drawer cabinet for slides, droppers, labels, pins, etc.
- cage(s) for animals
- card stock in various colors*
- celery
- coffee cans with lids*
- cork board*
- cotton, sterile
- dissecting kit*
- ferric chloride
- fertilizer
- first aid kit
- folders, pocket
- flower pots, various sizes and shapes
- food for various pets and plants in the classroom
- food coloring
- funnel, transparent glass
- garden soil
- herbarium*
- jars and lids, supply of various sizes
  - 6 identical
  - broad mouthed
  - small
  - tall
- leaf and flower press*
- light source for plants
- magnesium sulfate
- magnifying glass
- microscope
- mini set of gardening tools*
- miter
- moss, sphagnum
- newspaper
- nutcracker
- pan, clear glass
- paper:
  - black
  - in various colors
  - plain white
- paring knife
- peat
- pebbles
- pencil
- pictures, different types of roots
- pins, push
- plant stand*
- plants:
  - aquatic
  - variety of live plants
  - potassium phosphate
  - pottery, broken bits*
  - razor blades, single edged
  - rubber bands
  - sand
  - saucers or pans on which to set plants
  - saw dust
  - scalpel
  - scissors
  - seedlings
  - seeds for planting (corn, bean, etc.)
  - stands for plants
  - stone
  - string
  - terrarium*
  - test tube holder
  - test tubes, glass
  - tissue
  - toothpicks
  - trays - various sizes, shapes and materials
  - tweezers
  - vermiculite
  - water, distilled
  - watering can
  - *General supplies, usually not specified in the curriculum outline.

BIOLOGY FOR THE ELEMENTARY - SPECIMENS

algae
bark
bee
branches and/or stems showing:
  - fungi, bracket or shelf
  - twining stem
  - hooked climber stem
  - tendril
butterfly
cones, pine
egg, bird
ferns
flowers, variety of
fruits, variety of
insects
leaves, variety of
lichen
moss
mushrooms
nuts, different kinds
perishable items, as needed (fruits, vegetables, flowers, etc.)
plants, live, variety
roots, variety
seeds, variety
shells and other things from the sea
specimens, plants and animals, preserved
tree trunk, cross section
animal folders (e.g., herring gull, sea lion, chipmunk, bald eagle, Gila monster)
animal question cards
box with lid and 2 windows
cardboard tubes for rigid vertebral column and flexible vertebral column
cards:
botany experiments
care of plants in class
charts, 22"x28" (approximately 20)
heading cards
kingdom animalia materials
kingdom vegetalia materials
labels
nomenclature materials:

Note: Complete nomenclature materials are available for students at AMI elementary courses - or - pictures and labels are available from Nienhuis (0.195.00, 0.196.00, 0.197.00), definitions/descriptions need to be handmade.

zoology:
body functions
external parts of vertebrates
paper strips
picture cards and labels:
fish
amphibians
reptiles
birds
mammals
etc.
question cards
text for pictures
tree of life materials
volcano
Who am I? sets
Montessori elementary teachers are generalists whose task is to "sow the seeds of culture." This means that they are to expose children to as much information as possible about the cultures, inventions, and knowledge developed and acquired by human beings during the time human beings have been on earth. This includes math, geometry, language, history, geography, botany, zoology, geology and physics, as well as music and art. Ideally this is all done by the classroom teacher both within the confines of the classroom environment and in the "Going Out" program. "The elementary Children who wish to pursue technical skills in such things as music should enroll in special music classes. Ideally these special classes should be outside school hours.

Reality clashes with this ideal in two respects at Greenfield Montessori School, which is one of the Milwaukee Public Montessori School Magnets. First, the Milwaukee Public School System insists that Montessori specialty schools have art and physical education teachers. Therefore, at Greenfield School there is a half-time art teacher and a half-time physical education teacher. Over a two week time period, they each spend five full days at Greenfield School. The principal arranged for those two teachers to have three of those days in common.

Second, many families are unable to afford private lessons for their children or have no transportation available for the free group lessons for a variety of instruments offered on Saturdays by the Milwaukee Public Schools. For this reason, piano lessons and Suzuki violin lessons are offered during school hours. This results in interruptions of the children's work cycle. (See "Prepared Environment" for a discussion of the Work Cycle).

In order to protect the work cycle as much as possible, gym and art periods were made longer, and, whenever possible, they were scheduled back-to-back. The result is that elementary children still receive the required amount of gym and art time while having fewer interruptions of their work time. With this schedule, every elementary class has from 69 to 74 percent of their school days free from interruptions from art and gym.

The following list details the various requests and conditions taken into account when making the schedule for art and gym at Greenfield School.

1. The time for physical education is limited by the lunch period because the space used for gym has three functions - gym, auditorium and lunch room. Gym ends at 11:05 so that lunch tables may be set up. Five year olds and upper elementary students eat lunch at 11:30. Lower elementary students eat at 12:00. Lunch tables are folded up and the floor cleaned from 12:30 to 1:00. Gym resumes at 1:00.

2. The elementary teachers voted to have longer gym and art periods and to have those periods back-to-back whenever possible so there would be fewer (but longer) interruptions overall.

3. The preschool teachers wanted to have as much teaching time as possible with the children in the afternoons when only the five year olds were present, therefore, they requested that gym and art for their five year olds be in the mornings. (Three and four year olds, who are present during the mornings only, do not go to the gym or art teachers.) The preschool teachers also requested that their gym and art periods be at consistent times. This regularity of schedule aids the five year olds in their development of a sense of time and its passage on a weekly basis. Both of these requests were possible to fulfill. The five year olds have gym every Wednesday morning and art every Friday morning.

4. The art teacher requested that elementary art periods be relatively long so that completion of an art project could occur during one period. This was possible in the mornings but not always in the afternoons.

120
5. Both the gym and art teachers requested that all classes on a given morning or afternoon be for the same age level. It was possible to fulfill this request for all the mornings but not for all the afternoons.

6. The art teacher requested that there be art club time for special projects. Time was set aside for this in the overall time plan, but was not written into the daily schedules so the greatest possible flexibility could be maintained.

The time schedule shows a school day from 8:00 a.m. to 2:30 p.m. Children enter school as they get off the busses beginning at 7:45 a.m. School officially begins at 8:10 a.m. and ends at 2:40 p.m. Busses begin to load at 2:30 p.m. (see Illustration 1).

The gym schedule shows four 40 minute gym periods during the morning, 25 minutes for lunch set up, one hour for lunch, 30 minutes for clean up, and two 40 minute gym periods in the afternoon.

The art schedule shows two 85 minute art periods in the mornings, one 40 minute period in the afternoons, and one 45 or one 75 minute art period in the afternoon, depending on whether the art period is for the upper elementary whose lunch and recess is over at 12:15 or for the lower elementary whose lunch and recess is over at 12:45. Art club time for the lower elementary age is from 11:15 to 11:55 and for the upper elementary from 12:05 to 12:45. The latter overlaps 10 minutes with upper elementary recess.

The elementary gym and art schedule for February to the end of school in June is shown in Illustration 2. Upper elementary classes are designated by letters (A, B, C, D). Lower elementary classes have numbers (1, 2, 3, 4, 5). Since gym and art for the five preschool classes occur on a regular schedule, only the blocks of time they occupy have been indicated on the schedule. Each class receives a copy of this schedule and each class highlights its room number on the schedule. Many elementary rooms have one of the class “jobs” to keep track of the art and gym schedule. The child whose job it is announces at the end of the school day whether or not there is art or gym the next day and then announces it again in the morning. Under special conditions, the classroom teachers can trade art or gym periods if necessary.

With a schedule like this it is not possible to give everyone exactly the same amount of time. All elementary classes have 20 or 21 gym periods. The total number of minutes for art per class varies from 955 to 995, a difference of 40 minutes.

Obviously, this schedule is the result of cooperation and compromise on the part of all staff affected by this schedule. This was possible because all have a common goal of achieving the best possible conditions for the children at Greenfield School, and all accept the fact that there will be some variation in the amount of time scheduled for specialty subjects.

Jean K. Miller
**ILLUSTRATION 1**

### Elementary Gym Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
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### Elementary Art Schedule

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ILLUSTRATION 2

Elementary Gym Schedule

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>8:15 - 8:55</td>
<td>Gym</td>
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<td>9:00 - 9:40</td>
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<tr>
<td>9:45 - 10:25</td>
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<tr>
<td>10:25 - 11:05</td>
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<td>11:00 - 11:40</td>
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<td>11:45 - 12:25</td>
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Elementary Art Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>8:15 - 9:40</td>
<td>Art</td>
</tr>
<tr>
<td>9:45 - 11:15</td>
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</tr>
<tr>
<td>12:10 - 12:55</td>
<td>(upper elementary)</td>
</tr>
<tr>
<td>12:50 - 13:35</td>
<td>(lower elementary)</td>
</tr>
<tr>
<td>11:45 - 12:25</td>
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</tbody>
</table>

1.15 - 1.30 Lunch
1.30 - 2.10 Recess
2.20 - 3.00 Art Club
3.00 - 3.20 Lunch
3.20 - 4.00 Recess
4.00 - 4.20 Art Club
INTRODUCTION

In both the preschool and the elementary, Montessori music consists of seven related elements which include:

- Singing
- Listening (audition)
- Music theory and ear training
- Movement (eurythmics)
- Composition
- Production of music with instruments
- History and literature

The first area, singing, provides children with a repertoire of melodies which can be used in the production and analysis of music. Singing also provides opportunities for understanding scales, expressing feelings, and for understanding cultures in other parts of the world and eras in music history.

The audition or listening element relates to musical expression. The feeling expressed by a piece of music, such as a folk song, religious piece, or composition of a great composer, can be absorbed and recognized by children. This in turn leads to quiet listening and contemplation, to expression of the feeling through movement, to the expression of feeling in writing or in art, to the examining of qualities and characteristics of different musical instruments, or to the understanding of an era or a group of people through the music which they produced. This may lead to the study of style and musical form. The opportunities for expansion of the idea are limitless.

When language materials are provided in response to children's sensitive periods, writing comes before reading. This writing should reflect a creative expression of the children. In order to make this freedom of expression possible, mastery of a number of skills is necessary. The adult in the Montessori environment helps the children to acquire these necessary skills through peripheral teaching so that the children themselves can explode into true creativity.

The same is true for music. Music theory, ear training, and movement give children the necessary components of the system. Mastering these components provides children with a medium with which they may creatively express themselves and thereby continue to expand their self-creation. Whether with language or music, the creativity of the children is the driving force which sustains the experience which results in the mastery of a set of skills as an integral part of their own self-development.

Playing extemporaneously comes before recording one's own compositions on paper. Through the reading and performing of one's own compositions comes the understanding of the meaning of notation. Then follows the reading and playing of the works of other composers.

The production of music initially involves the Montessori bells and tone bars, later, a monochord, piano, and other percussion and melodic instruments such as the Orff instruments can be used. Exploration of these may lead to composition, concerts, accompaniment for dramatic productions, the scientific study of sound production, etc.

In relation to the entire Montessori program, music is an integral part of the integrated curriculum. It is related to mathematics, to language, to science, to history, etc., and, therefore, it emerges frequently in
the life of the class. In the study of music history, the children can do research on the development of music and express this research in a timeline. They can relate the instruments, composers, musical forms and literature to the country of origin, art, architecture, and politics of the times.

Additional information on Montessori music is available in the doctoral dissertation, *The Montessori Music Curriculum for Children up to Six Years of Age*, by Jean Karen Miller. Many of the activities it describes are appropriate for the elementary-age child. It may be obtained from University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106, or 18 Bedford Row, London, WC1R 4EJ, England. The order number is 8109598. In the United States, University Microfilms has an 800 telephone number:

*Jean K. Miller*
### MUSIC FOR THE PRESCHOOL
#### SIMPLE INVENTORY
#### MATERIALS FROM NIENHUIS

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>0.063.A0</td>
<td>bells</td>
</tr>
<tr>
<td>0.063.B0</td>
<td>2 keyboards</td>
</tr>
<tr>
<td>0.063.C0</td>
<td>1 wooden staff board</td>
</tr>
<tr>
<td>0.063.D0</td>
<td>2 wooden staff boards</td>
</tr>
<tr>
<td>0.063.E1</td>
<td>box with musical signs and notes</td>
</tr>
<tr>
<td>0.063.F0</td>
<td>bell striker (3)</td>
</tr>
<tr>
<td>0.063.G0</td>
<td>damper (3)</td>
</tr>
<tr>
<td>0.064.00</td>
<td>music strip boards</td>
</tr>
<tr>
<td>1.615.00</td>
<td>cabinet for bells</td>
</tr>
<tr>
<td>5.342.00</td>
<td>Children's Songs by Sanford Jones</td>
</tr>
<tr>
<td>5.344.00</td>
<td>Folk Songs by Sanford Jones</td>
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</tbody>
</table>
MUSIC FOR THE PRESCHOOL
OTHER MATERIALS TO BUY

pictures of composers
records - Sanford Jones
music history records - Martha Braedon Jones (NAMTA)
Maccheroni card material - Jean K. Miller
MUSIC FOR THE ELEMENTARY

All of the above materials are appropriate for the elementary class. In addition the following materials are needed:

0.100.A0 tone bars
0.100.A1 2 tone bar keyboards
0.100.A2 striker (5)
1.620.00 cabinet for tone bars
INTRODUCTION

In Montessori, adults aid children in the development of skills in order that they may creatively express themselves through various media. Children are shown techniques for using different kinds of art materials, but they are not told what they have to do with those materials. The activity that ensues is the child’s choice. For this reason, one would not expect to see art projects in a Montessori class where everyone is attempting to produce the same thing.

In addition to art expression for its own sake, art serves as an integrating factor for the rest of the curriculum. Children may utilize art for such things as geometrical drawings, geographical maps, mathematical graphing, or illustrations for history, botany, zoology, social studies, geology, geography, architecture, physics, etc. With a variety of techniques and media at their disposal, elementary-age children may choose appropriate forms of artistic expression for other areas of the curriculum.

A study of the historical development of artistic expression is made available within the history material. This begins at the preschool level and is developed first as an idea by itself; then, as the children mature, it is related to architecture, religion, music, politics, literature, inventions, exploration, etc. Later, it is again taken by itself and studied more deeply. Appreciation exercises are a natural part of the historical study.

In the preschool, art materials are kept on their own section of shelving. This shelving is usually near an easel. The art materials are available as a choice as are the rest of the materials in the classroom environment.

In the elementary, the art studio should be immediately adjacent to, or occupy a secluded section of the classroom environment. In it should be available the following techniques and media:

Crayons, chalk and other drawing media
Painting techniques
Clays and other modeling media
Textiles
Paper
Structuring
Printing techniques
Inks and dyes
Carving media

The above are detailed in Guidelines for Art Activities by Nell Weniger, available from Nienhuis Montessori USA (item number 5.673.00).

Jean K. Miller
<table>
<thead>
<tr>
<th>SUPPLIER</th>
<th>SERVICES</th>
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</thead>
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<tr>
<td><strong>ABC School Supply, Inc.</strong> 6500 Peachtree Ind. Blvd. Box 4750 Norcross, GA 30071</td>
<td>Oak book display rack, assorted supplies</td>
</tr>
<tr>
<td><strong>Albanesi Education Center</strong> Montessori Resource Dept. 4331 Allencrest Lane Dallas, TX 75244</td>
<td>Picture card reading materials, materials that compliment Montessori curriculum</td>
</tr>
<tr>
<td><strong>All West Pet Supply Co.</strong> 4200 Monroe St. Box 16565 Denver, CO 80216</td>
<td>Will accept POs from Public Schools</td>
</tr>
<tr>
<td><strong>American Montessori Society</strong> 150 Fifth Ave. New York, NY 10011</td>
<td>Headquarters for AMS training, school affiliation, Montessori supplies, books</td>
</tr>
<tr>
<td><strong>Apple Computer, Inc.</strong> 904 Caribbean Dr. Sunnyvale, CA 94086</td>
<td>Best price for Apple 2 Es and Macs</td>
</tr>
<tr>
<td><strong>Association Montessori International (AMI/USA)</strong> 170 W. Scholfield Rd. Rochester, NY 14617</td>
<td>Liaison group with AMI in Holland, center for Montessori publications, training and school affiliation information</td>
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<tr>
<td><strong>Baumbach</strong> 640 National Mountain View, CA 94043</td>
<td>Resource for small, colored plastic drawers</td>
</tr>
<tr>
<td><strong>Beckley Cardy</strong> Box 320 Bennett, CO 80112</td>
<td>Large assortment of school and office supplies</td>
</tr>
<tr>
<td><strong>Bobay's Appliances, Inc.</strong> 1130 W. Evans Denver, CO 80223</td>
<td>Source of two cubic foot refrigerator</td>
</tr>
<tr>
<td><strong>Butler Paper</strong> Box 5248 Denver, CO 80217</td>
<td>Assortment of paper supplies</td>
</tr>
<tr>
<td><strong>Cadillac Plastic &amp; Chemical Co.</strong> 4990 Olive St. Commerce City, CO 80022</td>
<td>Clear plastic vinyl, 54 in. wide for covering time lines, sewing folders, etc.</td>
</tr>
<tr>
<td><strong>Cards of Knowledge</strong> Box 653 Durham, CT 06422</td>
<td>Colorful, informative Safari cards</td>
</tr>
<tr>
<td><strong>Carolina Biological Supply Co.</strong> Box 7 Gladstone, OR 97027</td>
<td>Detailed scientific catalogue for live zoology and botany</td>
</tr>
<tr>
<td><strong>CARDS OF KNOWLEDGE</strong> Box 653 Durham, CT 06422</td>
<td></td>
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<tr>
<td><strong>Carolina Biological Supply Co.</strong> Box 7 Gladstone, OR 97027</td>
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<tr>
<td><strong>CAPECHEARLINSNATION</strong> Box 653 Durham, CT 06422</td>
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<td><strong>CAPECHEARLINSNATION</strong> Box 653 Durham, CT 06422</td>
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SUPPLIER DIRECTORY

Chaselle Arts & Crafts, Inc.
96
45 Gerwig Lane
Columbia, MD 21046

Colburn School Supply Co.
999 S. Jason
Denver, CO 80223

Cole
Box 1717
Pasadena, TX 77501

Comite Hispano Montessori
2127 S. 35th Ave.
Omaha, NE 68105

Community Playthings
Rifton, NY 12471

Craft Shop (Save the Children's)
3200 S. 76th Street
Box 33902
Philadelphia, PA 19142-0900

DLM Teaching Resources
Box 4500
One DLM Park
Allen, TX 75002

Education Systems
38395 Trifone Road
Sage, CA 92343

Follow Me
Box 916
Arvada, CO 80001

Great Books Foundation
40 East Huron Street
Chicago, IL 60611-2782

In-Print for Children
2113 Kenmore Ave.
Glenside, PA 19038

All colors of kraft rolls of bulletin board paper

Wide variety of school and office supplies, school furniture, art easel center

Resource for children's Spanish paperback books and records

Group to promote Montessori education and Spanish-speaking people in the USA, Central America and South America, Montessori classic literature in Spanish

Excellent wooden furniture, nice painting aprons

American Indian crafts and crafts from around the world

Assortment of reading, language, thinking materials

Spanish sandpaper alphabet, moveable alphabet, word-picture matching

Spanish language beginning books, tapes, picture card and reading label classified nomenclatures

Reading series, discussion leader guides

Variety of classified card materials printed on heavy card stock
Kaybee Montessori
4717 Chesapeake St. NW
Washington, DC 20016

H. Kamimoto String Instruments
198 Jackson
San Jose, CA 95112

Lillian Vernon
510 S. Fulton Ave.
Mount Vernon, NY 10550

Link the Language Company
1895 Dudley St.
Lakewood, CO 80215

Little Star Montessori
School Supply House
Star Route 38
Winthrop, WA 98862

Marisol Imports
Box 723
Boulder, CO 80306

Michael Olaf
5817 College Ave.
Oakland, CA 94618

Modern Curriculum Press
13900 Prospect Rd.
Cleveland, OH 44136

Montessori Creative Portfolio
Box 15132-L
Cincinnati, OH 45215

Montessori Printing Specialties
29 Ellenhall Square
Scarborough, Ontario
Canada M1W 3B1

Montessori Services
815 King Street
Santa Rosa, CA 95404

NAMTA (North American Montessori Teachers' Association)
2859 Scarborough Rd.
Cleveland Heights, OH 44118

Imported Montessori materials from Italy and India
Smallest violins for Suzuki
Useful commercial seasonal catalog of odds and ends
“Big” book resource
Moveable continental drift globe, nice child’s story of Maria Montessori’s life
Mexican imports
Assortment of books, tapes, practical life and science supplies for young children
History and science books for elementary
Many beautifully drawn picture card reading materials — primary and elementary
Excellent quality paper and paperbooks for various stages of penmanship and math
Great assortment of materials to support the Montessori primary and lower elementary curriculum
Montessori workshops, journals, media
SUPPLIER DIRECTORY

Nasco West, Inc.
1524 Princeton Ave.
Box 3837
Modesto, CA 95352

Nature Company
Box 2310
Berkeley, CA 94702

National Geographic
Educational Service
Dept. 81
Washington, DC 20036

Nienhuis Montessori USA
320 Pioneer Way
Mountain View, CA 94041

Par Imports
Isabell Thompson
3355 S. Akron St.
Denver, CO 80231

Parent Child Press
Box 767
Altoona, PA 16603

Scholastic, Inc.
2931 E. McCarty
Jefferson City, MO 65102

School Specialty Supply, Inc.
10844 Clarkson St.
Denver, CO 80233

Shorewood Fine Art Reproductions, Inc.
27 Glen Road
Sandy Hook, CT 06482

Smith & Hawken
25 Corte Madera
Mill Valley, CA 94941

Suzuki Corporation
Box 261030
San Diego, CA 92126

UNICEF
475 Oberlin Ave. S.
Lakewood, NJ 08701

Metric scales and weights,
materials for botany, zoology,
geography, science
experiments

Seasonal catalog of beautiful
nature posters, books,
videos, tapes

Excellent economical
collections of “Books for
Young Explorers,” great
globes, maps, books

Recognized manufacturer of
AMI-approved Montessori
apparatus

Beautiful wall hangings and
crafts from Peru

Montessori books, art
appreciation, postcard
materials

More “Big” books, also
in Spanish

Heavy duty paper cutters,
30-drawer storage cabinets

Complete selection of art
print reproductions and
support biographical
materials

Children-sized gardening
tools, beautiful pots, seeds

Orff music instruments,
rhythm band instruments,
Suzuki violins

Notecards, games, atlas-
world views
United Nations Gift Shop  
G A 45 A  
New York, NY 10017

Waterwheel Press  
203 - 42nd St.  
Des Moines, IA 50312

Waterwheel Press  
Box 4  
University Park, IA 52505

Wm C. Brown Publishers  
Box 539  
2460 Kerper Blvd.  
Dubuque, IA 52004

Woodlite  
1920 Donmaur Dr.  
Crest Hill, IL 60425

Wright Group  
10949 Technology Place  
San Diego, CA 92127

Silk flags and colored postcards of member nations

Science, nature posters, cultural studies prints

Student atlases, president prints, wives of presidents prints, history booklets

Excellent books

Large parts of animal and plant card material, large, bright, knobbed puzzle

Elementary level reading books on interesting topics like “Search for the Past” and “The Changing Earth”
A special chapter providing an insightful view of Montessori language arts in light of current trends, including bilingual education.
"Whole language" or "holistic" approaches to teaching reading that became popular in the 1980s are very similar to Montessori's once controversial integrated reading program.

Public schools are looking at Montessori as an alternative education model but need to understand its scope and sequence of curriculum to implement it properly.

Integrating Montessori with other methods at variance with the Montessori curriculum can destroy the Montessori curriculum.

There are critical differences in sequence and activity between Montessori, whole language programs, and the isolated skill approach.

Special Montessori apparatus, teacher-prepared exercises, and selected literature and reference books are needed to fully implement the Montessori language program.

INTRODUCTION

Of all the areas in the Montessori curriculum, the teaching of reading and the language arts has been the most debated and least understood. Until the 1980s and the recent popularity of the "whole language" or "holistic" approaches to teaching reading, Montessorians had a difficult time convincing traditional educators that the Montessori approach to helping children learn to read through exploration of a prepared environment was a viable and successful approach. Her emphasis was always on meaning first, although many of her interpreters focused mainly on her approach of teaching symbol-sound relationships. Yet as early as 1917 Montessori wrote, "Reading is an affair of the intelligence and interpretation (comprehension) alone constitutes true reading" (p. 170).

When Montessori was reintroduced in the United States in the 1960s, direct phonics instruction methods were being touted as the best way to teach reading in traditional education. This isolated skills approach to teaching reading became firmly entrenched and basal readers, used in 90 percent of the classrooms in the United States, were revised to reflect this intensive and isolated phonics approach. The Montessori approach, on the other hand, was and continues to be an integrated language arts approach in which speaking, reading, writing, listening, and grammar permeate the curriculum and are taught in tandem. In fact, using the words "teach" and "taught" are somewhat misleading since Montessori originally had no intention of developing pedagogical methods to do either. She wanted to provide an environment in which children could explore things of intense interest to them. She called these items "keys" or "aids to life." Therefore, this part of the curriculum is labeled "Language" rather than separating reading and English, to indicate a wholeness, a facet of the child's development.

Dr. Mary Maher Boehnlein is Chairman of the Specialized Instructional Programs at Cleveland State University and is Director of Research for the North American Montessori Teachers' Association. She was recently selected for a teacher leader's post with the Reading Recovery programs of Ohio State University.
The teaching of reading never is considered as separate and distinct from other areas of the language arts in the Montessori curriculum. This view of the language arts, that it must be presented to the child as an integrated whole, now has become acceptable and is called whole language and literature-based reading. There are differences between the Montessori approach to language and the current whole language approach, however, which are elucidated later in this chapter.

Public school personnel wishing to implement the Montessori curriculum need to know the scope and sequence of the curriculum, the materials needed to implement it, and most importantly, the instructional theory in which it is based. Without this understanding, there may be a tendency to superimpose or overlay a method of instruction which is philosophically and psychologically at variance with the Montessori approach. An example is the use of a basal reader system as the main reading approach and using Montessori materials to supplement or for reinforcement activities. This approach can destroy a Montessori curriculum which depends upon the Montessori language component as a unifying thread throughout the preschool and elementary years. All areas of the Montessori curriculum are dependent and interdependent on language skills and language appreciation learned at the developmentally appropriate age and in correlation with the rest of the curriculum. Geometry, mathematics, science, social studies, music, art, and movement are interrelated with the child's understanding and skill in reading, grammar, writing, and history of language. To impose a reading system foreign to the Montessori approach is to weaken the entire elementary curriculum.

This chapter will describe the Montessori language approach and its similarities to and differences from the whole language and isolated skills approaches currently used in United States' schools. Also described are the practical aspects of materials acquisition and cost of implementing a Montessori language curriculum in a public school setting.

**MONTESSORI LANGUAGE THEORY**

According to Stephenson (1986), Montessori stressed that language must not be related to learning to read and write but related to the development of the child—the child must be given the opportunity to develop language. Children are born with the potentiality for learning a language and for absorbing the particular language or languages spoken around them. The child, according to Montessori, has to acquire language to be a full member of the society. What Montessori called potential is similar to what Noam Chomsky (1968) called the Language Acquisition Device (LAD). LAD conveys the idea that certain tendencies are inherited by all children which cause them to begin to use words in essentially the same manner. Chomsky's research on children from all over the world concluded that all children seemed to develop grammar that was similar in sequence and content. While research carried out since Chomsky's has not clearly substantiated his claim, there is mounting evidence to substantiate the difference in the grammar of beginning speakers and that of children who have acquired the rules of language usage.

Montessori's observations of language development also are consistent with results of recent language development research and convey knowledge needed by adults to provide an environment that is language stimulating. Linguists agree that from birth to age five the child constructs a working language. Of all Montessori's sensitive periods, the times when a child is most receptive to specific types of learning and during which the child can learn effortlessly, language is the longest during the first plane of development, ages birth through six. Vygotsky, the Russian linguist, called the preschooler a linguistic genius. By age three the child has already made the discovery of the sounds of the group language, the vocabulary, the grammar, syntax, sentence structure, and uses language for cognitive processing. While Piaget refers to...
this stage of cognitive development as *preoperational*. Ripple, Biehler, and Jaquish (1982) point out that the two to five year old is capable of forming and modifying schemes at an impressive rate.

Vocabulary acquisition is an example of the forming and modifying of cognitive schematic structures. With each new word a scheme is learned that reflects awareness of a particular idea or variation of a basic idea. According to Carey (1977), the vocabulary of a six year old ranges between 8,000 and 14,000 words. That is an impressive amount of cognitive activity in the first five years of life. More impressive, according to Piaget, is that preschoolers are unable to decenter and therefore must concentrate on one quality at a time yet they have modified their schemata of language to include that fantastic number of words and their meanings.

Montessori knew the child was fascinated with words at this young age and included many opportunities in the preschool curriculum to learn new words. Her method included concrete materials and visual aids to enhance the child’s understanding of the meanings of the words. The basic material she developed was nomenclature cards with words and pictures. In working with the nomenclature materials, the child also begins to categorize and organize the new vocabulary into schemata.

THE IMPORTANCE OF MONTESSORI PRESCHOOL EXPERIENCE TO LANGUAGE LEARNING

Montessori observed that the six year old with the Montessori preschool (Casa) experience already possessed the rudiments of written language. Without this Casa experience, noted Grazzini (1981), the task of learning written language will be more difficult but certainly not impossible. He further explained that the needs of the six year old are different from the Casa child. The preschooler doesn’t really know he is going to school but the six year old knows it. This may in itself make him fearful. Also, by age six, the sensitive period for language is over and some of the concrete materials used in the Casa may not interest the child enough to ensure the necessary repetition of activity. “The child who comes without this preceding Montessori experience is a child whom we could say is handicapped because he is deprived. This difference, this passage from deprivation to wealth, cannot be filled in with the same procedures used in the Casa because the sensitive period is past and this passage then for a child of six has to be filled in with remedial methods” (Grazzini, 1984 Special aspects of teaching are necessary when a child has not acquired learning when it was originally presented. It implies a missed opportunity to learn during the most sensitive period.

The material or concepts must be presented in a more enticing as well as in an instructionally sound manner because the child must make a conscious effort to learn, unlike during the sensitive period when learning is almost unconscious and absorbed effortlessly.

THE MONTESSORI PRESCHOOL LANGUAGE CURRICULUM

In the Montessori curriculum for the child age three to six there is stress on vocabulary enrichment through words connected with the sensorial materials and their attributes, through classified nomenclature relating to plant and animal life, and all other areas of the curriculum. Integrated with this are the early stages of bringing grammar and syntax to the child’s consciousness through the study of how words function in a sentence and how simple sentences can be analyzed. The child hears poetry, stories, rhymes, and conversation. Everything in the classroom has a name which the child eventually learns to read, and demonstrates comprehension of by placing the labels on classroom objects. A unique characteristic of a Montessori preschool is the atmosphere which encourages and provides constant opportunity for the children to use oral language and to experience an adult model of responsible and humanly sensitive use of language.

Through work with the sensorial materials the child’s muscles are prepared for the act of handwriting. Use of the knobbed cylinders and the metal insets allows the child to develop muscles in the three fingers used in the prehensile grasp of the writing instrument. The work with the pink tower helps the child acquire a firmness of wrist, particularly placing the lightest and smallest cube. When using the plane geometric insets, the child follows the outline with two of the fingers needed for writing and absorbs a muscular
memory of basic shapes. Placing the insets on the outline cards calls for recognition of the shape. The practical life activity of washing the hands finger by finger increases the blood circulation which increases sensitivity to tactile material as well as calls the child’s attention to the hand. Lightness of touch is developed through the use of the sandpaper touch boards, and with the two finger tracing of the sandpaper letters and numerals. Even the sound cylinders with their particular shape enhance the flexibility of the wrist. “If the child has had an enriched Casa experience, he has prehension, hands that are firm and stable, lightness of touch, admirable and loose; a hand that is ready to write” (Grazzini, 1984).

Finally, in the Casa, stated Grazzini (1981), “there is also the development of a love for language in all aspects; the desire to speak and listen, the desire to communicate, and the technical or mechanical skills given by the sensorial material.” Love of language is encouraged by presenting the story of the alphabet at the beginning of the elementary level. The child is given the story of the alphabet not only for information but to appreciate this great gift.

In the Casa children play sound games which help them identify the sounds of their language. When a child can differentiate sounds, the symbols for the sounds are introduced through tracing sandpaper letters. The letters are introduced through their formation or shape and their sound. Thus handwriting is integrated with the learning of the symbol and its sound. Since the child at age four is at a pre-operational stage, letters and sounds are presented in isolation. This approach of Montessori certainly seems to match the child’s developmental needs according to Piagetian theory that the child can only concentrate on one quality at a time. The sound of the letter becomes ingrained through the simultaneous vocalization of the sound with the muscular tracing of the shape. The highest frequency sounds are presented in this manner. The sandpaper letters are never used to blend sounds into words as this would imply a synthetic approach to reading. Rather, Montessori proposes an analytic approach to reading just as the whole language proponents advocate today. Building on the analysis of sounds in words used in the sound games, the child is led to analyze or hear sounds in words through use of the movable alphabet. The sequence of learning is hearing sounds, then connecting symbol and sound, and finally, analysis of sound within words through use of the movable alphabet to compose the child’s own language. Later in reading the child will analyze and synthesize simultaneously as do all good readers. These early experiences help the child acquire the idea that reading requires both analysis and synthesis and is always aimed at obtaining meaning from print.

The preschool curriculum includes many activities and materials to round out the reading and writing experiences of the children. There are beginning experiences in spelling, use of the dictionary, punctuation, capitalization, and the learning of high frequency non-phonetically regular words known as puzzle words. Beginning word analysis of suffixes and prefixes, the study of compound words, and reading in all other subject areas are also included, particularly through the use of classified nomenclature card sets.

According to Miller (1989):

Accommodation of different learning styles comes with the extensive section of the language curriculum called classified nomenclature. This consists of many sets of pictures and word cards, each set constructed around a central theme (e.g., animals, objects in the kitchen, transportation on land, sea, air, tools, clothing, etc). Children are taught the names of the objects pictured, if they don’t already know them, by the teacher or by other children in the classroom. Then they can do an exercise of matching the label to the picture. Children who have a tendency towards an auditory approach to reading such as sounding out words can usually sound out the first letter and intuited the rest of the word by using the picture as a clue. Children who are more visual learners may focus on
the configuration of the word. The sets of classified nomenclature have a built in control of error either a
separate picture with its label attached, or an identical label on the back of the original picture. The movement
involved with the matching of the pictures is also helpful to the kinesthetic learner. Additionally, the use of a
central theme for each set of nomenclature charts helps children build their ability to relate objects with an idea
or concept and to categorize and classify.

In the Casa, by age six the majority of children read simple sentences and some are able to read short
books with full comprehension. They also can write sentences and short stories and make use of invented
spelling for more lengthy words.

DIFFERENCES BETWEEN MONTESSORI AND
OTHER BEGINNING READING APPROACHES

There are critical differences in sequence and activity of the Montessori language curriculum from the
whole language and the isolated skills approach because of the age and cognitive stage of the child, the
philosophy of learning, and psychology of the child. Whole language proponents believe that just as
language is learned through actually using it rather than through practicing separate parts and later
synthesizing them, the child will learn to read and write quite naturally when these processes are learned
incidentally and out of the need to communicate. Altwerger, Edelsky, and Flores (1987) describe whole
language as a set of beliefs, a perspective rather than a method. Like Montessorians, whole language
proponents state that belief shapes teaching practice. According to Altwerger et al., whole language is not a
phonics approach, a whole word approach, a revitalized language experience approach, or another type of
open education. The language does not make use of exercises in reading and writing but rather relies
heavily on literature, or other environmental print to naturally stimulate and motivate the child to want to
learn to read and write by active engagement. This is similar to the Montessori belief that true reading is for
meaning and the children will learn to read by reading what they have written or what they want to read.
Montessori believed that once provided the visual key, the alphabet, the child would write and reading would
follow quite naturally.

However, for the whole language proponents, there would be no isolated introduction of the sounds of
the language nor the symbols. Nor would there be any contrived language materials or activities. Symbols
and sounds would be learned from enriched experiences with print and by the adult scribing for the child. As
the child sees the spoken word written by the adult and then attempts to read it, the child will come to
recognize symbol-sound relationships. Montessori does have some prescribed reading and writing activities
but considers them only keys to get the child started. This appears to be the major difference between the
two approaches.

Both the whole language and the Montessori approaches differ from the isolated skills approach quite
significantly in both philosophy and child psychology. The isolated skills approach is allied with the
behaviorist approach to learning which espouses a view that learning is done in bits and pieces and later
synthesized. This approach to reading is characterized by isolated skill drills, elaborate management and
evaluation plans, and use of large amounts of work sheet type exercises. Less emphasis is placed on reading
quality literature or material with a sustained story line, and more emphasis is placed on reading short
segments of text often lacking the richness and complexities of natural language. The child is viewed as
dependent. Reading is something taught to the child rather than learned by the child. There is little true
integration of reading and composition and the other language arts, all are studied in isolation.

Proponents of this approach cite learning theory on overlearning and time on task to support their
approach. The proponents are behaviorists who view learning as a series of reactions of the learner to
positive or negative feedback from others. The child is expected to master many bits and pieces of
information and through carefully sequenced steps eventually will synthesize the information into a
meaningful whole. Believers in this approach do not view the learner as proactive.

Children in the behavioral approach to learning tend to do well on standardized reading tests because
the exercises they practice are similar to standardized test items - isolated bits of information. Studies of
independent reading, interest, and motivation to read for pleasure or information of children who learn to read in this approach, indicate little enthusiasm for reading in any form. Whole language and Montessori studies, on the other hand, describe children who read for both for pleasure and information and who produce much composition work.

THE MONTESSORI ELEMENTARY LANGUAGE CURRICULUM

Given the above explanations of the way in which beginning reading is approached in the Montessori curriculum, public schools wishing to adopt the approach must give careful consideration to the starting age of the children, the admission of children beyond kindergarten level, and the autonomy given the Montessori teacher to implement a Montessori curriculum rather than a hybrid curriculum. As stated above, the Casa program was designed to be developmentally appropriate for the three- to six-year-old child, it is not appropriate for the first through third grade child and will not succeed with children of that age.

Public school administrators also should be aware that the elementary Montessori teacher may not have full training in the preschool methods and therefore should not be asked to implement a preschool program at the elementary level. The elementary curriculum demands a solid base in written communication if the child is to successfully benefit from it. Without this solid base, the elementary teacher must employ a special approach to beginning reading; however, the child's access to the richness of the rest of the curriculum is limited until reading strategies are acquired. Because of this, it is strongly recommended that public schools not begin Montessori programs that do not at least admit four year olds and preferably three year olds.

Provided the child has experienced a rich Casa program, the elementary language curriculum consists of the following areas of study:

- History of language
- Parts of speech
- Sentence analysis
- Written composition
- Reading
- Literature study
- Oral language
- Creative drama

Basic to all the above is the art of listening and the Casa experience of the use of language to help in the process of adaptation to the life of the family and the small society of the classroom. Stephenson (1986) stated that one major aim at the elementary level is to build on the Casa experience and then to encourage the use of language in the process of reasoned thought. Elementary children need a command of reasoned language in order to communicate to society, and to understand their part in it because the elementary child is now moving into the larger society beyond the family and classroom. For this reason silent work and silence are not requirements of a Montessori class. Children are not asked to whisper but rather to learn to control their voices so as not to interfere with others. Only through oral interaction will children extend their vocabulary and become self-assured when speaking to others.

Within the Montessori elementary curriculum there is emphasis on discussion, free speech bounded only by the rules of social convention, and on oral reports given on various individual and group projects. Children are helped to make these reports interesting to others, to teach others, and to expand the work of the class. According to Stephenson, the oral report helps the child to appreciate and understand responsibility to society. The reports are the result of seriously planned individual and small group research.

Other areas of oral language in the elementary curriculum are prepared speeches around a self-selected topic, debates, particularly at the nine to twelve level, the recitation and reading of poetry, preparing and presenting dialogues such as between two historical characters, dramatic presentations which involve interpretive reading, and finally the writing and producing of plays.
WRITTEN COMPOSITION AND GRAMMAR

The Montessori curriculum, with its emphasis on the integration of the social sciences and the humanities, provides rich opportunities for both oral and written language. Children read, write, and speak about their study in all these areas. The means to do this successfully are ensured by a continuous study of language through reading, word analysis called word study by Montessorians, and the study of grammar. This interrelated psycholinguistic approach to the study of language is a unique contribution of Montessori that has gone quite unrecognized by traditional educators.

Montessori devoted much research to the development and testing of grammar materials that helped the child integrate the study of grammar with reading comprehension. In *Psychogrammar* Montessori said, “The study of the function of words is a way to penetrate language which already exists in the child and it is a means for perfecting and fixing the shape of his language. Therefore, it is extremely useful to the child who is organizing his language at that time” (Grazzini, 1982).

At the elementary level grammar is studied as an aid to reading comprehension. Therefore, grammar is preparation for reading and the child need not be a proficient reader to study grammar. The study of grammar also will help children express themselves better in writing. The goal of grammar study is to aid reading comprehension and skill in writing. Montessori said that the study of grammar aids the reading process but in the end it increases the understanding (Grazzini, 1982).

Unlike traditional grammar exercises, the Montessori materials are highly motivating and interesting exploratory exercises that allow the child to *discover* what he or she actually performs in speaking, writing, and reading.

GRAMMAR STUDY

The study of grammar begins in the preschool with the function of words or in the traditional curriculum, parts of speech, which are presented very dramatically with concrete materials. Later in the elementary, children are given stories of the etymology of the names of the parts of speech. In addition, Montessori invented symbols for the parts of speech, each with its own meaning and story. Throughout this study, which continues into the early elementary years, words are always studied within the context of meaningful sentences. Syntax, the order of words in a sentence, is learned by using cut-up sentences and making permutations to discover which order makes sensible sentences.

A very important elementary Montessori material consists of grammar boxes. Grammar boxes isolate and focus attention on the parts of speech and their qualities. They lead the child to make his or her own abstractions concerning the function of the part of speech. Follow-up activities include exploration of the etymology of the words in sentences, categorization of words by part of speech in sentences, word study of the root form of the words, and later tracing the history of changes in the meaning of words over time.

The grammar boxes are considered keys and do not teach the whole of grammar. Later, at ages nine to twelve, the child will use traditional grammar books and study what linguists have said about the parts of speech. The study at this age becomes more technical and will be better understood because of the solid foundation given by the work with the grammar boxes. In addition, the child discovers that there are many more cases than the grammar boxes presented.

Grammar box work, although isolating parts of speech, uses complete sentences. The child always goes from a whole sentence to the study of a part of the sentence. Through this analysis the child gains greater comprehension of what is read and learns quite naturally how choice of words helps one write clearly and effectively. The command cards that accompany the boxes provide opportunity for the child not only to learn the syntax of the language but also provide practice in reading comprehension of passages of more than one sentence in length. The purpose of the commands, according to Montessori, is to help clarify the meanings of words in context, the context of the total meaningful sentence. Often the commands are done cooperatively by groups of children, and thus provide opportunity for discussion and resolution of meaning and interpretation.
Sentence Analysis

At the same time the child is exploring the functions of words, another material, sentence analysis, is introduced and used from preschool through the elementary grades. This material helps the child learn the parts of the sentences such as subject, predicate, direct object, indirect object, clauses, and the types of sentences such as simple, compound, complex, and compound-complex. The material, consisting of several parts, is used throughout the elementary years to lead the child deeper and deeper into the understanding of the relationship of words to parts of sentences, and finally to in-depth study of the noun and its attributes and the verb and all its tenses and moods.

Written Communication and Creative Dramatics

Concurrently to the children's study of language through reading and grammar, the total Montessori curriculum requires independent research and sharing of that knowledge and information through written composition, oral reporting, or through dramatic presentations. Since the children are allowed to choose areas of exploration, they usually are eager to seek information and to learn how to communicate it to their peers. The teacher serves as a guide and does not impose a writing curriculum in any preconceived sequence. Rather, written work is guided individually by the teacher with help given on any aspect of writing as the child needs it. Children learn the process of writing quite naturally in a Montessori classroom, and with multi-age groupings children have other competent writers older than themselves who can help them. They also learn by helping the younger children. Both hand and computer generated written work is produced in Montessori classrooms.

The cultural life in a Montessori classroom provides great impetus to creative expression. Music, art, and drama are integrated into the regular life in the classroom and are naturally interrelated with all other areas of the curriculum. They are also experienced, as children attend community functions as a group. In the classroom they experience quality literature and poetry, read to them by the teacher and read by themselves. Teachers also tell stories and encourage celebrations and the learning of cultural and historical aspects of communication. It is no wonder that they ask to write their own plays or musical productions. Heathcote, the well known dramatics educator from Great Britain, said that

Dramatizing makes it possible to isolate an event or to compare one event with another, to look at events that have happened to other people in other places and times, perhaps, or to look at one's own experience after the event, within the safety of knowing that just at this moment it is not really happening (Kahn, RN).

The use of creative dramatics allows for creative expression as well as for solidifying knowledge and feelings learned through the Montessori curriculum experiences. Creative dramatics, Jones (1984) stated, helps in the development of a healthy imagination that serves to integrate the personality.

In a Montessori classroom, children write their own plays and often write their own music for musical productions. These productions, Jones noted, "become the focus for integrating other kinds of activities" such as researching characters and the period of history, using the grammar symbols on the portions of the text they write, and learning voice projection, articulation, and expression. Finally, children learn poise and the value of group cooperative effort. Through creative drama, written and produced by the children, all the language arts skills are practiced in an integrated manner.

Reading

Reading in a Montessori elementary classroom is done through trade books, informational materials, and classic literature such as the Junior Great Books program, rather than through a basal reader program. Children learn to read as they read to learn. Children set their own purposes for reading when they decide to do an oral or written report.

There is no need to purchase a basal reader series and no advantage to having them in the elementary classroom. Any reading skill to be learned can be learned through the use of trade books and through
content area reading materials. Furthermore, these skills will be learned easily and with more interest if they are needed by the child to understand material for self-selected research projects or through self-selected quality children's literature.

Public schools which require the Montessori classrooms to teach reading through the imposition of the basal reader program lose the advantages of the holistic language approach as well as impose a teaching time restraint which interferes with the implementation of the Montessori curriculum. Teachers and pupils spend time in artificially imposed instructional sequences and less time reading sustained text with high motivation. Far fewer individual and group research reports and less creative writing are accomplished because of the unnecessary group reading instruction. In addition, this imposed pace of the basal instruction actually slows the acquisition of reading strategies because it is not individualized according to the child's needs.

Lynch (1987) states:

Because the basal stories are written to incorporate a specific skill, not to engage a child's heart and mind, they are not very interesting. These short stories do not allow children to experience the purpose and pleasure of real reading. Books, interesting books, are often available to our children only as rewards, after they have finished their work. And as a result fluent readers practice reading and become more fluent, while less fluent readers are deprived of the practice they so need. They are given more lessons, more workbook pages, and more tests. They experience more loss of self-esteem and come to look upon reading as something to be avoided (p. viii).

Reading in the Montessori elementary classroom is taught mainly through a print enriched environment by a trained Montessori teacher who understands the reading and writing processes. The Great Lessons and Key Lessons given in other areas of the curriculum provide inspiration and stimulate interest in learning through reading. There is a wealth of resource material at various reading levels provided in the classroom as well as in the school library. If the child needs more than this, going out into the community environment to a local library is arranged. At the elementary level the child learns to read by reading to learn in interesting material rather than in basal reader material.

The classroom and school library have single and multiple copies of children's literature books (trade books) and all children read during a self-selected time or during group sustained silent reading time. The study of literary style and content is an important part of the reading work done by the child and often is integrated with the above described grammar study. An individualized, literature based program has been the hallmark of the Montessori elementary curriculum for over fifty years.

Some teachers add the Junior Great Books to encourage the art of discussion and to correlate with the children's study of history and geography. In connection with the Junior Great Books teachers and students learn the art of the seminar. "The seminar discussion is a conversation conducted in a manner conducive to shared insight. The aim of the seminar is to bring out ideas - ideas in the student" (Kahn, 1985). Usually the seminar is done after several children have read a book, either fiction or non-fiction. Through skillful discussion leading, the teacher and the group deal with literal to evaluative thinking, from factual to evaluative questions.

The principles of the seminar give the Montessori teacher an opportunity to be an explorer of the essential Montessori ideas. For implicit in the curriculum itself is a great humanist tradition presenting the unfolding development of life and history. The curriculum has a logic which appeals to the inner logic of the child. It is the natural tendency of the child towards truth and the capacity of the child's mind to comprehend the truth that gives Montessori elementary education its true impetus for which the seminar is a vital aid (Kahn, p. 18).

Reading, then, in the Montessori elementary curriculum is another means by which the child explores the prepared environment of the classroom and the wider society outside the classroom. All the skills identified by reading experts are practiced and learned by children in Montessori classrooms. The difference is that the skills are learned in a more natural and dynamic way because the child needs to learn them to continue his or her work. Another difference is that the skills are learned as they are needed rather than imposed by some artificial time table. Research of reading skill development in Montessori classrooms corroborates that children do learn to read well in this approach (Boehnlein, 1988).
MATERIALS NEEDED

Materials needed to fully implement the Montessori language curriculum consist of the standard Montessori apparatus (core materials) that can be purchased through authorized Montessori materials manufacturers (see lists in this book), teacher prepared exercises and consumable items, and literature and reference books purchased from traditional sources. While initial costs of fully equipping a classroom may seem high, over time the Montessori language curriculum is less expensive than a traditional curriculum which depends upon basal reader programs and all the workbooks and supplementary materials such as tests, spelling workbooks, handwriting books, English books, etc. that are bought for each child. In contrast, only a few duplicates of Montessori materials are provided in classrooms and the material is of such high quality that it lasts for years. The usual consumable supplies such as handwriting paper, notebooks to keep journals, writing and illustrating supplies are needed annually. In addition, appropriate containers to hold the consumable materials on the shelves, adequate reference materials, a classroom library of informational and children’s literature are initial investments and on-going additions and replacements to be planned for in the budget.

EVALUATION

Evaluation of children’s reading and writing progress is done in a variety of ways but always based on individual student performance. Teachers use daily anecdotal records, children’s own records of their work, and the child’s use of language and reading in real situations. While standardized and competency-based tests are used to evaluate children’s progress, there is a danger in the exclusive use of these tests. As Watson and Crowley (1988) point out, standardized tests, basal reader tests, and competency tests are designed to measure a skills model of reading by testing isolated skills outside of their actual use. Language learning is too complex to reduce to a single numerical score, and a test score provides no information that is useful to teachers.

The Montessori teacher must know the district expectations and match them to the Montessori curriculum. While the goals of both the district and the Montessori curriculum are similar, the Montessori curriculum timetable for achieving these goals will vary from standard practice for very sound psychological and psycholinguistic reasons. Because of the three year teaching cycle, Montessori teachers will be evaluating with long-term goals in mind. They will be more concerned with evaluating children’s use of thinking and problem solving strategies rather than merely evaluating hundreds of subskills. For example, a district might require that first graders be able to identify short vowels and long vowels at the end of first grade. Montessorians like whole language teachers, however, would not be concerned about this as a skill but rather would consider it a discovery that comes as the child explores spelling and grammar of the language. Furthermore, although the child was presented with the spelling patterns that relate to these vowel sound difference in the Montessori preschool, he or she would never be asked to memorize a phonics rule since this is not necessary to learn to read. This difference in what is considered evidence of normal progress in reading and writing needs to be recognized. The usual tests reflect the typical public school curriculum and do not reflect or measure the richness and depth of the Montessori curriculum. Evaluation instruments and methods should reflect the expectancies of the implemented curriculum rather than dictating the curriculum.

Montessori teachers, however, must help children learn to take standardized tests since this currently is required by our culture. Children need to learn the language of the test, and examples of such language in sample test format can prepare children for the test experience.

Evaluation of the Montessori language program must be done on more than pencil and paper tests. Children’s portfolios should be kept from year to year with selected evidence of continuing progress of the child. This will be far more revealing than a test score. Administrators and teachers need to delineate and agree on what will be considered valid evidence of children’s progress in language learning.
USEFUL SOURCES OF PROFESSIONAL AND CHILDREN'S BOOKS

American Library Association
50 East Huron Street
Chicago, Illinois 60611

Boynton/Cook Publishers, Inc.
P.O. Box 890
52 Upper Montclair Plaza
Upper Montclair, New Jersey 07043

Bulletin of the Center for
Children's Books
University of Chicago Press
Journals Division
P.O. Box 3705
Chicago, Illinois 60637

Children's Book Council
678 Irving Place
New York, New York 10003

Council on Interracial Books for Children
Racism/Sexism Resource Center
1841 Broadway
New York, New York 10023-748

Dell Publishing Company
1 Dag Hammarskjold Plaza
245 E. 47th Street
New York, New York 10017
(Banbury Delta, Laurel Leaf, Standish, & Yearling Books)

Dial Books for Young Readers
E. P. Dutton Publishing Co.
2 Park Avenue
New York, New York 10016
(Pied Piper books)

Dormac, Inc.
P.O. Box 270459
San Diego, California 92123-0983
(Reading Corner books)

Good Apple
Box 299
Carthage, Illinois 62321

Great Books Foundation
40 East Huron Street
Chicago, Illinois 60611

Harper & Row
10 E. 53rd St.
New York, New York 10022
(Trophy books)

Heinemann Educational Books, Inc.
70 Court Street
Portsmouth, New Hampshire 03801

Holt, Rinehart & Winston
383 Madison Avenue
New York, New York 10017
(Owl books)

The Horn Book
Park Square Building
31 St. James Square
Boston, Massachusetts 02116

International Reading Association
800 Barksdale Road
P.O. Box 8139
Newark, Delaware 19711

LINK
The Language Company
1895 Dudley Street
Lakewood, Colorado 80215

Longman, Inc.
95 Church Street
White Plains, New York 10604
(Breakthrough books)

National Council of Teachers of English
1111 Kenyon Road
Urban, Illinois 61801

Penguin
40 W. 23rd St.
New York, New York 10010
(Puffin Books)

Reading Development Resources Ltd.
P.O. Box 36531
New York, New York 10085

Richard C. Owen, Publisher
P.O. Box 813
New York, New York 10085

Rigby Education
454 Virginia Street
Crystal Lake, Illinois 60014
REFERENCES


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BILINGUAL EDUCATION

THE MONTESSORI ENVIRONMENT AS A SETTING FOR BILINGUAL EDUCATION

by Alice M. Renton

• Bilingual education is of value to both language minority and language majority children.
• The “dual language process” is enhanced by the natural learning of the Montessori prepared environment which builds linguistic experiences through the innate absorbency of the child’s mind.
• Language proficiency has two aspects: basic communicative tasks and cognitive academic tasks.
• Language skills in the first language serve as the base for language skills in the second language.
• A trained adult with high proficiency in the first language needs to be available for the minority child.
• Initial reading and writing are taught in the first language.
• Montessori classrooms provide comprehensive input through an array of developmental materials and activities and the three period lesson.
• Montessori provides a supportive environment through small group lessons, emphasis on tracking rather than correcting, overall respect for the child, and the three year cycle.

The Montessori environment, from preschool through elementary, can be a model setting for a truly bilingual education for both language minority and language majority children. As defined by the U. S. Office of Education, bilingual education is “the use of two languages, one of which is English, as medium of instruction...for the same student population...in a well organized program which encompasses part or all of the curriculum, plus study of history and culture associated with the student’s mother tongue.” By this definition, the purpose of bilingual education is proficient performance in all aspects of two languages — understanding, speaking, writing, and reading — as is common in many countries of the world. In the United States, however, bilingual education programs have given more importance to the learning of English by language minority children than to second language acquisition by English speakers. Current concerns about “the tongue-tied American” and American students’ abysmal ignorance of geography and world affairs point to serious deficiencies in second language instruction and cultural awareness. The capacity to function in more than one language and to participate in more than one culture is a vital need for all of today’s children.

Ideally, a Montessori model of bilingual education would fully utilize the developing period for language from preschool through elementary, tapping the language potential of both language minority and English speaking children while keeping in mind the needs of each group. For language minority children, English is essential for survival and success in the dominant culture. they must attain oral proficiency, achieve academically, and develop a comfortable biculturalism. At the same time — and the younger the child, the more critical this is — they have an equally vital need to maintain and develop their first language as an instrument of personal expression, cognitive development, family communication, and cultural identity. For English speakers, early exposure to a second language and culture is a key experience in communication.

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BILINGUAL EDUCATION

LANGUAGE ARTS

and awareness as well as a strong base for future study. For all young children, the dual language process is an opportunity to expand their minds and lives during a period of optimum language learning. As Eleanor Thomis points out:

Children who learn two languages equally well and use them both, in order to learn other subjects, are engaged in a highly complex process, one which influences their cognitive power, their emotional development, and their personality structure. The challenge to educators of young children lies in the preparation of an educational plan which will guide them safely through the dual language process so that they are competent, knowledgeable, and comfortable in two environments and two languages.

The term “dual language process” seems particularly appropriate to Montessori education. The prepared environment is uniquely suited, in philosophy and practice, to the conditions identified by current research as essential to successful second language acquisition. Montessori has always regarded language as a process of acquisition rather than as the result of direct instruction. It deeply respects the natural absorbency of the child's mind and the guidance of the sensitive periods for movement and order, which not only prepare for the emergence of language but are also intrinsic to it. The sensitive period for language is understood to encompass all of childhood, from birth through age 12, with each development stage focusing on a specific aspect of language.

The child's process of acquiring the physical capacity to speak, learning to negotiate meaning, using accepted forms, and eventually mastering all aspects of language, is analyzed by Maria Montessori in The Absorbent Mind. She describes it with the same awe expressed by contemporary researchers who admit they still cannot fully understand it. Montessori regarded this process as the child's individual creation, with the adult facilitating the child's own language by providing an environment rich in experiences and language modeling. She stressed language as communicative competency as much the same terms used in today's communication-based approach to both first and second language acquisition.

A bilingual or dual-language Montessori environment, with communicative competency as a goal, can congruently mesh Montessori philosophy and practice with the basic principles of current research on successful communication-based programs. Five principles, outlined below, are grouped into three areas: primary language development, second language acquisition, and student status or classroom interaction.

Primary language development is crucial to the success of language minority children, especially very young ones. It comprises three of the five basic principles below:

1. To succeed academically, language minority children need to develop proficiency in both languages. A child's primary language is an essential tool in developing such cognitive skills as understanding, remembering, ordering, classifying, and reasoning. Having acquired these skills, the child can then apply them to second language learning. Ideally, the result is proficient bilingualism (native or near-native level in two languages, the benefits of which are: superior levels of cognitive development, academic achievement, and linguistic awareness. However, if the child begins to learn a second language without first having acquired these essential cognitive skills in the primary language, the result will be limited bilingualism. In this case, the child lacks proficiency in either language and cannot achieve academically.

2. Language proficiency has two aspects: basic communicative tasks and cognitive academic tasks. This refers to the two skill levels of every language. Social conversational language is used on an everyday basis for informal, interpersonal communication and is first acquired in the family. Academic language, either spoken or written, is used for learning and discussing abstract ideas and is acquired in school. Differing amounts of time are required to develop these two aspects of proficiency in a second
3. Developing primary language skills necessary for academic tasks in the first language is the base for developing academic skills in the second language. Learning subject matter in the first language builds background knowledge which helps make second language subject matter more comprehensible. This speeds second language acquisition by capitalizing on the cognitive proficiency already established in the first language. Math concepts built in Spanish, for example, will enable a Spanish speaking child to transfer them to the same subject in English, while at the same time acquiring the appropriate academic language in English. This transfer of skills is very clear in reading development. Mastery of the written code only has to happen once. The most efficient way to English literacy is through native language literacy. The child who reads well in Spanish and has good oral language proficiency in English is more likely to begin reading English successfully than the child with few or no reading skills in Spanish and a limited English vocabulary.

These three principles have resulted in the following basic guidelines for successful instruction of language minority children, which can be applied to dual language Montessori settings:

- Language minority children require substantial amounts of instruction in and through their first language - most commonly, 70 percent at the preschool level, 50 percent in grades 1 to 3, and 25 percent in grades 4 to 6. In the Montessori preschool class, this means that all initial presentations of materials are given in the first language. In the elementary class, new subject matter is given in the first language. Less demanding, more familiar subject matter may be introduced in English as appropriate to the child's English proficiency level (this assuming the children have had three years of bilingual preschool experience).

- There is a trained adult available with a high proficiency in the first language. This adult (teacher or aide) gives first language presentations without translation, models the language, provides emotional and psychological support for language minority children, and serves as the first language resource person for the English-speaking adult and children.

- The two languages are kept in separate contexts. Preferably, there are two adults available to serve as separate language models. Presentations are given in one language only, without translation. There is a separate area for each language, with the full complement of Montessori language materials available in a parallel sequence. Equally attractive materials in both languages are available in the reading corner and the listening center.

- Initial reading and writing are taught in the first language. The Montessori language sequence, from beginning oral language development activities through proficient reading, builds native literacy naturally and organically. It gradually brings to consciousness the language already absorbed and develops each skill separately, to be integrated at the child's own pace. The child's own oral language is the basis for sound analysis, word building, and beginning reading.

The fourth principle to be considered from the research applies to all children and clearly defines two outstanding characteristics of the Montessori environment as essential to successful language learning:

4. The two essential conditions for acquiring communicative competency in a second language are: comprehensible input and a supportive environment.

**Comprehensible Input** — Children acquire language by understanding messages. The meaning of the message is embedded in its context — concrete objects, activities, or events taking place in the environment. For the content of the message to be fully understood, the material must be interesting enough for the child to want to understand what it means. It also becomes more meaningful when it triggers the child's imagination and can be explored in interactions with others. Meaning is also derived from delivery of the message. It must build on the child's existing knowledge and include familiar language as well as new. Gesture and facial expression, clear articulation, repetition and simplification, and a reduced rate of speech also transmit meaning. Through meaningful messages given in an understandable manner, children absorb
correct grammatical structures, so adult modeling of correct, precise, and complete language is extremely important.

It is clear from this description that the entire design of the Montessori environment is geared to comprehensible input. It provides the richest of contexts through the entire array of developmental materials and activities. Interest in the content comes from individualized presentation and exploration, the intrinsic attraction of the materials, and the many opportunities for interaction among children and between children and adults. The Montessori teacher is solidly trained in conscious delivery and use of language.

A classic Montessori technique, the Three-Period Lesson, is a powerful exercise in comprehensible input — concrete, brief, simple, objective — and an invaluable tool in the dual language process. Through the successive steps of perception, recognition, and expression it builds the three skills of listening, comprehension, and production common to any language. The three periods may be used not only for giving vocabulary for a specific experience, but also as a basis for presenting materials and activities geared to a specific stage of language acquisition. Second-period games, such as “Who has...” or “Bring me...” give the practice in recognition essential to comprehension. Third-period activities like “What do you have?” or “What did you bring me?” give opportunities for expression when the child is capable of production.

The Supportive Environment — Comprehensible input is not in itself sufficient for language acquisition to take place. Affective factors enter into play, and either impede or facilitate the process, acting as a sort of “affective filter” in the brain. Beneficial affective factors include a non-stressful setting, positive motivation, and self-confidence. These are all present in the Montessori environment and its goal to “teach teaching, not correcting.” Again, the entire environment is designed to be wholly supportive of the child’s work of learning. Respect for the child’s choices, the built-in control of error which frees the child from constant adult correction, and the structuring of materials and activities for maximum independence and success contribute to this atmosphere, as does the self-confidence developed from the daily experiences of respect and responsibility for self, others, and the environment.

The fifth principle from research is directly related to the supportive environment and the relationships established within it:

5. Positive student outcomes are the result of positive student/teacher and student/student interactions. This conclusion stresses that teachers must interact positively and equitably with both majority and minority students in specific ways. Examples are listening attentively to them, offering opportunities to respond, giving them individual attention, talking about personal interests and experiences, and using expressions of courtesy with students. Positive student-student interactions result from minority and majority students being involved in cooperative learning techniques where they are working together to reach common goals and rewarded for cooperating with each other. Such interactions promote second language acquisition because a principal factor in this process is intense and frequent contact with fluent second-language-speaking peers. Other positive practices recommended are offering the minority language in second language experiences for majority language children and using it throughout the school for noninstructional purposes to establish its importance. This is seen as part of the care that must be taken to engender feelings of acceptance and equality for all children.

The positive interactions described here are given in Montessori, since it requires the adult to adapt to the needs of the child and stresses cooperation, not competition. The three-year age range in a class promotes children asking for and receiving help from each other. In the course of the day there are dozens of opportunities for spontaneous pairings and groupings across ages, languages, and cultures. Small group lessons easily lend themselves to second language experiences for all children. The view of the Montessori school as a whole in which every part serves the child supports the integration of the minority language into the entire school environment. Respect for the uniqueness of each child is basic to the Montessori philosophy and brings with it an appreciation of each child’s native language and cultural heritage, as well as careful attention to his or her specific language requirements.
It may thus be safely stated that the Montessori educational philosophy, developmental materials, and learning and teaching techniques provide precisely the environment that research indicates is best suited to the dual language approach.

Beginning with preschool, the Montessori model is equipped to offer:

- An environment rich in developmentally appropriate experiences: practical life, sensorial, language, math, art, music, cultural areas, movement.
- High oral proficiency in the first language: conversational interactions, Three-Period Lesson, vocabulary enrichment activities, classified vocabulary, children's literature, group activities on line.
- First language beginning literacy skills: "I Spy," sound analysis games, sandpaper letters, movable alphabet, reading object boxes, secret messages, three-part cards, sequenced reading materials.
- Intensive oral development in the second language: all oral language activities mentioned under high oral proficiency above; small group lessons in content areas, giving second language vocabulary for concepts already established in first language, balanced use of both languages for line activities, grace and courtesy, and non-instructional purposes.
- A multicultural focus: integration through practical life, sensorial, math, cultural areas, arts and crafts, music, food preparation activities, holidays, and celebrations.

A special strength of the Montessori dual language approach is that the three-year cycle provides ample time for thorough second language acquisition. Monolingual children beginning the dual language process at age three are taking the first step towards becoming bilingual, a developmental process which continues throughout elementary school. During each of the three cycles, they will progress at their own pace and capacity in each language, at both the social and the academic levels. By approaching this process as a whole and using each level of the prepared environment to its best advantage, Montessorians can empower all children to more fully realize their human potential for language.
Becoming a Montessori school is not an event; it is a gradual restructuring of the school's total approach to education. Because it is a comprehensive program, a step-by-step process must be anticipated, taking into account physical, administrative, psychological, and pedagogical components. This chapter outlines a number of implementation approaches to help school district personnel and proposal writers identify the requirements of Montessori educational design and implementation.
MONTESSORI TRAINING

Montessori training in the United States has been in process since 1960. Even though a majority of public schools require the credentials of the American Montessori Society or the Association Montessori Internationale, there are an increasing number of training associations, approximately twenty-five, with different formats, standards, and contents. The Montessori name is generic. When restricted use of the term “Montessori” was sought in 1967, the U.S. Patent and Trademark Trial and Appeal Board refused.

Every district will need to research the various Montessori training methods available as it selects its training process because each training association has its own way of defining Montessori. Some associations have no pedagogical control at all.

FORMATION — NOT JUST INFORMATION

When Montessori is being considered as a program option, the prevailing question is methodological: How is it implemented? The general assumption is that Montessori training is information about the program's materials, key features, and approaches so that the trainees will be able to correctly implement Montessori in the classroom. The next assumption then follows: Montessori training can be conveyed in increments — the trainee is introduced to a limited number of components in convenient study units. The reality is, however, that Montessori training must deal with change in the adult. In fact, the most important aspect of Montessori training is formation of the teacher.

Formation implies that a pedagogical system has more than technique. Since Montessori is a philosophical, psychological, and even spiritual movement in its fullest dimension, the process goes beyond a “component” checklist. As an educational reform concept involving human development issues, moral learning, and personal self-esteem of the learner; the Montessori training must bring about a new operating perspective which is clear; child-centered, and responsive to the changing needs of an open classroom. In contemporary terms, Montessori training must deal with fundamental, teacher-held beliefs as they pertain to childrearing and education. Research has shown that dynamic teaching involves perceptions and personal meanings rooted in the teacher's beliefs about self, the child's personality, the human task, and making sense of the world.

THE IMPORTANCE OF EXTENDED PRESERVICE

Changing teachers' views of their roles in the classroom is seldom accomplished by a “lay on” program where new learning objectives are compared to old, where objectives are projected into teacher planning, and evaluation then proves whether the plan works. Teachers need a shared reference point about education. Training bonds the teacher to a mission of understanding the child, respecting the child, believing in the progress of the human personality, and discovering the universals of nature and civilization. These philosophical principles are instilled concretely through the "unfolding drama of the Montessori materials" integrated with theory, psychology, and philosophy, strategically introduced so that the teacher anticipates what each material means to the whole. In order to have a sense of the whole — an emerging overview where the details of training are connected to an idea structure — the trainee will need focused attention over a sustained period of study prior to going into the classroom.

Preservice training ensures that the Montessori teacher operates with two overviews: 1) the totality of developmental needs of the child in the context of education, and 2) the scope and sequence of the Montessori materials. In the classroom an effective Montessori teacher performs the art of the match — the needs of the...
child and the activities provided by the environment. To achieve these overviews and make them effective requires an intensive period of time because:

- Extended preservice creates a community response where groups of trainees build understanding and practice around a defined set of Montessori ideas and materials.
- Extended preservice allows for personal assimilation of the curriculum scope, sequence and interconnectedness unique to Montessori.
- Constant practice, insight, lecture programming, and writing bring to the trainees a heightened sense of discipline and commitment as they delve deeper into structure and working knowledge of the Montessori philosophy and its relevance to the child.
- Through the order and philosophical coherence of the materials presented all at once in preservice, a new constellation of ideas imparts to the trainee a sense of educational responsibility to maintain the unique characteristics of Montessori.

COURSE CONTENT AND SCHEDULE

The content of the preservice training is substantial: 1) the materials have basic uses and variations which must be presented (not talked through), 2) presentations must be practiced and assimilated, and 3) theory and methodology must be integrated with the materials.

The Association Montessori Internationale observes the following preservice requirements:

**Preschool**

*Three hundred lecture hours* in Montessori theory and practice, practical life, sensorial, language and language extensions, mathematics, geography, history, biology, art and handicrafts, and music.

*One hundred hours* of supervised practice with the materials is also required.

**Elementary**

*Three hundred lecture hours* in Montessori theory, biology, geography, geometry, history, language, mathematics, music, including parent relations, parent education, and professional development.

*One hundred lecture hours* for a Montessori preparatory course about the preschool curriculum in the event that the trainee does not have a preschool diploma.

*One hundred fifty hours* of supervised practice with the materials is also required.

Each course requires a minimum of 90 hours of supervised observation of an AMI certified Montessori class and a minimum 120 hours of practice teaching in two different AMI classroom sites other than the teacher’s classroom.

COURSE COMPONENTS AND RATIONALES

Montessori courses vary; the descriptive standards put forth here are generally those maintained by the Association Montessori Internationale.

**Lectures**

Lectures pertaining to theory and methodology are given by certified trainers or lecturers who have participated in a regulated Training of Trainers program. About ten percent of the elementary course is theory which orients the trainee to developmental psychology, philosophy,
and world view. Lectures presented are documented in writing and reviewed for consistency and timing by the Association Montessori Internationale.

Albums

Training albums are summaries of the material presentations written by the trainee. Writing the album enables the trainee to: 1) internalize the sequence through writing, 2) focus attention on the material passages, and 3) see the material presentation as a living, demonstrated craft and not a recipe to be read from a pre-printed manual. Following training, the albums serve as reference books that advise the teacher of the rich curriculum variations and applications basic to each material. Three-fourths of 122 AMI graduates surveyed in 1984 felt the album writing helped them learn the materials in a highly personalized manner.

Practicals

Practicals refers to “hands on” experience with materials presented in lectures. For every three hours of methodology lectures, one hour of supervised practice with the materials must be completed by the trainee.

Observation

Teachers keep a timed diary of various observational tasks which are fundamental to learning about the child, the Montessori classroom, and basic Montessori techniques. The observation requirement consists of a minimum three full weeks, morning and afternoon, in a certified AMI Montessori classroom.

Practice Teaching

Trainees give lessons to children under the direction of certified AMI teachers. Visiting trainer personnel make two hour visits, consulting with the trainee and the cooperating teacher regarding ways to improve the trainee’s classroom approach. In order to see good models for Montessori practice, it is required that trainees both observe and practice-teach outside their own classroom.

Examinations

A total of six hours of written examinations — three hours on theory and three hours on methodology — are required along with about two hours of oral examinations. The oral examiners are external to the course. Trainers from other centers examine, thereby assuring that the same high standards and objective evaluation are maintained at every institute.

COURSE FORMATS

Two course options are available: summer training and academic year training.

Academic Year Training — Preschool and Elementary

Academic year training is the traditional model which includes a practice teaching and observation component as part of the academic year. The intensity of the course sequence, the possibilities for close community, the additional assimilation time, and the more relaxed style of input are all advantages of academic year training. Public schools usually allow a sabbatical year for teachers interested in the nine month training.
Summer Training

Summer training allows teachers to continue their work during the year without uprooting the family for a nine month period. Here are two examples of summer training programs being piloted by AMI and which are under evaluation:

<table>
<thead>
<tr>
<th>SUMMER PREPARATORY COURSE FOLLOWED BY TWO-SUMMER ELEMENTARY COURSE</th>
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</thead>
<tbody>
<tr>
<td>Preparatory Course — First summer eight weeks including some elementary curriculum</td>
</tr>
<tr>
<td>Elementary 1 — Eight weeks second summer</td>
</tr>
<tr>
<td>Observation — Three weeks during the following academic year</td>
</tr>
<tr>
<td>Weekend Seminar — Review of observation experience during spring of that academic year</td>
</tr>
<tr>
<td>Elementary 2 — Nine weeks third summer includes written examinations</td>
</tr>
<tr>
<td>Practice Teaching — Four weeks during the following academic year</td>
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<tr>
<td>Weekend Seminar — Review in preparation for oral exams</td>
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<tr>
<td>Preparation for Oral Examinations — One week review</td>
</tr>
<tr>
<td>Oral Examinations</td>
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<table>
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<tr>
<th>TWO-SUMMER PRESCHOOL COURSE</th>
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<tr>
<td>Summer 1 — Nine weeks first summer</td>
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<tr>
<td>Observation — Three weeks during the following academic year</td>
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<tr>
<td>Weekend Seminar — Review of observation experience during spring of academic year</td>
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<tr>
<td>Summer 2 — Nine weeks second summer includes written examinations</td>
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<tr>
<td>Practice Teaching — Four weeks during the following academic year</td>
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</tr>
<tr>
<td>Preparation for Oral Examinations — One week review</td>
</tr>
</tbody>
</table>

Although summer training formats require a longer time for full Montessori certification, many teachers begin teaching after their first summer of primary or elementary training. During the academic year after the first elementary summer, a total of three weeks must be spent observing two different AMI Montessori classes. During the academic year after the second elementary summer a total of four weeks must be spent practice teaching in two different AMI Montessori classes.

David Kahn

An executive summary statement of implementation costs and procedures provides an overview. The general cost for Montessori apparatus is about $15,000 to $20,000, depending on degree of completion.

1. Use a total Montessori program
2. Use multi-aged groupings which are an essential part of Montessori
3. Progress slowly and phase in each program level
4. Provide Montessori trained teachers and quality teacher assistants
5. Purchase the full complement of Montessori materials for each classroom from authorized manufacturers
6. Hire a Montessori Coordinator with curriculum knowledge and authorities
7. Build a consensus among staff regarding curriculum goals in relation to pupil progress
8. Use Montessori-specific progress reporting and record keeping system that accurately reflects the pupil progress within a Montessori program. Grades and number factors are not compatible with Montessori philosophy
9. Involve parents and the community
10. Use reasonable evaluation techniques

Montessori cannot be done piecemeal; it is a total curriculum approach that is integrated and sequential...

Montessori Public School Consortium

Ten Steps to Montessori Implementation

BY DAVID KAHN

1. Use a total Montessori program

Montessori cannot be done piecemeal; it is a total curriculum approach that is integrated and sequential. The implementation of a Montessori program is a process, and it must be done in a comprehensive and coordinated manner. A total Montessori program is one that includes all of the elements of the Montessori method, such as the use of multi-aged groupings, the use of multi-sensory materials, the emphasis on self-directed learning, and the development of a supportive environment. A total Montessori program is essential for the success of the program.

2. Use multi-aged groupings which are an essential part of Montessori

Montessori teachers believe that children learn best when they are grouped with children of similar ages. This is because children of similar ages are more likely to share similar interests and challenges, and they are more likely to learn from each other. Multi-aged groupings also allow children to progress at their own pace, which is an important aspect of the Montessori method. The effectiveness of multi-aged groupings in Montessori programs has been well-documented, and they are a key component of the Montessori approach.

3. Progress slowly and phase in each program level

The implementation of a Montessori program should be a gradual process. It is important to introduce new elements of the Montessori method gradually, so that children can adapt and become familiar with them. This approach will help to ensure the success of the program, and it will also help to build a sense of excitement and enthusiasm among the children.

4. Provide Montessori trained teachers and quality teacher assistants

The success of a Montessori program depends on the quality of the teachers and the teacher assistants. Montessori trained teachers are essential for the success of the program, and they should be thoroughly familiar with the principles and practices of the Montessori method. Montessori trained teachers are also important in providing a supportive and nurturing environment for the children.

5. Purchase the full complement of Montessori materials for each classroom from authorized manufacturers

Each Montessori classroom has the following Montessori apparatus and general maintenance expenses:

- Montessori materials: $10,000 - $12,000
- Shelving, easels, tables, and chairs: $4,000 - $6,000
- Books, equipment, and other supplies: $2,000
- Annual maintenance (consumables): $800

If Montessori materials are purchased from non-authorized sources, the costs may increase significantly. Therefore, it is important to purchase Montessori materials from authorized sources to ensure the quality and authenticity of the materials.

6. Hire a Montessori Coordinator with curriculum knowledge and authorities

A Montessori Coordinator is an essential member of the Montessori team. The Coordinator is responsible for the overall implementation of the Montessori program, and they should be knowledgeable about the principles and practices of the Montessori method. The Coordinator should also be able to provide guidance and support to the teachers and the teacher assistants.

7. Build a consensus among staff regarding curriculum goals in relation to pupil progress

The success of a Montessori program depends on the cooperation and support of the staff. It is important to build a consensus among the staff regarding curriculum goals, so that they can work together to achieve these goals. This will help to ensure the success of the program, and it will also help to create a positive and supportive environment for the children.

8. Use Montessori-specific progress reporting and record keeping system that accurately reflects the pupil progress within a Montessori program

Montessori programs use a unique approach to progress reporting, which is based on the Montessori method. This approach is designed to provide an accurate reflection of pupil progress, and it is essential for the success of the program.

9. Involve parents and the community

The success of a Montessori program depends on the involvement of the parents and the community. It is important to involve the parents and the community in the implementation of the program, so that they can provide support and guidance to the children. This will help to ensure the success of the program, and it will also help to create a positive and supportive environment for the children.

10. Use reasonable evaluation techniques

The success of a Montessori program depends on the use of reasonable evaluation techniques. It is important to use evaluation techniques that are appropriate for the Montessori method, and that accurately reflect the progress of the children. This will help to ensure the success of the program, and it will also help to create a positive and supportive environment for the children.
Appendix 2: “A Study of College and University Accredited Montessori Teacher Training Programs,” by Mary Maher Boehnlein

This compendium of available training programs was published (Summer, 1984) in the NAMTA Journal. Although this study is obsolete, the number of college and university accredited Montessori teacher training programs presented as options offers ways of developing training formats. Montessori tuition fees in 1990 range from $4000-$5000.

A Study of College/University Accredited Montessori Teacher Training Programs

by Mary Maher Boehnlein Ph.D

Introduction

Teacher training studies are not new. Smith et al (1990) pg. It notes that one of the first was published in 1920 and still stands as the most comprehensive and objective effort to provide a functional basis for educational standards. Other studies followed in 1933 by the U.S. Office of Education, 1954 in the NAMTA Journal and 1977 by Smith et al. Last month a series of studies have been published in an attempt to provide research for teacher education, the National Commission on Education in Europe (1958) and the National Commission on Education in Europe (1958).

These studies sought to provide information about what teachers do before they decide to enter Montessori training. This study sought to examine the knowledge and training needs of Montessori teachers.

In this study it was found that Montessori training is oriented to a network of Federal, State, and local agencies and to a variety of training programs. It was concluded that Montessori training should be an integral aspect of any training program. A major need was identified in the United States was the need for Montessori training. A major need in the United States is the need for Montessori training. The major need in the United States is the need for Montessori training.

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In this study it was found that Montessori training is oriented to a network of Federal, State, and local agencies. A major need was identified in the United States was the need for Montessori training. The major need in the United States is the need for Montessori training. A major need in the United States is the need for Montessori training.
Methods

All Montessori elementary teacher training programs affiliated with the Association Montessori Internationale and the American Montessori Society were identified through information drawn from these organizations. Five preschool programs which have been in operation at the college level for nearly twenty years were also included to gather additional information from their many years of experience.

Brochures and other promotional or descriptive materials from the courses were examined. A questionnaire was developed as the basis outline for a phone interview to be conducted with the elementary training program directors. The interviews were transcribed and reviewed for clarity. When the interviewee was unable to reach a director after three attempts, the program was eliminated from the sample.

Data from the questionnaires were summarized in Table 1 and compared to similar data collected for AMS by Turner (1998) on preprimar training programs and a list of colleges and universities which had given credit for ASMI preprimar training compiled by the Atlanta Montessori Institute (see Table 2).

Each of the United States certification offices in the states and territories was asked for their certification requirements and to indicate if they recognized independent Montessori training courses for state teacher certification requirements.

Results

Data from 14 institutions were identified as granting credit for Montessori training courses. 24 for AMI courses; and 10 for AMS courses. Of these eleven, five were designated as teacher training programs operating in the United States. Of the eleven training programs, seven did not offer college or university credit simultaneously with Montessori training. All seven programs were contacted, but only four participated in the interview process. No trainer refused to participate in the study, but the most were unable to reach or did not return phone messages because they were teaching during the day or were away from their offices.

In addition to the four elemental, programs, four programs with universities or colleges were included in the data. These were chosen because they were not affiliated with colleges. One additional elementary program was chosen because its courses were offered to independent institutional credit for these courses. The total sample is small but is considered representative graphically in terms of years of experience. Both public and private universities or colleges are represented also.

Only one AMI program was directly connected to a university or college, the first program at Avila College in Kansas City, Missouri. Another AMI program did not have a college affiliation and was chosen because of its independence status. Seven out of ten AMI elementary programs are affiliated with colleges or universities. Four of the Montessori courses are listed in the institution's catalogs, often noting the school's name or teaching. The process of approval of the Montessori programs was described as the usual process of submitting the course descriptions and program to a departmental faculty curriculum committee which then recommended approval to the administrative faculty who in turn recommended approval to the appropriate dean. All of the AMS programs reported that they used the approved collegiate format for writing the program descriptions but found that the report was not unusual and that the process to obtain approval from the Accreditation Council for Childhood Education (ACCE) was also acceptable because of its thoroughness.

Trainers were very complimentary concerning the cooperation and support received from the colleges and universities and the occasional interference with course content or administration. All institutions recognized Montessori trainers as having equivalent to at least a master's level and often considered them as terminal degree in the Montessori field thus allowing them to teach graduate courses. Trainers on tenure at universities did possess a doctorate or a master's degree. Part time trainers, however, could possess only a bachelor's degree plus the Montessori training and were hired as guest lecturers rather than adjunct faculty.

Staffing patterns of the courses followed a pattern of bringing in guest lecturers at the beginning of the program with full time staff gradually taking over by the 16th week.
teaching all of the curriculum methods. Some training centers with laboratory schools on staff included the school staff as part-time lecturers, and specialists most often brought in were music and art.

Maintenance of the Montessori or college academic standards presented no problem. The interviews revealed that the Montessori training was perceived as equal to and in most cases, more rigorous and demanding of excellence than the traditional programs. Trainees stated that when their first students moved into the traditional teacher education courses, the students' performance was so superior that professors became more involved in the Montessori training and asked to observe and discuss the training. Additionally, excellence was pointed out by the sheer number of class hours which in most cases far exceed the amount required for the college credit granted and by the lengthy oral and written examinations.

Only in three cases did trainees report opposition to the Montessori programs by university or college faculty. In one case this was because the college was under severe financial strain and eventually closed. The Montessori program was unable to cut their budget and thus was perceived as a drain on resources. In the other two cases, traditional faculty were concerned that the Montessori program would attract students from the traditional programs and cause enrollment to decline. When the opposite occurred, students wanted to complete their degree and thus enrolled in the traditional courses as an opposition ceased. With the recent decline in enrollment in teacher training programs, trainees reported colleges and universities are more hospitable and have valued the Montessori courses in becoming a part of the college in order to boost college enrollment. Other opposition in the form of myths and misunderstandings still printed in traditional textbooks or rarely corrected by students who unknowingly have been propelled by the presence of a Montessori expert on the faculty and has resulted in mutual misunderstanding and respect between the traditional and Montessori training programs.

An interesting aspect of university accreditation of Montessori training is that students reported that their courses were being granted transfer credits for a number of college programs. See Table 2 for Portland, Oregon for example has been approved by both Portland University and Marylhurst College and the state universities were able to use the course, work for credit at Edgewood College or University of Cincinnati. This arrangement allows a program to remain independent of a college of university yet still have their courses be acceptable of the program is accredited teacher training program.

Vis a Certification Requirements

The survey of certification requirements of the states and territories brought from 175 other states and territories at the time of writing this report, all states and territories that require Montessori training courses were accepted by a university as college teacher training division or the state also would accept them through the college of university training. No state would require Montessori elementary training for independent of a teacher training program. Some states, however, do recognize the Montessori preschool training program.

Programs of Study

Sample programs of study from Seattle University, Oklahoma University, Portland University, and Xavier University were examined. All of the Masters Degree program required a common core of all candidates which included one course each in history, social studies, education, research, statistics, philosophy of education, and one or two foundations of education courses. Course Montessori courses, then composed three fourths of the student's specialization.

Both Seattle and Xavier had alternative program sequences for persons who held a bachelor's degree and who wished to obtain both a state and Montessori preschool or elementary diploma. Seattle also had a Bachelor's of Education in Early Childhood in which the Montessori courses substituted for traditional education requirements. Xavier has designed programs for persons who wish to convert an Ohio kindergarten programs' certificate to a state elements certificate and also obtain the Montessori elementary diploma simultaneously. The state allows them to do this within the Masters program who has highly unusual. All students seeking certification by converting a regular arts or Bachelor of Science degree, however, must have completed the necessary general education requirements at the undergraduate level.

That is, these courses must be taken in addition to the Masters program and are individually required of all teachers in the state. Consideration.

Even with the limited sample of programs available it is evident that Montessori training courses have arrived at clear agreements with universities or colleges which allow students to obtain credit and the training programs maintain or adopt specific standards. It also is evident that colleges and universities are more flexible today than they were twenty years ago in accepting Montessori training programs for credit and that they respect the Montessori training's education and experience. Based on our interviews, it appears that the Montessori programs, which are integral with universities or college programs, have been as well accepted and have helped Montessori education move into the mainstream of the profession. While none of the programs reported doing any follow-up study of the graduates, all agreed this should be done to be able to provide evidence that the training is of high quality and of practical value. The then helped to keep training programs present realistic evidence to all colleges and universities of the value of offering Montessori training as an option of an effective area in the traditional teacher training.

The longer program had been in existence at a university or college the easier it was to add the elementary training to the program. It was added to add the elementary training to the program. Most less budgeted were reported by programs that were supported by a university or college. Benefits that arise from being part of an accredited college of universities or colleges include:

1. students can earn credit toward a degree
2. students may be obtained state teacher certification simultaneously with the Montessori diploma
3. students can qualify for financial aid and veterans' benefits to subtract the cost of these education
4. students may be able to utilize the full resources of the college or university which often exceed those of the independent training center, particularly a library's resource center for material making and maintenance.
5. the training process may be more stable financially and thus allow training for longer periods of time
6. the training process can obtain greater public exposure and hence wider interest.
It appears from this study that Montessori elementary training can be structured so that students can obtain both the Montessori diploma and state teachers' certification and still maintain the integrity of their program.

Table 1
University Study Report
Montessori Teacher Training Project

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Program</th>
<th>Minor</th>
<th>College</th>
<th>Foundation</th>
<th>English</th>
<th>Extra Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>6401</td>
<td>Montessori Education</td>
<td>A</td>
<td>$1,000</td>
<td>$500</td>
<td>$200</td>
<td></td>
</tr>
<tr>
<td>6402</td>
<td>Daycare Management</td>
<td>A</td>
<td>$1,000</td>
<td>$500</td>
<td>$200</td>
<td></td>
</tr>
<tr>
<td>6403</td>
<td>Child Development</td>
<td>A</td>
<td>$1,000</td>
<td>$500</td>
<td>$200</td>
<td></td>
</tr>
<tr>
<td>6404</td>
<td>Education Law</td>
<td>A</td>
<td>$1,000</td>
<td>$500</td>
<td>$200</td>
<td></td>
</tr>
</tbody>
</table>

Credit for Montessori Work

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Foundational Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>6401</td>
<td>Montessori Theory</td>
</tr>
<tr>
<td>6402</td>
<td>Montessori Pedagogy</td>
</tr>
<tr>
<td>6403</td>
<td>Montessori Instruction</td>
</tr>
<tr>
<td>6404</td>
<td>Montessori Administration</td>
</tr>
</tbody>
</table>

Implementation

State Certification

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Foundational Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>6401</td>
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<td>Montessori Instruction</td>
</tr>
<tr>
<td>6404</td>
<td>Montessori Administration</td>
</tr>
<tr>
<td>Title</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>Title 1</td>
<td>Description 1</td>
</tr>
<tr>
<td>Title 2</td>
<td>Description 2</td>
</tr>
<tr>
<td>Title 3</td>
<td>Description 3</td>
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<td>Title 4</td>
<td>Description 4</td>
</tr>
<tr>
<td>Title 5</td>
<td>Description 5</td>
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<tr>
<td>Title 6</td>
<td>Description 6</td>
</tr>
<tr>
<td>Title 7</td>
<td>Description 7</td>
</tr>
<tr>
<td>Title 8</td>
<td>Description 8</td>
</tr>
</tbody>
</table>

**Notes:**
- Additional notes and details can be added as needed.
THE CURRICULUM MESH: MONTESSORI AND DISTRICT REQUIREMENTS

Each Montessori teacher that arrives from training at the public school must relate to the curriculum requirements of the school district and the state in which his or her work is to begin. Most districts require a curriculum document which represents the Montessori program goals, performance objectives, scope and sequence, time allocations, and correlation with the district curriculum. When curriculum content is recorded and compared to the district and state requirements, the Montessori program can usually find its counterpart in the traditional curriculum. Sometimes teachers need to incorporate requirements when certain curriculum items that are not in the Montessori sequence are mandated.

The "on paper" curriculum statement does not necessarily mean that implementation of Montessori programming must reflect the various unit by unit, objective by objective, sequence by sequence, minute by minute guidelines indicated by the documents. The documents are an overall description of equivalences that dictate the content of the program and not necessarily the mode of instruction. They are used as verification of content correlations, not necessarily as working documents. Generally speaking, the working curriculum guidelines are the Montessori training albums written by the teacher during training.

When instituting a Montessori program, most systems require that the administrator or program coordinator create these aforementioned curriculum documents. However, it is most helpful for faculty to take part in the curriculum correlations so that they can compare Montessori goals for student achievement with district and state goals. Curriculum correlations should only be attempted when Montessori trained personnel and experienced curriculum resource people who know the traditional programs are available to oversee the process. (See Chapter Four, Appendix 7)

Program goals must be reviewed by new faculty and emphasized from year to year so that the entire faculty recognizes their responsibility in relation to program development. A well defined curriculum builds dialogue and unity of perspective, but should not necessarily impose sequential performance objectives on the students. The Montessori teacher must be permitted flexibility in his or her presentations which should be made in relation to the child's manifest needs and interests and not according to prescribed courses of study. It is also key that the district not apply testing over short intervals that would be so specifically geared to curriculum objectives, scope and sequence, that teachers would be penalized for departing from the sequential structure of the district curriculum.

Certain school districts (Denver, Milwaukee) treat Montessori as an "experimental curriculum" placing little or no emphasis on the curriculum correlations, but rather accentuating program achievement tests, retention, attendance, and other generalized criteria which establish the efficacy of the program at the end of a three year cycle apart from isolated academic skill levels along the way.

AVOID DOUBLE CURRICULUM APPROACH

When the district curriculum is mandated along with the Montessori curriculum, lesson plans may reflect both curricula. This is quite cumbersome for Montessori trained teachers who are not familiar with the district curriculum. At the very least, there should be formal orientation to the district curriculum for Montessorians who are new to the district. Usually for the public school teacher who has subsequently become a Montessori teacher, the traditional approach which is most familiar will dominate if both curricula are required. The double curriculum approach creates a hybrid result which dilutes both the district and Montessori approaches so that there is really no clear educational format. A mediocre conviction on the part.
of the district about curriculum definition can produce confusion and general lack of coherence from both the
district and Montessori points of view. Faculty who sustain a double curricula usually find the task
overwhelming and eventually diminish the Montessori component in order to make their jobs manageable.
Therefore it is important to keep Montessori the primary content of the program. District curriculum
should be included only when district required content is not included in the Montessori format, and with
careful consideration not to obscure the Montessori viewpoint.

AVOID MONTESSORI AS CURRICULUM ENRICHMENT

Many times, when Montessori curriculum is partially implemented with partially trained teachers, the
program utilizes the district curriculum as the mainstay and uses the Montessori apparatus as a "manipula-
tive" material to "enrich" the traditional curriculum. This presents enrichment possibilities for the current
district curriculum which will undoubtedly improve the district curriculum. Why then worry about the
consequences of this alternative use of Montessori pedagogy as a curriculum supplement?

Supplementing with Montessori materials undermines the full use of the materials. Montessori
materials interconnect. Each piece of equipment isolates key difficulties, each building a sequence for
discovery, each adding new passages leading to more complex information and process. The cannibalization
of Montessori materials demeans their function and gives the user the impression that they are implement-
ing a Montessori education when, in effect, they are implementing a piece of Montessori equipment.
Montessori manipulatives enhance learning and should be regarded as essential experiences rather than as
a reward for doing "dull" academic work.

An analogy might be the use of computers strictly for video games; they were designed for much more
than video games. The full significance of the Montessori materials relates to the psychology of the child;
the materials are part of a sequence that corresponds with a developmental sequence in the child. Each
material has numerous applications which, when connected to other materials, increase the possibilities for
child development. In short, the full power of the material is extensively diminished when used out of the
context of the whole Montessori curriculum.

TEACHER PLANNING AND CURRICULUM OBJECTIVES

Montessori is a comprehensive curriculum because it deals with the whole child and it must operate in
direct response to observation of the whole child. To some degree management-by-objectives, where the
teacher identifies preconceived competencies and curriculum content levels by grade level, may serve to
prejudice the teacher's ability to respond to the spontaneous interests and needs of the child.

UNDERSTANDING MONTESSORI PASSAGES

The Montessori approach has its own structure and organization which might be described as
"passages" or "pathways." Like the game of chess, which has specific rules, the Montessori materials have
many creative applications within the limits of their use. Each Montessori material has implicit to its
mechanics a series of manipulations and verbalizations which are reflected in the mastery of each passage.
For example, the bead frame introduces a rational approach to multiplication with two digit multipliers
including expanded notation, the function of multiplying times ten or multiples of ten, the function of the
zero in the partial product, etc. Through observation, the teacher can pinpoint which passages have been
experienced and mastered by each child. This type of sequential list of material passages is a useful way to
look at curriculum objectives. They allow the teacher to chronicle intellectual progress and each child's
unique response to those learning experiences. Such a record is for internal reference only, serving as a
framework for organizing individual children's work and group lessons.
### Learning Outcomes

<table>
<thead>
<tr>
<th>Oral Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the Primary Years students should learn:</td>
</tr>
<tr>
<td>C. 1 to listen to a short presentation and recognize the main ideas;</td>
</tr>
<tr>
<td>C. 2 to follow simple oral directions;</td>
</tr>
<tr>
<td>C. 3 to distinguish between the sounds of the letters;</td>
</tr>
<tr>
<td>C. 4 and in addition students should have a variety of experiences such as listening to stories, choral speaking, live plays, choral music, instrumental music;</td>
</tr>
<tr>
<td>D. 1 to express complete thoughts orally;</td>
</tr>
<tr>
<td>D. 2 to speak clearly, with expression;</td>
</tr>
<tr>
<td>D. 3 a larger speaking vocabulary;</td>
</tr>
<tr>
<td>D. 4 and in addition students should have a variety of speaking experiences such as storytelling, choral speaking, role playing;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Arithmetic</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the Primary Years students should learn:</td>
</tr>
<tr>
<td>E. 1 the concepts of numbers through relating numbers to real objects;</td>
</tr>
<tr>
<td>E. 2 to read, understand place value, and write numerals to 999;</td>
</tr>
<tr>
<td>E. 3 to recognize and use such symbols as those associated with addition, subtraction, multiplication, division, and money system, the concepts of equality and inequality;</td>
</tr>
<tr>
<td>E. 4 to solve addition and subtraction examples of two and three digit numbers;</td>
</tr>
<tr>
<td>E. 5 to solve multiplication and division examples for products up to 50;</td>
</tr>
<tr>
<td>E. 6 to make change accurately using coins and small bills.</td>
</tr>
</tbody>
</table>

### Comment

<table>
<thead>
<tr>
<th>C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Group stories spontaneous children's comments.</td>
</tr>
<tr>
<td>2) Presentations for use of materials and command cards, oral exercises.</td>
</tr>
<tr>
<td>3) All sandpaper letters exercises - moveable alphabets and cards to match.</td>
</tr>
<tr>
<td>4) Stories read and told. Poems, most oral speeches and live plays are done as a preparation for the Christmas concert or for the concert at end of Scholastic year. Music bells.</td>
</tr>
<tr>
<td>D.</td>
</tr>
<tr>
<td>1) Free oral expression times are provided throughout the day and at group times.</td>
</tr>
<tr>
<td>2, 3, 4) All these are covered in a variety of exercises for enrichment of vocabulary.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5) Group reading and discussions.</td>
</tr>
<tr>
<td>6) This ability is incorporated in everyday practical life directions and when directing Science experiments.</td>
</tr>
<tr>
<td>D.</td>
</tr>
<tr>
<td>5) Students organize their own group discussions, chaired by Teacher. Develop a theme and prove their &quot;Thesis.&quot;</td>
</tr>
<tr>
<td>6) Promoted in classroom, specifically in Drama lessons.</td>
</tr>
<tr>
<td>7) All classified subject cards and reference books.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) All materials in Group 1 of Math.</td>
</tr>
<tr>
<td>3) All 2 Group exercises: Nature of operations, corresponding signs.</td>
</tr>
<tr>
<td>4) Taught with above materials and &quot;stamp game&quot; exercise.</td>
</tr>
<tr>
<td>5) Taught with above materials plus &quot;multiplication&quot; and &quot;division&quot; boards.</td>
</tr>
<tr>
<td>6) Yes, using real money and corresponding exercise.</td>
</tr>
</tbody>
</table>
## Whole Numbers

### CIMS Test 31
- Count rationally to 1000.
- Count by hundreds and by thousands.
- Name the number before and the number after in a sequence to 9999.

### Montessori Activities:
- Long chains, golden beads, bead frame, checkerboard.
- Golden beads and cards.

### Fractions
- Identify halves, thirds, fourths, and tenths of objects and regions.
- Identify halves, thirds, fourths, and tenths of a set.

### Decimals
- Determine the value of a group of coins more than one dollar.
- Make change for one dollar for items costing less than $1.00.

### Numeration

#### Whole Numbers
- Read and write 4-digit numerals to 9999.
- Identify place value of each digit in a 4-digit numeral.
- Read and write Roman numerals to XX.

#### Fractions
- Name and write fractional parts of regions.
- Identify and compare fractional parts of objects written as tenths.
- Compare halves with tenths.
<table>
<thead>
<tr>
<th>Subject</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade Level</td>
<td>2nd year</td>
</tr>
<tr>
<td>Learning Objective</td>
<td>Numeration</td>
</tr>
<tr>
<td>Criteria Component</td>
<td>Conditions</td>
</tr>
<tr>
<td>* Counting-skip</td>
<td>* Fluent skip counting abstractly</td>
</tr>
<tr>
<td></td>
<td>* Oral/written on blackboard</td>
</tr>
<tr>
<td>* Writing numbers to a million</td>
<td>* Able to recognize and read numerals</td>
</tr>
<tr>
<td></td>
<td>* Oral/written material</td>
</tr>
<tr>
<td></td>
<td>* Hierarchical material</td>
</tr>
<tr>
<td>* Category Identification</td>
<td>* Able to write numerals in relation to command</td>
</tr>
<tr>
<td></td>
<td>* Utilization of the materials</td>
</tr>
<tr>
<td></td>
<td>* Dictation/review</td>
</tr>
<tr>
<td></td>
<td>* Oral dictation</td>
</tr>
<tr>
<td>* Converting Arabic to RomanNumerals</td>
<td>* Sight recognition of units, tens, hundreds, thousands, ten thousands, hundred thousands, millions</td>
</tr>
<tr>
<td></td>
<td>* Large bead frame</td>
</tr>
<tr>
<td></td>
<td>* Checker board</td>
</tr>
<tr>
<td></td>
<td>* Golden bead frame</td>
</tr>
<tr>
<td></td>
<td>* Teacher quizzes</td>
</tr>
<tr>
<td>* Reading and writing Roman numerals</td>
<td>* Loose card material</td>
</tr>
<tr>
<td></td>
<td>* Timeline of centuries</td>
</tr>
<tr>
<td></td>
<td>* Layout of equivalences</td>
</tr>
<tr>
<td></td>
<td>* Teacher dictation</td>
</tr>
<tr>
<td>Addition &amp; Subtraction</td>
<td>* On paper with mixed formats and operations</td>
</tr>
<tr>
<td></td>
<td>* 80% computational accuracy</td>
</tr>
<tr>
<td></td>
<td>* Problem cards</td>
</tr>
<tr>
<td></td>
<td>* Problem sheets</td>
</tr>
<tr>
<td></td>
<td>* Problem sheets &amp; homework</td>
</tr>
<tr>
<td></td>
<td>* Problem sources</td>
</tr>
<tr>
<td></td>
<td>* Oral drill</td>
</tr>
<tr>
<td></td>
<td>* Coaching</td>
</tr>
<tr>
<td>Multiplication</td>
<td>* One digit multipliers</td>
</tr>
<tr>
<td></td>
<td>* Two digit multipliers</td>
</tr>
<tr>
<td></td>
<td>(multiplication)</td>
</tr>
<tr>
<td></td>
<td>* 80% accuracy at about 3 minutes a problem abstractly</td>
</tr>
<tr>
<td></td>
<td>* Large bead frame</td>
</tr>
<tr>
<td></td>
<td>* Checkerboard</td>
</tr>
<tr>
<td></td>
<td>* Gold bead frame</td>
</tr>
<tr>
<td></td>
<td>* Problem cards</td>
</tr>
<tr>
<td></td>
<td>* Problem sources</td>
</tr>
<tr>
<td></td>
<td>* Problem sources</td>
</tr>
<tr>
<td></td>
<td>* Problem controls</td>
</tr>
<tr>
<td></td>
<td>* Sequence advance</td>
</tr>
<tr>
<td></td>
<td>* Homework</td>
</tr>
<tr>
<td></td>
<td>* Coaching in class</td>
</tr>
<tr>
<td>* x10 \ x100 \ x1000 concept</td>
<td>* Understands function of multiplying x10, x100, x1000</td>
</tr>
<tr>
<td></td>
<td>* Abstraction (independence) from the materials</td>
</tr>
<tr>
<td></td>
<td>* Problem cards</td>
</tr>
<tr>
<td></td>
<td>* Problem sources</td>
</tr>
<tr>
<td></td>
<td>* Problem controls</td>
</tr>
<tr>
<td></td>
<td>* Sequence advance</td>
</tr>
<tr>
<td></td>
<td>* Homework</td>
</tr>
<tr>
<td></td>
<td>* Coaching in class</td>
</tr>
<tr>
<td>* Layout of &quot;decamomial&quot;</td>
<td>* Formatting of the facts</td>
</tr>
</tbody>
</table>
Academic supervision refers to the on-site guidance of Montessori teachers which allows the Montessori pedagogy to take root and become operational within a school. In general, this requires a full-time curriculum resource person for each building as well as staff leadership and cooperation to make the project work. The role of the building principal is to make sure that the implementation process described is protected from the bureaucracy of the central curriculum while developing its own identity. A principal can take Montessori training to enhance administration, but it is most likely that the building administrator, unless he or she teaches in the classroom, will still require an experienced Montessori teacher to direct the implementation process.

PHASING-IN MONTESSORI

The first requirement for developing a Montessori school is a wholehearted commitment from the building principal to implement Montessori at all levels of the school organization—parent education, curriculum, material resources, evaluation, and pupil progress reporting. Most essential is the underlying belief that the school will become a total Montessori institution and that comprehensive Montessori implementation without the burden of mixed curriculum goals will minimize confusion during a transition period. Two models for progressive Montessori implementation are outlined below. The phasing-in process, never instantaneous, generally takes from five to seven years.

Phasing-in Montessori, Phasing-out the Traditional Program

The following model is derived from a history of Greenfield Montessori School which began in 1983:

Year 1

Three classrooms are devoted to Montessori. Each class has a mixture of children ages three and four. Each room has one class in the morning and a different class in the afternoon for a total of six classes. The traditional part of the school has first through sixth grade, but no kindergarten. This provides a gap of one year between the Montessori school and the traditional school contributing to the separation of concepts.

Year 2

New three year olds are added to the Montessori program and three more rooms become Montessori rooms. There are no more double sessions. All six rooms have three, four and five year olds in the morning. The three and four year olds go home at noon and the five year olds stay all day. The traditional school has grades two through six.
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Year 3

Three lower elementary classes begin with six year olds. There are still six preschool classes. The traditional school has grades three through six.

Year 4

There are still six preschool classes. The elementary classes now have five classes of six and seven year olds. The traditional class has grades four, five, and six.

Based on retention patterns, the school progressively phases out the traditional concept while establishing Montessori classes one year at one time (see graph below). In all cases the Montessori classes phase in Montessori immediately.

IDEAL MONTESSORI PHASE-IN PLAN

<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Montessori</td>
<td>P3</td>
</tr>
<tr>
<td></td>
<td>P4</td>
</tr>
<tr>
<td></td>
<td>P5</td>
</tr>
<tr>
<td>Traditional</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

Note: P = preschool

Conversion of School With Existing Staff and a Mixture of Montessori and Traditional Pedagogies

When constraints of funding or lack of planning necessitate immediate conversion of Montessori classes, traditional teachers, in the process of training, may not be able to make a clean departure from their established teaching approaches.

Montessori training is only the first phase of becoming a Montessori teacher. After the intense training received during the Montessori course, the trainees need an opportunity to practice Montessori as presented to them in the course in order to solidify Montessori expertise and make it their own. Trying to mix traditional and Montessori methods will find teachers with a traditional teaching repertoire unable to make a real transition to Montessori.

If the existing traditional classes are changed into three year age groupings before Montessori training is finished, an additional burden is placed on the teacher because he or she must now govern three grades worth of traditional curriculum while trying to implement Montessori education thereby creating conditions for overprogramming and overexertion.

Therefore, when districts demand total conversion, the following suggestions may be helpful:

- Establish a clear timeline for conversion to the Montessori conventional multi-age groups which include ages three to six (preschool), ages six to nine (lower elementary) and ages nine to twelve (upper elementary).
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- If training is being provided in stages, maintain traditional grade classes until training is completed. When training is completed, convert traditional single grade classes to Montessori multi-age clusters and begin Montessori implementation in full. (Keep gender, relationships, race, age groupings in balance.)

- Once multi-age group clusters have been developed, a novice Montessorian needs help in planning the year for cycles of presentation. Often an experienced teacher is needed to develop an annual plan with each teacher in order to better respond to the needs of a multi-age class.

Sudden Conversion Plan

![Diagram](image)

EARLY IMPLEMENTATION GUIDELINES

Teachers implement Montessori differently and at different rates according to their individual abilities. The extent of implementation should be guided by experienced Montessori professionals such as a trained principal, resource teacher, an in-house consultant, or any other experienced Montessorian appointed to help. When specialized help is not available, the principal may wish to select a group of faculty which possesses some Montessori implementation experience as a leadership team. The following procedures are utilized in almost any kind of early implementation situation:

- **Encounter drift from the Montessori curriculum.** Many times teachers are selective about which Montessori lessons they do because some are “too difficult” or “the children do not like the presentations.” The teachers show loss of faith in the Montessori materials by omitting materials or including too many materials. Sometimes teachers drift away from Montessori materials back to traditional approaches. Monthly implementation meetings can bring drifters back to key Montessori lessons through shared faculty presentations, special trainer visits, and in-service workshops — both local and national.

- **Eliminate competency-based requirements of the district curriculum during early implementation** so that the teachers can implement their Montessori programs without concern about documenting grades, lesson plans, and evaluation data for programs other than Montessori. Adopt internal record keeping for Montessori passages geared to reporting pupil progress over three years time.

- **Orchestrate implementation resources.** Well organized material orders, classroom inventories, parent education events, handmade materials production, etc., make a difficult transition period run smoothly.

- **Utilize the monthly “walk about”** to look at the extent of implementation, special needs of children, degree of satisfaction, negative remarks, space and equipment problems, and teacher techniques in practice. Feedback can be given in writing utilizing an Extent of Implementation record form which reviews present and future progress (see Appendix 7 and 8). Active coaching includes observing individual lessons, group lessons, and the prepared environment, with an occasional demonstration of a lesson to the children when requested by the directress.

- **Treat resisters with respect.** Resisters are teachers who have not taken Montessori training or who are not adjusting to the school's transition to Montessori. They exist in every building. Some may be won over; others will transfer out of the building. The principal may wish to involve the resisters in special decision-making roles pertaining to non-pedagogical aspects of the building such as staff
social activities, school fundraisers, and school beautification efforts in order to overcome feelings of exclusion, especially if they have chosen not to take Montessori training.

MAINTENANCE OF MONTESSORI

Usually when magnet funding ends, the support system for curriculum maintenance is eliminated. Institutionalization of Montessori implies that the support structures for the continuation of the curriculum remain in place as part of the operations of the school. The following are important aspects that will aid in the institutionalization process.

- New staff receive training and orientation in the curriculum, record keeping, collaborative review, and self-evaluation.
- Montessori curriculum is fully represented in the lesson plans and record keeping.
- A calendar cycle of in-services is structured annually.
- Replacement materials are ordered each year.
- A seasoned teacher team is dedicated to Montessori maintenance which avoids depending too much on change agents, outside consultants, and trainers who are on-site for a limited period of time.

MONTESSORI TEACHER GROWTH

Montessori training provides a new conceptual base for organizing instruction and introducing new content. Continuing education is required and involves several areas of study, particularly for the elementary level:

- University or museum courses in geography, geology, botany, ecology, natural history, anthropology, evolution, paleontology, and humanities, philosophy, the history of education, and research.
- Montessori in-service in classroom management, preschool and elementary interface, observation, creative writing, interpretive reading, music, art, implementation skills in practical life, reading, writing, math, etc. These in-service programs are offered through national Montessori associations.

Elementary Montessori teachers need to implement open-end areas of training by reaching consensus about: 1) providing classrooms with math problem sources, particularly cultural story problems, 2) outdoor education, 3) literature study including the art of discussion, 4) integration of grammar and creative writing, grammar sentences with sciences and social science topics, 5) advanced sentence analysis, 6) usage grammar in speaking, 7) physics, 8) timing of materials — upper and lower elementary, 9) American history, 10) great civilizations, 11) spelling rules, 12) vocabulary skills, 13) cursive handwriting conventions, 14) geometry extensions, 15) diagnosis of special needs. These are typical areas where teachers can work in peer brainstorming groups.

Observations of good classroom models bring out peer discussion and comparison.

LIMITING TEXTBOOK ADOPTION

Many times well trained Montessori teachers will shun workbooks, readers, and other textbook sources. This is a positive response to training which focuses on the importance of teacher-generated math problem sources and exercises which are geared to the Montessori materials. Teachers should be encouraged to order and prepare Montessori handmade and unpublished materials before they order commercial source materials which may supplant rather than support the Montessori curriculum. Limiting textbook purchasing not only preserves the Montessori program, it cuts costs.

It is possible, however, to conceive of some creative uses for textbooks — particularly to help prepare children over nine for different learning formats. Textbooks, especially if their formats help prepare the
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children for competency-based testing, can be cut up or indexed for their problem clusters and used on an individualized basis. A textbook for every child is not necessary; five or six books per class will provide problem sources for a small group lesson or for individualized work. Ideally several current textbooks should be available to children so that different formats and explications can be judged by the children as they use different textbooks. Total reliance on textbooks and workbooks, however, can displace Montessori, which has its own especially designed curriculum support materials (see Chapter Two for a listing of materials by subject area). Some materials will need to be handmade.

INDIVIDUALIZED INSTRUCTION*

"Individualization of instruction is based on the observation that children learn at varying rates and is encouraged by our social milieu that stresses individual liberty" (Lewis). The conventional material for individualized learning has been "programmed learning" which is self-correcting, sequential, highly motivational, computerized, etc. The materials are attractively packaged with programmed cards providing such standardized activities as fill-in-the-blank, multiple choice, and, on occasion, playful grids, crossword puzzles, etc.

Montessori individualization is not "programmed." This is readily perceptible to the novice when visiting an established Montessori class because there are varieties of activities which are unique in the following ways:

Montessori materials have an open-ended quality with various layers of exploration and meaning which cannot be captured by one-word or multiple-choice answers. Children can use the materials in different ways in keeping with individual learning styles. For example, a child may need (or wish) to stay with the checkerboard verbalization of multiplier functions rather than move to the golden bead frame, or the child can go to abstraction with the bead frame instead of the checkerboard.

Montessori materials lead the child to discovery at many levels, moving the child’s activities from concrete to abstract passages learned by watching the teacher’s presentation. Then the child repeats the presentation, sometimes coached by the teacher. The learning process involves human interaction and information exchange: self-evaluation, observation, goal orientation, control of error, acceptance of mistakes, representation, etc. Repetition of activities is not prescribed, but rather is stimulated by the sensorial logic of the materials and the timing of the teacher’s intervention.

The materials provide an overview for the child, moving from the general to the specific in analyzed steps, introducing one difficulty at a time.

The activities are reflective and interpretive — there is not one right answer. In this way an emphasis can be placed on relationships between each exercise and extensions of increasing complexity.

The child’s introduction to a new material is guided by the dynamic observation of the teacher in relation to the child’s individual interaction with the “prepared” environment. Progress is contingent on social and emotional behavior. Children teach each other and are observed accordingly.

Sequence is not rigidly controlled. Materials have parallel applications with the same concepts and skills. Therefore, the sequence of the materials to some degree relates to the perceived interest of the child and the discretion of the teacher. The sequence may be revised for each individual.

Individualization also depends on the teacher’s knowing each individual challenge that allows the child to broaden his experience without feeling either overextended or underestimated.

*This section is derived in part from an article written by Larry Lewis entitled, “Individualized Instruction — Is It Montessori?”
MULTI-AGE GROUP DYNAMICS

Multi-age groups (ages 3-6, ages 6-9, and ages 9-12) enhance the Montessori dynamics by the following:

• **Reducing competition** — A variety of ages means that children will be more likely to find peers among a mixed group based on a variety of social, emotional, and intellectual levels not necessarily related to chronological age.

• **Broadening human perception** — Where there is diversity of ages, incidental perception of children at different developmental stages provides the teacher and the children with a greater range of insight.

• **Providing a social atmosphere** — Children of different ages generally humanize each other in a caring and affectionate manner. The atmosphere is family.

• **Intensifying learning** — The older children model learning for the younger ones and may actively teach the younger children. By assuming leadership in teaching, their own learning is reinforced.

ELEMENTARY CLASS GROUPING

Although there is no established procedure for grouping children in multi-age elementary group settings, it is clear that regrouping children from time to time can expand their social contacts and prevent segregation of abilities and behaviors. Generally, two kinds of grouping occur at the elementary level:

A **three-cycle approach** with children strategically placed according to ability and interest, but with basic curriculum presentations managed according to grade level. In other words, there is a first year cycle, a second year cycle, and a third year cycle. Although these divisions exist in planning, in actual practice it is important to plan smaller groups of children from different levels which change daily or weekly based on interest and teacher discretion.

The **Great Lesson approach** presents inspired lessons to the whole class with the children doing independently inspired group and individual work derived from their interest in what has been presented in the great lessons. This applies to work which is greater than the normative levels of work required by the district.

In most cases, the cycle-oriented approach is selected in the public sector since it can be more easily correlated to traditional curriculum objectives which are divided by grade. It is often easier to visualize multi-age group settings, especially in the context of public schools, if one documents areas of curriculum presentations as part of annual cycles for each grade level. This does not exclude inspirational class-wide lessons or the Great Lesson or Key Lesson approaches which should be incorporated at the same time.

OBSERVATION, RECORD KEEPING, AND EVALUATION*

In restructuring schools, the record keeping system must reflect the aims of the pedagogy. Patell suggests the following:

• keep records of presentations and activities that have been introduced to the children each week
• keep a monthly or six-week diary on each child's social development
• write up brief general notes on each child at the end of every term

In the preschool, the fundamental approach to Montessori evaluation is observation. Patell writes:

From the Montessori point of view, the purpose of observation could be thought of as the cornerstone of our work. It is the indispensable part which makes our work come alive and become meaningful. It is a tool which enables us to follow the child’s spontaneous manifestations not with the aim of studying the psychology of the child, but in order to refine our own thinking and understanding so as to be able to give the life of the child the help that it has the right to receive.

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At the elementary level, observation of each child is combined with individual conferences designed to assist the child in becoming a co-evaluator of his or her development both academically and socially. Montessori calls for the making of a "scientific instrument" that could measure the "psychical manifestations of the child" based on the "repetitions of the actions" and "the polarization of attention" (Spontaneous Activity, p. 78). A classical record-keeping approach enables the teacher to note patterns of interest and the ability of the child to sustain interest (see Appendices 12, 16, 17, and 18, this chapter).

The materials hold the attention of the child and represent the means by which the child can act upon his environment. When the child, in response to the material, begins to concentrate, he is giving his full attention to an activity. He is teaching himself.

Observation, insists Patell, must be done on the job. One must gather data patiently and objectively, reflect on information gathered, and take appropriate steps upon arriving at a conclusion.

In building an understanding of the child, Patell indicates that to judge the child is not the objective in the Montessori class.

In order to be objective we should not allow our perception to become clouded by personal preferences and prejudices, nor by personal expectations. It is a real struggle when one is trying to be objective not to allow past experiences to overshadow the observation of the moment. A useful practical discipline for oneself while observing is to keep awareness in the present — this simple but effective technique allows us to gather the necessary information without judging, assuming, labeling situations or individuals or reacting to situations.

The fundamental principle of Montessori pedagogy then, is the Montessori attitude. The director gains understanding of the child through a watchful thoughtfulness. The director then offers the child challenges with assurances of success.

THE PREPARED ENVIRONMENT

Montessori materials do not make a classroom a Montessori environment. Miss Patell, in examining the functions of the prepared environment which make possible valid observations of the child, poses the following questions:

Is the focus within the prepared environment on the development of the whole personality, taking into account the child's physical, social, emotional, intellectual and spiritual needs, or is it on gaining skills and acquiring knowledge?

Do the children have the freedom to fulfill their developmental needs?

Are opportunities provided which allow the growing child to achieve successive levels of independence in thought and in action?

Does the environment afford a place where the child can act for himself, direct his or her own life, and thereby become conscious of his or her own growing powers and abilities?

Are the children given the responsibility to contribute to the care of the environment so that they feel a sense of belonging — a sense of self-worth?

Do the children have the opportunity to acquire social skills through constant interaction within a community situation?

Are we aware of the many facets of order that should be prevalent within the prepared environment, including the director who presents with exactitude?

Do we keep in mind the principles of moving from simple to complex experiences with an added challenge at each stage?

In summary Patell reminds us that:

The materials are not intended just to provide instruction, they represent a means by which the children can act upon their environment. They are aids to the children's self-construction. By responding to sensitive periods and tendencies, the materials provide the right stimuli in order to capture the children's attention.
CONFERENCES AND WORK DIARIES*

When beginning a Montessori elementary class, the daily journal or "work diary" kept by each child makes the child a partner in his or her own assessment: this process helps the child assume a feeling of responsibility and ownership of his or her education.

The journal is a simple log of the child's time and activities for the day. It is important that journals are kept current and that the children are in the habit of using them daily. This may require scheduled times at the beginning, such as before lunch and before afternoon dismissal for filling out the diary.

The journal is used in a personal conference between child and teacher which takes place weekly or bi-weekly depending on the child's needs. The child brings all work done since the last conference.

At the conference the child discusses work that is completed and new directions for the future. The child may request presentation for which he or she feels ready, and the timing of the presentations in the upcoming weeks is scheduled right onto the teacher's planning sheets. If there has been work in one or two particular subjects, the child and the teacher may decide to schedule presentations in subjects which have been inactive. Also, productivity and work habits can be discussed. For example, when a child spends two hours doing four multiplication problems, it may mean that he needs to have the lesson repeated or that he needs help with motivation, self-discipline, time management, and social life.

NORMALIZATION

Fundamental to Montessori curriculum implementation is the concept of normalization. Normalization is a process where a child moves from being undisciplined to self-disciplined, from disordered to ordered, from distracted to focused. The process occurs through repetition on some piece of work that captivates the child's attention and represents an "inner change" which may take place quite suddenly and leads to deep concentration. Inner change refers to an impact on the child's whole aspect of behavior characterized by a sense of order, a love of work, profound focus, love of silence, working alone, sublimation of the possessive instinct, power to act from real choice, obedience, independence, initiative, and cooperative learning all in the context of freedom. Education is the means to normalization which implies "a harmonious growth of all potentialities of the child, mental and physical, according to the laws of his being" (Montessori, 1964).

WRITTEN REPORTS TO PARENTS

Written reports to parents are a supplement, not a replacement for parent conferences. Written reports communicate academic and classroom progress in the context of Montessori philosophy. They are important tools yet many Montessori programs do not take the opportunity to educate parents through the written reports.

- More than half of the fifteen districts submitting used conventional report cards to convey relative levels of success in Montessori curriculum.
- Several programs summarized Montessori sequences of materials with checklists and coded entries.
- Other report cards relied heavily on anecdotal reports and blank areas for academic progress lists where Montessori programming could be represented.

*Special acknowledgements to Diane Haldane, Greenfield Montessori School, Milwaukee, Wisconsin and Phyllis Pottish-Lewis, Corte Madera, California for this section.
Although under ideal circumstances report cards should reflect characteristics of the Montessori program, it is imperative, however, that they do not reflect itemization of program requirements that are not Montessori. A detailed listing of reading skill inventories, for example, would require that teachers report on components no longer relevant to Montessori pedagogy thereby obstructing communication of Montessori standards and confusing parents. In such cases report cards need to be modified.

Parent conferences provide the best kind of reporting, focusing on individual learning styles, interests, social interaction, emotional growth — in short, a well documented portrait of the child’s personality as a whole, with learning as but one facet of a total picture.

Written reports are part of a communications tradition, and to some extent guarantee a minimum of information to parents. Insofar as they include grades or evaluative codes they are not in keeping with Montessori tenets which acknowledge that self-motivation is derived from the intrinsic nature of the child’s work and not from a system of rewards or penalties.
Mathematics

**SCOPE AND SEQUENCE CHART**

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>AGE 10</th>
<th>MATERIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>III. Properties of Number</td>
<td>Students will be able:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To solve first degree equations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>in addition, subtraction, multiplication &amp; division</td>
<td></td>
</tr>
<tr>
<td>IV. Measurement</td>
<td>Students will be able:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To calculate the volume of Volume Material rectangular prisms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To measure the circumference, area &amp; sectors of a circle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To derive the formulas for volume calculations</td>
<td></td>
</tr>
<tr>
<td>V. Problem Solving</td>
<td>Students will be able:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To study special topics in science &amp; geography</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To continue third level study of: distance, velocity, time, percent, interest</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To solve word problems</td>
<td></td>
</tr>
</tbody>
</table>
IMPLEMENTATION


An experienced Montessori trained professional is essential to the fostering of a mature Montessori program. Montessori values and standards are maintained with each succeeding generation of teacher by an authoritative individual.

MANAGEMENT

MONTESSORI ACADEMIC LEADERSHIP:

Montessori Program Coordinator/Resource Teacher

(Adapted from Milwaukee Public School Job Description)

The MPSC stresses the importance of a professionally trained Montessori supervisor. The Montessori Coordinator is directly responsible to the principal. The basic function of the Montessori Coordinator is to assist in the development, coordination and implementation of the pre-kindergarten through grade six Montessori program. It is recommended that the Montessori Coordinator have Montessori training and experience at both the preschool and elementary levels. The major responsibilities of this position are to:

- Assist in recruiting and hiring Montessori-trained teachers and assistants
- Order materials
- Establish and supervise Montessori classrooms including planning and record keeping
- Develop and maintain parent education
- Oversee the preparation of Montessori materials
- Organize parent volunteers
- Coordinate staff development activities with teachers and assistants in and out of the classroom
- Plan and execute the creation of additional levels and components of the Montessori program
- Complement the principal, elementary educational administration, and central administration in the pursuit of the development and implementation of the Montessori program
- Maintain a flexible schedule capable of multiple task undertakings and spontaneous adjustments to circumstances as they arise
- Remain available for a variety of short-term activities that may present themselves on a day-to-day basis
- Attend conferences, workshops, in-services, meetings or classes as needed to support the development of the Montessori program
- Assist the principal in the preparation of periodic reports on the development and implementation of the Montessori program
- Draft correspondence to teachers, administrators, parents or community, and proposals to foundations, as needed, to support the Montessori program
- Provide leadership and direction in regularly scheduled staff meetings
- Act as a liaison between magnet school, public school, administrators, and community organizations
- Develop Montessori-specific evaluation materials which also take into consideration district evaluation criteria

Montessori Resource Persons Recommended by the Consortium

Of the many knowledgeable people involved in Montessori public education, the following Montessori trained people have agreed to serve as MPSC resource persons until more formal networking programs can be established. Consult the directory for phone numbers and addresses.

Paula Blower — Principal of Mitchell Montessori in Denver, Colorado. She gained extensive experience in curriculum coordination and development while employed by the Milwaukee Public Schools and is currently directing a research project measuring, in particular, the impact of Montessori on the family.

David Kahn — Executive Director of the North American Montessori Teachers' Association and Project Director of the NAMTA Public School Study. Prior to assuming the leadership of NAMTA, he served twelve years as a teaching principal at a large, private Montessori school.

Jean K. Miller, Ph.D. — Curriculum Coordinator for Greenfield Montessori School in Milwaukee, Wisconsin. Jean has excellent understanding of Montessori curriculum as well as a broad based education background with special expertise in Montessori music.

Phyllis Williams — Principal of North Avondale School in Cincinnati, Ohio. Ms. Williams has been active in the Montessori public school education movement since 1973 and has a sense of how to develop dynamic Montessori programming using parent resources.
### Implementation Observation Form - Extent of Model Implementation

**Montessori Preschool**

<table>
<thead>
<tr>
<th>Center</th>
<th>Date</th>
<th>Staff present</th>
<th>Total Enrollment</th>
<th>Children present</th>
<th>Volunteers present</th>
<th>Weather</th>
</tr>
</thead>
</table>

#### Areas

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Extent of Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Environment</strong></td>
<td></td>
</tr>
<tr>
<td>Aesthetic environment</td>
<td>Fully Implemented=FI</td>
</tr>
<tr>
<td>Materials easily accessible to children</td>
<td></td>
</tr>
<tr>
<td>Materials color-coded</td>
<td></td>
</tr>
<tr>
<td>Materials organized in baskets, boxes or on trays</td>
<td></td>
</tr>
<tr>
<td>Materials not stacked</td>
<td></td>
</tr>
<tr>
<td>Materials visible where appropriate</td>
<td></td>
</tr>
<tr>
<td>Amount of materials appropriate for time of year</td>
<td></td>
</tr>
<tr>
<td>Line on the floor for movement</td>
<td></td>
</tr>
<tr>
<td>Materials, shelves dust, dirt free</td>
<td></td>
</tr>
</tbody>
</table>

#### Arrangement

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Extent of Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment ordered so children can participate in necessary cleaning, straightening activities</td>
<td></td>
</tr>
<tr>
<td>Traffic pattern doesn't disrupt</td>
<td></td>
</tr>
<tr>
<td>Children working</td>
<td></td>
</tr>
<tr>
<td>Environmental design enhances self-control</td>
<td></td>
</tr>
<tr>
<td>Individual tables/rugs for working</td>
<td></td>
</tr>
<tr>
<td>Limited visual distractions on walls at eye level of children</td>
<td></td>
</tr>
<tr>
<td>Teacher can see over shelving</td>
<td></td>
</tr>
<tr>
<td>Appropriate tables/chairs, child-sized</td>
<td></td>
</tr>
<tr>
<td>Safety practices observed</td>
<td></td>
</tr>
<tr>
<td>Room and materials organized by areas</td>
<td></td>
</tr>
<tr>
<td>Outdoors utilized and integrated into the day</td>
<td></td>
</tr>
</tbody>
</table>

#### Areas of the Classroom

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Extent of Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of different materials available in each area:</td>
<td>exc=excessive adq=adequate inc=inactive comments</td>
</tr>
<tr>
<td><strong>practical life</strong></td>
<td>exc</td>
</tr>
<tr>
<td><strong>sensory</strong></td>
<td></td>
</tr>
<tr>
<td><strong>math</strong></td>
<td></td>
</tr>
<tr>
<td><strong>language</strong></td>
<td></td>
</tr>
<tr>
<td><strong>biology</strong></td>
<td></td>
</tr>
<tr>
<td><strong>history</strong></td>
<td></td>
</tr>
<tr>
<td><strong>geography</strong></td>
<td></td>
</tr>
<tr>
<td><strong>art</strong></td>
<td></td>
</tr>
<tr>
<td><strong>music</strong></td>
<td></td>
</tr>
<tr>
<td><strong>non-Montessori</strong></td>
<td></td>
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</tbody>
</table>

**Materials Not in Use in Each Area**

<table>
<thead>
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</tr>
</thead>
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<tr>
<td><strong>practical life</strong></td>
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</tr>
<tr>
<td><strong>sensory</strong></td>
<td></td>
</tr>
<tr>
<td><strong>math</strong></td>
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<tr>
<td><strong>language</strong></td>
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<tr>
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<td><strong>history</strong></td>
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<tr>
<td><strong>geography</strong></td>
<td></td>
</tr>
<tr>
<td><strong>art</strong></td>
<td></td>
</tr>
<tr>
<td><strong>music</strong></td>
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### IMPLEMENTATION

<table>
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<th>AREAS</th>
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<tr>
<td></td>
<td></td>
<td>Fully Implemented</td>
</tr>
<tr>
<td>Children's sense of order</td>
<td>Children demonstrate care of materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Environment well-ordered at beginning of day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chairs pushed in when leaving tables</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Children clean up after themselves</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Collective Grouping</strong></td>
<td>Uninterrupted time allowed for individual activities (3 hours)</td>
</tr>
<tr>
<td></td>
<td>Large group activities appropriate for developmental level of children</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Large group activities of an appropriate time duration (5-15 min)</td>
<td></td>
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<tr>
<td></td>
<td>Provision made for giving lessons without interruption</td>
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<tr>
<td></td>
<td>Teacher able to work individually while managing whole group</td>
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<tr>
<td></td>
<td>Large group activities:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Small group activities:</td>
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</tr>
<tr>
<td></td>
<td>Records document children’s progress systematically</td>
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<td></td>
<td>Lesson planning for individual children</td>
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<td>Lesson planning for developmental age groups</td>
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<td></td>
<td>Planning for periodic enrichment by area</td>
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<td><strong>Record keeping</strong></td>
<td>Descriptive records:</td>
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<td>Records document children’s progress systematically</td>
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<td></td>
<td>Lesson planning for individual children</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lesson planning for developmental age groups</td>
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<td>Planning for periodic enrichment by area</td>
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<tr>
<td></td>
<td><strong>Descriptive records:</strong></td>
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<td></td>
<td>Checklist of activities by children</td>
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<td></td>
<td>Anecdotal observation notes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Observation graphs</td>
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</tr>
<tr>
<td>Degree of independence demonstrated by children</td>
<td>Choose, use, return materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fix mistakes, take care of problems on their own</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use adults and children as resources</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Initiate activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select challenging work</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Degree of concentration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continues to work in teacher’s absence</td>
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</tr>
<tr>
<td></td>
<td>Work without external rewards or praise</td>
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</tr>
<tr>
<td></td>
<td>Routines reflect independence and integration of individual procedures</td>
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<tr>
<td></td>
<td>Snack time</td>
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<td></td>
<td>Tidying</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hand washing</td>
<td></td>
</tr>
<tr>
<td>Child/Child interaction</td>
<td>Children help each other</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Children teach each other</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Children work in community atmosphere</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social problems resolved mutually with consideration of individuals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Respect shown for people, activities and property</td>
<td></td>
</tr>
<tr>
<td>Adult/Child interaction</td>
<td>Adults encourage children to solve their own problems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eye level contact used when speaking to one child</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adults use quiet voices</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adults initiate activity when needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adults speak to children personally and individually</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adults provide and model lessons in grace and courtesy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adults are able to observe the class</td>
<td></td>
</tr>
</tbody>
</table>
### Implementation Observation Form - Extent of Model Implementation

**Montessori Elementary Center**

<table>
<thead>
<tr>
<th>Center</th>
<th>Date</th>
<th>Staff present</th>
<th>Total Enrollment</th>
<th>Children present</th>
<th>Volunteers present</th>
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</thead>
</table>

#### Extent of Implementation

<table>
<thead>
<tr>
<th>Physical Environment</th>
<th>Characteristic</th>
<th>Extent of Implementation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelving is clean and organized</td>
<td>FI = Fully Implemented</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key books are accessible for research</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural materials are prominent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic areas are articulated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group and individual work areas available</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Montessori materials few in number</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialty subjects set up for child's independent use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall displays respectful of key subjects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety practices observed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good out presented</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variety of problem sources</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overview of class possible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group lesson table with blackboard</td>
<td></td>
<td></td>
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<tr>
<td>Traffic pattern sensible</td>
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</table>

#### Care of the Environment

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Extent of Implementation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children put away their materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment well ordered at beginning of day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children participate in maintaining the environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children keep their work areas neat</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Child/Child Interaction

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Extent of Implementation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children help each other</td>
<td>FI = Fully Implemented</td>
<td></td>
</tr>
<tr>
<td>Children are aware of ground rules</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment is contention free</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict is resolved sensitively</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children respect each other's work</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Adult/Child Relationship

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Extent of Implementation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult sound out as a resource</td>
<td>FI = Fully Implemented</td>
<td></td>
</tr>
<tr>
<td>Adult observes children solving problems before interacting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult establishes eye contact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult shows individual sensitivity towards each child</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult shows grace and courtesy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult shows respect, proceeds gently</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Group Management

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Extent of Implementation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group lessons are frequent</td>
<td>FI = Fully Implemented</td>
<td></td>
</tr>
<tr>
<td>Children were attentive and active</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult was inspiring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult was aware of group needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult was aware of different levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eye contact in lesson was good</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapport in lesson was good</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interruptions minimized</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group lessons utilized key materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children seemed engaged</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### IMPLEMENTATION

#### AREA: CHARACTERISTIC | EXTENT OF IMPLEMENTATION
--- | ---
Independent Work | Children seemed sure of their choices  
Children worked with a sense of enjoyment  
Work is purposeful, detailed, and accurate  
Children work without direct adult supervision  
Children initiate work  
Children help each other  
Children work together keeping socializing in moderation  
Children show sustained concentration

#### RECORD KEEPING
- Records kept which document children's progress
- Lesson planning is evident for year, week, day

#### IMPLEMENTATION DIFFICULTIES
- Age of child entering
- Consistency of attendance
- Training of the teacher
- Willingness of the teacher to do Montessori
- Length of school year
- Length of school day
- Protection of work cycle
- Administrative cooperation
- Background of children

### DATA

#### AREA: CHARACTERISTIC | EXTENT OF IMPLEMENTATION
--- | ---
Amount of Different Materials Available in Each Area: exc = excessive adeq = adequate inc = incomplete
- Math
- Language
- Biology
- History
- Geography
- Art
- Music
- Non-Montessori

- Materials Not in Use in Each Area
  - Math
  - Language
  - Biology
  - History
  - Geography
  - Art
  - Music
  - Non-Montessori
Checklist for Functional Independence

The Child Can Manage:

The Morning Entry:
- Complete personal greeting to the guide.
- Changing and hanging up clothing (wraps, aprons, etc).
- Putting away personal articles neatly.
- Cleaning and beautifying his own work area.

During the Work Period:
- Sequence of using a chair and replacing it.
- Sequence of using a rug properly.
- Identifiable work pattern for at least the first 45 minutes of the day.

Walking on the Line:
- Taking off and putting on shoes (except for bows).
- Walking from the designated place and coming to walk according to your signals.
- Preparing and arranging the space for the exercise.

Silence Exercises:
- Sitting silently and without tension.
- Concentrating on distant sounds.
- Concentrating on particular nearby sounds.
- Concentrating on hearing his own name.

Daily Life of the Group:
- Snack time.
- Lunch time.
- Nap time.
- Using the bathroom.

The Afternoon Departure:
- Straightening the objects on one shelf.
- Searching the floor for foreign objects.
- Straightening out one's own clothing.
- Arranging hair neatly.
- Checking for clean hands and face.
- Carrying articles properly (scrap, books, papers, etc).
- Putting on wraps.
- Personal good-bye to the guide.

At first the children are dependent on you for many of these things. Our manner of showing them how to do it gives the possibility for you to be less active as the children take over more and more.

If freedom is to be learned, the guidance is indirect through placing limits and representing whenever necessary.
Appendix H: Suggested Preschool Work Levels — Midwestern Montessori Teachers’ Center, International, Wisconsin

Work levels are generally established at each school by faculty consensus. Work levels are summarized in terms of process and communication that is especially useful in the preschool classroom.

<table>
<thead>
<tr>
<th>Task</th>
<th>Process</th>
<th>Communication</th>
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<tbody>
<tr>
<td>Setting</td>
<td>Process 1</td>
<td>Communication 1</td>
</tr>
<tr>
<td>Writing</td>
<td>Process 2</td>
<td>Communication 2</td>
</tr>
<tr>
<td>Reading</td>
<td>Process 3</td>
<td>Communication 3</td>
</tr>
</tbody>
</table>

Note: Each task is broken down into specific steps for easier understanding.
### Geometry Record Keeping

**KEY:** Introduced ☐ Has worked independently ☒

#### Solid Geometric Figures:

<table>
<thead>
<tr>
<th>Figure</th>
<th>Names</th>
<th>Labels</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>sphere</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>oval</td>
<td></td>
<td></td>
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<tr>
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<td></td>
</tr>
<tr>
<td>square based pyramid</td>
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</tr>
<tr>
<td>triangular based pyramid</td>
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#### Plane Geometric Figures:

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<tr>
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<tr>
<td><em>trapezoid</em></td>
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<tr>
<td>obtuse angled triangle</td>
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</tbody>
</table>

*These figures need to be introduced before they are employed.*

#### Constructive Triangles:

- **rectangular box**
  - 1 colored triangles
  - 2 blue triangles
- **triangular box**
  - small hexagonal box
  - large hexagonal box

#### Miscellaneous:

<table>
<thead>
<tr>
<th>Figure</th>
<th>Names</th>
<th>Labels</th>
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<tr>
<td>triangular cube</td>
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<table>
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<th>Figure</th>
<th>Names</th>
<th>Labels</th>
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#### Nomenclature Cards:

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<tr>
<td>parts of a circle</td>
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<tr>
<td>Mena</td>
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<tr>
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<td></td>
</tr>
</tbody>
</table>
Excerpted from *SPONTANEOUS ACTIVITY IN EDUCATION*
by Maria Montessori

---

**Chart 1 Page 100**

- Work
- State of Quiescence
- Disorder
- Waiting to enter the schoolroom
- Collective call to order
- Frame
- Plane insets
- Frame
- Collective call to order
- Recreation

---

**Chart 2 Page 108**

- Initial work
- False fatigue
- Earnest work
- Real

---

**Chart 3 Page 103**

- Colours
- Numbers on the star
- Alphabet
- Contemplation

---

**Chart 4 Page 106**

- Touches the letters
- Writes
- Reads the slips
- Recreation: looks at picture books
9.30  |  Helps to set up the environment
10.00 | Painting (Candice comes to watch)
10.30 | Sets out farm
11.00 | Asks directress if he can go
11.30 | Continues working
12.00 | Helps another child put away hair of edge
12.30 | Whole group music and never does not
IMPLEMENTATION

Appendix 16: Weekly Lesson Plan Sheet, Whole Class — Diane Haldane, Milwaukee Public Schools, Upper Elementary, Milwaukee, Wisconsin

One lesson plan sheet is filled out with individualized lessons for the whole week. This takes about 1.5 hours each weekend. When the lesson is given it is underlined. Children can use this sheet to review their work options. Lessons not given are entered on the weekly plan for the following week. Appendices 16-19 are samples of teacher records kept of students in a Montessori Elementary classroom. Remember that these exhibits are merely samples of one teacher's development of a suitable recordkeeping system. The thinking and reflection a teacher must undertake to devise and maintain a recordkeeping system is indispensable to her providing a genuine Montessori environment.

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<th><strong>History</strong></th>
<th><strong>Geography</strong></th>
<th><strong>Biology</strong></th>
<th><strong>Music</strong></th>
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<td>Read, write, spell, say</td>
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- **Math**: Basic arithmetic operations (addition, subtraction, multiplication, division)
- **Language**: Reading, writing, spelling, and basic grammar
- **Geometry**: Basic geometric concepts (angles, shapes, measurements)
- **History**: Basic historical facts and dates
- **Geography**: Basic geographic locations and concepts
- **Biology**: Basic biological concepts (cells, ecosystems)
- **Music**: Basic musical concepts (notes, rhythm)

**Comments**:  
- **Math**: Needs improvement in multiplication and division.  
- **Language**: Needs improvement in grammar and spelling.  
- **Geometry**: Needs improvement in understanding basic shapes.  
- **History**: Needs improvement in memorizing dates and events.  
- **Geography**: Needs improvement in understanding maps and locations.  
- **Biology**: Needs improvement in understanding cellular processes.  
- **Music**: Needs improvement in understanding musical notation.
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<td>11:12-11:20</td>
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<td>11:20-11:30</td>
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<td>1:00-2:30</td>
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Appendix 20: Traditional Report Card Used for Montessori Reporting — Sands Montessori School, Cincinnati, Ohio

Using conventional nomenclature, this report card is able to convey the "public school curriculum" containing some Montessori concepts, while at the same time maintaining citywide conventions.
TO PARENTS OR GUARDIANS:

The teachers and the principal of this school, and all the other School District personnel working to help your child learn, have a single goal that your child succeed in school now to prepare for success in later life. Your child will succeed if you share in the goal of your child's success.

I have asked you to come to the school to pick up your child's report card. I have done this to give you a chance to discuss with your child's teachers how you and they can best work together so that your child will succeed.

I hope you will continue to be involved in your child's education. The home and the school working together is the best guarantee of your child's success.

Everett J. Williams
Superintendent
### Mathematics

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### Social Studies

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### SCIENCE

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<tr>
<td>Classification of rocks</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Classification of plants</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Classification of animals</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Science experiments</td>
<td>☐</td>
<td>☐</td>
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<td>☑</td>
</tr>
</tbody>
</table>

### ART

### MUSICAL

### PHYSICAL EDUCATION

### BEHAVIOR, ATTITUDES AND SOCIAL INTERACTION

<table>
<thead>
<tr>
<th>Periods</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follows directions</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Moves with purpose</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Works independently</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Attention span</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Completes work</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Attentive in group lessons</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Positive response to requests</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Works without disturbing</td>
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<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Self-motivated</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Chooses challenging work</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Works for own enjoyment</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Respects property of others</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>Neatness and order</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
</tbody>
</table>

### ADDITIONAL COMMENTS:

Report Card Dates:  

Parent's Signature

---

Nelson Card 

Principal's Signature

---

is recommended for grade for the school year.

Teacher's Signature

Principal's Signature
TO PARENTS OR GUARDIANS:

The teachers and the principal of this school, and all the other School District personnel working to help your child learn, have a single goal that your child succeed in school now to prepare for success in later life. Your child will succeed if you share in the goal of your child's success.

I have asked you to come to the school to pick up your child's report card. I have done this so you can discuss with your child's teachers how you can help your child succeed.

I hope you will continue to be involved in your child's education. The home and the school working together is the best guarantee of your child's success.

Everett J. Williams
Superintendent
Division
Multiples and factors
Prime Numbers
Fraction Equivalences
Operations with fractions
Complex operations with fractions
Binomials and Polynomials
Study of powers with beads
Square root with golden beads
Square root with pegs
Study of decimals
The metric system
Algebra
Trigonometry
Calculus

Work without Montessori materials
Addition with carrying
Multiplication with carrying
Subtraction with borrowing
Long division with one digit
Long division with two digits
Long division with three digits
Lowest common multiple
Highest common divisor
Fraction equivalences
Operations with fractions
Binomials and Polynomials
Computation of powers
Square root
Algebraic equations
Decimals
Cubing
Computation of percentage
Computation of average
Ratio and proportions
Problem Solving

COMMENTS

Periods
1 2 3 4

GEOMETRY
Work with Montessori materials
Protractor
Study of triangles
Second set of constructive triangles
Theorems of Pythagoras and Euclid
Box of small cubes
Yellow material for the study of volume
Work without Montessori materials
Measuring angles
Construction of figures with a compass
Study of equivalences
Study of similarity
Study of congruency

SOCIAL STUDIES
Work with Montessori materials
Geography cabinet
Classified nomenclature of geography
Timeline of life history
Timeline of man's history
Timeline of civilizations
History of one's country
History of one's state
Socio-economic geography

SCIENCE
Botany
Zoology
Physics
Scientific inquiry

FRENCH

ORAL AND SOCIAL INTERACTION
+ very weak making progress + strong

Periods
1 2 3 4

Follows directions
Moves with purpose
Works independently
### Behavior, Attitudes and Social Interaction Continued

<table>
<thead>
<tr>
<th>Periods</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention span</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completes work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attentive in group lessons</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive response to requests</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Works without disturbing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-motivated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chooses challenging work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Works for own enjoyment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respects property of others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neatness and order</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ADDITIONAL COMMENTS:**

- 
- 
- 
- 

**Report Card Dates:**

<table>
<thead>
<tr>
<th>Periods</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

**Parent’s Signature**

**Teacher’s Signature**

**Principal’s Signature**

---

**is recommended for grade for the school year**

---

---

---
The purpose behind the Montessori Report Card is to evaluate the individual child's progress without comparison to the other children. Our intent is to describe the child's progress. A check means that your child was involved in that lesson. All evaluation by the director is written with a comment.
THE GOALS OF PERSONAL AND SOCIAL DEVELOPMENT: They are listed below for a reference to the child and his parent.

<table>
<thead>
<tr>
<th>Chose appropriate work</th>
<th>Works cooperatively and constructively in groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentrates on chosen work</td>
<td>Respects rights and property of others</td>
</tr>
<tr>
<td>Shows order in their work</td>
<td>Cares for the materials and the environment</td>
</tr>
<tr>
<td>Works independently without supervision</td>
<td>Shows growth in self-control</td>
</tr>
<tr>
<td>Accepts responsibility to accomplish their academic needs</td>
<td>Observes rules and procedures</td>
</tr>
<tr>
<td>Is self-directed</td>
<td>Is sensitive to the needs of others</td>
</tr>
<tr>
<td>Completes work</td>
<td>Uses grace and courtesy</td>
</tr>
<tr>
<td></td>
<td>Leads and guides their classmates</td>
</tr>
</tbody>
</table>

COMMENTS

THE REPORT CARD ENVELOPE MUST BE SIGNED BY THE PARENT AND RETURNED TO THE DIRECTOR. COMMENTS BY PARENTS OR STUDENTS MUST BE WRITTEN ON A SEPARATE PIECE OF PAPER. PARENTS MUST HAVE CONFERENCES WITH TEACHERS AT LEAST 2 TIMES A SCHOOL YEAR.

PARENT-TEACHER CONFERENCE

<table>
<thead>
<tr>
<th>Attended</th>
<th>Unattended</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 3, 4, 5, 6</td>
<td>1, 2, 3, 4, 5, 6</td>
</tr>
</tbody>
</table>

1ST REPORT
I  It
I I
conveys thoughts logically

commits to group discussion

related conversation

discussions about on-going work
### READING
#### THE READING OF WORDS:
- Phonetic words
- Non-phonetic words
- Surprise words
- Phonograms
- Sounds pairs or sets
  - on (on, on, on)
  - in (in, in, in)
  - on (on, on, on)
  - in (in, in, in)
  - on (on, on)
  - in (in, in)
  - on (on)
  - in (in)
  - on
  - in
  - on
  - in

#### WORD STUDY:
- Affixes
- Suffixes
- Prefixes
- Compound words
- Possessives
- Contraction
- Word families
- Synonyms
- Antonyms
- Homonyms
- Abbreviations
- Spelling rules
- Syllable division rules

#### COPRISTS:
- One word per column
- Sentences
- One action
- Lead in action
- 3 or more actions

#### INTERACTIVE READING:
- Sentences
- Paragraphs
- Dialogues
- Poetry
- Dramatic productions

#### SPEECH:
- Oral reports
- Debates
- Forensics

**Note:** Reads aloud fluently and with expression.

### GRAMMAR BOIDS
#### NAMES:
- Initial introduction
- Article-noun
- Symbolizes in writings
- Definite & Ind articles
- Singular-plural
- a
- an
- the
- 's
- -s
- -es
- f
- v
- other
- FT
- y
- -y
- -s
- -en
- -er
- possessive
- 1st
- 2nd
- 3rd
- Gender
- Diminutive
- Singular, plural, gender

#### ADJECTIVES:
- Introduction (BB IV A)
- Filter boxes
- Commands
- Symbolizes in writings
- Types
- Pattern

#### DEVICES:
- Introduction (BB VI A)
- Filter boxes
- Commands
- Symbolizes in writings
- Types
- Pattern

#### SYNONYMS:
- Introduction (BB VII A)
- Filter boxes
- Commands
- Symbolizes in writings
- Types
- Pattern

#### INTERJECTIONS:
- Introduction (BB IX A)
- Filter boxes
- Symbolizes in writings
- Pattern

#### VERBS:
- Present tense
- Past tense
- Strong & weak verbs
- Future tense
- Auxiliary verbs
- Present perfect
- Past perfect
- Future perfect
- Continuous verbs
- Progressive
- Active voice
- Passive voice
- Reflexive
- Intensive positive
- Passive voice
- Reflexive
- Intensive negative

**Note:** Uses a variety of verb tenses and voices.
<table>
<thead>
<tr>
<th>Area</th>
<th>Concepts of area with yellow area material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Finding area of the yellow area material</td>
</tr>
<tr>
<td></td>
<td>rectangle</td>
</tr>
<tr>
<td></td>
<td>parallelogram</td>
</tr>
<tr>
<td></td>
<td>triangle</td>
</tr>
<tr>
<td></td>
<td>Deriving the formula</td>
</tr>
<tr>
<td></td>
<td>With the yellow material</td>
</tr>
<tr>
<td></td>
<td>rectangle</td>
</tr>
<tr>
<td></td>
<td>parallelogram</td>
</tr>
<tr>
<td></td>
<td>triangle</td>
</tr>
<tr>
<td></td>
<td>With the non-material</td>
</tr>
<tr>
<td></td>
<td>triangle</td>
</tr>
<tr>
<td></td>
<td>trapezoid</td>
</tr>
<tr>
<td></td>
<td>octagon</td>
</tr>
<tr>
<td></td>
<td>Circle</td>
</tr>
<tr>
<td></td>
<td>The circle as a special polygon</td>
</tr>
<tr>
<td></td>
<td>Measuring the circumference</td>
</tr>
<tr>
<td></td>
<td>Area (with formula)</td>
</tr>
<tr>
<td></td>
<td>Relationship between apothem</td>
</tr>
<tr>
<td></td>
<td>and side of plane figures</td>
</tr>
</tbody>
</table>

### Solid Geometry

<table>
<thead>
<tr>
<th>Prisms</th>
<th>Introduction and review</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Concept / volume of / yellow material</td>
</tr>
<tr>
<td></td>
<td>building solids with a fixed</td>
</tr>
<tr>
<td></td>
<td>number of cubes</td>
</tr>
<tr>
<td></td>
<td>Elements to find volume of prisms</td>
</tr>
<tr>
<td></td>
<td>Equivalence between prisms</td>
</tr>
<tr>
<td></td>
<td>with various bases</td>
</tr>
<tr>
<td></td>
<td>Derivation of the formula</td>
</tr>
<tr>
<td></td>
<td>Volume of a pyramid with</td>
</tr>
<tr>
<td></td>
<td>Archimedean solids figures</td>
</tr>
<tr>
<td>Solids of rotation</td>
<td>Concept - cylinder and cone</td>
</tr>
<tr>
<td></td>
<td>Volume - cylinder and cone</td>
</tr>
<tr>
<td></td>
<td>Internal and external area of solids</td>
</tr>
<tr>
<td></td>
<td>Concept - rectangular prism</td>
</tr>
<tr>
<td></td>
<td>Triangular prism</td>
</tr>
<tr>
<td></td>
<td>Pyramid</td>
</tr>
<tr>
<td></td>
<td>Cone</td>
</tr>
<tr>
<td></td>
<td>Regular polyhedrons</td>
</tr>
</tbody>
</table>
BEGINNING MONTESSORI AT AGE THREE:

ALL FIVE YEAR OLD MONTESSORI KINDERGARTEN

EARLY CHILDHOOD FACT SHEET

INTERFACE – PRIVATE PRE-KINDERGARTEN WITH PUBLIC KINDERGARTEN

SUPPORT FOUNDATIONS

PROMOTION

PARENT HANDBOOKS

JOINT VENTURE SPONSORSHIP

HEADSTART-MONTESSORI RELATIONS

Not every school district, or even full-day kindergarten, is structured to support Montessori preschool. Researchers and government policymakers concur that early childhood education is a dynamic factor in a child's educational life. This chapter shows a variety of ways to integrate different funding sources so that early childhood Montessori can be supported within a school district that does not normally provide pre-kindergarten services.
THE IMPORTANCE OF BEGINNING MONTESSORI AT AGE THREE

by David Kahn

- Starting at age three enhances the teacher-child relationship, intensifies the sensitive periods of early childhood, builds leadership over time, and provides a greater impact on the child's long-term personal success.
- In contrast to the three year Montessori program, the single year Montessori kindergarten class means complete classroom turnover as twenty-five new children enter each year.

Only about one-third of Montessori Public Schools programs in the United States are available to three and four year olds. Dr. Montessori designed her curriculum to start at age three, not at age five. Most early childhood educators concur that there are distinct advantages to beginning preschool at age three, whether for Montessori theory, contemporary follow-up studies, or for the early childhood education sources at large. Significant research nationwide (the Perry Preschool Project, the New York University Preschool Project) cites higher literacy, greater rates of employment, and more education beyond secondary as outcomes for those who start school at age three. Keeping children in school reduces the likelihood that they will become delinquent and require expensive incarceration and remedial treatment programs. The Children's Defense Fund budget has indicated that monies to remedy problems such as teen pregnancy, drug addiction and criminal activity are about six times the cost per student of preschool programs. Yet only 16 percent of our nation's children are served by early childhood programs. It is critically important that school districts consider funding preschool programs, including the Montessori preschool option. The Montessori educational concept is a time-tested approach to teaching young children, and research documents its successful impact over time. Further research evidence indicates that elementary children who have Montessori preschool achieve at significantly higher levels than elementary peers who have not had Montessori preschool experience (Takaes and Clifford, 1988).

Sensitive Periods

From a Montessori point of view, starting school at age three is indispensable because it provides an aid to the developing sensitive periods of language, order and movement. Indeed the three year old demonstrates a greater intensity than a five year old in the acquisition of a native tongue, the awareness of the order of the surrounding environment and willingness to maintain that order, and the perfection of body movement, especially in everyday actions. For this reason the beginning motivation for writing, reading, and for developing spoken language occurs well before mandatory school age.

Teacher-Child Relationship

In addition to skill competencies, the issue of starting school at age three is fundamental to the teacher-child relationship. Three year olds by their very nature seek out an intimate and close bond with the directress. Young parents of a three year old are more open to suggestions and direction for parenting ideas and also establish closer relationships with the teacher. The full Montessori preschool program was
BEGINNING AT AGE THREE

EARLY CHILDHOOD EDUCATION

designed to involve the same teacher over a three year time period in a deepening relationship with the child and the family. Over three years the teacher learns the vital signs that tell her when a child needs a challenge, an encouraging word, or an exact statement of feelings to resolve a social conflict. The personal history of each child becomes second nature to the teacher’s way of interacting.

Social Leadership Can Evolve

Work intensity is gradual, at the child’s own pace and with maximum choice for the child. When there is choice and uninterrupted time the child builds better concentration and works for longer periods of time. In a three-to-six age grouping only one-third of the class is replaced each year, allowing the children’s patterns of leadership and knowledge to remain in place as a new group is initiated. Older children provide social and academic models for the younger children. The maturing child finds a developmental variety of classmates and can identify with different ages according to personal needs. The multi-age group setting provides more social options and more academic options because a greater variety of children are working on a greater variety of activities.

Kindergarten Means Yearly Turnover

In contrast to the three year Montessori program, the single year Montessori kindergarten class means complete classroom turnover as twenty-five new children enter each year. These children bring a variety of educational experiences and must learn the routines and traditions of the class. Although personal development is important, energy needs to be devoted to developing skills and to teaching subjects that prepare the children. Montessori elementary. Class-wide demand for the same pieces of equipment requires expensive duplication of Montessori apparatus. Sometimes classes of five year olds are staggered, with groups of children assigned to respective equipment in order to not overburden any one material. These artificial constraints impose on the freedom of the child for the sake of access to the materials and are not necessary in a multi-age setting.

Kindergarten Means Language and Math Orientation

With a Montessori kindergarten (age 5 only), the curriculum focus is usually on language and math. Although practical life and sensorial materials are reviewed, five year olds seek mathematic and linguistic competence and will not exhibit that natural repetition that is so much a part of the three year old’s exploration. Lack of repetition also diminishes the role of self-correction; the teacher provides the control of error. The children need more “monitoring” and sequencing of work by the adult. Five year olds learn differently than three year olds. They proceed using reasoning skills and, because of this, require more formal presentation time. Although high expectations result in high skills, the Montessori emphasis on intrinsic motivation may be lost.

Kindergarten: Discipline External, not Internal

With a three year old it is easier to use personal modeling as an educational influence. The teacher and older children can have a great impact just by showing the desired work and behaviors. Five year olds without preschool experience are frequently less socialized and less organized in their personal habits and outlooks and require more remedial approaches to discipline than children who have had preschool experiences. Ground rules for the five year old without Montessori background must be stated and require external enforcement. By contrast, the starting three year old responds to the order of the environment and can internalize expectations without a great deal of verbal commentary.
Conclusion

The Montessori preschool learning environment is designed for three-to-six year olds. With the three year old the development is centered on the child, not on subjects. The Montessori teacher can focus on the child's whole personality by growing up with a child and his or her parents over a three year period in the context of a family cluster which is the Montessori multi-age group setting. The Montessori preschool teacher is trained for this orientation, the pedagogy is designed for it, and the child benefits from a process which is natural and gradual and embodies the right mix of freedom and discipline.

The appendices for this Chapter offer a variety of funding solutions for pre-kindergarten programs that are especially useful when school districts cannot provide preschool funding.
Appendix I: Proposal for the Implementation of Two High-Implementation Meetings for a Montessori Specialty Program—Milwaukee Public Schools, Milwaukee, Wisconsin

Written by a group of parents, administrators, and faculty, this proposal argues for district support to include three year olds and an extended day program.
II. Rationale for Inclusion of Three-Year-Old Children in the Montessori Specialty

Seventy years ago Dr. Montessori began working with and telling the world about the need of the three-year-old child. She saw this age of early childhood as the age when the child's "absorbing mind" was the strongest. She stated that the years three to six are a particularly sensitive period in our growth, during which the child can benefit immensely from experiences in a prepared learning environment. She allowed three-year-olds to work within this prepared environment, designed to utilize maximum potential of the "sensitive periods", which result in leading the child on a natural path to self-mastery and independence.

The phrase "sensitive periods in development" was first used by Dr. de Vries with his research in the development of certain animals, particularly from the life history of certain insects and other arthropods. Later, Montessori applied this term to human development. The study of the sensitive periods led her to an understanding of the child's mental growth.

Montessori defined a sensitive period as a "special sensibility with a nature opposed to its infantile state, while it is still in a process of evolution. It is a transient disposition and limited to the acquisition of a particular trait. Once this trait is mastered, it has been acquired. The special sensibility disappears. He is not born with it. A child's psychic development does not take place in time, but is not originated in external stimuli, but in the inner sensitivities."

While the child develops, he passes through certain sensitive periods. Each sensitive period is like a temporary instinct which guides the child to use certain elements in the environment to help him develop a certain trait. The child is attracted to certain environmental elements for a definite and limited time (only as long as the sensibility is present), pursuing those elements with an "irresistible impulse" and a "well-defined activity". At the peak of the sensitive period, the child's mind is like a searchlight that focuses on certain aspects of the environment to the exclusion of others, enabling the child to choose from his complex environment what is suitable and necessary for his growth. He is sensitive to some things but indifferent to others. Such attention is not the result of mere curiosity, it is more like a burning passion, setting in motion a marvelous creative activity in contact with the outside world, thus building up consciousness.

The child has a real need to learn and acquire experience in the area in which he is sensitive. If the child's need is satisfied, he learns joyfully, easily and without fatigue. Each effort brings an increase of power. His being flourishes on experiences that satisfy a need of his sensitive period. After working under the guidance of this inner urge the child feels better, stronger and calmer because by means of such work he has been creating himself. The child constructs his personality through the establishment and perfection of some function or characteristic he develops in a sensitive period.

If a child is not allowed to satisfy the need a sensitive period creates in him, he may become unhappy and frustrated; damage can be
to his development, Montessori states, "a child has a special interior vitality which accounts for the miraculous manner in which he makes his natural conquests, but if during his sensitive stage a child is confronted with an obstacle to his toll, he suffers a disturbance or even warping of his being, a spiritual martyrdom that is still too little known, but whose scars are borne unconsciously by most adults. The tantrums of the sensitive periods are external manifestations of an unsatisfied need, expressions of alarm over a danger, or of something being out of place. They disappear just as soon as there is a possibility of satisfying the need or of eliminating the danger...Adults have no direct influence on these different states. But if a child has not been able to act according to the directives of his sensitive period, the opportunity of a natural conquest is lost, and is lost for good."

The sensitive periods are transient. They help the child acquire certain functions or determined characteristics. When this aim is accomplished, the special sensibility disappears and is often replaced by another and quite different one. Once a sensitive period passes it never returns. But the benefits a child acquires during a sensitive period last a lifetime.

It is true that a child will nevertheless grow up even without having made use of this or that sensitive period in his development, but he will be a "diminished individual" by comparison with what he might have been, and should have been. With each sensitive period that we miss, we lose an opportunity of perfecting ourselves in some particular way. If the child misses some of his sensitive periods during his development, he will still grow up into an adult. But that adult will not be so strong nor so perfect an individual as he would have been if he had been able to avail himself of their constructive power. Many of us adults are aware of our many awkward traits and weaknesses which may have been our better points if we would have had the right experiences at the right time.

While this is not an attempt to prove or disprove Dr. Montessori's educational insights, the following must be pointed out. Within a functioning three to six year old Montessori classroom, the children, beginning at three build upon an internal need for order and self-mastery to choose his/her own tasks, work at their own pace and progress individually as well as socially. Dr. Montessori demonstrated that through this type of freedom within a controlled environment, children would become independent and self-disciplined learners.

Not only does this lead to growth in general intelligence, but it also develops within a young child coping and competency skills. Follow up studies of different early childhood models are now showing that the child's ability to work independently, to be self-disciplined and to feel positive about oneself are traits that the child carries out of a good "pre-school" experience into the rest of his/her life. The establishment of these basic value skills are more important than the temporary gains in "measured intelligence", which tend to even out after third grade.

When we ask for three-year-olds to be included in MacDowell Montessori primary level classes, we are simply asking to be able to respect Dr. Montessori's own insights and demands for a Montessori school. Dr. Montessori outlined a comprehensive view of child dev-
development and schooling in which the three-year-old child plays the important role of being the cornerstone for further education.

Other Milwaukee Public School Three-Year-Old Programs

Including three-year-olds in an official curriculum class setting is not unprecedented in the Milwaukee Public School System. There are two federally funded programs that enroll three-year-olds in their curriculum, Title I-FSEA Preschool Program Project and Headstart Preschool Program.

The Title I Preschool Program Project was instituted in Milwaukee in 1971 after extensive research indicated that pre-kindergarten children show a great capacity to learn from their environment and establish a great percentage of their intelligence during the first three to four years of the life cycle.

The program was designed to expose educationally disadvantaged children to an enriched learning experience for the purpose of preventing the development of future educational problems. Statistics from the 1976-77 Preschool Program testing results reflect a perceptible gain in test results, which is a conclusive indication that the project successfully met its objectives.

The Milwaukee Public School Headstart Program was established in 1969 to provide an enriched learning curriculum for low income/cognitively disadvantaged children and their families. 450 three to five-year-olds are currently enrolled in the program which includes those children in the two Montessori Headstart classes at MacDowell.

Further indication that three-year-olds are being accepted into a public school setting is the recently established Special Educational
Within the Montessori view of child development the five-year-old child is in a transitional period and this extended portion of his/her school day is meant to foster this transition. What it means in practice is that all five-year-old children attend school all day. They spend their morning in their primary level (3 and 4 and 5 year old kindergarten) class with a teacher and an aide. In the afternoon they (5 year-olds) remain with their teacher in the extended day program.

Dr. Montessori saw the fifth year in a child’s life as being one between that stage called the “absorbent mind” where the child is constantly building his/her own self as a person independent from others. In the next stage from six to twelve the child develops social values, finding where he/she fits within society and how different societies fit within a cosmic, interdependent world.

Within this context, then, the extended day program allows the five-year-old to do the following things:

a) Gives the child time within the Montessori classroom framework to make transition from primary level to junior level.

b) The extended day program allows them the time to develop the necessary reading and math skills to function well within the junior level (6-9 year old) class. There is important reading skill work done during this period which is not being achieved in our present dual session kindergarten approach to Montessori. In the primary (3-6 year olds) class the five-year-olds chosen task is one of the
Dr. W. W. Ayers pointed out long ago that in an ungraded/multi-level classroom environment a child at certain levels of development needs some intensive time alone with their peer group in the classroom.

**Communities for Students Who Took Part in Last Year's Extended Day Program**

1. Actualized his/her potential academically because of the length of time at school.

2. Developed maturity due to responsibility given them. Examples: lunchroom experience, playground experience, all day field trips.

3. Fulfilled the need of perfecting their work with cultural subjects, reading, writing, math, and fine arts.

4. Child was able to do more challenging work due to the exposure in the extended day program.

5. Acquired ability to do in-depth research in cultural areas.

6. Benefitted academically and socially from multi-age setting (with children who were older than they were.)

7. They became models this year for incoming, first year junior level students because of their extended day experience last year.
Alternative Sources of Funding

The Education Committee of the Montessori Parent and Staff Involvement Group feels the best source of funding for the implementation of this proposal would be through local board funding. The following public school Montessori programs are board funded:

1. Montessori Montessori, Buffalo, N.Y.
2. Syracuse City District Special Projects, Syracuse, N.Y.

However, considering the present demands on the Milwaukee Public School Board to cut expenditures, we suggest the following alternative sources as ways to support the implementation of our proposal to gain admittance of three-year-olds and provide an extended day for five-year-olds:

A Title VII: Funding from this source could be obtained by applying under:
1. Elementary School Grant
2. Innovative Specialty Programs Grant, a subpart of the Title VII Basic Grants

B Title I: Funding could be applied for to support a Title I Montessori Extended Day Kindergarten. The following Montessori public schools currently are funded by Title I:
1. Pecar Elementary, Detroit, MI
2. Grand Rapids Public School, Grand Rapids, MI
3. Anelli Elementary Montessori Vanguard School, Dallas, Texas
4. Brook Hill School, Dallas, Texas (Title VIII)

C Eisenhower Demonstration Grant Program. This grant is offered by the State of Wisconsin Department of Health and Social Services. It is a newly established grant with a budget of $98,000 for the 1979 fiscal year.

D Title I: on a sliding scale basis to support the three-year-old children...
Below is an example of an established sliding tuition rate policy recently used by the Highland Community School, 1125 Highland Avenue, Milwaukee. The figures given are the yearly tuition rate. Adjustment have already been made to reflect the half-time fee schedule which would be applicable to our program.

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The following Public School Montessori programs currently require tuition and/or sliding scales:

1) Bonneville School, Pocatello, Idaho
2) Arlington Public Schools, Arlington, Virginia
3) Grand Rapids Public Schools, Grand Rapids, Michigan (20% of student population that are not Title I)
4) Headstart Hilltop Community School Reading, Ohio
Fact Sheet

CHILD-INITIATED LEARNING ACTIVITY IS CRUCIAL

High Scope Preschool Curriculum Study
Self-Reported Delinquency Findings

Fact Sheet

GOOD PRESCHOOLS FOR POOR CHILDREN ARE COST-EFFECTIVE

It would be hard to imagine that society could find a higher yield for a dollar of investment than that found in preschool programs for its at risk children.

Committee for Economic Development in Rating our Children 1985
The following information explains how a 3 to 6 class was funded at North Avondale Montessori School. Sada Montessori has a different means for funding its class.

Funding

All three and four-year-old students were enrolled as tuition-paying students ($900.00 a year). Their tuition primarily covered two-thirds of the teacher's salary and some materials and equipment. Two-thirds of the students in the three to six classes were three and four-year-olds. The tuition payments were made to the Cincinnati Public Schools where a budget director was assigned to manage the bookkeeping, pay the teacher's salary, and provide a monthly budget report to the local school principal (i.e., North Avondale principal).

Scholarship

The local school raised necessary funds for annual scholarships. The fundraising efforts were primarily done by parents with much leadership from the principal. Each year funds equivalent to six scholarships were allocated to low-income applicants.

Five-year-olds

Parents of five-year-old students were not required to pay tuition because the students were eligible to attend kindergarten in the school district. The district received the usual state funding based on average daily attendance for all five-year-olds; thus, some general funds were available to supplement the teacher's salary for those five-year-olds in attendance.

Because of the huge success with tuition payment and local fundraising efforts, the three to six program was self-sufficient. The district, in essence, saved money by not being strapped by paying any of the teacher's salary. There is a gentlemen's agreement that the district will provide financial assistance and services where possible (i.e., available furniture, custodial services, school psychologist, visiting teacher, maintenance, and improvement of classroom environment, all instructional supplies normally available for serving five-year-olds). Surplus funds accumulated through tuition and fundraising, a trust fund has been established through Cincinnati Public Schools.

Instructor Assistant

A full-time Instructor Assistant has served in the three to six classes along with some parent volunteers. Initially, the teacher serving in this position was funded by Cincinnati Public Schools to serve in a 9 to 12 class. The 9 to 12 teachers agreed to reduce the instructor assistant position to less than full time to increase the services needed in the 3 to 6 class.

Appendix 3: Interface of Privately Supported Three and Four Year Olds with Publicly Supported Five Year Olds — by Phyllis Williams, North Avondale School, Cincinnati, Ohio

This summary statement provides a basis for integrating privately supported pre-kindergarten with publicly supported kindergarten.

Instructional Supplies and Equipment

Instructional supplies and equipment are primarily funded through fundraisers and tuition.

Prior to the opening of the first three to six class, local foundations and school fundraising projects enabled North Avondale to accrue over thirteen thousand dollars to aid start-up cost. Needless to say, cooperation and support from the 6 to 12 teachers were necessary for program success. The school district provided necessary funds for equipping an approved Montessori classroom for five year olds.

I opted to couple a fully funded five-year-old class teacher with a tuition funded three to four year teacher. Together they shared students and resources. Each teacher received the same salary and benefits. Each teacher had a fully equipped classroom with a full-time Instructor Assistant.

Local School Project Manager

The assistant principal or a designee is necessary for managing three to six program enrollment, tuition, recruitment, scholarship applicants, and parent involvement.
Appendix 4: Process Paper, Developing the Site-Based Not-For-Profit Support Foundation – Cincinnati Public Schools, Cincinnati, Ohio

This is an early letter in the process of organizing a school foundation. The information is still pertinent today, although budget amounts are outdated.

June 14, 1984

Cincinnati Public Schools
Dr. William A. DuPree, Area Director
230 E. Ninth Street
Cincinnati, OH 45202

Dear Dr. DuPree:

Members of the Local School Advisory Committee, North Avondale School Foundation, North Avondale Montessori Parent Association, and the Montessori Preschool Parent Association unanimously endorse the establishment of a Montessori Preschool Program at North Avondale School beginning September, 1984. To date the following accomplishments have been made in order to make possible a September, 1984, starting date:


2. The Preschool Steering Committee recruited students and solicited funds.

3. The Local School Advisory Committee met with the Preschool Steering Committee to clarify the role it could play and to approve assisting the Preschool Steering Committee with plans for program proposal.

4. The North Avondale School Foundation was organized to aid with soliciting funds for the proposed Montessori Preschool Program. Attorney Marvin Kraus volunteered to provide all legal services without charge.

5. The Foundation Committee Chairperson, LSAC Chairperson, and the School Principal met with Mr. Lynn Goodwin, Treasurer, Cincinnati Public Schools to discuss policies and procedures for operating a trust fund for monies that have been restricted for preschool. When appropriate he will draft an agreement to be supported by all parties involved.

6. Through the efforts of the North Avondale Neighborhood Association (NANA) we have received a One Thousand Dollar ($1,000.00) check from The Jewish Federation, a committed Five Thousand Dollars ($5,000.00) from the closing of a real estate investment and NANA is prepared to provide matching funds up to Five Hundred Dollars ($500.00).

7. Mr. Moss White, Director, Chapter I Programs, Dr. William DuPree, Area Director, Mrs. Vella Ellis, Montessori Alternative Program Manager, Miss Mary Lewis, Curriculum Supervisor and Mrs. Phyllis Williams, Principal of North Avondale School have met with Mr. Jim Clingman, Associate Director of Community Action Commission Programs and Mr. Raymond Brokamp, Assistant Superintendent, to discuss the possibility for providing a Headstart Montessori Preschool Program for economically disadvantaged students.

After some discussion and research the administrators of the local Community Action Commission perceived the idea as being not only ideal; a similar system is in operation with full support in the Milwaukee, Wisconsin Public School System. Limited funding was the source of concern because the North Avondale Preschool proposal was not included in the 1983 fall request for program funding. One plausible idea discussed was to exchange the present Chapter I Preschool Program for an existing Headstart Preschool Program since CAC is the common source of funding for both programs. Unfortunately, Chapter I program policy does not permit three year olds to be included. We are waiting for final word (hopefully one of approval) for CAC funding.

8. In December and May Dr. DuPree and Mrs. Williams met with the Board of Education Facilities Committee to discuss preschool proposal.

9. An integrated group of parents have filled out applications and paid thirty dollars to demonstrate commitment to having their children enrolled in a North Avondale Preschool Program. More have indicated an interest once the Board of Education gives approval. At a May meeting the parents agreed to pay a seven-hundred ($700.00) tuition fee. Most of the tuition would cover the salary of a certified Montessori teacher who would receive the on-going salary as specified through certified personnel.

The parents discussed the need to have a Cincinnati Public School sponsored program rather than a private program, renting space at North Avondale School. The idea is one that could be replicated at Sands School or any new elementary Montessori Program. The advantages for a district sponsored program are obvious.

(a) The correlation of curriculum with the elementary program would be facilitated as all staff members work together.

1. North Avondale School is not eligible for federal funds.
The involvement of preschool parents with existing school-parent community organizations would exist.

The integrated preschool Montessori Program would feed into the existing elementary Montessori program thus contributing to the desegregation plans.

Ultimately early childhood education would exist with possibilities of tailoring achievement scores on the elementary level.

Volunteers from the Preschool Parents Association met to interview Montessori teacher applicants and decide on 2 choices—one of whom could be funded for a Headstart class. These teachers are anxiously awaiting for Board of Education approval because their outstanding talents are being sought elsewhere. For this reason, time is of the essence.

Upon meeting and/or dialoguing with various CPS Board of Education members, and Central Office Administrators, the various groups who have worked to make real the idea of a Montessori Preschool Program in September, 1984 have discussed the role each would play in supporting program implementation:

- Provide opportunities, evaluation of program and student achievement.
- Provide transportation through CAC funding for economically disadvantaged children and charge a fee for tuition-paying parents.
- Seek and provide funds using state and federal grants that would allow for innovative preschool implementation.

North Avondale School

Principal would coordinate all parent-school community groups, administer the preschool program and communicate progress with Central Office Administrators.

The Local Advisory Committee would support program implementation, advise as a source that correlates all interest group activities, advise in order to perpetuate team work without duplication of roles; prioritize needs for disbursement of funds; assist Foundation with seeking and monitoring of funds and providing quality control for evaluation of and auditing of contribution fund, resources and uses. The LSAC would annually conduct goal setting and program evaluation activities.

The North Avondale Foundation Committee

- Review needs for additional funds.
- Seek funds.
- Monitor and manage accounting system for incoming monies.
- Respond to LSAC in providing quality control through on-going evaluation of funding sources, and uses as planned.
- Communicate with District Treasurer regarding policies and procedures for use of Trust Fund earmarked for Preschool.
- Receive and record tuition or funds received by Treasurer of Preschool Parents Association.

North Avondale Preschool Parents Association

- Assist Foundation Committee with seeking funds.
- Volunteer with classroom assistance and parent education. Assist teacher with instructional needs.
Serve as representative on the LSAC, Foundation Committee and the North Avondale Montessori Parents Association.

Assist with recruitment.

Executive Committee established to manage program needs and make recommendations to LSAC and Foundation Committee.

Support groups for the Montessori Preschool agree there are provisions made to include low economic students whose families can't afford the seven hundred dollar tuition. Concern is how can this be done the first year if there aren't funds available though the Community Action Commission for the following possibilities listed in priority have been considered:

Total funding through CAC for Headstart A.M. and P.M. classes.

Partial funding from CAC for 10 low economic students.

The North Avondale School Foundation would raise as much as it can by September (including $1,000.00 from the Jewish Federation plus the committed $5,000.00 through Mr. Weiland) and CPS would advance enough money to cover remainder of the needed seven thousand dollars ($7,000.00). Mr. Weiland is actively working to achieve a goal of $20,000.00 for the preschool by the end of 1984. This would allow for financial assistance using Headstart economic scale guidelines.

Provide a sliding scale tuition using Headstart economic guidelines.

Provide a Tuition Free Scholarship of $7,000.00 to cover 10 low income students. Administrators administer applications.

Proposed budget for Headstart funding recommends a $7,000.00 which includes transportation. In order to integrate low economic students, transportation needs assistance. During the first year of the program, low students within walking distance and who may have access to transportation would be re-tailed. This would allow time for applications to be submitted through November 15th for 1985-86 funding. During the first year, at least 10 low economic students who will benefit from the Headstart program should be enrolled and a sliding scale tuition, or

The Proposed Minimum Budget for a single class in September, 1984:

- **Teacher** $20,000.00 plus fringe benefit (20% of salary)
- **Instructor Assistant** $6,000.00 plus fringe benefit (for parent volunteers)
- **Equipment** $3,000.00
- **Materials** $3,300.00
- **Scholarships** $7,000.00

**TOTAL** $42,000.00 with Instructor Assistant $34,000.00 with Parent Volunteer

Respectfully Submitted,

Principal, North Avondale School

Local School Advisory Committee

North Avondale Montessori Preschool Parents Association

North Avondale Montessori Parents Association

North Avondale Foundation Committee

North Avondale Neighborhood Association
ARTICLES OF INCORPORATION
OF
NORTH AVONDALE SCHOOL FOUNDATION, INC

The undersigned incorporator, a citizen of the United States, desiring to form a corporation, not for profit, pursuant to Section 702.01 et seq. of the Ohio Revised Code and Section 501(c)(3) of the Internal Revenue Code, does hereby certify:

First. The name of said Corporation shall be North Avondale School Foundation, Inc.

Second. The place in Ohio where the principal office of the Corporation is to be located is 615 Clinton Springs, Cincinnati, Ohio 45229.

Third. The purposes for which this Corporation is formed are exclusively educational and charitable within the meaning of Section 501(c)(3) of the Internal Revenue Code of 1954, including for such purposes the making of distributions to organizations that qualify as exempt organizations under said Section. The Corporation intends to support and promote the welfare of children and faculty at the North Avondale Elementary School in order to raise and maintain high standards of academic achievement, athletic performance and administrative efficiency; and to pursue such other reasonably related purposes permitted by law, with all authority permitted by Section 1702.12 of the Ohio Revised Code.

Fourth. This Corporation is intended to attract substantial support from contributions, directly or indirectly, from parents, children, alumni and friends of the North Avondale Elementary School (owned and operated by the Cincinnati Board of Education) in the City of Cincinnati generally and within the community of North Avondale specifically. It has not been formed for a pecuniary profit or financial gain, and no part of the net earnings of the Corporation is distributable to, or is made to the benefit of, its directors, members, trustees, officers, or other private persons, except that the Corporation is authorized and empowered to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of the purposes set forth in Article Third as permitted by the Ohio Nonprofit Corporation Law. No substantial part of the activities of the Corporation shall be the carrying on of propaganda or otherwise attempting to influence legislation, and the Corporation shall not participate in or intervene in (including the publishing or distribution of statements) any political campaign on behalf of any candidate for public office. Notwithstanding any other provision contained in the Articles, the Corporation shall not carry on any other activities not permitted to be carried on (a) by a corporation exempt from Federal Income Tax under Section 501(c)(3) of the Internal Revenue Code or (b) by a corporation, contributions to which are deductible under Section 170(c)(2) of the Internal Revenue Code.

Fifth. Upon the dissolution of the Corporation, the Trustees shall, after paying or making provision for the payment of all of the liabilities of the Corporation, dispose of all of the assets of the Corporation exclusively for the purposes of the Corporation in such manner, or to such organization or organizations organized and operated exclusively for charitable and educational
purposes as shall at the time qualify as an exempt organization or organizations under Section 501(c)(3) of the Internal Revenue Code, as the Board of Trustees shall determine. Any such assets not so disposed of shall be distributed to the Cincinnati Board of Education.

SIXTH. The following persons shall serve said Corporation as initial Trustees, until the first annual meeting or other meeting called to elect Trustees:

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SEVENTH. Wherever sections of the Internal Revenue Code or of the Ohio Revised Code are referred to in these Articles, they shall include future corresponding provisions of either code or of any similar body of laws.

IN WITNESS WHEREOF, I have hereunto subscribed my name as Incorporator this _ of __________, 1983.

John Doe, Incorporator

**Original Appointment of Statutory Agent**

The undersigned, being at least a majority of the incorporators of NORTH AVONDALE MONTESSORI SCHOOL FOUNDATION, INC., hereby appoint JOHN DOE, a natural person resident in this state, upon whom any process, notice or demand required or permitted by statute to be served upon the corporation may be served. His complete address is 911 Clopay Building, 15 East Fourth Street, Cincinnati, Hamilton County, Ohio 45202.

John Doe

Cincinnati, Ohio
December 14, 1983

NORTH AVONDALE MONTESSORI SCHOOL FOUNDATION, INC.

Gentlemen: I hereby accept appointment as agent of your corporation upon whom process, tax notices or demands may be served.

John Doe
NORTH AVONDALE MONTESSORI SCHOOL FOUNDATION, INC.

BY-LAWS

NAME: The name of the Corporation shall be North Avondale Montessori School Foundation, Inc. (NAMSF) as is filed with the office of the Secretary of State, Sherrod Brown, in our Articles of Incorporation under Sections 1702.01 et seq., Ohio Revised Code and Section 501(c)(3) of the Internal Revenue Code.

ARTICLE II

PURPOSE: The purposes for which this Corporation is formed are exclusively educational and charitable within the meaning of Section 501(c)(3) of the Internal Revenue Code of 1954, including for such purposes the making of distributions to organizations that qualify as exempt organizations under said Section. The Corporation intends to support and promote the welfare of children and faculty of the North Avondale Elementary School, in order to raise and maintain high standards of academic achievement, athletic performance and administrative efficiency; and to pursue such other reasonably related purposes permitted by law, with all the authority permitted by Section 1702.12 of the Ohio Revised Code.

ARTICLE III

MEMBERSHIP: All persons who are pre-parents of students, parents of students, faculty, staff, alumni and friends of the North Avondale Elementary School.

COMMITTEE PEOPLE:

SECTION 1. The property, business and affairs of the corporation shall be managed by a Committee which shall consist of individuals of the corporation who shall be chosen as hereinafter provided and who shall hold office for a one (1) year term, or until their successors shall be chosen and qualified. It is understood that a successor's one year term shall commence upon date of appointment.

SECTION 2. ELECTION: Officers shall be chosen from members of the Committee at the annual meeting by a majority of those members present and voting. Any vacancy in the offices may be filled by a majority vote of those Committee members present and voting at any regular or special meeting.

SECTION 3. COMPOSITION: Composition of the Committee will be made up of ten representatives from interested persons who are pre-parents of students, parents of students, faculty, staff, alumni and friends of the North Avondale Elementary School.

The North Avondale Elementary School principal will be an automatic foundation member.

The total Committee should not exceed ten (10) members, and it should reflect various points of view and the ethnic and social diversity which exist within the community.

SECTION 4. MEETINGS: Regular meetings of the Committee shall be held at least once per month. Special meetings may be called at any time.
by the President or by a majority of the Committee and shall be called by the President upon the written request of a majority of the Committee. Such special meetings shall be held at The North Avondale Elementary School and reasonable notice of each such meeting shall be given to each Committee member by mail, telephone or personally.

**SECTION 1. QUORUM:**

Except as otherwise prohibited by law, or by these by-laws, fifty-one percent of the Committee members shall constitute a quorum for the transaction of all business. The act of the Committee members present at any meeting at which there is a quorum shall be the act of the whole Committee except as provided by law or by these by-laws.

**SECTION 2. COMMITTEES:**

The President may constitute and appoint such subcommittees as needed and with such powers and authority as the Committee shall designate.

**ARTICLE V**

**SECTION 1. OFFICERS:**

The executive committee of the Committee shall be President, Vice-President, Secretary and Treasurer. President, Vice-President, Secretary and Treasurer shall be elected by the Committee to hold office for one-year terms. The Committee may at any time fill any vacancy in such offices and may from time to time elect or appoint such other officers and agents and employees as it may deem proper. All officers and agents and employees shall be subject to removal by a majority of the total Committee at any time.

**Section 2. REMOVAL OF COMMITTEE MEMBERS:**

A Committee member may be removed if he/she misses more than three consecutive meetings during the calendar year. Alternate Committee members are permissible providing they do not serve in the alternate position more than three consecutive meetings.

**Section 3. POWERS AND DUTIES OF OFFICERS:**

The various officers shall have the powers and duties which customarily appertain to or are incident to their respective offices, including those here and after provided for and, in addition, such powers and duties as the Committee may from time to time designate and confer.

**President:**

The President, as the principle executive officer of the Committee shall preside at the meetings of the Committee. He/She shall be an ex-officio member of all subcommittees.

**Vice-President:**

The Vice-President shall perform the duties and have the powers of the President in the absence, inability or arbitrary refusal of the President to act, as determined by the Committee.

**Secretary:**

The Secretary shall act as secretary of all meetings of the Committee and shall keep the minutes thereof and see that all notices required to be given are fully given and served.

**Treasurer:**

The Treasurer shall have the care and custody of
the funds and securities of the Foundation, and shall handle and disburse the same under the direction of the Committee. The Treasurer shall keep or cause to be kept, proper books of accounts showing all monies received and disbursed and all assets and liabilities of the Foundation. All funds of the Foundation shall be deposited in such banks as the Committee shall designate. An independent audit shall be conducted at least once every twelve months.

ARTICLE VI

MISCELLANEOUS:

Section 1. Execution of instruments: All checks, drafts and other instruments for the payment of money and all instruments of transfer of securities shall be signed in the name and on behalf of the Foundation by the treasurer or by the President. All instruments of transfer of personal property other than securities, all instruments of conveyance of real property, and all contracts and agreements shall also be signed by the Treasurer or President.

Section 2. Indemnification:

The Committee may indemnify and reimburse each member of this Foundation and any person engaged to perform services for this Foundation.

ARTICLE VII

AMENDMENTS

Section 1. GENERAL

Except as provided below, these by-laws may be adopted, amended, repealed or added to by the affirmative vote of a majority of the Committee present at any regular or special meeting of the Committee if notice of the proposed adoption, amendment, repeal or addition be contained in the notice of the meeting.

Adopted this ___ day of ___, 1985

ATTEST:

______________________________
The Individual Child

Maria Montessori (1870-1952) believed that children effortlessly absorb knowledge and have a natural and intense desire to learn about the world. She said that children have more absorbent minds than in the preschool years. At North Avondale Montessori Pre-school, absorbent minds are nurtured in a prepared environment which allows them to act freely on their own initiative, meeting needs through individual activity. Children learn to work quietly and attentively on their own tasks building concentration and self-discipline.

Knowledge can best be given where there is eagerness to learn. - Maria Montessori

The Prepared Environment

Children in the Montessori classroom work individually or in small groups or in whole class activities. Here is a true sense of community. The five year old learns through the five year old. The younger child, the younger child, the younger child. The younger child is challenged to do more advanced activities by watching older children working in the same environment.

In Montessori preschool mathematics reading, writing, art and music are taught. But everything is also planned on acquiring practical life and social skills such as putting things away, sensing without sharing materials, sharing an adult's returning material to its proper place, and respecting the rights of the community. This develops the growth and development of the whole child in the true spirit of Montessori education.

The Child Forms a Community

Appendix 6: Promotional Brochure offering Montessori Preschool Options – Cincinnati Public Schools, Cincinnati, Ohio

Since the preschool is privately operated it utilizes public relations materials designed to compete against other magnet options and privately operated preschools. This program option is, however, part of the district operations and is housed in a public school building.

EARLY CHILDHOOD EDUCATION
Teachers and Parents

"It is not enough for the teacher to restrict herself to knowing and understanding the child; she must first love and understand the universe."

-Maria Montessori

North Avondale Montessori Preschool teachers not only have an Ohio Teaching Certificate, but also have preschool Montessori certification. The Montessori teacher has a deep sense of respect for the child's total being. Since emphasis is placed on the child as his own timekeeper, the Montessori teacher allows for a natural pace which fosters learning retention and creativity. Montessori works best when parents are involved in their child's education. Parents and teachers work together to support and follow the whole Montessori process through open and ongoing communication.

Registration

North Avondale Montessori Preschool is for children of three and four years of age. Morning and afternoon sessions, 2.5 hours long each are offered. A non-refundable application fee, a copy of the birth certificate, and an update of immunization records must be presented upon request before the child will be accepted into the program. Optional payment methods and limited scholarships are available. For an application please contact the school 221-3478. Information regarding extended child care may be obtained through the school office.

The school year is the same as that of the Cincinnati Public Schools, with few exceptions. Parents are notified in advance of any exceptions.

NORTH AVONDALE MONTESSORI PRESCHOOL

615 Clinton Street
Cincinnati, OH 45224
(513) 221-3478

"The child should love everything that he learns for his mental and emotional growth is linked. Whatever is presented to him must be beautiful and clear."

-Maria Montessori
Appendix 7: Application Form for Admission — North Avondale Montessori Preschool, Cincinnati Public Schools, Cincinnati, Ohio

This is a typical application form used by a private Montessori school within the public system.

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<tbody>
<tr>
<td>615 Clinton Spring Avenue</td>
</tr>
<tr>
<td>Cincinnati, Ohio 45229</td>
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<tr>
<td>Telephone (313) 321-3178</td>
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**APPLICATION**

Submit with $30.00 non-refundable application fee

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|-----------------|-----------------|
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<th>Family Physician:</th>
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Appendix 8: Pre-Kindergarten Brochures — Philadelphia and Milwaukee Public Schools

Excellent graphic presentations of preschool options, including Montessori supported by Headstart funds. This sample is included to show how the Montessori preschool option can be incorporated into Headstart programming and can be selected as an option among many.

Technical education

LETTER FROM THE SUPERINTENDENT

I am very proud that for many years the School District of Philadelphia has been recognized throughout the country for its excellent Early Childhood Programs. Educators, child development specialists, community leaders and parents from across the nation have praised these efforts and success.

On the following pages you will read about the educational, medical, emotional, social, psychological and special education services offered to more than 1,500 children in 30 centers throughout the city. These programs are the Prekindergarten Head Start Program.

These centers are vital in helping young children prepare for a good start in school and the proud record of outstanding achievement attained by pupils who have participated in the program.

Sincerely,

[Signature]

School District of Philadelphia

Superintendent
LETTER FROM THE ASSOCIATE SUPERINTENDENT FOR EARLY CHILDHOOD EDUCATION

As the Associate Superintendent for Early Childhood Education, I am excited to share with you some of the innovative programs and initiatives that are currently underway within our school district. Our goal is to provide a supportive and stimulating learning environment that fosters the growth and development of all children. To that end, we have implemented several programs that focus on early childhood education, including:

1. **Head Start Program**
   - Offers comprehensive early childhood education and family support services to children from birth to five years old.
   - Provides education, health, nutrition, and social services to help children reach their full potential.

2. **Preschool Program**
   - Provides a structured learning environment for children who are younger than school age.
   - Focuses on developing foundational skills in reading, writing, and mathematics.

3. **Kindergarten Program**
   - Prepares children for the transition to elementary school.
   - Emphasizes the development of social and emotional skills.

4. **Parent Engagement Initiatives**
   - Encourages active involvement of parents in their children's education.
   - Offers workshops and resources to support parents in their role as educators.

These programs are designed to address the developmental needs of young children and to provide them with the support they need to succeed academically and socially. We are committed to ensuring that every child in our district has access to a high-quality early childhood education.

We appreciate your continued support in helping us achieve our goal of providing the best possible education for all children. If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

[Name]
Associate Superintendent for Early Childhood Education

---

TABLE OF CONTENTS

1. Introduction
2. Programs and Initiatives
3. Parent Engagement Initiatives
4. Conclusion

---

PROFILE

HEAD START

The Head Start Program is a federal initiative designed to provide comprehensive early childhood education and services to low-income families. The program aims to help children, particularly those from low-income families, achieve a good start in school and life.

For Parents
- Provides information on the benefits of early childhood education and services.
- Offers resources and support to help parents and caregivers.

For Community
- Increases awareness of the importance of early childhood education and services.
- Supports local businesses and organizations.

The Major Components of Head Start
- Comprehensive services for children and families
- Early childhood education and learning experiences
- Health and social services
- Parental involvement
- Quality assurance and improvement systems

---

FOR CHILDREN

- Preparing children for school
- Providing nutrition
- Offering health services
- Helping children develop skills
- Providing family support services

FOR PARENTS
- Information and assistance
- Support for children's development
- Support for parents' education

FOR COMMUNITY
- Increasing awareness of the importance of early childhood education
- Supporting local businesses and organizations
- Providing resources for parents

FDUCATION

1. EDUCATION

**Bank Street Model**

The Bank Street Model emphasizes the developmental approach. Its ultimate objective is to enable children in their early school years to become deeply involved and well directed in their learning. This requires first a positive self-image, specifically as a learner and more generally as a person.

Pre-kindergarten and Kindergarten are conducted on a small growth and offers children a variety of social, constructive, challenging, and pleasurable experiences in which they participate effectively.

The classroom is organized into activity areas including:

- Houses: Keeping space
- Library corner
- Wooden and paper games
- Quiet table games

Cooking is an important element of this model. The children help to cook, read the ingredients needed for food preparation, and measure the required amounts. These cooking experiences provide opportunities for learning arithmetic, reading, and nutrition. They also allow for vocalization and enjoyment.

The teachers are encouraged to create materials instead of using commercial products and to involve parents in the process.

**Behavior Analysis Model**

The Behavior Analysis Model is a behavioral approach based on the principles of behavioral psychology. Learning is encouraged through positive reinforcement.

Children are taught in small groups. Each group has a learning center with activities and materials that reinforce the curriculum. Tokens are used as a reward system.

Children can choose an activity at the child's choice. Tokens are later exchanged for a reward. Periodic tutoring is provided to those children who need extra help.

The model is designed to provide a nurturing environment for children to develop their social skills.

**Child Development Model**

The Child Development Model focuses on the development of the whole child. It involves the implementation of a regenerative approach to child education. The model emphasizes the importance of family and community involvement in the child's education.

The role of the teacher is to be aware of the child's progress and to modify the curriculum to meet the needs of the individual child.

The model also emphasizes the importance of providing a safe and stimulating environment for children to learn and develop.
EDUCATION

A TYPICAL EARLY LEARNING DAY

8:45 - 8:50 A.M.
REGISTRATION (IN HALLWAY)

8:45 - 11:00
MONTSSORI MATH PROGRAM

11:00
TOILETING

11:20
LARGE MUSCLE ACTIVITIES

11:30 - 11:40
OUTDOOR ACTIVITIES (IN COURTYARD)

11:40 - 12:00
LUNCH

12:00 - 12:20
DENTAL CARE

12:30
CIRCLE TIME

12:45 - 1:45
RECESS

1:45 - 2:15
SECOND blocks PERIOD

2:15 - 2:30
OUTDOOR ACTIVITIES (IN COURTYARD)

2:30 - 2:45
TOILETING

2:45 - 3:00
SECOND blocks PERIOD

3:00 - 3:45
OUTDOOR ACTIVITIES (IN COURTYARD)

3:45 - 4:00
MONTSSORI MATH PROGRAM

4:00 - 4:45
DEPARTURE
2 HEALTH

Prekindergarten Head Start emphasizes the importance of early identification of health problems. It provides care, health services, and health promotion programs to selected health centers. The objectives of the health services are to:

- Improve health services to selected health centers.
- Enhance the nutritional status of children's health centers.
- Develop a comprehensive health care program at the health centers.
- Enhance the nutritional status of children's health centers.
- Enhance the nutritional status of children's health centers.

3 NUTRITION

In the Prekindergarten Head Start program, children are served a cold breakfast at each meal. The health care provided at the health centers is comprehensive, including medical, dental, mental health, and nutritional services. The health care program is designed to address health problems, and its objectives are to:

- Improve the nutritional status of children's health centers.
- Enhance the nutritional status of children's health centers.
- Enhance the nutritional status of children's health centers.
- Enhance the nutritional status of children's health centers.

4 SOCIAL SERVICES

The Social Services component provides a variety of services that meet the needs of children and their families. It includes health and dental services, nutrition services, mental health services, and child care services. The Social Services component is designed to:

- Provide comprehensive health care services to children and their families.
- Enhance the nutritional status of children's health centers.
- Enhance the nutritional status of children's health centers.
- Enhance the nutritional status of children's health centers.

5 PARENT INVOLVEMENT

Parents are the most important partner in a child's development. An essential part of every Prekindergarten Head Start program is the involvement of parents in the planning and implementation of activities. The Parent Involvement component is designed to:

- Involve parents in the planning and implementation of activities.
- Enhance the nutritional status of children's health centers.
- Enhance the nutritional status of children's health centers.
- Enhance the nutritional status of children's health centers.

6 EDUCATION

The Education component provides education and training to parents and children. It includes a variety of programs, such as:

- Early childhood education programs.
- Parent education programs.
- Community education programs.
- Nutrition education programs.

7 HAPPY CHILD

The Happy Child is a key component of the Prekindergarten Head Start program. It includes:

- Nutrition programs.
- Health programs.
- Early childhood education programs.
- Parent education programs.

8 COMPREHENSIVE PROGRAM

The Comprehensive Program is designed to:

- Enhance the nutritional status of children's health centers.
- Enhance the nutritional status of children's health centers.
- Enhance the nutritional status of children's health centers.
- Enhance the nutritional status of children's health centers.

9 HEALTHY CHILD

The Healthy Child is a key component of the Prekindergarten Head Start program. It includes:

- Nutrition programs.
- Health programs.
- Early childhood education programs.
- Parent education programs.

10 MENTAL HEALTH

Mental health services are provided to children and their families. They include:

- Counseling services.
- Psychological services.
- Mental health services.
- Early childhood education programs.

11 DENTAL HEALTH

Dental health services are provided to children and their families. They include:

- Dental care services.
- Oral health services.
- Mental health services.
- Early childhood education programs.
Prekindergarten Head Start Policy Groups
Parents with children enrolled in Prekindergarten Head Start are involved in the decision-making process concerning the nature and operation of the program. The school for this involvement is the committee structure which follows.

Prekindergarten Head Start Center Committee
Set up at the center level, the committee’s membership consists of all parents with a child enrolled at that center. The group elects its own officers and assists the Classroom Teacher in planning for and implementing daily activities.

Prekindergarten Head Start Policy Committee
This group operates at the delegate agency level and is composed of representatives of all the center committees plus at least one parent representative. This state committee is responsible for planning and approving program operations in a variety of areas including curriculum and fiscal matters.

Project Head Start Policy Council
The Board of Directors has responsibility for planning and overseeing the operation of a wide range of delegate agency functions. It operates at the grantee level.
The School District of Philadelphia

Dr. Michael P. Nuccio
Superintendent of Schools
P. O. Box 980
Philadelphia, PA 19105

Dr. Constance B. Clayton
Associate Superintendent
Early Childhood Education

Mrs. Elaine S. Spin
Director, Prekindergarten
Head Start Program

Mr. Thomas C. Rodica
Executive Director
Federal Programs

In 1969, Head Start was
conceived at the Office of
Economic Opportunity in
the Office of Child Developmen
in the U.S. Department of Health
Education and Welfare. It has now
become a program within the
Administration for Children, Youth,
and Families at HHS. Project Head Start is
an innovative experimental
demonstration program that has had a
strong impact on communities and early
childhood programs across the country.
Since 1969, Head Start has served almost
4 million children and their families.

This program is sponsored by the
Philadelphia Board of Education

300
EXCEPTIONAL EDUCATION PROGRAM

The school's exceptional education program includes services such as occupational therapy, speech therapy, and special education classes. These services are designed to meet the individual needs of students with special education needs and to improve their academic and social skills. The program also includes support for students with hearing impairments, visual impairments, and physical disabilities. The staff works closely with parents and families to ensure that students receive the best possible education. In addition, the program provides opportunities for students to participate in extracurricular activities and to develop social skills. The school is committed to providing a safe and inclusive environment for all students. 

CHAPTER 1: EARLY CHILDHOOD PROGRAM

This chapter provides an overview of the early childhood program, which is designed to support the development of young children and to prepare them for success in school. The program includes activities such as art, music, and physical education, as well as opportunities to learn social skills and to develop a love of learning. The early childhood program is a critical component of the school's mission to support all students and to provide them with the best possible education.

FOUR-YEAR-OLD KINDERGARTEN

The four-year-old kindergarten program provides an opportunity for students to participate in a year-long educational program. The program includes activities such as art, music, and physical education, as well as opportunities to learn social skills and to develop a love of learning. The four-year-old kindergarten program is a critical component of the school's mission to support all students and to provide them with the best possible education.

FIVE-YEAR-OLD KINDERGARTEN

The five-year-old kindergarten program provides an opportunity for students to participate in a year-long educational program. The program includes activities such as art, music, and physical education, as well as opportunities to learn social skills and to develop a love of learning. The five-year-old kindergarten program is a critical component of the school's mission to support all students and to provide them with the best possible education.

The school is committed to providing a safe and inclusive environment for all students. The staff works closely with parents and families to ensure that students receive the best possible education. In addition, the program provides opportunities for students to participate in extracurricular activities and to develop social skills. The school is committed to providing a safe and inclusive environment for all students.
ENROLLMENT INFORMATION

For enrollment information, call the School Center listed below:

<table>
<thead>
<tr>
<th>SCHOOL CENTER</th>
<th>ADMINISTRATOR</th>
<th>PHONE NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drew</td>
<td>William F. Young, Principal</td>
<td>555-9600</td>
</tr>
<tr>
<td>Globe</td>
<td>William Vollin, Principal</td>
<td>384-3920</td>
</tr>
<tr>
<td>Hoffman-Boston</td>
<td>Judith Andrews, Head Teacher</td>
<td>555-9612</td>
</tr>
<tr>
<td>Key</td>
<td>Paul Hiram, Principal</td>
<td>550-2917</td>
</tr>
</tbody>
</table>

TUITION FEE

Tuition is charged according to a sliding fee schedule for all children enrolled in Montessori classes who do not meet the age requirements for kindergarten.

<table>
<thead>
<tr>
<th>FEE SCHEDULE</th>
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</thead>
<tbody>
<tr>
<td>Adjusted Gross Income</td>
</tr>
<tr>
<td>$ 0 - 13,999</td>
</tr>
<tr>
<td>14,000 - 15,999</td>
</tr>
<tr>
<td>16,000 - 20,999</td>
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<td>21,000 - 24,999</td>
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<td>85,000 - 89,999</td>
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<tr>
<td>90,000 - 94,999</td>
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<tr>
<td>95,000 and above</td>
</tr>
</tbody>
</table>

PAYMENT SCHEDULE

Tuition may be paid annually, semi-annually, or quarterly. Fees are to be paid by the first day of school of the month listed below:

Annual Plan: September or first day child enters school
Semi-annual Plan: 1) September or child's first day of school
2) February
Quarterly Plan: 1) September or child's first day of school
2) February
3) November
4) April
If family circumstances require a schedule different from any of the above plans, parents should request a conference with the principal to arrange an appropriate payment schedule. Monthly payments may be arranged for those with identified need.

DELINQUENT ACCOUNTS

Delinquent accounts will observe the following schedule when parents fall behind in their child's tuition payments:

1. If payment is not received 15 days after the due date, a notice should be given by the school.
2. If payment is not received 30 days after the due date, the parent will be advised that the account is in arrears and the child may be considered for withdrawal from the program.
3. If payment is not received 45 days after the due date, the child will be withdrawn from the program.
4. Parents who are in arrears because of financial difficulty should request a conference with the principal to discuss adjustments to the fee or payment schedule.

CLASSIFICATION OF CLASSES

Each class of Montessori will be established with a minimum of 15 students registered for the class. The returning four-year-olds, returning five-year-olds will attend school on the first day of school. All others new three and four year old students will be phased-in within the next four weeks. The phase-in process will be cooperatively developed by the Montessori teacher and the principal of the school.

The annual tuition fee for students phased-in during the first two weeks will be reduced $30.00 and those phased-in during the second two weeks will be reduced $60.00.

Classes will be conducted for three-hour sessions, with each teacher responsible for a morning and an afternoon class.

TRANSPORTATION

Parents of pre-kindergarten children enrolled in Montessori classes are responsible for their safety and transportation to and from school. Bus transportation is provided for children of kindergarten age who live in the central school district.

CONFERENCE

Parent-teacher conferences are scheduled by appointment in October and March. These conferences provide an opportunity for parents and teachers to evaluate a student's achievement and plan constructively for his continued progress. Written reports are issued in January and at the close of school in June.

PROGRAM DESCRIPTION

The content of the program will be adapted from the Montessori Internationale Method and will include the following areas of instruction: practical life, sensory perception, language/reading, writing, mathematics, geography, science, art, music and movement. Special apparatus and materials will be provided to implement instruction. The program is developmental in nature and is designed to encourage independent thought and action within young children and to give them the confidence and skills necessary for successful participation in later learning environments.

CUMULATIVE EDUCATION

Parents of children in Montessori classes will be offered the option of their children's continued enrollment in the Montessori program during the kindergarten year or enrollment in the regular kindergarten program.
A JOINT VENTURE FOR A MONTESSORI PRESCHOOL SYSTEM
FOR CLEVELAND’S ECONOMICALLY DEPRIVED CHILDREN

Project Summary
The long range goal of the Marotta Montessori School, since its inception in 1979, has been to provide an urban Montessori preschool model in the City of Cleveland to serve economically deprived children during the critically formative years of ages three to six. This urban model of Montessori education would eventually be "incorporated into an inner city school system". At a meeting on April 25, 1985, participation letters were signed by the City of Cleveland, the County, the Cleveland School District, the Cleveland Catholic Diocese, and the Marotta School for establishing a not for profit corporation: Marotta Montessori Schools of Cleveland ("MMSC") dedicated to expanding the successful school operated by the Marotta School to five sites over three years. Since the Board of MMSC would consist of two persons appointed by each of the principal participants (as well as four persons from the community at large), the project represents a unique, creative joint venture among these key groups.

Since April, Executive Director Alcillia Clifford, working ardently with her Board, has secured funding from the County and City and has secured building classroom space from the Cleveland Public Schools for the first expansion site. In addition, MMSC has been approved by the Council for Economic Opportunity ("CEO") with respect to a proposal for funding by CEO of program operations for one of the five sites, subject to the receipt by CEO of an expansion grant for this purpose. As a result of these efforts, MMSC has become the most developed preschool initiative for inner city children available, supported by Cleveland’s main agencies for educational opportunity.

Objectives
Utilizing the support and guidance from its composite board (see Articles of Incorporation attached as Exhibit C), Marotta Montessori Schools of Cleveland endeavor to bring authentic Montessori education to Cleveland’s children by achieving the following objectives by 1992:

A. To build a curriculum spiral and expectations which in turn will provide a new stimulus to the development of elementary education in the Cleveland Public Schools at Hicks Montessori School and elsewhere.

B. To serve as a delegate agency for Montessori Headstart programs providing Headstart agencies with a new curriculum option building a base of support for Cleveland Public Schools.

C. To expand MMSC’s successful Montessori preschool operations to four additional sites selected by statistical analysis and census tracking data provided by participating sponsors. By 1992, the total operations will serve close to five hundred children city-wide.

D. To provide self-study documentation as to the effectiveness of the program as well as follow-up data indicating educational success after the MMSC program.

E. To provide a family education component with publications, video programming, and discussion groups involving families in both educational principles and child rearing principles.

F. To begin planning for future programs for parent/infant care for teenage mothers, and for preschool education utilizing Montessori training models in conjunction with the Ohio Montessori Training Institute and Cleveland State University.

G. To provide other cities with the urban Montessori model and joint venture structure and related documentation.

MMSC envisions, as a result of its effectiveness and documentation of the same a new level of service and quality for Cleveland preschool education for disadvantaged children supported by federal, state, city, and private funds.
The Need

The Council for Economic Opportunities' 1987 Head Start Needs Assessment Statistical Analysis documents the gaps in service to poor three and four year old children in Cuyahoga County. According to analysis, Head Start serves a smaller percentage of poor children today than it did in 1980, and has only increased its Head Start slots by 1.9% in eight years.

The service gap has not been filled by county funded Title XX day care or preschools in Cleveland Public Schools, as areas that have historically been underserved have experienced a steady growth in poverty populations. Even when the Title XX day care and Cleveland public preschool child development programs are taken into account, over three-fifths of the 12,106 poor three and four year old children in the county were not served by publicly funded programs.

The Council for Economic Opportunities in Cleveland (CEOEC) has reviewed the time-tested Montessori Method and its effectiveness in improving the probability of educational success for low-income children over the long term. (Bennett, 1988. Exhibit). Research has indicated that low-income families benefit from Montessori programs including Banta (1988), Sciarra (1974, 1976), Miller (1984), Karnes, Swede., and Williams (1983), and Karres and Teske, and Hodgins (1970). There are also established precedents for Montessori/Headstart collaboration in the sixties and seventies.

Montessori Support in Cleveland

Montessori Ohio, with twenty-five Montessori schools, has been a center of Montessori practice in the United States since 1958. The Marotta Montessori School, established in 1979, is an experienced urban Montessori school and therefore is perhaps most relevant to CEOEC. In addition to this privately funded school, Cleveland has supported Montessori elementary education in the Cleveland Public Schools since 1968. Both the North American Montessori Teachers' Association and the Ohio Montessori Training Institute are located in Cleveland and are affiliated with the Association Montessori Internationale, providing an ongoing source of authentic Montessori teacher training and service.

The Marotta Montessori School is dedicated to providing fully
developed Montessori education to low-income, primarily black, families. The Marotta program was first conceived by Robert Wolf of the FAMICOS Foundation who, in his work with Sister Henrietta, C.S.A., endeavored to meet the housing, nutritional, and educational needs of poor families. Mr. and Mrs. Vincent Marotta provided the funding for this unique pilot program supporting both excellent Montessori teaching while maintaining nutritional and health services simultaneously. The Marotta Montessori School, at the heart of its operations, embodies a development program equipped to serve needy neighbors with implicit headstart objectives.

Under the direction of its principal, Alvillia Clifford, Marotta Montessori School has proposed a Montessori expansion program designed to service economically deprived children in conjunction with the Cleveland Public Schools. In April 1988, the officials of the City of Cleveland, Cuyahoga County, Cleveland Public Schools and the Cleveland Catholic Diocese established a new non-profit corporation: The Marotta Montessori Schools of Cleveland (MMSC). MMSC, as it looked to its expanded mission, approached the Council for Economic Opportunity of Greater Cleveland (CEOGC) for funding and expanded services.

After several meetings with Mrs. Clifford and after reviewing her staff's detailed study reconciling Montessori and Head Start performance standards, MMSC and CEOGC elected to seek expansion funds. MMSC has cooperated with CEOGC for the establishment of a pilot program serving 80 children which will provide an opportunity to build an integration of Montessori and Head Start procedures. MMSC projections call for four operating sites of four classes each by 1991 including the CEOGC/BCEGC proposed expansion of two sites.

**Expected Benefits**

Research includes a 1988 Cleveland State University follow-up study of Marotta students. That study and others indicate that the Montessori preschool experiences are beneficial to children, including those in social-economic environments with especially significant findings documenting higher performance at the advanced preschool, and high school levels. MMSC programming provides for these Montessori-Ian standards, but also an emphasis on socialization, self-esteem, competence, self-image enhancement, academic and cognitive skills, language, parent education and human development. The role reviewed in MMSC's plan and heartily endorsed is that of an effective delivery system for all Head Start objectives.

--Successful expansion of child development and educational services in areas of unmet need documented by the census data of CEOGC.
--An extensive family education program including parent discussions with video and publication support.
--Academic success which stimulates higher expectations for elementary education in Cleveland Public Schools.
--Research and documentation approaches built into program design.
--Special planning functions for new programming for parent-infant care for teenage mothers utilizing Montessori models.

--Planning and research for state funding of preschool education.
The Montessori Classroom

The Marotta Montessori School of Clevel and will operate its first classrooms in accordance with the high standards established by the Association Montessori Internationale. The child education component will include the following:

1. A "prepared environment" with child-sized furniture and materials with enough challenge to be stimulating and independent.

2. Coordination of the classroom setting, for three-to-five-year-olds children (until mandatory school enrollment), to allow children of different ages to work at their personal level and pace according to their natural tendencies.

3. A full range of Montessori materials for children aged three to five years, including practical life activities that cultivate the ability to care for one's self and one's environment, sensorial materials that sharpen the child's senses in preparation for observation of the physical world and academic and cultural activities which expose the child to the basics in reading, writing, mathematics, geography, history, life science, art, music and dramatics.

4. Montessori-trained adults who guide children with a minimum of intervention. Teachers must have a bachelor's degree and be certified by the Association Montessori Internationale.

5. Cultivation of "normal" classes - where children are able to concentrate during periods of uninterrupted free and take on roles of activity, thus building independent thinking.

activity from 9:00 a.m. to 12:30 p.m. Children from four and a half to five will stay for afternoon sessions from 1 p.m. until 3 p.m. The variation in center attendance supports the Montessori technique of encouraging older children to teach younger ones, while preparing them for transition to the public school kindergarten. The older children who attend "extended day" sessions will receive more individual lessons reinforcing their math and language skills. The classrooms vacated by children in the afternoon will be used for structured training for parents of the children in the program, including group discussions which give parents the opportunity to interact and learn from each other. Babysitting services are provided during parent education sessions by the school staff.
COMPETENCY STANDARDS.
CHILD DEVELOPMENT ASSOCIATE AND MONTESSORI COMPARED

Submitted by David Kahn
Administrator, Ohio Montessori Training Institute
June 16, 1988
In cooperation with Marotta Montessori Schools of Cleveland
Alcilia Clifford, Executive Director

Primary Sources:
Dr. Mr. Kohnlein, Montessori Preschool Component
Miles Arendt, Ohio Montessori Directors Circle
CHILD DEVELOPMENT ASSOCIATE COMPETENCY STANDARDS

 Competency 1
To Establish a Safe, Healthy Learning Environment

1. Functional Area: Safe

The candidate is trained to provide a safe environment to prevent and reduce injuries.

MONTESORI COMPETENCY STANDARDS

1. Safe

Montessori Students will be able to demonstrate understanding in:

1. the prepared environment dealing with the child's use of materials, clear availability of materials, workspaces delineated by tables and rugs, the taking of turns, the practical life exercises, etc.

2. the role of the teacher in assisting the child in the use of the materials.

3. the arrangement of the materials to establish social relations and the right use of the materials for safe interaction and peaceful assistance.

Lecture Schedule (Subject to Revision)

1. Dr. Montessori's Life
2. Human Tendencies
3. The Absorbent Mind
4. The Process of Adaptation
5. The Prepared Environment
6. The Role of the Teacher (Directress)
7. Freedom and Discipline
8. Deviations
9. Work and Normalization
10. Social Development and the Child
11. Observation of Children

Weekend Seminar—1969

1. Practical aspects of discipline with responsibility
2. A classroom environment that leads to normalization
2. Functional Area: Health

Candidate is trained to promote good health and nutrition and to provide an environment that contributes to the prevention of illness.

2. HEALTH

Students will demonstrate the following:

1. Skill in observing and recording children's growth and development within the context of the prepared environment.

2. Integration of the exercises of practical life with the nutritional needs of the children (i.e., healthy snack, food preparation, cooking etc.)

3. Skill in presenting principles of nutrition and good voluntary food habits to parents.

4. Integration of the study of food with the study of cultures.

Lecture Schedule (Subject to Revision)
Summer I - June 20-July 29, 1988

1. Human Tendencies
2. The Prepared Environment
3. Preliminary Exercise (Orientation to the Environment)
4. Spooning, Pouring, Folding
5. Care of Person/Dressing Frames
6. Care of Environment
7. Grace and Courtesy
8. Deviations
9. Work and Normalization
10. Observation
11. Development of Movement
12. Freedom and Disciplines

Weekend Seminar--1989
1. Discussion on Environment and Normalization

Four Weeks Practice Teaching--1989-1990
3. **Functional Area: Learning Environment**

Candidate is trained to use space, relationships, materials and routines as resources for constructing an interesting, secure, and enjoyable environment that encourages play, exploration, and learning.

---

3. **Learning Environment**

The student will demonstrate theory, skills and attitudes about the following:

1. the understanding that cognitive and affective growth is promoted by a child's interaction with people and appropriately designed materials and activities.

2. the understanding that children’s learning is often incidental rather than with specific intent to learn, and therefore, the environment must provide a natural setting, purposeful practical life and sensorial activity for the child to allow for indirect preparation for later academics.

3. the understanding that the child learns as a whole being in a holistic manner and that motor, cognitive and affective development are integrated requiring that the child have freedom of movement and choice.

4. the stages of development (planes of education) and their relationship to learning environments

5. the role of the teacher in assisting the child within the prepared environment

6. the scope and sequence of the Montessori practical life, sensorial, language, math and cultural materials (Montessori materials for development)

All lectures given in the Primary Course apply to this section.
Appendix 13: Early Childhood Funding Appropriations Guidelines Fact Sheet — Marotta Montessori Schools, Cleveland, Ohio
These guidelines provide state officials with a one page introduction to critical Montessori issues.

**EARLY CHILDHOOD FUNDING APPROPRIATIONS GUIDELINES**

**FACT SHEET**

Support Montessori Education in Ohio
Montessori education has operated for eighty years internationally and for thirty years in the United States. There are two outstanding systems of teacher and school certification in the United States: Association Montessori Internationale (AMI) and the American Montessori Society (AMS). Both AMI and AMS operate teacher training courses in Cincinnati, Columbus, and Cleveland. There are approximately 100 Montessori schools educating approximately seven thousand children (about half of whom are of preschool age) in the State of Ohio. (An up-to-date census will be available by January 1). In order for Montessori schools to be recognized and funded by state sources, the following general program characteristics need to be protected under the law:

Support Montessori Teacher Training
Montessori training (AMI or AMS) includes child psychology, educational theory, material demonstrations, supervised practice with Montessori apparatus, observation, supervised practice teaching and over seven hours of written and oral examinations. Montessori training is recognized by selected colleges and universities at both the undergraduate and graduate levels. Pre-service training usually involves close to three-hundred hours of lectures.

Support Montessori Curriculum
Montessori is a total curriculum approach that is integrated and sequential. Unlike many existing early childhood programs, Montessori programming is a child-centered, cognitively based preschool program. Activities are child-initiated within a prepared environment created by the teacher. Extensive research is available which documents the success of child-centered, developmental approaches in general, and Montessori programs specifically.

Support Cross Age Groupings
Cross age groupings (ages three to six) are supportive of development by reducing competition, maximizing curriculum options, providing a family atmosphere that plays a vital role in socialization, and permitting older children to model advanced work for younger children.

Support Adult-Child Ratios up to 15:1 for the Montessori Preschool
Montessori preschool programs for children ages three to six have adult-child ratios of from 12:1 to 15:1, relying on the specific expertise of the teachers to link the child to materials which develop skills. Utilizing the prepared environment, the trained Montessori teacher is able to foster independent learning skills at maximum levels with the aforementioned adult-child ratios.

Support Full Day Montessori Programs
Montessori full day programs (six to eight hours) are an established practice and provide day care and educational opportunities for children which are uniquely supportive to families, especially working families. Full day programs allow for extended academic activities integrated with community building activities such as meal preparation, outdoor play, care for plants and animals and personal hygiene. In addition, Montessori schools offering full day programs recognize the emotional needs of children who are away from their parents and their homes for extended periods of time.

Support Private, Not-For-Profit Programs
It is hoped that the State will consider different options for utilizing the extensive network of private Montessori schools in the State of Ohio. Regulations should permit public school districts to subcontract with Montessori schools to establish new Montessori programs which service preschool children with very low tuition or no tuition at all. It is also hoped that independent Montessori schools with certified teachers may apply for direct state funding.

**CONTACT.** Alexa Clifford, Marotta Montessori Schools of Cleveland, (216) 347
Prepared by THE NORTH AMERICAN MONTESSORI TEACHERS’ ASSOCIATION
FIVE-YEAR-OLD-CLASS
EARLY CHILDHOOD EDUCATION

FOR THE TRAINED MONTESSORIAN:
ADJUSTING TO THE MONTESSORI KINDERGARTEN
CLASSROOM OF ALL FIVE YEAR OLDS

by Hildegard Solzbacher

• In the beginning the Montessori kindergarten will need to be directed.
• It is impossible for children to make up in one year what other children have done in three years or more.
• While making up for lost time, Montessori five year olds must be academically challenged without compromising their self-motivation.

This article does not recommend classrooms of all five year olds, but rather provides emergency advice for those confronted with this compromise.

Two-thirds of Montessori public schools begin their Montessori programs with five year olds. The following guidelines may help trained Montessorians who may have to adjust to five-year-old-only Montessori classrooms. Hopefully, such an adjustment is temporary.

When you place five year olds without previous Montessori training in a Montessori environment, you must realize that you cannot expect a group of children with the same reverence for the environment and eagerness to be busy all the time that you find with three year olds. In many cases, five-year-old children without Montessori backgrounds have experienced long periods of boredom, a lot of television, and may not have been held to appropriate behavior within a social context. Yet, first and foremost, the role of the directress is to bring the child to a level of inner discipline. How can this be done?

In the beginning the five year olds need to be directed. Start class-wide group lessons with many presentations so that children can be independent as soon as possible. Present exercises objectively stating, "this is how we do it here." Make sure that the rules are simple to understand and consistently enforced by every adult in the environment.

For the first three to four weeks presentations should be group oriented, but not always class wide. Smaller groups may emerge relative to abilities, allowing children who are ready to work on their own to do so. Small group lessons are essential in order to make sure that the five-year-old child can be busy, independent and constructively engaged. If the children are not challenged, they will become bored and difficult to manage. Group lessons can diminish when children are able to choose their own work, work responsibly, and put materials away. Each class of five year olds will have different rates of readiness.

Hildegard Solzbacher is the Director of Training at the Midwest Montessori Institute. She has over thirty years experience in Montessori education as a lecturer, teacher trainer and examiner.
Include activities that will build the group spirit of the class. These group games and songs include such activities as storytime. They will add to the liveliness of the group and will give you another perspective on the children.

Practical life (in group lessons) is a good starting point. Present those practical life exercises which entail responsibility for the environment. Simple exercises without a sequence of actions, such as simple pouring exercises, do not excite five year olds.

More interesting exercises might be: the lacing and tying frames, washing exercises, and polishing. Once the exercises are introduced, stress that they are individual, that each child will do his or her own work alone at first. At the beginning the whole group must be involved watching many activities — such as dusting shelves and preparing snack — because you cannot have children choosing work without knowing what to do. Also in the beginning, blocks, puzzles, and simple toys can provide children with activities while they are gaining skills using the Montessori materials.

Grace and courtesy lessons are practiced daily. Children are shown how to say “I don’t want to be disturbed.” Presentations are given in expressing emotions and in dealing with social relations. Already many children are expressing whom they like and dislike; these children need role-playing demonstrating desired behaviors.

Group presentations on spoken language, vocabulary enrichment and the sandpaper letters prepare the child as quickly as possible for the explosion into reading and writing. The movable alphabet can be introduced soon after, with two or three children working together.

Sensorial exercises are also appealing. Matching is an important preparation for reading. With the second color box and the geometric cabinet, emphasis should be on vocabulary related to these exercises. All of the spoken language lessons related to the sensorial materials should be given, utilizing in particular the game extensions. Language activities and memory work will be the foundation for reading later in the year.

Children need to be academically challenged, but not at the expense of their inner development.

The sensorial materials provide a foundation for mathematics. It is important to expose the children to extensive use of the sensorial materials before introducing the math materials. If the math materials are introduced too soon, the sensorial materials will be abandoned, and the value of the indirect preparation will be lost.

The metal insets introduce the pencil grip and the left-to-right as well as up-and-down movements with the pencil. The geometric cabinet prepares children for writing, providing the teacher with key information as to competence in visual perception. Writing comes last.

Mathematical materials can be introduced after foundations in the sensorial materials are established. Since the children are older, that might be in about four weeks.

In conclusion, the teacher should not be overly concerned with the Montessori timetable for reading, writing and math skills. It is impossible for children to make up in one year what other children have done in three years or more. It is more important for the children to be “helped” by the adult than to force a higher level of learning. The children must be helped to take charge of their own work so that when they encounter the wider elementary environment they can handle the greater freedom. Montessori is a helping pedagogy and therefore excludes pushing and pulling simply to achieve learning goals. One of the most important aspects of the Montessori preschool is that children are sensitive to their own needs. This is what makes a Montessori classroom, and not a classroom of Montessori materials. Children need to be academically challenged, but not at the expense of their inner development.
Mainstreaming the child with special needs into the Montessori classroom has been successfully accomplished throughout the Montessori community both in the United States and abroad. Within the public school context, continued financial support and staffing of Montessori special education can expand the practice so that more children with special needs can be included.
MONTESSORI EDUCATION AND THE SPECIAL CHILD

One of the tenets of the Montessori approach has been the integration of disabled and non-disabled children working together in the same learning environment. Contemporary “mainstreaming” is in agreement with the Montessori approach which “has always placed important emphasis on the benefits gained through involving children of different abilities in the same environment” (Osterkorn, 1982).

In the case of disabled and non-disabled children working together, Helbrugge (1978) highlights the social and cognitive benefits. The non-disabled child makes a cognitive and social leap when communicating with a handicapped child who may be physically different and who communicates differently. The handicapped child benefits from having non-handicapped children model language, behavior, and movement which research shows has much greater impact than the adult model.

In the past eighty years of Montessori practice, Osterkorn (1982) cites successful application of the Montessori approach with blind children in Padua, Italy (Leonardi, 1957); with brain injured children in Washington, D.C., (Argy 1965); with mentally retarded children in Milan, Italy (Attias, 1977); with physically disabled children in Munich, Germany (Ockel, 1977); with learning disabled children in Toronto, Canada (Trass, 1982); with cerebral palsy children in Hellerup, Denmark (Hoff, 1966); and with emotionally disturbed children in Dublin, Ireland (Jordan, 1977).
A BRIEF OVERVIEW OF MONTESSORI SPECIAL EDUCATION

by Muriel W. Adcock

- Maria Montessori began her work with children at the mental asylum in Rome. She observed that they were hungry for meaningful activity.
- She developed a method of education that successfully enabled children considered uneducable to learn new skills and increase their level of competence.
- The individualized approach and the prepared environment developed by Dr. Montessori help children with and without disabilities to benefit academically, emotionally, and socially.

INTRODUCTION

Dr. Montessori has stated that her work is founded on a "science that transforms the personality.... Whereas the ancient pedagogy in all its various interpretations started from the conception of a 'receptive personality' — one, that is to say, which was to receive instructions and to be passively formed, this scientific departure starts from the conception of an active personality — reflex and associative — developing itself by a series of reactions induced by systematic stimuli which have been determined by experiment" (M. Montessori, 1965, p. 73).

This concept of children having an active personality remains fundamental in the Montessori approach to the education of young children with and without special needs, and is why Montessori principles and practice can be particularly beneficial in classes which are mainstreamed and integrated environments where the children have a variety of abilities.

HISTORY

In 1896, after she graduated from medical school, Dr. Maria Montessori began working for the Psychiatric Clinic of the University of Rome. It was during this year that she began her work with children from the mental asylum of Rome. As a physician at the Clinic her duties included seeking out subjects for treatment. This involved visiting the asylum, Monasterio di Santa Maria della Pieta. At this time in history the conditions there were bleak and dehumanizing. All the adults and children, which included those who were insane, physically ill, mentally retarded and emotionally disturbed, shared the same living quarters. During her visits to this unfortunate place of human suffering, the patients themselves went to her and asked her to help the children. On one occasion she observed the children in their dark, empty room.

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playing with crumbs on the floor and it occurred to her that these children were not starved for food but
were hungry for meaningful activity. They were handling the crumbs for lack of any other form of mental
stimulation. This observation so moved her that she began to research all prior literature regarding the
education of young mentally retarded children using the works of Jean M. G. Itard and Edouard O. Seguin of
France, who had done pioneering work with people who were hearing impaired and mentally retarded.
Through intensive observation and direct work with children, she developed new education principles based
on experimental psychology which incorporated her prior knowledge as a physician.

In 1899, Dr. Montessori became the Director of the Scuola Orthophrenica (Orthophrenic School) in Rome. This
was a school for retarded children as well as a teacher training institute. It was here that she began to
develop her materials and to work with the children in a learning environment. The children came to the
Orthophrenic School from the regular schools of Rome where they were unable to participate. She spent
two years at this school developing and refining her methods. Gradually it became apparent that something
very special was happening in the classrooms. Children who had been described as uneducable began to
learn new skills and increased their level of competence. When these retarded children were given the
normal primary grade exams for regular children, they were able to pass, and some scored higher than the
normal children. These amazing results led Dr. Montessori to consider what would happen if normal
children were educated by these same methods.

In 1901 Dr. Montessori returned to the University of Rome to study philosophy. She believed that the
work of Seguin, with its emphasis on sensorial learning and his idea of teaching abstract thought through
congerent sensorial materials that children could see and touch, was based on psychological principles which
could also be used in the education of normal children.

In 1907 in Rome she opened the first regular Montessori school (Casa dei Bambini) and began her work
with normal children. Gradually as the news of her success spread, more and more schools opened. She was
then invited to other continents to open schools and give lectures as interest in her method continued to
extend throughout the world.

These principles developed by Dr. Montessori provided opportunities for learning to children with
disabilities through carefully designed educational tasks in a prepared environment of sensorial materials.
Her research showed how even the severely disabled child is able to learn and achieve a greater level of
independence through interaction with the environment using specifically designed instructional tasks.
Her work also showed how psychological deviations could be overcome through this meaningful activity in a
prepared learning environment. The "active personality" of the child participates in a psychological process
of self-construction by means of interaction with the external environment.

Dr. Montessori wrote many years later:

From the very beginning in my work with deficient children I felt that the methods which I used had in them
nothing united to the instruction of the retarded. I believed that they contained educational principles more
rare than those in use. I became convinced that similar methods applied to normal children would set free
their personality in a marvelous and surprising manner.

CURRENT APPLICATIONS

"Any contributions which we can make towards the training of deficient children — beings who have
been excluded as it were from society — to become useful citizens is of immense importance" (Dr. M.
Montessori, 1932).
The Montessori classroom allows each child to work individually at his or her own pace and level with the careful guidance of the teacher. Through detailed observation of each child's active personality and learning process, the prepared and highly trained teacher is able to provide appropriate instructional tasks which will nurture the child's physical, intellectual, and emotional development. This individualization within the learning environment helps children with and without disabilities to benefit both emotionally and socially. The order and structure of the Montessori prepared environment offer a sense of security for the child. This external structure and consistency allows the child to develop a sense of trust in the environment as he or she experiences predictability in daily events. This sense of security can help the child with disabilities feel more confident and thus more comfortable with learning new concepts. The social organization of the classroom is non-competitive. Each child works at an individual pace so that there is no psychologically threatening pressure to perform at the same level as other non-disabled children.

The Montessori classroom also incorporates a special attitude of respect for each child as an individual with potential. This respect nurtures self-esteem and joy in learning in all children. The beauty and nature of the prepared environment encourages relaxation and concentration as well as respect for living things. Gradually the children will begin to internalize the external order of the environment and thus enhance their ability to take in information and order it in the mind. This mental ability is of particular importance to children with disabilities who do not take in information as clearly. The emotional atmosphere of the classroom supports the emotional development of the children in it. The teacher participates in this process through skilled observation techniques and intensive specialized pretraining which provide him or her with a sensitive understanding of the needs of each child.

THE MATERIALS

The Montessori materials help provide order and structure in the classroom and may assist in motor development and perceptual functioning. The attractiveness of the material encourages the child to develop attention, interest, and concentration. The instructional tasks provided in the materials give the child a sequence of movement, form, and symbol appropriate to each child's individual level which forms a foundation for classifying and categorizing information which in turn helps the process of generalization—a critical skill for knowledge acquisition and therefore of special importance to the child with special needs. The self-correcting quality of the materials provides the child with opportunities for success without adult intervention. This quality is especially important for children with special needs who often have more difficulty acting independently and feeling successful.

It is the structure, individualization, and opportunities for success provided in the Montessori prepared environment which allow for the education of children with very different needs and abilities within the same classroom.

SOME CONSIDERATIONS

In order to integrate or mainstream children with disabilities, the individual children need to be assessed. The individual program needs to be planned so that the child's abilities and disabilities can be identified. Staff training and prior experience with children should also be considered as the success of the program will be related to the appropriate training and the inner resources of the adults in the environment. It is also important to know what resources are available in the community for children with special needs and for teachers who would like further information on various related subjects. The physical design of the facility and daily routine should be evaluated along with the availability of outside professional services. Children with disabilities will need to be assessed on an ongoing basis. The adults who work with the children need to have an understanding of what normal development is before they work with children who have special needs so that they may better understand special needs and individual difference. The staff should also be prepared for parent education regarding children with special needs.

There are many different types and degrees of disabling conditions. Teachers will need specific information about their individual students. The introduction of new children into a class will need to be planned. All children need to feel accepted and valued as individuals.
HISTORICAL OVERVIEW

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ADDITIONAL RESOURCES FOR PARENTS, ADMINISTRATORS AND TEACHERS

Alexander Graham Bell
Association for the Deaf
3417 Volta Pl. NW
Washington D.C. 20007-2778
(202) 337-5220

American Cancer Society
4 W. 35 St.
New York NY 10001
(212) 736-3030

American Coalition of Citizens with Disabilities
494 Westchester Ave.
Yonkers NY 10707

American Council of the Blind
1010 Vermont Ave. NW
Suite 1100
Washington D.C. 20005
(202) 339-3666
(800) 424-8666

American Juvenile Arthritis Organization (AJAO)
Arthritis Foundation, National Office
1314 Spring St. NW
Atlanta GA 30309
(404) 872-7100

American Printing House for the Blind
1889 Frankfort Ave.
P.O. Box 6085
Louisville KY 40206
(502) 895-2405

American Society for Deaf Children
814 Thayer Ave.
Silver Spring MD 20910
(301) 585-5400

Association for Children with Learning Disabilities
4156 Library Rd.
Pittsburgh PA 15234
(412) 341-1515
(412) 341-9077

Association for Persons with Severe Handicaps
7010 Roosevelt Way NE
Seattle WA 98115
(206) 523-8446

Association of Birth Defect Children
3526 Emerywood Ln.
Orlando FL 32806
(305) 876-2821

Asthma and Allergy Foundation of America
1302 18 St. NW
Suite 303
Washington D.C. 20036
(202) 283-2560

Compassionate Friends Inc.
(child has died)
Box 3896
Oak Brook IL 60522-3896
(312) 323-5010

Congress of Organizations for the Physically Handicapped
1630 Beverly Ave.
Tinley Park IL 60477-1904
(312) 523-3566

Epilepsy Foundation of America (EFA)
4351 Garden City Dr.
Landover MD 20785
(301) 459-3700
RESOURCES

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Foundation for Children with Learning Disabilities
P.O. Box 2929
Grand Central Station
New York NY 10163
(212) 687-7211

Immune Deficiency Foundation
(IDF)
P.O. Box 586
Columbia MD 21045
(301) 461-3127

National Association for Parents of the Visually Impaired
P.O. Box 188086
Austin TX 78718
(512) 459-0917

National Association of Mothers of Special Children
9079 Arrowhead Ct.
Cincinnati OH 45241

National Association of the Physically Handicapped
1001 N. College—71
Fort Collins CO 80524

National Center for Education in Maternal and Child Care
38th & R Streets NW
Washington D.C. 20057
(202) 625-8400

National Center for the Prevention of Sudden Infant Death Syndrome
330 N. Charles St.
Baltimore MD 21201
(800) 638-7437

National Down Syndrome Congress
1800 Dempster St.
Park Ridge IL 60068-1146
(312) 823-7550
(800) 222-4372
The Education of All Handicapped Children Act (PL 94-142) stipulates that all handicapped children are entitled to free, appropriate public education.

Since PL 94-142 there has been increased awareness, accountability, and the mainstreaimg of handicapped children into classes of non-handicapped children.

Montessori education is a unique opportunity to meet the needs of handicapped children.

Bennett Park Montessori Center in Buffalo, a public school magnet, successfully incorporated a special education program in its building.

Montessori should be considered seriously as a program option to meet the special needs of handicapped children in the public schools.

The Education for All Handicapped Children Act, commonly known as PL 94-142, is a landmark piece of legislation stipulating that all handicapped children, aged three to thirteen years, are entitled to a free, appropriate public education. The major requirements, which must be adhered to by every state and its localities, include:

- assurance that special education is provided to all handicapped children in the "least restrictive environment"
- assurance of the maintenance of an individualized education program (IEP) for all handicapped children, developed jointly with their parents or guardians
- assurance of early identification and of "full service" goals (i.e., provision of all the related services, such as speech, physical or occupational therapy, needed by the handicapped child)

PL 94-142 also included a special incentive grant of $300 per child to encourage the states to provide special education and related services to its preschool children, but it will not be until the 1990-91 school year that public schools must provide a free, appropriate educational program for all three- to five-year-old children with handicapping conditions.

The most obvious results of this mandate have been increased accountability for referral, evaluation, placement and review procedures, an emphasis on staff development to create greater sensitivity and awareness of children with special needs, and an increase in "mainstreaming" (i.e., integrating a child with a handicapping condition with non-handicapped children for all or part of the day).

The rights of handicapped children were also expanded as a result of court-ordered desegregation plans. Advocates for the handicapped joined civil rights plaintiffs in several large urban school districts to assure greater access and equity for their clients.

Montessori education presents a unique opportunity to meet the needs of handicapped children. Maria Montessori did some of her most significant work at the Orthophrenic School in Rome, Italy, following her graduation from medical school. The Orthophrenic School was a state institution for the "feebleminded"

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MONTESSORI AND SPECIAL EDUCATION

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(possibly a generic term for the handicapped). Building on the work of two French physicians, Edouard Seguin and Jean Marc-Aspard Itard, she sought to humanize the institution and elevate the care of children to something more than custodial management. Montessori achieved a stunning success! Her pupils were able to make remarkable progress in learning basic skills although they had been assumed to be unteachable. She developed many unique methods and materials that roused the children from their lethargy and stimulated their curiosity for learning. This legacy still challenges us.

Montessori later began to train teachers to use her approaches, teaching them how to "take their cues" from the child. She showed them how to match the materials to the child's developmental needs and how to individualize instruction through their observation of the child as he interacted with the materials.

The respect for the child that is so inherent in Montessori's approach inevitably leads him to develop respect for himself and others. It is through this respect, granted automatically and unconditionally to the child, that he learns to trust himself and the environment. Trust is also established through the permanence of the materials on low, accessible shelves. They appear in their predictable order and in their predictable space. The child comes to depend upon them as familiar aids in his own growth and development.

Theresa Hahn (1977) urged Montessorians to help meet the needs of handicapped children soon after the enactment of PL 94-142:

I have seen Montessori work for the handicapped child and at the same time watched the normal child benefit from contact with those children who need their love and compassion. With the current national legislation enforcing a mainstreaming approach in the public schools, we as Montessorians should open our hearts and classrooms to those kinds of children who once inspired Montessori in her initial work, educating the human potential.

The Bennett Park Montessori Center, one of the Buffalo Public School's magnet school programs, has successfully incorporated a special education program within its building. The school, opened in 1977, houses 600 children aged three to thirteen years. There are approximately sixty children with handicapping conditions attending the school and receiving a Montessori education.

Montessori education presents a unique opportunity to meet the needs of handicapped children.

A primary consideration in implementing the special education program at the Bennett Park was teacher preparation. A preschool Montessori training program (3-6 yr. level) had been initiated in Buffalo through the joint efforts of the Montessori community, public school officials, and teacher education professors as part of the preparations for desegregated schooling. The Buffalo Board of Education initially agreed to pay for the staff development costs before opening the school, since there were no teachers in the school district who held a valid Montessori credential. Several Special Education teachers volunteered to participate in the training courses offered by the Buffalo Montessori Teacher Education Program in 1978-80.

Two self-contained primary level classes for children with emotional handicaps were begun in 1979, the third year of the school's existence, and a class for the educable mentally retarded was implemented the next year. The Department of Special Education allotted sufficient funds to equip these classrooms with a full complement of Montessori materials and to staff each class with an appropriately trained Montessori/Special Education teacher and a full-time aide.

Although these classes were adequately staffed and equipped, there were many obstacles to establishing a successful program. For one, the children were assigned by the placement office of the Special Education Department, often just before the opening of school. The rest of the school population is drawn by lottery after parents have made application to the program, assuring racial and sexual balance. Fixed assignments to the Special Education classes were often made solely on the availability of space. This precluded any contact with parents prior to the arrival of the children at school. They usually appeared
alone, coming by bus, with no idea of what to expect. Parents had been given no orientation to the school and had had no opportunity to participate in the decision to place their children in a Montessori environment.

The handicapped children thus placed at Bennett Park were often as old as nine, although it had been stressed that the probability of success was greater if they entered the program at a much younger age. The pupils were almost always boys and were predominately minority children — again, noticeably different from the heterogeneous classes throughout the school. They most likely had been newly identified as handicapped, had previously experienced many negative interactions with adults and peers, and usually appeared to be more aggressive than many children in the school. When several new students arrived at once, it was very difficult for them to adjust to the new expectations for their work and behavior. Each time a new child appeared, the tenuous newly established patterns of the others slipped back and old habits resurfaced. Fortunately, the staff has learned to recognize and anticipate these situations and they have developed much greater sensitivity to the needs of the children.

One way the placement problems have been reduced is by identifying children with handicapping conditions within the existing school population. Through skilled observation, children are occasionally seen as needing more support and attention. Every effort is then made to meet the child’s needs in the regular classroom, including spending four years instead of three at the preschool level. This is not perceived as failure, but is comparable to the non-graded primary programs of the 60s, when children were not hurried to complete predetermined or inappropriate objectives. If this extra time does not result in reasonable growth, the child may be referred to the Committee on Special Education for evaluation. Resource Room service is usually recommended for such children since they usually display less severe learning and behavioral difficulties than those who require placement in a self-contained Special Education class.

Today there are two Resource Rooms and two self-contained classes at Bennett Park. There no longer is a class for the retarded. Most of the children are labeled as learning disabled (LD) or emotionally disturbed (ED). There are also two visually impaired students and three children with physical handicaps placed in regular classrooms and receiving itinerant service.

All of the Special Education students are thoroughly integrated into the daily life of the school. Many travel to and from school on the regular school buses, not on those transporting only the handicapped. They participate in all the school activities, performing in plays, singing in the chorus, going to camp overnight and learning.

Mainstreaming is a goal set for each Special Education student. It is begun as soon as possible by utilizing the school visiting policy: any child of any age may visit in another classroom for a day, as often as he likes, if it is mutually agreeable to sending and receiving teachers. Special Education children visit, too. They may invite friends to visit them. When the handicapped child’s teacher anticipates asking for a reclassification from “self-contained” to “resource room,” she works out a “trial mainstreaming” period with a teacher who has been accepting him as a frequent visitor. He now becomes a “regular visitor,” spending a portion of every day in the same classroom. The host teacher may include him in a reading or math group or invite him to join a cultural subjects lesson. Both teachers confer often to assure that the child’s experiences are positive ones and that growth is continuing. If this trial mainstreaming is successful, the parent will come in for a conference to discuss the re-evaluation process and to participate in the decision to ask for a change in the child’s placement. The parent and the teacher both attend the CSE meeting to suggest that the child remain at Bennett Park if resource room service is recommended.

Support is then provided for the teacher as well as the child to assure a successful transition to a totally mainstreamed environment. The Resource Room teacher will visit the classroom frequently during the first few weeks of school, offering suggestions for classroom management, learning strategies and support materials. She will offer advice to the child on how to manage time more effectively, try to help him develop better study skills and support his efforts to make new friends. If the child experiences difficulty in the transition to a regular classroom, the teacher may request a “Case Conference.”

The Case Conference is a weekly meeting of the support staff (i.e., Special Ed Resource Room teachers, Speech Therapist, Chapter 1 specialists, Program Coordinator, school administrators) to discuss.
children with special needs. The classroom teacher may ask to join a session and share her concerns about a mainstreamed child or anyone who is experiencing difficulty in the classroom. The Case Conference group reviews the child's background and school history, perhaps providing some new insights for the teacher, and suggests strategies for meeting the child's needs. A parent meeting may be arranged as a result of the case conference to enlist help in working with the child. Counseling may be suggested to the parent as a way to provide additional support. For a child who is not presently identified as handicapped, an exploratory psychological evaluation may be in order. The parent must agree to this before the school can request the evaluation, however. There may be a need for further testing and, eventually, a referral to the Committee on Special Education, but this is always a joint decision between home and school.

Bennett Park is currently exploring the "consultant teacher" model as a new direction for its special education program. A specially trained teacher (one of the present Montessori/Special Ed staff) would assist a classroom teacher who would have twelve handicapped children as well as twelve "at-risk" students in the same classroom. The identified children would not be severely handicapped but would still require considerable support services. Since many of the Special Education students are so well integrated into the Montessori mainstream, this new concept may prove beneficial to them.

The challenges posed by children with special needs are difficult and sometimes overwhelming. The opportunities that Montessori education provide in a prepared, respectful and peaceful environment are unsurpassable. Montessori education should be looked at seriously by every concerned educator.
Let us at the outset try and find out who are these children with developmental disabilities. An infant
may sometimes experience slight damage to a part of his nervous system before birth, during birth, or soon
after birth. A young child may also experience some damage to his nervous system by an accident. The
resulting insult may not be immediately observable. Later on, however, as the child matures we would notice
that he is not functioning as he should. Kinsbourne tells us that:

It is the failure of the normal timing of development of the relevant function. The function which is involved
will develop later and more slowly. There will be a developmental lag with respect to the function to be
subserved by the damaged area, irrespective of the etiology of the damage. So what we see after perinatal
trauma or other insult is that a particular skill comes in late. With respect to that skill the child behaves
like a normal younger child.

IDENTIFYING DEVELOPMENTAL DISABILITIES

How can one identify these children? When is the onset of the neuro-developmental disability? The
onset can unfortunately be at any time. Some mothers can even talk of the baby being very active in the
womb. Others comment on difficult babies who are whiny, don't sleep well, and have temperamental traits.
The onset could also be during the toddler years. It seems possible for developmental disabilities to occur at
any time from 2 to 22 years. If the child is an only child, the behaviour manifestations of developmental
disabilities may be discovered late as he has been the centre of attention for a while and nobody notices
anything. On the other hand, if the child comes from a large family, discovery will also be delayed in all the
commotion caused by the other sibling.

Recent research seems to show that some attention deficits are observable early in life. But deficits in
attention that result in selective learning disabilities are usually apparent after entry into the school setting.
School makes certain demands on the child which the child may not be ready to meet. Some children exhibit

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M.A. in Special Education at Arizona State University. She gained teaching experience in both Ceylon and the U.S.
and since 1972 has directed a class for children with Learning Disabilities at Good Samaritan Hospital in Phoenix,
Arizona. On the death of her aunt, Dr. Lena Wikramaratne in 1982, she took over the direction of the A.M.I. Training
Centre in Phoenix. Article reprinted by permission of the author.
learning problems as soon as they begin to receive formal instruction. Others may not be discovered until they reach elementary school.

The reason why many children with developmental disabilities tend to go undetected sometimes for too long is because of the absence of conventional symptoms of disease. In examining the nervous system, a distinction is made between hard and soft signs. A hard sign is something that tells a physician that it is a sure sign of a disease — like an arm that is paralyzed. We all know that this is not a normal development. A soft sign of developmental disability is one that you will not be able to tell for certain, unless you know the age of the child. Keep in mind that the developmentally disabled child has the added invisible handicap of looking normal.

Dr. Marcel Kinsbourne puts it this way: a soft sign represents a persistence of a primitive form of response on the one hand, and represents a failure on the other in a certain performance — “the child fails to do something which at his age he ought to be able to do.”

Over 70 years ago Dr. Montessori had the same view. Speaking of psychic deviations she tells us that deviations from physical normality are easy to recognize because of visible malformation. Deviations from mental normality do not advertise their presence very clearly. As a child develops, according to Dr. Montessori, the two streams of energy — the physical and mental — should be balanced and expended in voluntary movements. The two streams should never be operated separately. Should the two parts of the psyche, mind and body, be separated instead of being intimately bound together, the result is deviations from the norm. This is exactly what we find in the child with neurodevelopmental disabilities today.

Dr. Melvin D. Levine, Professor of Pediatrics of Harvard University and Boston Children's Hospital, gave a presentation in Phoenix on “Attention in Childhood — A tension in childhood.” He was of the opinion that longitudinal studies have realized the high prevalence of low severity handicaps in children with developmental lags. These subtle disabilities in childhood run the risk of turning into major disabilities in adolescence. He brings together many of the characteristics of children with developmental disabilities under the heading “attention deficits.” These deficits have been grouped under four basic “lesions”: altered focus, distractibility, unintentionality and impaired feedback.

ATTENTION AND ATTENTION DEFICIT DISORDERS

Before discussing the characteristics of children with attention deficits let us take a moment to dwell on the normal process of attention. All of us are constantly bombarded by various incoming sensory stimuli. As I am talking to you this afternoon, there are various stimuli competing for attention. The central nervous system is inundated with the possibilities of auditory stimuli, visual stimuli, memories and associations. The central nervous system can take in only one or two selected stimuli at a time. Therefore, it is a major human competence to select what one’s primary attention should be. Attention has to be continuously reinforced. For a child with a central nervous system that is damaged, this presents a very real problem and results in neurodevelopmental disabilities. These children find it difficult to:

- select the stimulus set which contains the most knowledge.
- select the stimulus set which gives them the most pleasure.
- select the stimulus set which will lead them to a new product.

At the present time we see a growth in the population of our children who are continuously selecting the wrong stimulus sets. This is called an attention deficit disorder and relates to the four basic areas: altered focus, distractibility, altered intentionality and impaired feedback.

Altered Focus

The first characteristic of altered focus is the child who always seems to be selecting the wrong stimuli. It is almost as if you have a T.V. turned on with no channel selector. A child who has his circuitry jammed is a child unable to make a decision because he has trouble selecting the sensory stimuli for attention. This
child also has difficulty with detail. He can get the big picture, but not the little details. This is the child who
does very well grasping the "functions" of the decimal system but makes many careless mistakes in working
on individual math problems. He can probably teach a math course but will get the answers to the problems
wrong. This child is also the glib talker, who talks his way out of any situation. He very probably will not be
identified as a developmentally disabled child until he reaches elementary school.

Because of the child's altered focus and his inability to select suitable stimuli he tires very easily. He
manifests the symptoms of fatigue. He yawns, stretches, scratches and fidgets. He also shows symptoms of
early burnout. The sleep pattern is a very fretful, disorganized one. The observation is made that the child seems to be
running around all the time, trying to keep awake. This is true, because as Dr. Levine says, the reticular
activating cerebral cortical system seems to be stuck at mid point in these children also causing inappropriate
time allocation. This leads to a dysrhythmia of nocturnal balance — which means they are night people —
up and going all night. Once the child is an adult he will do well, but unfortunately what are we to do in the
meantime? This causes a major management problem at home for the parents. Some physicians in these
instances recommend pharmacotherapy. The drug Ritalin seems to control the behaviour of these children,
however it does cause some undesirable side effects.

The child, because of his failure to prioritize appropriate stimuli, is excellent at incidental learning. He
seems to have an encyclopaedic knowledge of irrational things — remembers the room number of a motel
the family stayed in during a visit to Disneyland three years ago but does not remember a telephone number
or the number of the page of homework. The parents will tell you that he has a wonderful memory. In reality
it is a poorly selected memory. Another common characteristic of this group is inappropriate time allocation.
He may persevere on a task or be impersistent.

**Distractibility**

The next basic attentional dysfunction is distractibility. Distractibility presents in four basic modalities:
- sensory, free flight, insatiability, social. Here is a brief review of each of these characteristics as it applies to
children.

Sensory distractibility may be visual or auditory. This child's notion of visual saliency is usually
irrelevant observations. Montessori comments on this fact in her observations of very young children in
Secret of Childhood. In older children, however, this constitutes a developmental and learning disorder. This
is the child who could have problems discriminating foreground and background areas, who cannot
differentiate correctly between the black letters and white spaces on a page of the printed word. This child
has problems with the position of letters in space, reversals and inversions.

Auditory distractibility is prevalent also in the children who are so finely tuned to sounds that they can
hear a fly walk on a window. They cannot hear the teacher's voice for the hum of the air conditioner. These
children are difficult to deal with at school because it is demanded of them to put forth sustained attention to
auditory stimuli. This deficit is not so noticeable at home, as the same demands are not made of the children.

We now have the characteristics of free flight — flights of fancy — where the child's mind drifts away on
daydreams. The child is constantly tangling with tangential relationships (looking out the window he notices
kites flying, reminds him of an airplane, New York, etc.). He could also be distracted by insatiability, by his
own appetite. He seems to have constant trouble delaying gratification. These children could end up having
serious problems as adults. This is the child who is also chronically restless and is a most intolerable child
when it comes to equanimity and peace. His behaviour patterns lead him to provoke people all the time — so
much so that it becomes a serious issue for parents. Siblings take the brunt of the child's behaviour. Here is
the child who cannot tolerate the present but is always looking ahead for something else to do. In time he
will probably end up as the president of a Fortune 500 company. Meanwhile, we need to channel his energy.
Because of this child's extreme social distractibility he has great peer awareness. Many children are tuned in
to other children. For this child the pressure is so intense that he absolutely cannot seem to be able to leave
other children alone. He is not good at shutting off social vibes. However, in the Montessori classroom,
constantly reminded of the main rule that he may not disturb other children at work, he is not allowed to be a constant provocateur.

**Altered Intentionality**

The third major lesion is unintentionality. Most of us do things intentionally. Our actions are intentional and purposeful. These children have attention-intention deficits. Most of us think before we act. These children do not have an editorial board reviewing their actions before they perform them. They say what most people only think. Their candor constantly gets them into trouble. They embarrass their parents most of the time. They are tactless. This is the child who is very impulsive—he is liable to hit out first and think later. The child will usually tell you that “it just happened.” His impulsivity also makes him do things hurriedly in order to get them over and done with. These children substitute haste for diligence, do their work poorly, quickly, and present many careless mistakes.

Performance inconsistency is also a marked characteristic of these children. Now, here is something impossible for teachers to comprehend. How can the same child do something well one day and be unable to do it the next? But, as Dr. Levine tells us, “this is a comfortable conclusion in medicine” as symptoms, for example, in asthma come and go. In the field of sports too this is a well understood concept. Schools will do well to understand this.

Neuromotor disinhibition is another phenomenon. The normal child is neuromotorically selective. The child with neuromotor problems is not selective. This applies to associated movements, overactivity, fidgetiness, and whole body hyperkinesis. This child is not able to close his hands leaving two fingers out. He either closes both hands or leaves all fingers out. As the child matures motorically his motor overflow problem begins to be controlled. This is also the child who, when he writes, sticks his tongue out. As he develops, his movements will become more skillful and precise.

These children can also be hyperactive or hypoactive. Earlier, it was thought that more boys than girls were learning disabled, because more boys presented as hyperactive. Today we know that many girls with attention deficits are mostly hypoactive. They get lost in the classroom because they are quiet and do not trouble the teacher. The issue seems to be, therefore, that these children have a problem with attention and not hyperactivity. Speaking of hyperactivity, Dr. Kinsbourne identifies three types of hyperactive children in the classroom:

1. The child who does not understand what the teacher is saying. This may be because of a language problem or due to the fact that their mental capacity cannot handle the task.
2. Children who are constantly anxious, beset by emotional problems, are hyperactive.
3. The real hyperactive—the young organically hyperactive child. This child is happy and hyperactive in any situation. Unlike the earlier two types, his hyperactivity is not situational.

The cure for the hyperactivity is control. The child is taught to control himself. The ability to control one’s attention and focus it develops slowly, even in normal children. In our school the child is gradually taught to control and concentrate. Dr. Kinsbourne also is of the opinion that “hyperactivity is rare in the Orient.” While this may be genetic, he says that traditional societies may make these children so anxious that they somehow manage to control themselves. Medication sometimes makes good management of the hyperactive child and sometimes not. Threats and punishments are surprisingly ineffective. They usually resort to the child spiralling into a frenzy of disobedience. For this reason Kinsbourne says bel...our modification is relatively ineffective. What we find to be very effective is the controlled structure of a prepared environment such as the Montessori classroom.

Task impersistance is a common characteristic of these children. In talking about a broad spectrum of children we see that many children seem to suffer from attention deficit disabilities. The child with a language disability may tune you out. If the child has trouble processing language the same thing may happen. Children who are chronically anxious due to emotional problems or home environment, may have attention problems that make task-persistence difficult. Dr. Montessori, over 50 years ago, recognized,
understood, and knew what to do with this problem. Quoting from Standing let me say that: “It may surprise some readers to learn that Montessori also includes in her list of deviations that marked instability of attention which most psychologists regard as an essential feature of childhood” (p. 172).

**Impaired Feedback**

Impaired feedback is a common characteristic of these children. We see children who have uneven self-monitoring systems; children who do not learn from experience; cause and effect have to be repeated too many times before they get the message. Socially they are imperceptible; they have little social knowledge; they seem to be unaware of many hidden rules in society. They are unable to read rules of a social situation and fit into it. They are not able to reinforce the good initiative of their peers, nor are they able to pace themselves in a relationship. Generally, the child with the developmental disability will be controversial, neglected, or rejected outright by his peers.

**MONTESSORI’S TERMS FOR ATTENTION DISORDERS – PSYCHIC DEVIATIONS**

Many of these characteristics are common in most children. Dr. Montessori, in fact, describes each one of these and more in her chapter on “Psychic Deviations” in The Secret of Childhood. Many of us, ourselves, have some of these symptoms in isolation. Those of us who have isolated problems are resilient and we can overcome them. However when a child has more than one of these problems or a cluster of symptoms, that is when a real learning disorder surfaces.

Let us at this point look at attention disorders in the light of Dr. Montessori’s “Psychic Deviations.” We are all aware of the fact that the so called normal child is a figment of statistician’s imaginations. Montessori, writing on “True Normality” in her book The Secret of Childhood (p. 108) tells us: “Development has been arrested or, rather, been turned into a wrong direction in all children of every social condition. The spread of our schools over the world, among every race, will prove this child conversion to be a general fact, common to all mankind.” She goes on to say: “Thus at the origin of life, in the small baby, errors are constantly being made, deforming the natural psychological type of man, and leading to an infinity of deviations.”

Dr. Montessori’s list of the characteristics of psychic deviations reads almost like the list of characteristics of the child with attention deficits that I gave you earlier. Here is Dr. Montessori’s list: destructiveness, disorderliness, disobedience, laziness, greediness, selfishness, quarelling, naughtiness, and also the so-called creative-imagination-delight in stories, affectionate attachment to persons, submissiveness, play and so on.

In the psychic deviation called a “fugue” the child’s mind flees into a fantasy; movement is disordered and purposeless. In the deviation called “Barriers,” the mind of the child has withdrawn into a defence against the world. Intelligence has been suppressed — instead of fleeing, it has withdrawn within itself. Montessori tells us: “Here is one of the plainest signs that the deviated child has a diminished intelligence, for he does not possess his mind nor can he lead it forwards in full development.” This particular deviation Dr. Montessori feels is the more difficult to correct.

The psychic deviations of the dependent child, in Dr. Montessori’s writings, remind us of the developmentally disabled child who is hypoactive. Here is Dr. Montessori’s description: “They are ready to renounce their movements and obey every inhibiting command on the part of the adult who finds it very easy to substitute his own will for that of the child. The child docilely giving way in everything. Thus there is a grave danger of the child’s falling into apathy, that apathy that is called idleness, and sloth. The adult welcomes such a state of things because it does not impede his own activities but it is really the extreme limit to which deviation can reach.”

The characteristics of the psychic deviations of the possessive and power-craving child bear a resemblance to the distractibility of appetite-insatiability described by Dr. Levine. We also have the deviations cited as those of the inferiority complex — the child full of fear and the one who lies all the time.
NORMALIZATION THROUGH WORK

How are we to correct these problems? The one cure for all the deviations, the process of normalization, says Dr. Montessori, is only through work — work that the child has picked on his own, using his own hands, the organs of his mind and will. The child works within his environment to build himself. The more actively the child is engaged with using his hands in manipulation, the more his memory and concentration are involved. "The first spontaneous spell of concentration" is the beginning of his salvation. Since these are all attentional deficits, it stands to reason that the beginning of the ability to attend, to concentrate, is the key that will lead the child to normality. However, before the child is able to concentrate we hope to be sure that his mind and body are working in unison. Those of you who have listened to Dr. Osterkorn’s lecture on “Movement, Manipulation and Maturation” and Mrs. Palmieri’s lecture on “The Cosmic Plan of Development,” understand Dr. Montessori when she tells us that: “To have a vision of the cosmic plan, in which every form of life depends on directed movements which have effects beyond their conscious aim, is to understand the child’s work and be able to guide it better.”

Movement

Therefore, what we initially aim to do in our Montessori classroom, in the hospital programme, is to educate Movement. We do this by taking the child through all the simple exercises of practical life and by placing a lot of emphasis on the exercises of practical life. By placing a lot of emphasis on the exercises in social relations, the grace and courtesy exercises allow for efficient movements as well as developing harmony of mind and body between the individual child and others. In our position, working with children with developmental disabilities, we cannot leave anything to chance. We try to cover all bases, hypothetical social situations are play-acted and correct social responses are given. The children are carefully shown how to act in given circumstances. We do these activities daily. The walking on the line and silence games are also part of the daily routine for developing complete control of mind and body. Besides these exercises, the other real practical life exercises are gone into very thoroughly. The children are always moving, carrying, opening, closing, moving. In this way we see the gradual development of independence, self-control and concentration.

Choice

In Dr. Montessori’s doctrine of “Centre and the Periphery” she stresses the fact that in order for concentration to develop the child has to choose the activity himself. The child presents us with two aspects of the individual, the centre and the periphery. The centre is the innermost secret part of the child’s mind, Dr. Montessori’s didactic materials, beginning with the materials to educate the senses, help the child’s natural tendency to explore his environment. These materials, because of their scientific accuracy, careful gradings, and the exceptional manner in which the stimulus is isolated, are a special boon for the child with attention deficits. the periphery is the part of the child’s personality that comes in contact with the outside world. Through the constant interaction of these two factors, the centre and periphery, we can see a gradual development of the child’s mind as it grows in concentration making for a unity in the personality of the mind.

The same is true with the senses. Our senses are being constantly bombarded with stimuli. We can control our senses. It is we who choose to look, to see and to act. As active beings we can express if we do not want to see — we close our eyes. When we do not want to hear — we shut our ears. The child also chooses through his senses. In the case of the neurodevelopmentally disabled, this is something that needs to be carefully taught. It is Dr. Montessori’s view that the child takes in images through the senses and movement, this is: “accomplished by the manipulation of objects, by a continuous muscular activity.”
Therefore, in order to help the child to develop concentration, especially since we let the child free to choose his activities, our role as Montessori directresses is to always "feed the periphery." We do this by preparing an environment ready to meet the natural human tendencies of the child. The child explores the materials we have placed at his disposal. By doing so he explores the world and abstracts his own ideas. These ideas are then built into his own mental system, which is the great work of the centre. This is what we mean by structure in the Montessori prepared environment. The choice of objects and Montessori materials is carefully assessed and placed at the child's disposal by the Montessori teacher. Here again, the children are not only able to look at them but the manipulation of each activity, of each piece of material, is carefully precisely presented to the child. This is the structure of the environment that is so beneficial for the child with developmental disabilities.

Materials

Dr. Montessori's didactic materials, beginning with the materials to educate the senses, help the child's natural tendency to explore his environment. These materials, because of their scientific accuracy, careful gradings, and the exceptional manner in which the stimulus is isolated, are a special boon for the child with attention deficits. The child with a developmental lag has trouble mastering concepts. What we do in the Montessori classroom is to help the child use the mental processes he has. We are showing these children how to use appropriate strategies for learning on a developmental basis. We do this by not only showing them the materials, but by presenting each piece of equipment, individually if necessary, so that "each material calls forth a visible movement at the periphery;" we try "never to give to the eye more than we give to the hand." So we see children who are successful and are capable of learning at their own gentle rates, because once more the mind and hand are united in building up the personality of the child.

An important factor for consideration in our work in the hospital programme is that we have more successes with the children we work with below the age of six. In reviewing the literature on learning and developmental disabilities over the past twenty years, one is impressed by the evidence that points to the fact that early assessment and intervention of learning disabilities is both necessary and possible. Writing in "Current Topics of Learning Disabilities," Karnes and Storeburner say: "It is reasonable then to believe that handicapping conditions such as learning disabilities can be prevented through high quality early intervention, based on an ongoing assessment which delineates the child's strengths and weaknesses, and provides a curriculum and services enabling the child to overcome or minimize weaknesses."

This is the hope that the Montessori method holds out to the developmentally disabled young child.

Note: This lecture was presented at the First International Montessori Forum held in San Juan, Puerto Rico in February, 1984.

REFERENCES


**JOURNALS AND PUBLICATIONS**


School districts need clearly laid out development plans for Montessori implementation. This is very important for Montessori school advocates who must counter any misconceptions about Montessori pedagogy circulating within the educational establishment. Included are cost audits from two well-established Montessori schools in Cincinnati, which demonstrate high achievement and with pupil costs comparable to public school costs. Many times start-up costs are covered by magnet school funds for the one-time cost of Montessori materials.
DEVELOPING A PROPOSAL

STARTING A SCHOOL

DEVELOPING A PROPOSAL

Research has found that approximately two-thirds of existing Montessori public school programs have been initiated by school districts as voluntary efforts at desegregation of racially or economically imbalanced districts or as responses to educational reform movements. The remaining one-third were founded by Montessori teachers and parents who sought public funding for their efforts. Whatever the genesis, it is important that the initiators of Montessori programs in public schools be informed about a number of key issues before they undertake this responsibility.

PROPOSALS AND FIRST STEPS

When developing a proposal for the public school district the following issues should be considered:

Needs Statement

Emphasize current concerns of the district — early childhood education, desegregation, explicit achievement, and individualized instruction — to assert the needs of the district. A needs statement should consist of several paragraphs indicating the challenge Montessori programming will face, as well as information regarding the ways in which such programming will be of benefit to the district.

Program Summary

The program summary should respond to the needs statement, indicating the solutions implicit in Montessori programming. Each district has its own trends and surrounding conditions for curriculum innovation. A discussion with district curriculum supervisors will allow the program description to speak to regional curriculum issues. Also, a personal visit with the superintendent to promote the comprehensive nature of the curriculum may secure the high level support needed for the program’s unique requirement for total implementation.

Parent Involvement

A traditional approach to starting schools in the private sector is to hold monthly “study groups.” These groups discuss Montessori philosophy of education and are usually led by an informed parent or Montessori professional. Suggested books by Montessori for these discussions include the Secret of Childhood, The Absorbent Mind, and The Child and the Family.

In the early stages, parents may form a not-for-profit “Friends of the Montessori School.” This parent not-for-profit group is often willing to raise funds for special capital items for the school, to plot out a course for school expansion with the intention of raising money, and helping the building principal achieve community support for various plans.

A “task force” committee made up of parents, teachers, and the administration of a new school is often recommended by the court in desegregation cases to guarantee timely completion of the school planning (see Appendix 4).
Initial Publicity — Program Descriptions

Initial publicity should illustrate the unfolding reality of the school, including the mission of the program, parent involvement, the needs to be met by establishing a Montessori school, the location of the school, and the timetable for school development and related meetings.

Staffing

Staffing is the most critical part of starting a Montessori school. If a school begins with a small staff developing a year at a time, teachers may be sponsored for training programs. Ideally, preparation of teachers should commence two summers prior to the school opening date so that training is completed prior to the opening. Sponsorship contracts encourage staff retention by an agreement to stay with the program.

In many cases, a school which is designated to become a Montessori school may require that the current faculty in that building either choose Montessori training and practice or transfer from the building after a predetermined period of time. However, it is important not to force training on faculty. Interested faculty should train first. As they practice their expertise and receive their Montessori apparatus, other faculty will develop interest and may decide to enroll in the next course. It is ideal to aim for the total conversion of a building over a period of four to six years.

Facilities

Projections regarding enrollment require choosing a facility. Usually a discrete building wing or annex works best to lend a sense of identity to the program. Many times in the first stages, the Montessori programs are “schools within a school.” This provides the new Montessori program with an established building and many related resources, as well as an experienced building principal. “The school within the school” will then relocate to an autonomous Montessori site when numbers reach maturity (see Relocation, Chapter Ten).

Another approach is to establish a “progressive” Montessori program which gradually displaces the traditional portion of the school. This particular method of starting requires very experienced administration to modulate the tensions between expanding Montessori and diminishing non-Montessori staff (see Implementation, Chapter Four).

The least complicated approach is to begin a program in an autonomous building, but such conditions may not be feasible relative to projected enrollment or space availability.

Facility requirements are also included in Chapter Ten: Expansion, and should include funds allocation so that the building can be brought up to specifications.

Enrollment Projections

Anticipated numbers by grade should be projected for five years. This will permit space and material allocations to be budgeted in accordance with the number of children being served. Staffing needs and multi-age classroom groupings should also be projected accordingly.

Montessori Inventory Per Classroom

Montessori materials should be purchased for those teachers who have Montessori training and know how to use them. Careful inventory must be maintained from the beginning with each classroom teacher responsible for his or her own set of Montessori apparatus. Materials shared from class to class tend not to receive the same degree of quality maintenance as those materials in the custody of individual teachers.
DEVELOPING A PROPOSAL

STARTING A SCHOOL

Evaluation and University Partnership

The terms of evaluation of the Montessori program should be negotiated in advance. Most programs require some testing mechanism; Montessori schools perform very well on annual standardized achievement tests. However, competency-based testing with a specific set of timed skills should be avoided as this type of test tends to prescribe curriculum other than Montessori. At least one-third of the existing public school Montessori programs have received exemptions from competency-based testing.

University involvement in pre-testing and post-testing research projects utilizing various instruments and interview formats can ease district concerns regarding accountability (see Evaluation, Chapter Eleven).

Program Audits

Various “audits” from programs in established districts indicate that Montessori program-per-student costs equalize once the up-front equipment purchases are made. Many districts write magnet school grants to cover their equipment start-up needs. Other statistics in audits show excellent desegregation results as well as academic achievement (see Evaluation, Chapter Eleven).
COMMON MISCONCEPTIONS SCHOOL DISTRICTS HAVE ABOUT MONTESSORI EDUCATION

Montessori is rigid and does not permit integration of the district curriculum.

Montessori curriculum is a comprehensive program in its own right. The inclusion of other curricula impact on its interdisciplinary structure, its intricate system of indirect preparation, and the clarity of educational goals in both the mind of the teacher and the child. It is not that Montessori is rigid; rather Montessori is both self-assured and self-sufficient in its curriculum pathways. Montessori curriculum goals and objectives can be outlined along with district curriculum goals and objectives to demonstrate correspondence.

Montessori is elite because it demands special materials and special teachers.

Montessori schools require special teachers and special equipment as does any magnet concept. A computer school needs computers and computer literate instructors. It should not be surprising that a Montessori school needs special apparatus and training. Magnet schools by definition offer a unique delivery system which must be supported with both the right kind of staff and equipment.

Montessori is too expensive. Both training costs and material costs are prohibitive.

Materials are expensive, but when comparing costs of textbooks and workbooks with Montessori materials there is an equalizing of costs over time. Montessori materials, if cared for, can last ten to fifteen years or longer. Montessori training is not more expensive per trainee than Child Development Associates, Headstart training or a conventional Master's program at a private university. Once established, Montessori costs per pupil are generally less than conventional schools.

Full Montessori implementation is too expensive. We will have a Montessori enriched program with partial training and partial equipment.

Montessori works because it is a curriculum spiral with an internally consistent view of the child. Piecemeal programs beget piecemeal effects. When a district chooses a comprehensive approach such as Montessori, it is dealing with many levels: the preparation of teachers, the content of the learning materials, testing methods, and evaluation techniques. Failure to establish planned priorities for the whole curriculum system may leave the students worse off than before Montessori programming was adopted.

Montessori is for gifted children and does not serve children from lower socioeconomic levels.

Frequently this is said about Montessori because it has been maintained in upper class situations in the private sector which may project an image of eliteness and giftedness. However, Montessori began her work with normal children specifically to meet the needs of a group of lower income children in a housing estate in Italy. In the view of Montessori, every child is uniquely endowed. Utilizing individualized learning, isolation of the difficulty, manipulative materials, and a strong emphasis on connection between language and experience, every child can be helped in a Montessori school. Research has vindicated this matter repeatedly (see "Research and Evaluation of Montessori Programs," Chapter Eleven).

Montessori teacher training and pedagogy is narrow. Montessori programming should take into consideration other pedagogies and techniques that work with the children.
Montessori teachers are confident that their pedagogy will work. The cohesiveness and interlocking nature of the curriculum parts need to remain uncluttered by the infusion of commercial sources of textbooks, teacher manuals, workbooks, etc. Many times Montessori teachers who are trained to prioritize Montessori programming in order to establish a coherent and well defined developmental approach to the whole child, will avoid the fragmentation and confusion of random supplementary sources.
Appendix 1: An Alternative Education Program Proposal to the District of Columbia Public Schools

This first chapter of the proposal offers a helpful timeline and an articulate statement of purpose and design. Also included is an "executive summary," which provides a quick synopsis of the contents of the proposal. (This may be ordered from the Montessori Public School Consortium, 2859 Scarborough Rd., Cleveland Hts., OH 44118.)
SECTION I. PURPOSE AND INTRODUCTION

A. PURPOSE

The proposal seeks the commitment of the District of Columbia Public Schools to the provision of Montessori education and funding for expansion of the current Montessori programs via incorporation into a model school.

B. SCOPE OF THE PROPOSAL

This proposal suggests a phased development of the Montessori "Model" School.

September 1986

Continuation of the existing Montessori classes in their current locations, under the direction of a single Montessori Coordinator (described in a later section of this proposal).

Building, principal, and core staff identified for the initial phase of the school.

Section I Purpose and Introduction
primary classes, ages 3 to 6, four junior classes, ages 7 to 9 and four elementary classes, ages 9 to 12 by school year 1973/4. The final 'model' school would serve 500 to 600 students and would offer all the amenities of a traditional school, i.e., library, physical education, music, counseling, etc. Existing in the most appropriate form...with the Montessori approach. The facilities and staff for the program are described in detail later in this proposal.

C STATEMENT OF THE PROBLEM

This proposal attempts to address a two-fold problem:

First, while the current program has been extremely successful, it has no structure or status within the District of Columbia School System. Unlike other programs such as gifted and talented, special education, Bancroft Academic High School, etc., the Montessori program has not been recognized as an ongoing educational alternative. Because the program has a different method and approach, it requires different guidelines and analysis as set forth by the Association Montessori Internationale (AMI), yet it is not incompatible with public school instructional programs in cities such as Milwaukee, Wisconsin, Buffalo, New York, Dallas, Texas, Cincinnati, Ohio, and Spokane, Washington. Montessori public school programs are thriving...
these programs were initially patterned after the Burroughs program. Their difference lies in the extent to which they are recognized, respected, and supported by their public school system.

The second part of the problem involves the limits of the current program. Many parents who are desirous of a Montessori education are concerned about their children's education beyond the third grade. The Montessori curriculum for the 9-12 year old continues to build on the firm foundation established in the primary and junior classes. The logical expansion of a true alternative educational program is an addition of the elementary level. While a consistent quality of elementary instruction has been available in the traditional Burroughs program, many parents opt to transfer their children after third grade to either private Montessori schools, private traditional schools with strong academic programs, or to other public schools known for their high academic standards. The development of a Model School, serving students through fifth grade, would lessen this problem and offer students an alternative educational opportunity.

A HISTORY OF THE MONTESSORI PROGRAM IN THE D.C. PUBLIC SCHOOLS

The Montessori Program has been operational in the D.C. Public Schools since September 1971. The program began at the John Burroughs Elementary School, the second school system in the nation to have such a program. (The first were Drew School in Arlington, Virginia, and Benjamin Franklin School in Philadelphia, Pennsylvania.) The program was originally funded as an experimental program using Title III funding under the Elementary and Secondary Education Act. After its first year of operation the Burroughs Program was awarded the Gold Medallion for Excellence in Programming by the D.C. Public Schools and became the "Model" pre school for the entire District of Columbia.

The current program was designed and adapted over its history to meet several needs:

1. need for quality preschool education in Ward III;
2. need to make the opportunity for Montessori education available to those who cannot afford it privately; and
3. need to continue to consistently educate the primary graduates as they continue in the junior level.

Since 1974 the Montessori program has been funded through the regular public school budget. The program also receives additional funding in fees collected from the Parents Group. These fees pay for expenses not included in the public school budget, such as classroom aides salaries, specialized Montessori materials, etc.

Section 1 Purpose and Introduction
In 1975 after 17.5 years of meeting Association Montessori Internationale (AMI) guidelines, the Burroughs Montessori Program became the first public school in the nation to obtain AMI certification.

Initially, training began at Burroughs with one primary class. Then, in 1973 a transitional class (grades k-1) was added. From the primary class in 1971, the program expanded to include another primary class. In 1981, the program grew to include one primary class at Fort Lincoln and two elementary classes (grades 1-3) at Burroughs. The program currently has three primary classes (two located in John Burroughs and one located in Fort Lincoln) and two elementary classes located at John Burroughs.

The program has demonstrated a high rate of success in teaching and learning as can be substantiated by its growth, test scores, monitoring that evaluations and the overall success of students. The program was begun and the program has been used repeatedly by the Washington Montessori Institute as one of the training sites for its future teachers.

Aside from its success in terms of test scores and evaluation, the program has proven through exposure to the Montessori approach that children can develop to their full potential in a positive, stimulating and most learning environment.

Currently the program, re-located within a traditional school environment, is serving children from 3 years to third grade. classrooms in rotating sessions. The school year begins in September and ends in June.

Section I Purpose and Introduction

Individual child, the four and five year olds are invited to participate in an afternoon session of more intensive instruction. These afternoon sessions serve to set the pace with two three class periods per week. The art program, conducted by the parents, has been so successful that the traditional school requested to participate in its classes.

The current program has outstanding community support and involvement. The "Montessori Parents Association" was begun in 1973 and incorporated under D.C. Law in 1980 as a non-profit corporation. The Association was responsible for raising community advocacy necessary to the development of the program and continues to be actively involved with many of its facets and its future.
Section 1 - Purpose and Introduction

Only teachers with Association Montessori Internationale (AMI) certification are employed in this program. The program utilizes a different approach to child development, focusing on the individual needs of each child. The teachers are trained in the Montessori method, which emphasizes independence, self-confidence, and social skills.

The Montessori classroom is a stimulating environment where children are encouraged to explore and learn at their own pace. The materials are designed to be self-correcting, allowing children to learn through discovery and experimentation. The classroom is organized into different areas, each designed to meet the developmental needs of the children in that age group.

The Montessori method is based on the belief that children learn best when they are engaged in meaningful activities that are challenging yet achievable. The program emphasizes the importance of play as a learning tool, as it allows children to develop their imagination and creativity.

The Montessori program also places a strong emphasis on the development of social skills. Children are encouraged to work together, share, and help one another. This fosters a sense of community and cooperation among the students.

In summary, the Montessori program at the school is designed to provide a stimulating and engaging learning environment for children. The teachers are trained to support the children's individual needs and encourage them to become active, successful learners.
Certification should be hired to teach Montessori classes. AMI certified teachers who are not certified by DCPS should be allowed 5 years to complete certification requirements. This is in compliance with existing regulations. Any teacher hired under such circumstances would then be assured of being rehired each year until probationary status is acquired, provided they meet the teaching standards of the DCPS Montessori Program and obtains a satisfactory performance appraisal. Further and most importantly, the parents would be guaranteed an adequate number of Montessori teachers for the program on a 25:1 basis which is consistent with DCPS policy.

4. Limitation of The Elementary Program

Currently the environment does not allow full implementation of the Montessori approach. Additional time should be allowed to address the gapping phase of the Montessori approach. Going Out is defined as learning outside the classroom, exploration of environment, how it is made, how it functions, and what is its purpose. The child's work is done inside and outside of the classroom. Involves the child in their environment. It is the method of蒙特梭利教学法 that is ECE and not the Montessori approach between Montessori and traditional. The program school should recognize that the end result demonstrated by the child's performance and learning is the important factor not this case, how one gets to that end.

5. Incorporation of CBC

In the Montessori program, it currently exists there is no time to compare and incorporate the CBC into the Montessori curriculum. An overview of the curriculum indicates that the skills can be incorporated into the Montessori method. Testing should be done once per year, rather than frequently during the school year. The program school should recognize that the end result demonstrated by the child's performance and learning is the important factor not this case, how one gets to that end.

The aim of the Montessori philosophy of education is that every child should be within the person he or she will become. In other words, they must have freedom to achieve through order and self-discipline. The child's world is filled with sights and sounds which are

Section I: Purpose and Introduction

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first appear chaotic. From this chaos, they must gradually create order, and learn to distinguish among the impressions that assail their senses, slowly but surely gaining mastery of themselves and their environment.

Dr. Maria Montessori developed what she called the prepared environment which already possesses a certain order and disposes children to develop at their own speed, according to their own capacities, and in a non-competitive atmosphere in their first school years. Never let a child risk failure, until he has a reasonable chance of success, said Dr. Montessori, understanding the necessity for the acquisition of a basic skill before its use in a competitive learning situation. The years between three and six are the years that children most easily learn the ground rules of human behavior. These years can be constructively devoted to civilizing the children - freeing them through the acquisition of good manners and habits, to take their place in their culture.

Children who have had the benefit of a Montessori environment are freer at a later age to devote themselves more exclusively to the development of their intellectual faculties. The method by which children are taught in the Montessori school might well be called programmed learning. The structure of Montessori learning involves the use of many didactic materials with which the children work individually. In every phase of this learning, the teaching material is designed to test understanding, to correct errors and to prepare children for the next step.

Dr. Montessori recognized that the only valid impulse to learning is the self-motivation of the child. Children move themselves toward learning. The teacher prepares the environment, programs the activity, functions as the reference person and exemplar, offers the children stimulations, but it is the children who learn. Who are motivated through the work itself (not solely by the teacher's personality) to persist in their chosen task. If Montessori children are free to learn, it is because they have acquired from their exposure to both physical and mental order, an 'inner discipline.' This is the core of Dr. Montessori's educational philosophy. Patterns of concentration, stick-to-stiveness, and thoroughness established in early childhood, produce a confident and competent learner in later years. Schools have existed historically to teach children to observe, to think, to judge. Montessori introduces children to the joy of learning at an early age and provides a framework in which intellectual and social discipline go hand in hand.

It is impossible to make a case for any type of alternative education program without some mention of test scores. The following graphs indicate that Montessori students tend to perform at least as well as, and usually better than, those of the larger population.

The evidence of test score achievement through the implementation...
of a quality Montessori program is all the more remarkable in light of the difference in thrust between the Montessori and traditional methods. The Montessori elementary curriculum requires that subject areas be integrated rather than isolated, that skills be mastered in the process of application to a task rather than taught as goals in and of themselves. Yet tests often measure simple skill mastery only. In the Montessori classroom, the impetus and motivation to a task well done, a question thoroughly researched, or a problem carefully thought through comes entirely from within the child rather than from a desire for external reward or praise or from a desire to compete with fellow students. The overall curricular goal is the growth and development of the whole child's competence to become a mature and responsible adult. The children thus do not study for the test to score a 'grade' but learn for the sake of learning.

Here in the U.S. Public Schools the number of students in the Montessori Elementary program taking standardized tests (such as the CTBS at the Grade 3 level) is very small (9 schools in SY 83-84; 7 students in 5th grade). Also the elementary program has only been implemented up to the third grade level since 1983-84. Nevertheless, when we compare the scores for 5th and 8th graders against the city-wide and building wide (Figures 3 and 4) it is only because more city-wide test data was not available for this proposal that more comparisons are not made here (such as scores on CBA, CTB or DPI tests for other years and subject areas).

Since the local sampling is small and limited, it would be valuable to examine a sampling from a significantly larger population. The city of Milwaukee, Wisconsin is known for its "Magnet School" system. At present, two of its elementary schools utilize the Montessori method. The following test score data was provided by the Milwaukee Public Schools Department of Educational Research and Program Assessment. Using 13 serially selected schools to protect the anonymity of the individual schools, those sampled have been assigned a number code with #1 being the MacDowell Montessori School. The selection was done by personnel in Milwaukee for SY 83-84. We added only that one of the schools be the MacDowell School. A comparison was made as follows:

- Percentage of students scoring in the 'High Performance' category in vocabulary, reading and math (77 through 99th percentile)
- Percentage of students scoring in the 'Average Performance' category in vocabulary, reading and math (23rd through 66th percentile)
- Percentage of students scoring in the 'Low Performance' category in vocabulary, reading and math (23rd through 66th percentile)

Section 1 Purpose and Introduction
category in vocabulary, reading and math (1st through 22nd percentile)

Figures 1, 4 and 7 show the comparison of students in Grade 2 in all categories and in all subject areas. Figures 8, 9 and 10 show the comparisons for Grade 5. (The Iowa Test of Basic Skills is administered in Milwaukee on these grade levels rather than the Comprehensive Test of Basic Skills given in Grades 1 and 2 here in the District of Columbia.) The focus of this study will be on the school with the C.L. Number 1, the Edward McDowell School, which implements the Montessori program from Pre-school through Grade 4 (population = 1 student).

Figure 1 shows the percentage of students in Grade 2 who scored in the category of Higher Performance. In all areas tested, School #1 shows percentage significantly higher than the national norm (23%) the city-wide norm and the other schools shown.

Figure 2 compares students in the "Average Performance" category. School #1 has a lower percentage of students than city-wide or national norms (3%).

Figure 2 shows students in low performance categories. It is perhaps here the findings are most significant for school 11 as more than half the percentage of students in math scored in this category, compared to 21% in the city and 21% nationally. Only 1 person scored above average in reading and no students scored below average in the area of vocabulary.

Figures 7, 8 and 9 show equally significant findings on the Grade 5 level.

It must be pointed out that an analysis of any body of statistics is subject to a variety of interpretations, particularly those with the limitations and variables of standardized achievement test scores. We must, therefore, exercise caution in drawing sweeping conclusions from test results.

Section I Purpose and Introduction
Program Description
For Proposal Summaries

When writing Montessori program proposals, concise program descriptions are needed by the grantee. The following may be used or modified for proposal writing purposes:

Introduction

Montessori’s philosophy of education is based on "the personality, a harmonious growth of all potentialities of the child, mental and physical, according to the laws of its being..." (Montessori, 1964).

Montessori stated that children have natural tendencies toward learning, that stages of learning exist for which there should be corresponding educational environments and trained teachers who "prepare the environment." The child learns independently using the components of the environment; the teacher coaches and observes the child who chooses higher activities. The teacher is the link between the child and the environment.

The learning environment cultivates individualization, freedom of choice, concentration, independence, problem solving abilities, social interaction, interdisciplinary breadth, and competency in basic skills.

The Montessori Preschool Environment (Ages 3-6+)

The Montessori classroom is a "living room" for children. Children choose their materials from open shelves with self-correcting materials and work in discrete work areas. Over a period of time the children develop into a "normalized community" working with high concentration and few interruptions. The program includes the following components:

1. The practical life exercises enhance the development of task organization and cognitive order through care of self, care of the environment, exercises of grace and courtesy and refinement of physical movement.

2. The sensorial materials enable the child to order, classify, seriate and describe sensory impressions in relation: length, width, temperature, mass, color, etc.

3. The Montessori mathematics through the manipulative materials, allows the child to internalize the concepts of number; symbol, sequence, operations and memorization of basic facts.

4. The language work includes oral language development, written expression, reading, the study of grammar, creative dramatics and children’s literature. Basic skills in writing and reading are developed through the use of sandpaper letters, alphabet cut-outs, and various presentations allowing children to effortlessly link sounds and letter symbols and to express their thoughts through writing.

5. The child is also presented with geography, history, and life sciences, music, art and movement education.

The prepared environment unifies the psycho-social, physical, and academic functioning of the child.

The Montessori Elementary Prepared Environment (Ages 6-9/9-12)

The elementary program offers a continuum which builds on the preschool experience. The environment reflects a new stage of development and offers the following:

1. An integration of the arts, sciences, geography, history, and language evokes the native imagination and abstraction of the elementary child.

2. The presentation of knowledge as part of a large scale narrative unfolds the origins of the earth, of life, of human communities (agricultural and urban), of empires, and of modern history, always in the context of the wholesomeness of life.

3. The presentation of formal scientific language of zoology, botany, anthropology, geography, geology, etc. exposes the child to accurate, organized information which respects the child’s intelligence and interests.

4. The use of timelines, pictures charts, and other visual aids provides a linguistic and visual overview of the first principles of each discipline.

5. The mathematics curriculum is presented with concrete materials which simultaneously reveal the arithmetic, geometric and algebraic correlations.
6. Montessori-trained adults are able to integrate the teaching of all subjects, not as isolated disciplines, but as part of a whole intellectual tradition.

7. The emphasis on open-ended research and in-depth study uses primary and secondary sources (books) as well as other materials.

8. "Going out," entails the ongoing use of community resources beyond the four walls of the classroom.

Parent Education and Parent Involvement

The parent of a Montessori student will have an opportunity to be involved in the Montessori program. Parents will learn about the program by:

1. Attending orientation meetings to explain the program;

2. Attending meetings where the unique aspects of a particular classroom as well as the specifics of Montessori curriculum are presented;

3. Attending class level open houses where the children, as the host/hostess to their parents and siblings, present their favorite activities;

4. Attending parent discussion groups dealing with aspects of childrearing, home environment, and child psychology;

5. Observing the class and discussing their observations with the Montessori professional; and

6. Receiving a regularly-published newsletter which includes a calendar of significant events, information on major developments at the school, book reviews, and a list of needs and requests for help.

In addition to Parent Education, which is designed primarily to orient the new parent and keep the returning parent informed, parents may form parent associations which coordinate volunteer activities, plan and carry out fundraising programs and lend support to school staff.
MAGNET SCHOOL FUNDING

STARTING A SCHOOL

SECURING MONTESSORI MAGNET SCHOOL FUNDING

By David Lerch

The greatest single source of federal and state discretionary (competitive) funds for public school instructional improvement during the next decade will be based on "choice." Public school districts will develop programs that allow students to choose a school or educational program based on interest or need rather than on mandatory school assignment.

The single largest federal program that currently supports "choice" is the Magnet Schools Assistance Program. Successful applicant school districts are awarded up to four million dollars for two consecutive years to establish and operate schools with special themes capable of attracting students from throughout the school district or region.

As a result of these incentives, public school officials look for unique teaching or education approaches to make school programs attractive. The Montessori concept, which has a different education approach and a unique teaching methodology, is growing in popularity among public school educators developing magnet themes.

Since 1984, the Magnet Schools Assistance Program annual appropriation has grown from seventy-five million to over one hundred thirteen million dollars. Federally funded magnet school programs have proven to be successful as a school desegregation tool, a means of instructional improvement, and as programs that support the popular political concept of "choice." As a result, Congress will continue to provide large federal appropriations for magnet schools during the next decade. The Montessori concept, used for magnet themes in public school systems, will receive more federal resources for training, equipment, and materials than have ever been available in the private sector. Because of this, public school systems using federal magnet school grants are the future for Montessori education.

Public school districts that wish to seek federal support to establish a Montessori school within their district should review the current Magnet School Program legislation as the current major federal source of funds for such a project. It is an extremely competitive program and school districts should look closely at eligibility requirements before committing district resources and personnel to application development.

A district with racially isolated schools (those exceeding 50% minority) that has a representative distribution of both minority and non-minority students has the competitive edge. Smaller eligible districts can be successful by creating an application package that is responsive to the Magnet School Assistance Program regulations. To be successful, applicants must develop strong proposals that include all of the following elements:

- Enough information about the school district and the population it serves so that anyone reading the application becomes familiar with the area.
- A clear description of the need for a magnet (Montessori) program including evidence that it has the ability to attract students from different racial, ethnic, and economic backgrounds.
- An outline of the organizational structure of the school district and how it can be used to establish a successful magnet program.

Mr. Lerch is a Resource Development Officer at Wright State University, Dayton, Ohio.
STARTING A SCHOOL

- Qualifications of the district personnel and others working with the magnet program and their experience establishing new and unique programs for students from different racial backgrounds.
- Specific program objectives that include a timeline and evidence that each can be accomplished using district resources.
- A reasonable budget based on activities described in the application.
- An evaluation plan based on the described objectives along with methods for quantifying the measured results.

Although the grant application document requires more information, those that do the best to describe those items listed above will receive the highest score.
The Jefferson and Franklin Magnet Schools will be full-time magnet programs for students in grades K-6. The Montessori theme is based on the philosophy of Maria Montessori who believed that children should be taught using the five senses. The Montessori method stresses motor coordination, self-motivation, and non-competition. Children develop at their own rate, without competition through guided individual interest in learning. The role of the teacher is to prepare the environment that encourages the student to explore and investigate. The teacher acts as a facilitator. The student progresses at his/her own rate based on individual motivation. Each child is allowed to work undisturbed at each task throughout the learning experience. Through teacher guidance and self-directed learning, the student learns motivation and concentration.

Program Design

Students will be heterogeneously grouped by class in both the Jefferson and Franklin Montessori Magnet Schools. However, they will be grouped by age rather than by grade into one of three strands. The Montessori philosophy for this type of grouping is that younger students learn from older ones. Children will have the freedom of choice in the classroom. In the first strand, the youngest group, students are provided total freedom to choose an activity and remain with it, uninterrupted as long as there is interest. Within the second strand, more formal lessons are introduced, and the student has less opportunity to choose activities. A balance between choice and assigned tasks is determined by the teacher based on the individual student's motivation, curiosity, and self-discipline. During the third and final strand, children are assigned tasks with the responsibility to complete them. The teacher helps the student deal with problems related to work that is not done correctly, or when materials are misused. Students do not receive report cards; instead, parent conferences are held regularly to share observations and to discuss individual progress. Each spring, students will take the California Achievement Test, Forms E and F, to compare individual yearly academic progress and to show comparative gains of the groups of students in regular and other magnet classes.

Student Participation

Although the Montessori approach to teaching is quite different at the Jefferson and Franklin Magnet Schools, students are provided a rigorous program of studies in the basic courses of instruction including reading, English, writing, science, mathematics, history, including geography and government. Students receive alternate days of art and/or music, physical education, and/or health. Students will spend at least six hours daily in classroom instruction and participate in special field trips related to classroom studies. Classes will be balanced racially and by gender without regard to economic status. Classroom assignments for each of the magnet schools will be based on lists derived from student application forms that will be distributed on June 2, 1989, and returned by July 14, 1989. Students selected will be assigned to classes so that the racial composition reflects the district-wide student ratio.

Program Personnel

The magnet school teachers at the Jefferson and Franklin Magnet schools will be certified Montessori teachers. Since Montessori certification differs from elementary certification in the state of Ohio, Montessori magnet teachers must have both. Each teacher must apply for a position in the magnet school regardless of whether he or she was at the magnet school site the previous year. Each will be selected on the basis of interest and special skill.
racial composition of the teaching and administrative staff for the magnet program will be consistent with the racial balance of the student enrollment, approximately 63% minority and 37% non-minority for the 1989-90 school year. All staff members must have demonstrated experience using teaching strategies that have proven classroom success for teaching groups of students from different economic, racial, ethnic, and social backgrounds. In addition, teachers must be knowledgeable about instructional strategies for the mainstreaming of special education students into magnet classes. Montessori teachers must be willing to plan and conduct special field trips and work with parent advisory councils, administrative personnel, parents and instructional specialists to plan, revise, carry out and promote the magnet school program. They must also participate in parent/teacher student progress conferences, work with the parent advisory council, and instructional specialists to plan, revise, carry out, and promote the magnet program.

The Montessori Resource Specialist will be responsible for providing expertise in the area of the Montessori teaching methodology and will act as a resource to classroom teachers helping them to provide students with a strong academic program in a very structured environment. The Specialists will coordinate all field trip activities, participate in parent/teacher conferences and develop activities that include parents and other valuable community resources that are available to the school.

THE MIDDLE AND HIGH SCHOOL MAGNET SCHOOL PROGRAMS

The secondary magnet school curriculum is being designed to provide choices to students so that they can concentrate in specific fields of study while continuing to receive a strong academic program. The intent of the district's magnet school program is to offer students a strong foundation in the basic
I. STATEMENT OF INTENT

Faxon Montessori Elementary School has been established to provide children with the opportunity for academic excellence through a cost-free alternative method of instruction developed by Dr. Maria Montessori. The Montessori method of learning is a specialized, individualized method which will help children, beginning at age three, to develop a healthy self-concept and a love for learning.

II. MISSION STATEMENT

Faxon Montessori Elementary School will become operational in September of 1988 as a magnet school in the Kansas City Missouri School District. The mission of the school is to prepare the learner for life. The school will seek to create a desegregated educational and social environment in which the child will be encouraged to be a self-motivated learner, developing such qualities as order, concentration, coordination, and independence. The Montessori environment will enable the child to maximize his or her potential for success in learning and acquiring life skills.

III. PROGRAM GOALS

1. To develop skills and attitudes that prepare the learner for life.
2. To create a desegregated environment in which ethnic backgrounds are honored.
3. To support independent learning as a preparation for self-motivation.
4. To assist children in developing order, concentration, coordination, and independence.
5. To provide learning experiences that will help each child maximize his or her potential for learning skill development.
6. To provide opportunities for parent and community involvement.
7. To assist parents with application of Montessori theory in the home.
8. To provide mixed age classroom environments based on the Montessori theory of child development.

IV. RATIONALE

A. The following are reasons for the establishment of Faxon Montessori School:

- To attract a wide range of students
- To offer excellence in education through a student-centered environment
- To attract students from the private schools into this school
- To allow students to begin their formal education at age three
- To make use of the accessibility of the Faxon area
- To assist the rejuvenation of that area
- To offer no-cost quality education for people who cannot afford to send their children to a Montessori private school
- To offer a program which will enable students to learn more quickly
V. CURRICULUM DEVELOPMENT

A. Curriculum Emphasis

Basic and Magnet curriculum will be integrated so that identification of separate time segments will not be necessary. District and state objectives will be identified and correlated to Montessori curriculum. Differences in scope and sequence will be noted. Curriculum writing will take place by the end of 1988. The curriculum will be written by a team consisting of the principal, the instructional assistant, resource teachers, classroom teachers, and district resource personnel.

B. Staffing Requirements

Because the Montessori program is not an addend to the traditional curriculum, teachers will need complete age-appropriate Montessori training before entering the classroom. Teacher aides will be sought who have experience in Montessori classrooms as well.

Certificated staff will be required to have a Montessori diploma. AMI preferred. The resource teachers will require an AMI Montessori diploma. All placement in the school will give preference to Montessori experienced applicants.


| Principal | 1 | 1 | 1 | 1 | 1 |
| Instructional Asst. | 1 | 1 | 1 | 1 | 1 |
| Resource teachers | 1 | 4 | 1 | 4 | 4 |
| Pre-K teachers | 6 | 4 | 3 | 3 | 3 |
| K teachers | 2 | 3 | 3 | 3 | 3 |
| First Grade tchr. | 1 | 2 | 2 | 2 | 2 |
| Second Grade tchr. | 0 | 1 | 2 | 2 | 2 |
| Third Grade tchr. | 0 | 0 | 2 | 2 | 2 |
| Fourth Grade tchr. | 0 | 0 | 2 | 2 | 2 |
| Fifth Grade tchr. | 0 | 0 | 0 | 0 | 0 |
C. Staff Recruitment

1. April
   - Distribute notices to District
   - Mail 1500 notices nationally to Montessori teachers
   - Co-sponsor National Montessori in the Public Conference as part of recruitment on the 29th and 30th

2. May
   - Complete hiring of qualified applicants
   - Notify certified teachers of Montessori training options

3. Develop re-certification program at UMKC in Early childhood certification for AMI Montessori graduates

D. Staff Development

1. Staff will need Montessori Certification above the aide level.

2. The staff development will be conducted using the approved Association Montessori Internationale standards for resource training and support.

3. Inservice will be held according to the following schedule:
   
<table>
<thead>
<tr>
<th>Year</th>
<th>Preservice</th>
<th>Inservice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>80 hrs.</td>
<td>30 hrs.</td>
</tr>
<tr>
<td>2</td>
<td>40 hrs.</td>
<td>30 hrs.</td>
</tr>
<tr>
<td>3</td>
<td>30 hrs.</td>
<td></td>
</tr>
</tbody>
</table>

   New teachers will begin Year 1 schedule.

4. Areas of emphasis:
   - District curriculum
   - Montessori activities
   - Extended day activities
   - Parent/public relations
   - Group dynamics
   - Test analysis
Summer Workshop Preservice

August 1 to 5, and August 8 to 12.

The staff development plan will be coordinated by the principal. He will plan the details with the Instructional Assistant, resource teachers, and school-based curriculum group. It will be their responsibility to give inservice training and find qualified persons to help support the staff development plan goals.

Follow-up will occur on an individual basis with each teacher assessing individual needs. Each teacher will pursue various inservice training activities which will be planned with the principal. The coaching and feedback will occur in the classroom and will come from peers, the resource teachers, the instructional assistant, and the principal.

Resource Support - Internal and External

Internal resource support will be provided by the teachers, resource teachers, instructional assistant, principal, and specialists in the district.

External resource support will be provided by Association Montessori Internationale, the North American Montessori Teachers Association, and the Kansas City Life Insurance Company.

E. Leadership/Management Structure

1. Organizational Chart

2. General Guidelines for Staff Team

Provide strong academic focus.

Understand the elements of effective Montessori instruction.

Stimulate the use of the community as a center for learning.

Promote the understanding of child development as a guide for learning.
Admissions Criteria

As per the Pink Plan, some students should not be admitted if it appears that they require unusual emphasis on structural learning and assistance. Initially, this determination should be made through interviews with applicant students and their parents.

Due to the special nature of the program, students should enter the program early, in grade one at the latest, with later admission allowed only for students with prior Montessori experience elsewhere.

No child, regardless of race, sex, or religion, will be prohibited from applying to attend the New Faxon Montessori School. Application procedures must be followed through the Kansas City Missouri School District Magnet Office. Appropriate races, balance will determine placement by the Magnet Office.

Enrollment Goals

<table>
<thead>
<tr>
<th>Grade</th>
<th>48-89</th>
<th>89-90</th>
<th>90-91</th>
<th>91-92</th>
<th>92-93</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prek</td>
<td>120</td>
<td>100</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>K</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>1st</td>
<td>3</td>
<td>20</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>2nd</td>
<td>3</td>
<td>30</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>3rd</td>
<td>6</td>
<td>60</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>4th</td>
<td>6</td>
<td>60</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>5th</td>
<td>6</td>
<td>60</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>180</td>
<td>240</td>
<td>240</td>
<td>240</td>
<td>320</td>
</tr>
</tbody>
</table>

Three special education rooms of ten students each will be added upon completion of the new building.

One grade level per year will be added each year until the program extends through the fifth grade.

C. Recruitment Plan

Because of the extended day program in Faxon Montessori School, and the need of Parents for early childhood assistance in education and care, the recruitment for the first year will be very moderate. Magnet school recruiters will provide brochures and phone information.

If the elementary grades need additional students in time, parent involvement in the school will be the best school advertisement. Recruiting elementary age Montessori students from private Montessori schools can be considered if necessary.
VII. OTHER SUPPORT REQUIREMENTS

A. Community Participation

The New Faxon Montessori School should develop positive reciprocal relationships with the local community. These relationships could be developed through several avenues including:

1. Use of the school building for general community purposes
2. Invitation of local groups to assist and participate in various activities and projects.
3. Community involvement in groundbreaking and dedication.
4. Invitation of Kansas City Life Insurance Company and others in these activities and fundraising.
5. Enlisting support from private Montessori schools in the community.

B. Specialized Needs

The New Faxon Montessori School building will need to be furnished completely when in its temporary location as well as in its permanent site. Specialized Montessori equipment must be ordered to provide adequate Montessori experience.

Teachers must be trained in Montessori. The District must assist in funding special teacher training in order for the future teacher needs to be met.

Orientation to the school is important for young children. They need to be brought into the classrooms in a quiet and respectful way.

Parent orientation programs could include philosophy of the school and teaching methods, rules and regulations, surveys of parent interests and duties, and learning goals for the children. Parents could get involved at whatever level they wish to be.

VIII. Evaluation

A. Plan/Design

The evaluation of the individual magnet schools will be designed around four program areas. The information to be collected within the four areas will be based on the objectives developed by each magnet school's Site Task Force. This information will provide decision makers with evidence regarding the progress being made toward achieving these program objectives.

1. Demographic data
   These data will include enrollment, ethnic balance, and other related data and will be obtained from both the central office and the school site.

2. Implementation of the magnet school as planned
   Information will be collected primarily through site visits which may include observations of activities, interviews with school personnel, and the documentation of other elements related to program implementation (e.g., documenting the availability of necessary materials, the allocation of program funds, or the extent of staff development.)

3. Student achievement outcomes
   Achievement data will be collected for reading, math, and language arts as well as for the magnet theme. These data will be collected using standardized tests (e.g., Iowa Test of Basic Skills, state criterion referenced tests) and, when appropriate, assessments that match the school's curriculum.

4. Perceptions of the program
   Through the use of questionnaires and interviews, perceptions of the magnet school program will be gathered from school staff, students, parents and appropriate central office personnel.

B. Types

1. Formative
   As described in the Long Range Magnet School Plan ("Pink Plan"), program evaluation during the first two years of the program will be formative. Information as outlined above will be collected and fed back to each magnet school and other district personnel with the purpose of identifying aspects of the program that are working and those needing improvement. Information will also be communicated to the Board of Education and
The Court Desegregation Monitoring Committee on the progress that is being made.

2. Summative

After the third year of program implementation a summative evaluation will be written. During this third year evaluation information will still be used in a formative manner, i.e., to foster program improvement, but at the end of the year emphasis will be placed on determining the effectiveness of the program in achieving its objectives.

Procedure

Evaluation staff will consult with the principal to determine indicators of accomplishment for each of the goals and to discuss possible evaluation strategies for the indicators prior to development of the detailed evaluation design.

II. Time Line for Each Montessori School

- February-March: Begin site in-service training
- April-May: Identify Montessori Distinctions; Complete Planning Outline; Visit Other Montessori Schools
- June-July: Prepare Curriculum Outline; District and Montessori Begin In-Depth Curriculum Writing
- August: In-service; Prepare for School

X. Budget for Each Montessori School

<table>
<thead>
<tr>
<th>Item</th>
<th>4th-5th</th>
<th>6th-8th</th>
<th>9th-11th</th>
<th>12th</th>
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</table>
FAMILYSTAR
INFANT-PARENT
EDUCATION CENTER
Professional Training
Para-professional Training
Infant/Toddler Community
Teen Counseling  Parent Education
Literacy Center  Publishing Laboratory
Cottage Industries  Food Distribution

Maria Mitchell
Plaza

Linking Northeast Denver agencies and social services with programs designed for newborns, infants, youths, and families.
the teaching profession. The invalidated license may be revalidated if the applicant satisfactorily completes 6 semester credits or the equivalent as described in sub. (2) (b) during the 5-years immediately preceding his or her application for revalidation.

(4) ONE-YEAR LICENSE. A one-year license may be issued as follows:

1. To an applicant who has completed an approved program in another state but who has minor course work deficiencies under this chapter.

2. To an applicant who has not met the accumulating education requirement for renewal of a regular license under sub. (3) (c). This one-year license may not be renewed. For renewal of the regular license, the applicant shall meet the requirements under sub. (3) (c).

3. To an applicant who meets the license requirements under this chapter, but who has not been regularly employed in the teaching profession within the 5 consecutive years immediately preceding application for the license or renewal, upon the written request of an employing school district administrator. For issuance or renewal of the regular license, the applicant shall meet the refresher work requirement under sub. (3) (d).

(5) EMERGENCY LICENSES. (a) Special license. A special license which authorizes a licensed teacher to teach in an assignment other than that for which he or she holds a license may be issued for one specific assignment. A special license issued under this section is valid for a period not to exceed one year and expires on June 30, unless an earlier expiration date is specified in the special license.

2. The district administrator or designee of the employing school district shall request a special license in writing with full explanation and justification of the need. The request shall state that a search was conducted for a fully licensed teacher and an explanation of why any fully licensed candidates were not acceptable for employment.

3. The district administrator or designee of the employing school district may request that a special license be renewed. The special license may be renewed if, between the date of issuance and the proposed renewal date, the applicant satisfactorily completes at least 6 semester credits toward completion of an approved program. The request for renewal shall be in writing and shall include a full explanation of the need for renewal.

4. The state superintendent may issue or deny a special license. The state superintendent shall deny a special license to an applicant who has not met the requirements in sub. (b) (1) (b). If the applicant completed the initial professional education program on or after August 31, 1992.

(b) Permit. 1. A permit which authorizes the holder to be employed for one specific assignment may be issued to a person who has a bachelor's degree but does not meet the license requirements under this chapter. A permit issued under this subdivision is valid for a period not to exceed one year and expires on June 30, unless an earlier expiration is stated in the permit.
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<tr>
<th>Description</th>
<th>Actual 1987-88</th>
<th>Budgeted 1988-89</th>
<th>Difference</th>
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<td>Teacher-Elementary</td>
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<td>987,836</td>
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<td>Total Civil Service Personnel</td>
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<td>FRINGE BENEFITS</td>
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<td>Supplies/Books and Materials</td>
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<tr>
<td>Replacement Equipment</td>
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<td>2,000</td>
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<td>All Other</td>
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<td>173</td>
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<td>0</td>
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<td>Vocational Education</td>
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<td>0</td>
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<td>Magnet Schools Assistance Act</td>
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I. Incidences...learnt. reacher* of all...

**Program Offerings**

**Instructional Level** 2-6

**WRIT S0100L6i 64-65; 6546: 86-81**

**Schl 111124LIBIssbilities**

**Reading**

**Developmental**

**Comprehension**

**Instructional Management System**

**Basic Education Program**

**Instructional Pogram (OCT 1988)**

Program Offerings

Instructional Level 2-6

WRIT S0100L6i 64-65; 6546: 86-81

Schl 111124LIBIssbilities

Reading Developmental Comprehension Instructional Management System

Basic Education Program

**Program Purposes**

**Additional Allocation**

**Program Purposes**

Alternative Program

Special Program (See Above)

Special Education

Vocational Education P. F. Art, and Music

Other

**Additional Allocation**

**Program Purposes**

Alternative Program

Special Program (See Above)

Special Education

Vocational Education P. F. Art, and Music

Other

**Summary Statement**

The total budget for this elementary school is higher due to Transportation and Support Staff as explained in the right hand column.

**HISTORICAL DATA**


| Year | Schl Avg | Schl Avg | Schl Avg | Budget
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<td>99.2</td>
<td>99.0</td>
<td>99.3</td>
<td>99.0</td>
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<tr>
<td>1986-87</td>
<td>99.5</td>
<td>99.3</td>
<td>99.6</td>
<td>99.2</td>
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<tr>
<td>1987-88</td>
<td>99.9</td>
<td>99.7</td>
<td>100.0</td>
<td>99.9</td>
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</table>

**Avg Daily Attendance**

(ADA - Annual)

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<tr>
<th>Year</th>
<th>Schl Avg</th>
<th>Budget Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-86</td>
<td>99.2</td>
<td>99.0</td>
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<tr>
<td>1986-87</td>
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<tr>
<td>1987-88</td>
<td>99.9</td>
<td>99.9</td>
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</table>

**Available Balance**

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<tr>
<th>Year</th>
<th>Schl Avg</th>
<th>Budget Avg</th>
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</thead>
<tbody>
<tr>
<td>1985-86</td>
<td>99.2</td>
<td>99.0</td>
</tr>
<tr>
<td>1986-87</td>
<td>99.5</td>
<td>99.2</td>
</tr>
<tr>
<td>1987-88</td>
<td>99.9</td>
<td>99.9</td>
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**Student Mobility**

<table>
<thead>
<tr>
<th>Year</th>
<th>Schl Avg</th>
<th>Budget Avg</th>
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</thead>
<tbody>
<tr>
<td>1985-86</td>
<td>99.2</td>
<td>99.0</td>
</tr>
<tr>
<td>1986-87</td>
<td>99.5</td>
<td>99.2</td>
</tr>
<tr>
<td>1987-88</td>
<td>99.9</td>
<td>99.9</td>
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</table>

**Days Absence per Student**

<table>
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<tr>
<th>Year</th>
<th>Schl Avg</th>
<th>Budget Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-86</td>
<td>99.2</td>
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<td>1986-87</td>
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<td>99.2</td>
</tr>
<tr>
<td>1987-88</td>
<td>99.9</td>
<td>99.9</td>
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**Student Achievement**

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<th>Grade</th>
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<td>99.1</td>
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<tr>
<td>1986-87</td>
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<td>99.2</td>
<td>99.3</td>
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<td>1987-88</td>
<td>99.9</td>
<td>99.9</td>
<td>99.9</td>
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**Student Attendance**

<table>
<thead>
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<th>Year</th>
<th>Schl Avg</th>
<th>Budget Avg</th>
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</thead>
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<tr>
<td>1985-86</td>
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<td>1987-88</td>
<td>99.9</td>
<td>99.9</td>
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</table>

**Transportation and Support Staff**

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<tr>
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<th>Schl Avg</th>
<th>Budget Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-86</td>
<td>99.2</td>
<td>99.0</td>
</tr>
<tr>
<td>1986-87</td>
<td>99.5</td>
<td>99.2</td>
</tr>
<tr>
<td>1987-88</td>
<td>99.9</td>
<td>99.9</td>
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</tbody>
</table>

**Budget Per Pupil Analysis**

<table>
<thead>
<tr>
<th>Year</th>
<th>Comparable School</th>
<th>This School</th>
<th>Diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-86</td>
<td>3204</td>
<td>4355</td>
<td>1151</td>
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**Budget Per Pupil Analysis**

<table>
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<th>Year</th>
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<th>This School</th>
<th>Diff.</th>
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</thead>
<tbody>
<tr>
<td>1985-86</td>
<td>3204</td>
<td>4355</td>
<td>1151</td>
</tr>
</tbody>
</table>

**Some Critical Factors Contributing TO THIS DIFFERENCE ARE**

1. **Pupil-Teacher Ratio**

<table>
<thead>
<tr>
<th>Year</th>
<th>Similar Schls</th>
<th>This Sch</th>
<th>Diff.</th>
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</thead>
<tbody>
<tr>
<td>1985-86</td>
<td>18.6</td>
<td>17.5</td>
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**Normal Difference**

2. **Average Teacher Salary**

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<td>1985-86</td>
<td>8090</td>
<td>9100</td>
<td>1010</td>
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**Normal Difference**

3. **Support Staff**

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</thead>
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<td>1985-86</td>
<td>8231</td>
<td>8131</td>
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**Normal Difference**

4. **Supplies - Equipment**

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<th>Diff.</th>
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<td>1985-86</td>
<td>8641</td>
<td>8011</td>
<td>-630</td>
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</table>

**Normal Difference**

5. **Facilities**

<table>
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**Normal Difference**

6. **Transportation**

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<th>This Sch</th>
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<tbody>
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<td>1985-86</td>
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<td>2667</td>
<td>650</td>
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**Normal Difference**

7. **National Median**

<table>
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<tr>
<td>1985-86</td>
<td>1025</td>
<td>1105</td>
<td>80</td>
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8. **Transportation to High due to cost of transporting students for the Alternative Program**

**Design for School Excellence**

The Design for School Excellence Program (DSEP) recognizes schools publicly for their achievement of excellence. The ten areas measured include: reading achievement, mathematics achievement, student attendance, writing mastery, staff attendance, instructional understanding, discipline, parent attitude about the school, student attitude, and staff attitude. To be declared a James McKechnie Merit School, meri status must be achieved in majority of the categories including the mandatory four: reading achievement, mathematics achievement, student attendance, and instructional understanding.

This school achieved merit status for the 1985-86 school year in the following categories:

- Reading Achievement
- Student Attendance
- Teacher Attitude
- Discipline
- Parent Attitude

(Due for more information, refer to APPENDIX C)
<table>
<thead>
<tr>
<th>Description</th>
<th>1987-88 ACTUAL</th>
<th>1988-89 BUDGETED</th>
<th>DIFFERENCE</th>
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<tr>
<td><strong>CERTIFICATED</strong></td>
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<tr>
<td>Administration-Schools</td>
<td>81,649</td>
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<td>10,754</td>
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<tr>
<td>Teacher-Kindergarten</td>
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<tr>
<td>Teacher-Elementary</td>
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<td>91,793</td>
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<tr>
<td>Teacher-Reading Resource</td>
<td>35,381</td>
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<td>1,840</td>
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<td>Teacher-Special Education</td>
<td>30,356</td>
<td>36,747</td>
<td>6,391</td>
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<td>Teacher Substitute</td>
<td>13,041</td>
<td>15,694</td>
<td>2,653</td>
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<tr>
<td><strong>TOTAL CERTIFICATED PERSONNEL</strong></td>
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<td>1,102,885</td>
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<td><strong>CIVIL SERVICE</strong></td>
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</tr>
<tr>
<td>Secretaries and Clerks</td>
<td>27,120</td>
<td>28,517</td>
<td>1,397</td>
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<tr>
<td>Instructional Assistants</td>
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<td>Security Assistants</td>
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<td>0</td>
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<tr>
<td>Special Education Assistants</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cleaning and Heating</td>
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<td>103,792</td>
<td>10,915</td>
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<td>Other</td>
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</tr>
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<td>359,780</td>
<td>398,170</td>
<td>38,390</td>
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<tr>
<td><strong>FRINGE BENEFITS</strong></td>
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</tr>
<tr>
<td>Non-Personnel</td>
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<td>Supplies/Books and Materials</td>
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<td>Replacement Equipment</td>
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<td>Additional Equipment</td>
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<td>Fuel and Utilities</td>
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<td>Operating Supplies/Contracts</td>
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<td><strong>GENERAL FUND</strong></td>
<td>1,285,701</td>
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<td>Food Services</td>
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<td>Contract Instruction</td>
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<td>51,666</td>
</tr>
<tr>
<td>Vocational Education</td>
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<td>0</td>
<td>0</td>
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<tr>
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<td><strong>GRAND TOTAL</strong></td>
<td>70,313</td>
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</table>
Admissions policies in Montessori public schools must avoid tendencies to select only families already familiar with Montessori education. The admissions procedure needs to inform applicants about Montessori so that parents make the right choice for the right reasons. The admissions process sets the tone for the family's relationship to the school and is the starting point for future parent involvement.
ADMISSIONS AND RECRUITMENT

ADMISSIONS

Results of a 1988 NAMTA survey of Montessori Public Schools throughout the country indicated that there are a number of different approaches to handling admissions. Approximately 25 percent of the Montessori public schools utilized a screening process including a teacher interview in their admissions process, 47 percent operated on a first come, first serve basis, while still another 30 percent used a lottery method. Race, gender, and prior Montessori schooling constituted major factors for both selective and nonselective admissions. Special needs classification, economic or linguistic disadvantages, geographical location of applicant, had little or no bearing on the admissions process. Almost a third of the programs had extensive waiting lists. The following procedures characterize most magnet programs:

- Prior Montessori schooling usually means that Montessori children are selected from private Montessori schools which feed into the kindergarten year of the public school. Admitting private school children is regarded by some districts as elitist because it gives preferential treatment to those who can afford private school tuition. Other school districts appreciate the infusion of well prepared private school children as they offer a more balanced class composition.

- Magnet schools usually develop advanced promotional material to keep their schools competitive with other magnet programs. They also distribute handbooks with well defined expectations in order to discourage those parents who may not have the interest or time for extensive parent participation that many Montessori schools require at the outset.

- Screening is largely used to determine whether the family is willing to work with the school. Parent involvement and awareness is oftentimes initiated with a parent observation in order to bring the parent immediately into the Montessori experience. At the time of observation, an interview with a Montessori trained representative or the principal is desirable as part of the recruitment and screening process. (See appendix for interview forms and recommendations for prospective parents.) The primary purpose of the interview is to convey Montessori principles and approaches at the point of entry and to enlist the parents' support.

- Admissions in most Montessori public schools follow conventional cut-off dates for the entrance age of the child (e.g. you must be there by a specific date — October 1). It is recommended that the admittance of children over age four without Montessori experience should be limited to one or two children per classroom annually for best results.

- A few districts utilize recruiters to screen applicants who, like the school administration, can measure their success by those who make a long-term commitment to the school.
ADVANTAGES OF NON-SELECTIVE ADMISSIONS

by Timothy Duax

- Montessori admissions are either selective or non-selective in their policy orientation.
- The use of open, non-selective enrollment can result in equitable, quality Magnet Schools.

The intent of offering Montessori magnet schools as well as other magnet specialties in public school systems is to provide options previously denied to public school parents and to promote choice, diversity, desegregation, and increased educational opportunity in the public domain (Coleman, 1981; Uchitelle, Harris & Libros, 1984; Rossell, 1985; Hentschke, Lowe & Royster, 1985; Levine & Eubanks, 1986). For this reason, the type of magnet school increasingly being used is a "nonselective" magnet school which has a distinct curriculum or instructional mode and is open to a broad range of students, not just a select group.

Blank (1983), in a federally funded national study of magnet schools, looked closely at the issue of selectivity. Selectivity was classified into four types: (1) student self-selection, which is inherent in the magnet concept; (2) market focus, which is expressed in the ways magnets are advertised (e.g., as when a magnet is presented as a rigorous and accelerated program); (3) applicant screening, which may include both behavioral and academic standards for admission; and (4) post-entry mechanisms for transferring students who do not perform or behave in accordance with the magnet's standards.

Nonselectivity was defined by the study as magnet schools that: (1) admit students on a first come, first serve basis or by means of a lottery, with no consideration of anything but interest in the theme; (2) do not remand students for any reason; and (3) host lower-spectrum-needs students (e.g., learning disabled, emotionally disturbed).

Blank recommended that nonselectivity be used as part of the ideal design for cities implementing magnet schools.

Several cities have established magnet schools which are formally selective through the use of entrance requirements. Other cities have developed nonselective magnet schools which use open enrollment through lottery schemes to admit children of all abilities. Access for students on the basis of voluntary preference and lottery is an attempt to ensure equal educational opportunities for children and avoids the outright tracking of children based on academic ability or behavior. School systems using tracking have been successfully challenged in court (Raywid, 1985).

Timothy Duax works in administration and research with the Milwaukee Public Schools.
When implementing nonselective magnet schools, lottery selection is intended to deal equitably with programs having overenrollment due to popular demand. Lotteries are designed to maintain the ethnic balance of the overall public school population. In school systems where it is used, parents are informed well in advance through city-wide mailings of availability of programs and their descriptions, and are given registration forms to mail or to present to either the particular school, a parent advocacy office, or the school system central office. Parents are often asked to select second or third school choices. The lottery can consist of two or three "rounds" in which parents are given their second or third choices as particular programs become filled.

Equal education opportunity is maintained by an active outreach program which focuses on informing and following up on parents who may not have the skills, the language, or the community ties to adequately complete the registration process for school selection. This is especially the case when magnet schools offer innovative programming such as Montessori early childhood education, since many parents may not be aware of the necessity of early registration for young children first entering schools.

The use of open enrollment based on voluntary preference, lottery selection, and community awareness through outreach can result in formation of equitable, quality magnet schools. Public Montessori magnet schools have already been established which are nonselective, provide a service to the school systems of which they are apart, demonstrate strong academic achievement, and educate in a stimulating environment a broad spectrum of diverse children.

REFERENCES

CASE STUDY:
MONTESSORI MAGNET SCHOOL RECRUITMENT

by Martha Vincent

- Many families who come to Montessori are uninformed about Montessori education. The recruiter for a Montessori program helps families become informed about Montessori from the start.
- In the preliminary interview with a prospective parent, it is important to find out as much as possible about the parent’s lifestyle, values and expectations, and guide them to Montessori ideas.

For the past eighteen months I have been employed as a recruiter for magnet schools in a public school system. The magnet school plan for the district was designed as the remedy in a federally court-ordered desegregation case, and it gives protection to the proper implementation of special themes — Montessori in particular. The Montessori program is self-contained — a school in its own right — not merely a program within a school. Administrators and teachers are required to have recognized Montessori training as well as state certification. Students are admitted to the program only after an interview with the principal or the teaching staff. After the start-up year, only new three year olds are added with the occasional four or five year old to fill any vacancies. Applicants for the elementary program must have Montessori preschool experience in order to be eligible for placement.

Recruiting for this particular Montessori magnet school program was not difficult. Most parents applied without even seeing the building or meeting the principal and staff. There was a tremendous rush of applications over a thousand for 180 student slots. The biggest problem was scheduling the prerequisite interview for the first 300 applicants. Because of the time constraints, the opening year did not allow for much counseling or screening of parents.

Montessori programs can meet the needs of most every child; meeting the needs of parents is more difficult. It is important that each parent visitor be welcomed to the school with warmth and hospitality. The same grace and courtesy lessons demonstrated to the children should be used with all visitors to the building. In a preliminary interview with a prospective parent, it is important to find out as much as possible about the parent’s lifestyle, values and expectations. This is not to screen out any child or parent, rather it is helpful information when informing the parent of the philosophy and goals and expectations of the Montessori program, and when giving the parent an overview of the kind of support and involvement the school needs so the child will have the best Montessori experience possible.

From the beginning interview it is important to explain the scope of the full primary and elementary Montessori experience to the parents of preschool age children. It is a challenge to retain children who come to a Montessori program simply for the preschool or daycare aspect of the program. When a parent who has made the choice to stay only for the “kindergarten” year decides to continue in the elementary program, it is clear the interactions with the parents were successful.

The work of recruitment for a Montessori program is really one of retention. It is not particularly difficult to attract students to fill a primary program, and grievous as it may sound, it is not really all that
important that they come for the "right" reasons. It can be a concern that parents choose Montessori to take advantage of a few hours away from their preschool children or that they need a "socially elite" daycare center. In reality, however, what is important is what we have the opportunity to offer the children, not what brings them to Montessori initially. In many cases the child would have no other chance to realize independence, positive social development, academic tools, and life skills without the experiences a Montessori program offers. Socioeconomic levels aside, many parents simply do not understand the special needs and developmental stages of their children. Montessori is one of the few educational philosophies that deals with the whole child.

No matter what motivates the parent to choose a Montessori program, "right" or "wrong," it becomes the responsibility of the school to educate the parent as well as the child. The parent must understand the guiding philosophy of the Montessori Method and be given the opportunity to become familiar with the program goals and expectations.

The parent must understand the guiding philosophy of the Montessori Method and be given the opportunity to become familiar with the program goals and expectations. Parents need to observe the child in the Montessori environment. Then they must be gently encouraged to align their own goals and expectations with a new awareness and understanding of the needs of the child.

Parent education is not only desirable, it is essential to the survival of a public Montessori school. In a district where choices are encouraged and programs become very competitive for students, the largely misunderstood Montessori program can thrive well at the primary level then lose students rapidly in the elementary years, particularly at the kindergarten-to-first-grade juncture. It is the job of each administrator, classroom teacher, recruiter, and admissions counselor to provide information to make parents aware of the tremendous scope of a fully-developed Montessori program that will allow the parent to make an informed, intelligent educational choice in the best interest of the child.
Parental Involvement

In order to realize a successful Montessori Program, parental involvement is encouraged. Parents are urged to assist in whatever way they can to support the program and are asked to communicate with the teacher on a regular basis regarding the progress of their child.

Registration Procedures

Registration is usually on a first-come basis (provided that vacancies are available).

In order to facilitate organization of classes, registration of students for the ensuing school term should be completed between January-April of the corresponding school year.

Late registrations are accepted provided that room is still available in the program.

The following criteria are considered on registration:

1. Availability of space
2. Vancouver district students given preference
3. Sibling(s) in the program
4. Suitability of the program for the child
5. Parental commitment to the Montessori program
6. Previous Montessori experience is not required for children enrolling at Kindergarten and Grade 4 levels

Registration forms may be obtained at the school office anytime during regular school hours.

TYEE SCHOOL
3525 Dumfries Street
Vancouver, B.C. V5N 3S5
Phone 875-8397

"In the words of the child
I hear and I forget
I see and I remember
I do and I understand."

DR. MARIA MONTESSORI
(1879 - 1952)
Montessori Alternative Program

In February 1985, the Vancouver School Board approved the Montessori Alternative Program for a three year pilot which began in September 1985. This district program was located at Nightingale School until June 1988. Tyee Elementary became the new site for the program in September 1988, enrolling students from Kindergarten to Grade 4. The program continues to expand.

Historical Perspective & Philosophy

Maria Montessori, born in Italy in 1870, was a pioneer in early childhood education. After becoming Italy’s first woman doctor, her interests turned to the education of children and began her lifelong pursuit of studying child development. Her own educational method evolved. The essential elements were the child, a prepared environment and a variety of manipulative learning materials.

Maria Montessori believed that education must be developmental in nature. Her observations indicate that teaching techniques and curriculum materials must be geared to the individual child.

She maintained that under her approach children become self-disciplined, orderly, and joyful about their schooling. Further, she contended that education was accomplished by a child’s self-motivation — resulting in an intrinsic natural curiosity and a continued love for the learning process.

Teacher’s Role

Maria Montessori referred to the teacher as a “Directress” or “Director” who directs or channels the child to pursue his/her educational goals. This procedure follows Montessori’s principle that a child learns through experience. The teacher in a Montessori classroom endeavors to fulfill the following roles:

1. to understand and be supportive to the child...
2. to be an observer of the learning atmosphere...
3. to be the initiator of the “prepared environment”...
4. to be an “exemplary” figure for students...
5. to be the key link between the child and the environment...
6. to be the liaison between the child, and the school community...

Some General Principles of Montessori Education

1. It is based upon the belief that a child’s natural instinct is to love learning. Children must learn for themselves.
2. It encourages self-discipline through the development of concentration, sequenced learning activities, problem solving opportunities as well as freedom (not license).
3. Opportunities are provided for mutual help within the learning environment (multi-age groups allow the children to learn from one another).
4. A non-competitive atmosphere is encouraged. The children progress at their own rate.
“Education should no longer be mostly imparting of knowledge, but must take a new path, seeking the release of human potentialities”
—Dr. Maria Montessori

Mission of the Program

The mission of the Mama Mitchell Montessori program is to enable all of its students to develop strategies for the acquisition of the knowledge, skills, and values they will need to participate meaningfully in our pluralistic society. Consistent with this mission, Mitchel's Montessori program strives to reach five goals:
- an integrated school environment
- a solid academic foundation
- a strong parent participation
- a trained and responsive faculty
- a supportive community partnership

A Public Montessori School

Mandated by a federal directive to integrate Maria Mitchell Elementary School, the Denver Public Schools chose to model an educationally sound Montessori learning environment as a 'magnet' program capable of attracting a dynamic mixture of students from all of Denver.

This new public Montessori educational offering began in the fall of 1986 with a full integrated student population of 175 children ranging in age from three to six years. Some 370 children attended Mitchell during the 1986-1987 school year, and the program continues to grow. A transition plan allows for one grade level to be added yearly until Mitchell is a total pre-primary and elementary Montessori school with grades one through six.

The Faculty

Each of the well prepared Montessori learning environments is directed by a specially trained Montessori teacher who possesses both a Colorado State Teacher's Certificate and an accredited diploma from the Association Montessori Internationale or the American Montessori Society.

The Montessori teacher strives not to be the focal point of the classroom, but rather observes the child's needs and directs the child toward the appropriate materials through which learning will be achieved.
## Integrated Enrollment

![Image of a page from a document]

### Basic Philosophy and Practice

Instead of grouping children in the typical graded structure of one-year age groupings, the Montessori program places children within learning environments that span three years of academic and social development. This creates a more natural learning community in which the younger children can witness the skill development of older classmates, and, in turn, the older learners can exercise leadership by assisting the younger students.

Each of Mitchell's Montessori learning environments is prepared to meet the learning and social needs of each child as an individual. Specially designed and sequenced manipulative materials help isolate skills to be learned and lead the child up the curriculum from mastery to mastery, building self-confidence along the way. Although there are both large and small group activities throughout the day, the child's academic instruction is most often individually presented. Each student, in fact, is carefully observed to assure respect for that child's level of ability and rate of progress.

The Montessori environments are divided into specific learning areas that include practical life, sensory, language, mathematics, geography, history, science, and the arts. To foster self-motivation and self-discipline, children are allowed to choose any material they wish which has been introduced to them by their teacher. They may repeatedly work with the material on their own so that they have the opportunity to discover the underlying concepts and to assimilate mastery of the skills contained.

Unlike the practice within traditional classrooms, in Mitchell's Montessori learning environments one learner is not compared or pitted against others. Each child's academic, emotional, social, artistic, and physical progress is observed and tracked closely by the Montessori teacher. Rather than depending on textbooks or basal readers, the children within the Montessori program are presented academic skills and knowledge through concrete materials and by using a vast array of reference materials provided within their learning environments and the library/media center.

Grounding the child in open-ended real-life experiences fosters the early development of both the imagination and the intuitive mind. Consistent work with the Montessori manipulative materials develops a strong habit of attending to the task at hand as well as the motor control required to pursue their artistic interests.

## School Achievements

- Awarded the Certificate of Honor for Academic Achievement by the Black Education Advisory Council in June 1989.
- Awarded a $2,000 Federal Grant to further expand Montessori Instructional Media Center Library into areas of botanical and zoological drama exhibits.
- Awarded Recognition of Merit in the Custodial Care and Facility Management for 1988 by the Denver Public Schools.
- Awarded $1,000 to the Denver Post for Public Montessori Education. Mitchell has had over 150 visitors during the past year.
- Chosen by the North American Montessori Teachers Association (NAMTA) to be part of a national documentary film depicting model programs of Montessori in public schools.
- Hosted three national educational seminars for the Association Montessori International, including the “Assistants to Infancy” two-summer training course for 1989-1990.
- Presented an overview of Montessori education in the Denver Public Schools, and its positive impact on the community, to the Colorado Forum.
- Developed a Community Garden in partnership with the University of Colorado.
- Raised over $2,000 in support of the School's Suzuki program and expansion of the instructional media center.
- Recorded no suspensions from school during the 1989-1990 school year.

## Accountability

Mitchell Montessori School has an active and involved School Improvement and Accountability Committee. Every Colorado public school is required by law to establish a committee of community members, parents, and school personnel that meets monthly to evaluate existing educational programs and to create and suggest a short-range educational plan for the next school year.

During the 1988-1989 school year, Mitchell's SIAC conducted a survey of the parent body of the results of which were used to develop a parent packet for students in the elementary program and to create a curriculum plan that will be shared with the parent body and interested educators.

Recently, the school discovered that a full 95 percent of the parents are pleased with their child's educational program and with Mitchell Montessori School.
<table>
<thead>
<tr>
<th>Message from the Principal</th>
<th>Excellence in Education</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Excellence in Education**

- South Montessori School believes in children reaching their peak in life.
- Our curriculum is designed to foster critical thinking, problem-solving, and creativity.
- We provide a supportive and collaborative learning environment.
- We emphasize the importance of individuality and self-direction in learning.
- Our philosophy is based on the Montessori method, which values self-discovery and independence.

---

**Table:**

<table>
<thead>
<tr>
<th>Test Results</th>
<th>Student Name</th>
<th>Test Score</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Note:**

- The table above lists the test results for each student.
- South Montessori School is committed to providing an environment where every child can excel.
- We encourage parents to discuss their child's progress with their teachers.

---

**Conclusion:**

- South Montessori School is dedicated to ensuring that every child reaches their full potential.
- We are proud of our students' achievements and their contributions to our community.
- Our goal is to prepare our students for success in life.
WELCOME!! We are pleased that you want to observe in our school and we hope the visit will be enjoyable and meaningful. Toward that end, we offer these guidelines for visiting the classroom.

1. In order to have a good view of the natural activities and atmosphere you need to be as inconspicuous as possible.
2. Remain seated in the chair provided for observation.
3. Do not engage the children in conversation, example: I'd like to watch you work.
4. Remember that any child's behavior may be a reaction to your presence in the room. This is particularly true of your own child.
5. Make notes of any questions that come to mind and discuss them with the coordinator after your visit.

A prepared environment has many aspects. So that you may gain a better understanding of what is developing in our Montessori classes, we offer these goals which represent some of our ideals for the Montessori child.

INDEPENDENCE:
1. Initiates own activity
2. Terminates own activity
3. Evidences self-help

RESPONSIBILITY:
1. Returns work to proper place
2. Care for environment: Maintenance, clean-up after work or accident, and care for equipment and supplies

SOCIAL SENSE:
1. Respect for work of others
2. Adapting to group needs
3. Participating in group activities

INDIVIDUALITY:
1. Selects work to satisfy own needs and interest
2. Works at own speed and for as long as attention lasts
3. Follows own rate and sequence of development

Please stay forty-five minutes to an hour and return this form and the clipboard to the office before you leave. The coordinator will be happy to talk with you at this time.

***** THANK YOU FOR VISITING US !!! *****
Appendix 4: Application Form — Tyee School, Vancouver, British Columbia

Application forms should be simple and straightforward.

VANCOUVER SCHOOL DISTRICT #39
APPLICATION FOR ADMISSION
MONTESSEOR ALTERNATIVE PROGRAM

In order to be accepted into Kindergarten, a child must be 5 years old on or before Dec. 31 of the year of entry.

Date ____________________________

THIS IS NOT A FORMAL REGISTRATION FORM

NAME OF CHILD (full given legal names) __________________________________________

ADDRESS _________________________________________________________________

DATE OF BIRTH ___/___/____ SEX: boy _______ girl ______

DATE OF BIRTH confirmed by school personnel (birth certificate) (date and initials)

LANGUAGE SPOKEN IN HOME ________________________________________________

NAMES OF CHILDREN PRESENTLY ENROLLED AT TYEE ____________________________

NAMES OF CHILDREN PRESENTLY ATTENDING COMMUNITY MONTESSEOR PRESCHOOL __________________

NUMBER OF CHILDREN IN FAMILY __________________

NAME OF PARENT/GUARDIAN: MOTHER (family name) _______ (given name) _______

DAY PHONE _______ EVENING PHONE ______

FATHER (family name) _______ (given name) _______

DAY PHONE _______ EVENING PHONE ______

MONTESSEOR BACKGROUND (name of Montessori pre-school) _______________________

: PRIVATE SCHOOL LAST ATTENDED ________________________________

APPLICATION FOR GRAD. ____________________ FOR SEPTEMBER __________

School: ____________________

Assigned to Gr. _____ Div. _____ Teacher ____________________________ 1.1.1. list

PR CARD _______ MED CARD _______ $1000 ______

TYEE SCHOOL
2395 W. ARNIE STREET
VANCOUVER, B.C. V5W 3S5

VANCOUVER SCHOOL DISTRICT #39
APPLICATION FOR ADMISSION
MONTESSEOR ALTERNATIVE PROGRAM

In order to be accepted into Kindergarten, a child must be 5 years old on or before Dec. 31 of the year of entry.

Date ____________________________

THIS IS NOT A FORMAL REGISTRATION FORM

NAME OF CHILD (full given legal names) __________________________________________

ADDRESS _________________________________________________________________

DATE OF BIRTH ___/___/____ SEX: boy _______ girl ______

DATE OF BIRTH confirmed by school personnel (birth certificate) (date and initials)

LANGUAGE SPOKEN IN HOME ________________________________________________

NAMES OF CHILDREN PRESENTLY ENROLLED AT TYEE ____________________________

NAMES OF CHILDREN PRESENTLY ATTENDING COMMUNITY MONTESSEOR PRESCHOOL __________________

NUMBER OF CHILDREN IN FAMILY __________________

NAME OF PARENT/GUARDIAN: MOTHER (family name) _______ (given name) _______

DAY PHONE _______ EVENING PHONE ______

FATHER (family name) _______ (given name) _______

DAY PHONE _______ EVENING PHONE ______

MONTESSEOR BACKGROUND (name of Montessori pre-school) _______________________

: PRIVATE SCHOOL LAST ATTENDED ________________________________

APPLICATION FOR GRAD. ____________________ FOR SEPTEMBER __________

School: ____________________

Assigned to Gr. _____ Div. _____ Teacher ____________________________ 1.1.1. list

PR CARD _______ MED CARD _______ $1000 ______

TYEE SCHOOL
2395 W. ARNIE STREET
VANCOUVER, B.C. V5W 3S5

VANCOUVER SCHOOL DISTRICT #39
APPLICATION FOR ADMISSION
MONTESSEOR ALTERNATIVE PROGRAM

In order to be accepted into Kindergarten, a child must be 5 years old on or before Dec. 31 of the year of entry.

Date ____________________________

THIS IS NOT A FORMAL REGISTRATION FORM

NAME OF CHILD (full given legal names) __________________________________________

ADDRESS _________________________________________________________________

DATE OF BIRTH ___/___/____ SEX: boy _______ girl ______

DATE OF BIRTH confirmed by school personnel (birth certificate) (date and initials)

LANGUAGE SPOKEN IN HOME ________________________________________________

NAMES OF CHILDREN PRESENTLY ENROLLED AT TYEE ____________________________

NAMES OF CHILDREN PRESENTLY ATTENDING COMMUNITY MONTESSEOR PRESCHOOL __________________

NUMBER OF CHILDREN IN FAMILY __________________

NAME OF PARENT/GUARDIAN: MOTHER (family name) _______ (given name) _______

DAY PHONE _______ EVENING PHONE ______

FATHER (family name) _______ (given name) _______

DAY PHONE _______ EVENING PHONE ______

MONTESSEOR BACKGROUND (name of Montessori pre-school) _______________________

: PRIVATE SCHOOL LAST ATTENDED ________________________________

APPLICATION FOR GRAD. ____________________ FOR SEPTEMBER __________

School: ____________________

Assigned to Gr. _____ Div. _____ Teacher ____________________________ 1.1.1. list

PR CARD _______ MED CARD _______ $1000 ______

TYEE SCHOOL
2395 W. ARNIE STREET
VANCOUVER, B.C. V5W 3S5

VANCOUVER SCHOOL DISTRICT #39
APPLICATION FOR ADMISSION
MONTESSEOR ALTERNATIVE PROGRAM

In order to be accepted into Kindergarten, a child must be 5 years old on or before Dec. 31 of the year of entry.

Date ____________________________

THIS IS NOT A FORMAL REGISTRATION FORM

NAME OF CHILD (full given legal names) __________________________________________

ADDRESS _________________________________________________________________

DATE OF BIRTH ___/___/____ SEX: boy _______ girl ______

DATE OF BIRTH confirmed by school personnel (birth certificate) (date and initials)

LANGUAGE SPOKEN IN HOME ________________________________________________

NAMES OF CHILDREN PRESENTLY ENROLLED AT TYEE ____________________________

NAMES OF CHILDREN PRESENTLY ATTENDING COMMUNITY MONTESSEOR PRESCHOOL __________________

NUMBER OF CHILDREN IN FAMILY __________________

NAME OF PARENT/GUARDIAN: MOTHER (family name) _______ (given name) _______

DAY PHONE _______ EVENING PHONE ______

FATHER (family name) _______ (given name) _______

DAY PHONE _______ EVENING PHONE ______

MONTESSEOR BACKGROUND (name of Montessori pre-school) _______________________

: PRIVATE SCHOOL LAST ATTENDED ________________________________

APPLICATION FOR GRAD. ____________________ FOR SEPTEMBER __________

School: ____________________

Assigned to Gr. _____ Div. _____ Teacher ____________________________ 1.1.1. list

PR CARD _______ MED CARD _______ $1000 ______

TYEE SCHOOL
2395 W. ARNIE STREET
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DATE OF BIRTH confirmed by school personnel (birth certificate) (date and initials)

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NAMES OF CHILDREN PRESENTLY ENROLLED AT TYEE ____________________________

NAMES OF CHILDREN PRESENTLY ATTENDING COMMUNITY MONTESSEOR PRESCHOOL __________________

NUMBER OF CHILDREN IN FAMILY __________________

NAME OF PARENT/GUARDIAN: MOTHER (family name) _______ (given name) _______

DAY PHONE _______ EVENING PHONE ______

FATHER (family name) _______ (given name) _______

DAY PHONE _______ EVENING PHONE ______

MONTESSEOR BACKGROUND (name of Montessori pre-school) _______________________

: PRIVATE SCHOOL LAST ATTENDED ________________________________

APPLICATION FOR GRAD. ____________________ FOR SEPTEMBER __________

School: ____________________

Assigned to Gr. _____ Div. _____ Teacher ____________________________ 1.1.1. list

PR CARD _______ MED CARD _______ $1000 ______

TYEE SCHOOL
2395 W. ARNIE STREET
VANCOUVER, B.C. V5W 3S5
WHY ARE YOU CONSIDERING MONTESSORI FOR YOUR CHILD?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

ADDITIONAL INFORMATION - ON CONFIRMATION NOTICE

1. Will you need BEFORE and/or AFTER School Care?

________________________________________________________________________

2. Are you interested in registration for younger siblings in the Pre-School?

________________________________________________________________________

3. Are you interested in KINDERCARE?

________________________________________________________________________

ADDITIONAL INFORMATION (school use only)

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

BR. C ARE MAI LED (if app'---) Date ____________________________

CONFIRMING LETTER TO PARENT Date ____________________________

CONFIRMING PHONE CALL TO PARENT Date ____________________________


MEMORANDUM

TO:        

FROM: JEROME SHELTON  
PRINCIPAL

SUBJECT: MONTESSORI PROGRAM

THIS IS TO INFORM YOU THAT YOUR APPLICATION FOR YOUR CHILD               TO ATTEND THE MONTESSORI PROGRAM FOR SCHOOL YEAR               HAS BEEN RECEIVED.

  ALL FORMS HAVE BEEN COMPLETED AND YOUR CHILD'S NAME WILL PLACED ON THE WAITING LIST

  YOUR APPLICATION IS NOT COMPLETE, AND YOUR CHILD'S NAME WILL NOT BE PLACED ON THE WAITING LIST UNTIL THE FOLLOWING FORMS ARE FILED IN THE SCHOOL OFFICE

  COPY OF YOUR CHILD'S BIRTH CERTIFICATE
  COPY OF YOUR CHILD'S IMMUNIZATION RECORD
  PROOF OF DISTRICT OF COLUMBIA RESIDENCE
  CLASS VISITATION BY PARENT HAS NOT BEEN COMPLETED
  PLEASE CALL THE SCHOOL OFFICE TO MAKE AN APPOINTMENT TO VISIT THE MONTESSORI CLASS

PLEASE NOTE THAT ALL PHASES OF THE APPLICATION PROCESS MUST BE COMPLETED BY MAY 31, 1989 FOR ENTRANCE IN THE FALL OF 1989
Dear Parents of Tyee Elementary (Montessori Alternative):

As a group you enjoy an enviable record of involvement and commitment to the Montessori program over the years. Your continued support and the support of new parents to the program is essential to our school. As we follow the development of your children as learners, we need to work together. Please complete this survey and return to the school as soon as possible.

A. This section of the survey will help us collate information as to your areas of interest so please complete the form (tonight, if possible) even if you have already contacted us personally. A definite commitment at this time is not necessary. Please feel free to contribute to more than one group/activity.

1. Preferred Activity:
   a) classroom helper
   b) making materials (home, school)
   c) driving on field trips
   d) special events (fundraisers, etc.)
   e) musical/drama assistance
   f) sport assistance
   g) art assistance
   h) most activities
   i) library helper
   j) lunchtime volunteer

2. Preferred Year Level:

3. Preferred Times:
   a) available at a regular time each day Hours
   b) available at a regular time each week Hours
   c) available at irregular times, difficult to pinpoint
   d) available on an "on call basis"

4. We are also interested in providing a variety of experiences for the children. Please indicate if you have an occupation or an interest which you might share with them (i.e. calligraphy, filmmaking, driving, cooking, a cement truck, etc.).

SIGNATURE

TELEPHONE
Appendix 7: Interview Form — John Burrough's Montessori School, Washington, D.C.

This pre-interview questionnaire offers excellent talking points for a school-parent admissions interview.
21. Is your child restricted in any physical activity?

22. Has your child ever been seriously ill? Hospitalized?

23. Does your child have any problems with: sight, hearing, speech? If yes, is he currently under treatment?

24. Is there any additional information that you think would help us to know your child better?

Thank you for giving us the above information. It has been said that the Montessori environment is one that usually meets the needs of all children; however, it may not meet the needs in a particular situation -- for example, a child with a disability or a home environment that is incompatible with the classroom environment. In such cases it may be advisable to enroll the child on probation. If your child has difficulty adjusting, we will make every effort to work with you in helping him. However, because of the large number of children in each class and the young ages at which we accept them, we cannot guarantee that every child will be able to make this adjustment. If a child becomes a disturbance to the other children or otherwise unduly disrupts the orderly atmosphere of the classroom, we may have to ask that he be withdrawn temporarily or permanently, depending on the nature of the problem.
Research has shown repeatedly that parent involvement correlates with student achievement. To win parents over, the school must communicate clear understandings about Montessori pedagogy and philosophy through media and meetings so that the home can play the vital role needed to complement Montessori education. The Montessori magnet school builds community through decision making and goal setting established by parents working with administrators and teachers (Advisory Councils).
The family is the center of human development. Montessori has, implicit within its philosophy, a school-based family support program which promotes child development ideas in the home.

THE PREVENTIVE MODEL

Montessori is a developmental model. It takes into consideration the extreme sensitivity of the child to the actions and expectations of the adult. The principle is that the child wishes to be in the company of the adult, to imitate the adult's voice and actions, to belong to the community.

Many times, there are attempts to supersede the sensitive balance of Montessori discipline by introducing different discipline programs including Parent Effectiveness Training, Fiber-Mazlish-Ginott, Dreikurs, Assertive Discipline, Positive Parenting, etc. However, as part of its comprehensive plan, Montessori has a distinctive discipline mode which it uses to help the child become more self-motivated in the classroom.

Most parents have been raised in the habit mode. This might be described as controlling the impulses of the child and directing the child's behavior through rewards and punishments.

In contrast to the habit mode, the adult in Montessori education works in a helping mode. The adult assumes that the child has the innate tendency to find a level of activity at each stage of development. Parents, then, receive training by the Montessori school in methods to aid the child in expanding activity while the parents observe from the sidelines.

Traditional (Habit Mode)

1. Correct the child's behavior, or misbehavior will persist.
2. Social training is necessary in order to complete proper development of the child.
3. Children need to be dominated in order to obey. Punishment and reward are effective motivators.

Montessori (Helping Mode)

1. Consider the emotions, fears, reactions, and anticipations of the child.
2. Children have a natural ability to self-perfect, to learn.
3. Children obey out of love.

It is important to convey Montessori discipline and its parts to parents: freedom of activity, choice, adult intervention and its limits, observation, responsibility, and perception. One frequently utilized technique in a group meeting is the discussion of the child's point of view. Regular meetings can bring the collective wisdom of the group to bear on everyday problems, providing they are described concretely to the group. Bedtime, dinner, getting ready in the morning, taking responsibility for chores, putting toys away; all are practical issues which often can be solved by using the helping mode — looking at the child's need for independent activity and simultaneous adult involvement. The independence of the child does not imply abandonment by the adult, but rather interdependent community functioning.
Montessori Themes for Parents

The Montessori educational system works best with the involvement and understanding of parents. It is for this reason that parent education is such an important part of its pedagogical design. The style of discipline, the non-competitive approach, the order of the prepared environment, and the exploratory independent work need the enlightened involvement of the home. The following themes provide the framework for a well-rounded parent education program and exert the highest expectations on the parent's role:

The Child's Prepared Environment

The home can be adapted so that the child can participate in the activities of the household. "A child's corner" in every room allows the child to coexist with the adult while maintaining his or her own activities.

Discipline

The child works in order to belong to a community and needs to be supported in activities which enhance development. We must model attitudes and activities for children and show them how to cultivate a friendly feeling towards error. Rewards and punishment offend the spirit and are external to true discipline. Independence should be a natural outcome of discipline.

Language

The child absorbs the language of the environment — the names and classification of living and non-living objects in the world. Language can be presented to the child in ways which enhance confidence, expression, and interpretation. There are ways to encourage the thinking and responsiveness of the child that the parents can use in the home to complement the work of the school.

Literature

Literature is part of our culture that can enhance development in different ways depending on the particular stage of development. Selected books should be in the environment and read regularly.

The Child in Nature

The relationship of the child to nature is at the same time sensorial, linguistic, scientific, and can result in a fundamental sense of identity — sexual, human, and ecological.

Movement

Movement is indispensable to development, both mental and physical. It is manifest in all aspects of learning; it is an antidote for passivity, and it is the key to early self-confidence and productivity.

Television

Television watching in any amount means a reduction of movement, language, reading, and real experiences. The very nature of the television experience, whatever the content of a program, can have detrimental effects, especially for children under six.
Food Habits and Nutrition

A variety of good foods, arranged so that the child can choose what to eat, will build good eating habits and better human relations naturally. A child needs to be included in as many facets of meal selection, preparation, and clean-up as possible.

Montessori Pedagogy in the Home

In order for parents to participate in the learning experiences of their children, it is essential that they be informed regarding the special classroom materials and philosophy of Montessori education. Suggested areas of programming are: the three period lesson, asking questions, the academic areas, handwriting, the initial sounds, how to read with a child, memorization of math facts, the meaning of self-motivation and interest, the relationship of the whole to detail, the skills of research and the differences between toys and Montessori materials — the latter incorporating qualities of isolation of the difficulty, sensorial discrimination, and aesthetic qualities.

Prepared by David Kahn, © 1989
SUGGESTIONS FOR ACTIVITIES FOR THE PRESCHOOL CHILD

INTRODUCTION

Make frequent trips to the library for books and read AT LEAST one book to your child every day. Discuss the book when you are finished and review the vocabulary in the book. Repeat vocabulary during the week to be sure concepts are clear. Some books that are loved and special should be read many many times during the year. Although you may tire of the same book, your child will not. Please read only factual and true-to-life stories. Never fairy tales or fantasy books until the child is over a year old.

Be selective about TV viewing. A preschool child should not watch more than a total of one hour of TV a day. It is preferable that he watch NO TV unless there is a very special program. Do not let the TV become your babysitter.

Suggestions for activities (chores) around the house:

- Setting and clearing the table
- Filling salt shakers and sugar bowls
- Cleaning sinks
- Dusting and polishing furniture
- Sorting silverware from dish washer
- Emptying Waste Basket
- Making beds
- Folding laundry
- Folding small pieces of laundry
- Hanging certain dirty clothes
- Preparing food
- Pouring drinks
- Making simple lunches (i.e., toast, spread)
- Putting tires while parent washes car
- Paper-making: make a book of special pictures from old magazines
- Planting and weeding a garden
- Tilling and planting flowers
- Weeding the lawn
- Help in your projects, especially, paper, and
- Use the chart for the long list of measurement, weight, time, and
- Use to include your child on your shopping trips and
- Talk about the items you see. Familiarize him/her with
- The names of fruits and vegetables, especially those
- Which you may not necessarily buy, but he may like
- To see, eat, smell, touch, etc.
INTRODUCTION

Make frequent trips to the library for books and read AT LEAST one book to your child every day. Discuss the book when you are finished and review the vocabulary in the book. Repeat vocabulary during the week to be sure concepts are clear. Some books that are loved and special should be read many many times during the school year. Although you may tire of the same book, your child will never tire. Please read only factual and true-to-life stories. No fairy tales or fantasy books until the child is at least five or six years old.

Be selective about TV viewing. A preschool child should not watch more than a total of one hour of TV a day. It is preferable that he watch NO TV unless there is a very special program. Do not let the TV become your babysitter.

Suggestions for activities (chores) around the house:

- Setting and clearing the table
- Filling salt shakers and sugar bowls
- Cleaning sinks
- Dusting and polishing furniture
- Sorting silverware from dishwasher
- Emptying waste basket
- Making beds
- Filling laundry
gather small pieces of laundry
- Giving certain hints, etc., etc., etc., etc.
- Sizing clothing
- Pouring drinks
- Making simple lunches (i.e., toast, spread, etc.)
- Cutting tires while parent washes car
- "Making" paper—making a book of special pictures from old magazines
- Planting and weeding a garden
- Sickle work or other

In the hilly areas, especially, I knit hats and
in the hilly areas, etc., etc., etc., etc.

We do not include your child on your shopping trip and
Talk about the things you see. Familiarize him/her with
the names of fruits and vegetables, especially those
which you may not necessarily buy, but he is "live" on the road, well, flowers, etc.
Appendix 2: Discipline: Objectives and Goals of a Montessori School – Milwaukee Public Schools, Milwaukee, Wisconsin

A very nice encapsulation of the Montessori approach to psychology, discipline, and ground rules for parents and teachers.
FIRST PLANE

1. Unconscious growth and absorption
   Use of sensitive periods and ability to absorb
   creating internal structure for individuals' and
   emotional development.
   Gradual bringing of the unconscious to viewing as
   a conscious level.
   Material leads fluid from concrete to abstract.
   By age 8-10, the form of structure and coherence is
   established. The child has an internal model of reality
   in which to base creativity.

SECOND PLANE

6-7
   Built academic and artistic by necessity for
   life in culture.
   Upper himself to awareness of the universe itself;
   similar to adult in the 10-12, etc.

THIRD PLANE

10-12
   Explore more dimensions: interest in depth.

FOURTH PLANE

14-16
   Maturity.
Listed below are Dr. Montessori's rules for the treatment of the child by the directress in school. You will find them useful in your own relationship with the children.

1. **Never touch the child unless invited by him or her (in some form or the other).**
2. **Never speak ill of him in his presence or in his absence.**
3. **Concentrate on developing and strengthening what is good in him.** Teach proper use of foods and show the place where the are kept.
4. **The adult is to be active when helping the child to establish relation with his environment and remain outwardly passive but inwardly active when this relation has been established.**
5. **The adult must respect the child who makes a mistake without correcting it actively.** Put in the most skillful of the environment and any action which endangers the child or the life of the community.
6. **The adult must also be ready to say, 'I am the child who stands in front of him and always, from and to the child who appears as the teacher.**
7. **The adult must respect the child who has rest or needs others working and do not disturb the child neither call in a little helper to their form of activity.**
8. **The adult just help those who are active in activity without the helper.**

**M ANY ADULTS SHOW LACK OF RESPECT**

**VOICE**
- Condescending
- Angry
- Loud

**OVER-DIREC TION**
- Not allowing children a chance to make their own decisions. Directing what they say and how they say it.

**LOOK**
- Angry
- Disgusted

**UNNECESSARY HELP**
- Staying too long with a child for a lesson.
- Doing something for a child rather than helping the child learn how.
- Doing things in the classroom rather than letting the children do them, in order to expedite things.

**PHYSICAL THINGS**
- Bodily moving a child.
- Dragging him or her around, hold; or to him or her.

**CORRECTING ERRORS**
- Correcting their speech.
- Changing letters on their paper.

**FIXING UP WORK**
- Tidying up work that's laid out.
- Putting papers in order for them. In a book.
- Throwing away work "not good enough" to take time.
Appendix 3: Discipline: Conduct Sheet — North Avondale School, Cincinnati, Ohio

An effective communication device for situations which require positive reinforcement at home.

*** NORTH AVONDALE MONTESSORI SCHOOL ***

CONDUCT SHEET

FOR

STUDENT: ___________________________________________ ROOM NUMBER: __________

This sheet is to be looked at by you each day and signed. This is a report on your child's behavior, and if you have any comments, please write them below and return daily.

| WEEK OF || CLASS | TEACHER COMMENTS | PARENT COMMENTS |
|----------|--------|------------------|-----------------|
| MONDAY   |        |                  | Signed:         |
| TUESDAY  |        |                  | Signed:         |
| WEDNESDAY|        |                  | Signed:         |
| THURSDAY |        |                  | Signed:         |
| FRIDAY   |        |                  | Signed:         |

A simple contrast of Montessori discipline under normal conditions and extreme misbehavior and its consequences are presented in this memo to the parents.

[Content of the document is not clearly visible, but it appears to be a page from a book or a report, discussing Montessori discipline and its consequences.]
A Primary Montessori class is composed of children between the ages of 2 1/2 and 3. In the midst of all the movement and conversation, each individual is creating the person he is becoming. Most lessons are given individually. Once a child has received a lesson, he may take it from the shelf and work with it as long as he/she likes. The activity cycle is completed by returning the activity to its special place, ready for the next person.

Entering the class at 2 1/2 or 3, the child is introduced to the lessons of Practical Life. These activities aid the child in developing muscular coordination, concentration, and independence.

Care of the person activities include various dressing frames which isolate one difficulty at a time: snapping, buttoning, tying, and so on.
Polishing activities are appealing to young children. They enjoy applying polish to an object and uncovering a shiny surface.

The washing activity consists of a lengthy sequence of movements. Intense concentration results as the water and the bubbles absorb the child's attention.
Dirty polishing cloths are scrubbed and hung to dry.

Handwashing is another water activity which is enjoyed by the young child.
The bells train the ear for work with the music scale. With the first exercise, the child pairs identical sounds.

With the touch boards, the child feels rough and smooth surfaces.

Building the broad stair, the child experiences the different dimensions of each prism.
Primary colors are introduced with the first box of color tablets in a simple matching activity. Later, with box 3 of the color tablets, the child lines the tablets up in gradation.

Preschool children construct the binomial and trinomial cubes as puzzles.
Since the preschool child's approach to life is through his senses, the Montessori Sensorial Material provides experiences which sharpen the child's observation powers.

Tracing the shapes of the geometric cabinet prepares the child's hand for writing while connecting the hand and the mind in muscular memory. The vocabulary prepares the child for the study of geometry.

Cylinder blocks help the child to discriminate size. The control of error is in the material. If a mistake is made, the child will recognize it and correct it himself.

With the geometric solids, the child is given the language for each solid as well as the opportunity to feel each figure.
The study of geography opens many new interests for the children. Preschool children are introduced to the names of continents and countries through the puzzle maps. Once the child is able to read, he labels the maps.

Montessori education consists of a triangle: the interaction of the child, the teacher, and the materials. The children create themselves through their environment, coordinate their bodies, stimulate their minds, and develop a lifelong happy attitude towards the world and the joy of learning.
An abundance of language materials are provided which enlarge the child's vocabulary and knowledge of the world.
The phonograms combinations such as sh, ch, and cc are explored with the movable alphabet; isolating the phonogram's sound and helping the child to be aware of the combination.
Puzzle words, words that do not follow any rules, must be memorised. Children make a game out of quizzing each other.

The preschool child is introduced to the function of word activities with the farm. The adjective activity includes, for example, the phrase, "the little pig". Grammar symbols are used to represent various parts of speech.
The preschool child's math experience begins with the number rods. As he places his hand on each colored segment, he counts the quantity.

The child learns the number symbols by tracing the sandpaper numerals. The tactile sense connects the hand and the mind and prepares the child for writing.

Next, the child combines the quantity and the symbol.

The spindle boxes introduce the concept of zero. The child places the quantity of spindles represented by the symbol in each compartment. The zero compartment is left empty.
With the cards and counters, the child places the symbols in sequence and places the correct number of counters below each numeral.

The golden bead materials introduce the decimal system. The quantity is given first: unit, ten, hundred, thousand. Then the symbol. Then the quantities and symbols together. The material is used to introduce addition, subtraction, multiplication, and division.

After extensive work with the golden bead material, the child works with the stamp game. The children perform all math operations with this material. It is a little more abstract than the golden bead material; the child must understand the written symbols on the stamps.
The child learns to count linearly with beads. With the base boards, the child experiences the numbers and quantities of 11-99.

Working with the same game, the child discovers various combinations which make ten.

One of the uses of the square chains is stop counting. Counting the 5 chains, the child will label every 5th bead... 5... 10... 15. She sees the numerical pattern.
In a multiplication exercise, the child lays out the bead bars of 8 to represent the 8 times table. For example, $8 \times 2$ is represented with a ten bar and a six bar.

Preschool children keep a simple record of their weather observations.

Parents need reminders as to just how harmful television is for children. Available for $1.75 per copy from NAMTA, 2859 Scarborough Rd., Cleveland Hts., OH 44118.

TELEVISION

It’s Not WHAT You Watch (excerpted from the Plug-In-Drug)

by Marilu Winn

Volume 1, No. 1

Concern about the effects of television on children has centered around three threads: (1) television provides an escape for the child from the demands of daily life; (2) television programs are filled with violence and aggression; and (3) television serves as a substitute for social interaction. This essay will focus on the third of these threads, which is often overlooked.

For the past 20 years, psychologists and educators have studied the effects of television on children. However, there is little agreement on the nature and extent of these effects. Some researchers argue that television has a positive impact on children, while others believe that it has a negative impact.

One of the main arguments against television is that it provides a substitute for social interaction. According to this perspective, children who watch a lot of television are less likely to engage in social activities, which can lead to problems later in life. This is because television provides a form of entertainment that is easy to access and does not require much effort or energy.

Another argument against television is that it is a passive medium that offers little stimulation for the child’s mind. According to this perspective, television programs are designed to be entertaining and engaging, but they do not require much mental effort or creativity.

In contrast, books and other written materials require more active thinking and imagination. By reading books, children can develop their own ideas and perspectives, which can help them to be more creative and independent thinkers.

Finally, some researchers argue that television is a form of escapism that allows children to avoid problems and responsibilities. This is because television programs provide a world that is different from their own, and children can use this world as a way to escape from their problems.

In conclusion, television is a powerful medium that can have a significant impact on children. However, it is important to remember that television is not a substitute for social interaction, and it is important to encourage children to engage in activities that promote their social and cognitive development.

Montessori Talks To Parents Newsletter

Television as a supplement to the imagination and brings to the child a wider view of his planet. But television is a spectator’s sport and cannot substitute for doing. — Exploring the role of television in childhood development.

In the building of intelligence, the mind is formed by the child’s actions. Television, on the other hand, is a spectator’s sport and cannot substitute for doing. However, television can be a supplement to the imagination and bring to the child a wider view of his planet. By watching television, children can see and hear about the world in a way that they cannot through their own experiences.

It is not the job of television to substitute for doing, but rather to complement and enhance the child’s imagination. Children can use television as a way to explore the world and to learn about new ideas and perspectives. However, it is important to remember that television is not a substitute for action, and it is important to encourage children to engage in activities that promote their social and cognitive development.
The Home Eating Environment

by Sue Newman

Food preparation and eating should be fun and free from routine...the child should be involved in the planning of the meal and should take part in the preparation.

Margaret C. Dessel Food Educator, Columbus
University National Board for Health Education

Even in the busiest households, the kitchen is often the gathering spot for family life. Children and parents come together for conversation and exchange. The food being prepared and eaten is the focal point around which the preparation and eating of meals. When should be quiet and calm, a conversation of love and caring, is often replaced by noise and anxiety. The busy parent or child is often on the go and may not even think about the food being eaten. The table and meal are a place to share stories and experiences. The table and meal can be a place for children to learn about food and nutrition. The table and meal can be a place for children to learn about social skills and manners. The table and meal can be a place for children to learn about independence. It gives them a sense of accomplishment and independence in their daily lives.

A child needs to be included in as many facets as possible surrounding meals. It gives him a tremendous sense of accomplishment and independence in his own life.

1. Have a child sit at your table with suitable chairs. The child may be able to use a high chair at some point. Try to involve the child in the process of setting the table and eating. Allow the child to set the table and eat at the table. This will help the child feel a sense of independence.

2. Have a table where the child can sit and eat. Set the table in the kitchen where the child can see and hear the family. This will help the child feel a sense of independence.

3. Have a special place for the child's own place setting. The chair for the child should be in a position that allows the child to see the family and the food being eaten. The child should be able to see and hear the family and the food being eaten. This will help the child feel a sense of independence.

4. Offer the child a special place for the child's own place setting. The chair for the child should be in a position that allows the child to see the family and the food being eaten. The child should be able to see and hear the family and the food being eaten. This will help the child feel a sense of independence.

5. Allow the child to help clear away the dishes after the meal. Life can be put in the dishwasher after you put them, etc.

6. Involve the child in planning the meals. This will help the child feel a sense of independence.

There are only some of the many ways to help a child's eating habits. Several things can be done to make the child feel comfortable and secure while eating. The child can be involved in the planning of the meal and eating of meals. This will help the child feel a sense of independence.

Did You Ever See a Fat Seidell? Ruth Adams

The Home Eating Environment

"Meal preparation and eating should be fun and free from routine...the child should be involved in the planning of the meal and should take part in the preparation."

Margaret C. Dessel Food Educator, Columbus
University National Board for Health Education

Even in the busiest households, the kitchen is often the gathering spot for family life. Children and parents come together for conversation and exchange. The food being prepared and eaten is the focal point around which the preparation and eating of meals. When should be quiet and calm, a conversation of love and caring, is often replaced by noise and anxiety. The busy parent or child is often on the go and may not even think about the food being eaten. The table and meal are a place to share stories and experiences. The table and meal can be a place for children to learn about food and nutrition. The table and meal can be a place for children to learn about social skills and manners. The table and meal can be a place for children to learn about independence. It gives them a sense of accomplishment and independence in their daily lives.

A child needs to be included in as many facets as possible surrounding meals. It gives him a tremendous sense of accomplishment and independence in his own life.

1. Have a child sit at your table with suitable chairs. The child may be able to use a high chair at some point. Try to involve the child in the process of setting the table and eating. Allow the child to set the table and eat at the table. This will help the child feel a sense of independence.

2. Have a table where the child can sit and eat. Set the table in the kitchen where the child can see and hear the family. This will help the child feel a sense of independence.

3. Have a special place for the child's own place setting. The chair for the child should be in a position that allows the child to see the family and the food being eaten. The child should be able to see and hear the family and the food being eaten. This will help the child feel a sense of independence.

4. Offer the child a special place for the child's own place setting. The chair for the child should be in a position that allows the child to see the family and the food being eaten. The child should be able to see and hear the family and the food being eaten. This will help the child feel a sense of independence.

5. Allow the child to help clear away the dishes after the meal. Life can be put in the dishwasher after you put them, etc.

6. Involve the child in planning the meals. This will help the child feel a sense of independence.

There are only some of the many ways to help a child's eating habits. Several things can be done to make the child feel comfortable and secure while eating. The child can be involved in the planning of the meal and eating of meals. This will help the child feel a sense of independence.
Survey Finds Strong City-wide Montessori Support

Minneapolis parents have an extremely positive opinion of Montessori programs according to a survey presented to the Minneapolis Board of Education Wednesday April 6.

The survey done by Minnesota Opinion Research (MOR) was designed to measure response to a recent task force report that recommended parents be allowed to choose with certainty the Montessori openings would need to quadruple to meet demand.

MOR surveyed 660 Minneapolis parents, 340 with children in Minneapolis elementary schools, 320 with preschool but no school-age children. Only seven parents with children in Montessori programs were part of the survey, and there is not indication which of the two schools—Northrop or Hill—they attended.

Survey Continued on Page 9

POSITIVE INTERVENTION

Lora Plain

My position is actually two jobs: Intervention, which is working with children who are at risk to fail the Benchmark Test; and Achievement, which is working with 2nd graders who were retained—I give them a separate reading and math program.

I take small groups of children out of the classroom and work on basic skills. I like having more individual relationships with each child, and can individualize the program for them.

Jill Carlson

I work with students who are at risk for not passing the Benchmark Test, mostly 2nd and 5th graders who scored in the lowest 25th percentile last year in Reading and Math. I do work with 4th and 5th graders, because we are not a Title 1 school, and I have some extra time to cover these grades. I am not trained in the Montessori Method. I concentrate on Benchmark skills. I take the children out of the classroom for half an hour at a time.

Lora

Continued on Page 10

Jill

Continued on Page 10
THE BENNETT PARK MONTESSORI ASSOCIATION: A COLLABORATIVE MODEL OF HOME-SCHOOL PARTNERSHIP

by Rae Rosen

- Buffalo’s Montessori magnet developed a home-school partnership by including parents in setting objectives, developing priorities, and initiating school activities.
- Parents participate in the Monthly Meeting and formed seven subcommittees to address specific needs.
- Parents maintain a daily presence at the school and volunteer in many capacities such as computer literacy, newsletters, the humanities curriculum, social services, etc.

INTRODUCTION

The Bennett Park Montessori Association (BPMA) was established in 1977 when Buffalo’s magnet school program was first initiated. The school administrator suggested the development of a true home-school partnership as an optimal goal for the group. That is, parents were invited to join the staff and the administrator in setting objectives, developing priorities, and initiating activities that would enhance the learning climate and maximize the opportunities for the growth and development of every child. Since parents were now able to choose a particular school program for their child, enthusiasm was high, although, the uniqueness of the Montessori option still raised some issues of concern.

It was decided early in the BPMA’s history not to affiliate the group with the PTA because parents wanted everyone to “belong,” whether or not they paid the standard dues required for PTA affiliation. Membership became automatic upon enrollment of the child at school. Since both the administrator and the parents visualized “participatory democracy” as an appropriate model for their meetings, a formal organizational structure was vetoed, in favor of a “steering committee” in which everyone was welcome to participate. The steering committee was viewed as the decision-making body with other committees to be formed as needed. The steering committee (currently referred to as “The Monthly Meeting”) is managed by a rotating chairperson. A member volunteers to take minutes at the meeting one month and then serves as the chair the following month. The Monthly Meetings are held at the school in the evening. The agenda usually consists of reports by the ongoing committees and a short presentation by a faculty member on some aspect of the curriculum.

Rae Rosen is Principal Emeritus of Bennett Park Montessori Center in Buffalo, New York and is currently a freelance consultant for Montessori public schools.
Several committees evolved as needs were identified and discussed. Some have accomplished their goals and disbanded, while others will continue to meet as long as there is still a need for their focused objective. Among these subcommittees are:

Playground Committee

Goal: to establish a play space for primary children. Parents originally tried to design and build the playground themselves. This proved to be an overwhelming task, so assistance was sought from city officials. Accomplishment: enough money was raised to pay for the architect's drawings, and the Board of Education and the Common Council provided funding for building the structures. A parent was awarded the contract for construction of the playground.

High School Study Group

Goal: to establish a high school to follow Montessori. Parents from BPMA and three other magnet schools met to pursue the feasibility of an “open” high school, one which would have an innovative philosophy compatible with that of all the schools. Accomplishment: a “Humanities” high school (dubbed Leonardo Da Vinci School) was established in 1987, primarily as a result of the Montessori parents’ persistence and effort. Its philosophy is congruent with Montessori's, and it offers some opportunities for independent study. Several Montessori graduates have selected it as their high school option, and their parents seem satisfied with the program thus far.

Computer Advisory Group

Goal: to develop computer literacy in each child. Parents interested in this committee convinced the staff that there should be at least one microcomputer in every classroom to teach word processing and logical thinking skills. They encouraged and supported the Chapter 1 Math Resource Teacher in submitting a proposal to the Apple Computer Company. Accomplishment: Apple supplied the school with ten microcomputers and the school district purchased the site license for the “Logowriter” software and provided staff development to implement a “Logowriter” project in four classrooms of 9 to 12 year olds. The BPMA allocated funds to purchase three monitors for computers that had been accessed at another school. Chapter 1 funds were used to provide another five computers and these were matched with school district funds to acquire five more computers. These computers were distributed to every age level except the preschool.

Humanities Committee

Goal: to integrate arts-in-education projects for children at every age level. Interested parents wrote grants, lobbied for additional funding from local arts organizations, and convinced district curriculum personnel to find funds for arts activities. They purchased the supplies and got the district’s tradesmen to install the artwork. They tapped their own artistic talents to teach each graduating class how to design and silkscreen T-shirts to be reproduced by a parent with a commercial printshop. Presently they are writing a grant which will involve 60 to 70 students in designing and casting a bronze sculpture that may ultimately grace a public space near the school. Accomplishment: the arts occupy a central role in the overall development of the students. Many teachers participate in an arts-in-education project which brings teaching and performing artists to the classroom and gives children the opportunity to enjoy new experiences in the community.

Communications Committee

Goal: to improve home-school communication. The parents on this committee revised the school handbook and readied it for publication. One parent, an administrative assistant at a district vocational school, arranged for the printing majors to do the photo-offset. The committee members also publish a monthly newsletter soliciting children’s work, classroom news, and school information. The high school students photocopy the newsletter and Montessori students collate and distribute it. A monthly calendar reminds
parents of school and community events. **Accomplishment:** parents look forward to the newsletter and say they feel better informed about the school activities.

**Family Wellness Project**

**Goal:** to provide support for families in crisis. This group grew out of the administrator's concern for a number of children in the school who had experienced a severe trauma before the age of five and who were now at risk for learning developmentally appropriate tasks. She invited parents who were mental health professionals to brainstorm ways to support parents in gaining access to community services, since options within the school were either too limited or totally non-existent. Support for teachers was also needed because these children experienced many difficulties in the classroom. **Accomplishment:** parents developed strategies for linking parents to appropriate agencies for help. They developed a list of useful resources and contact people and organized workshops for parents and staff members to describe sources for help and how to make use of them.

**Montessori Study Group**

**Goal:** to increase understanding of Montessori philosophy and how it is implemented at Bennett Park. The newest committee arose in response to a crisis. Parents recognized the lack of understanding of the school's philosophy when a handful of students and parents tried to change the long-standing prohibition against locks on students' lockers. They successfully fought the attempt, arguing that it violated the school's values of respect and trust. The incident led to the realization that the study group needed to find ways to help parents strengthen their commitment to the school's philosophy. **Accomplishment:** parents who attend the study group seem more secure in their choice of the Montessori option.

These diverse committees offer a variety of involvement possibilities and allow many parents to actively participate in the life of the school. Other types of participation include volunteering in the library and classroom. Parents shelve books, help children do research, read stories to the younger students or do clerical tasks. They also accompany classes on field trips, share their expertise with children in special activities or classroom lessons, create materials, and locate interesting resources. Teachers are encouraged to visit their child's classroom as often as possible to experience the Montessori environment. The unlocked school doors symbolize the openness with which the school welcomes parents as full partners in the educational process. Their involvement is limited only by time and energy.

Despite the increased number of working mothers, single parents, and families in crisis, the presence of parents in school is a daily occurrence. Parents are employed as classroom assistants or tutors, whenever possible. Several parents who began as volunteers have become paid employees. Sometimes this employment enabled them to get off the welfare roll and become more independent, self-actualized adults. Of these, about a third of the professional staff at Bennett Park are parents of children in the school. Having a child in the school increases their commitment and involvement and strengthens home-school communication.

Some have gone on to take the Montessori training, to return to college for a teaching credential, and then to become "real" Montessori teachers. About a third of the professional staff at Bennett Park are parents of children in the school. Having a child in the school increases their commitment and involvement and strengthens home-school communication.

Not every parent is actively involved in school activities, but large numbers can always be counted on to support the school in times of crisis. A case in point is the year when budget cuts resulted in the loss of teacher aids, and staff members agonized over the compromises being made. Parents joined together to demand the reinstatement of the aides and pointed out that the presence of an aide in every classroom was required by the district's desegregation order, which could not be ignored. Another crisis occurred when the...
school was nominally attached to a neighboring school as an administrative device. Parents again successfully coordinated an effort to insure the school's ability to function independently without compromising the Montessori philosophy. Most recently, the "locks issue" united parents in their resolve to preserve the integrity of the school and to resist the pressures of a small group that held values inconsistent with those of the school.

An ongoing problem for the parent association has been the relative lack of participation by minority parents. Only a few minority parents attend the Monthly Meetings. Fewer still are actively involved in a committee. While minority parents do visit school, attend parent conferences, participate in field trips, and come to school-wide celebrations and performances, they seldom choose to be involved in decision-making opportunities. Attempts to hold meetings in homes or during school hours have been only minimally successful. Even when parents personally encourage others to attend a workshop or join a committee, the response is limited. Minority parents express support for the school in many ways, but attending meetings does not seem to interest them. Nonetheless, the association remains committed to seeking new ways to involve minority parents and continually explores avenues of communication.

Equally difficult to resolve has been the lack of active participation of the teachers. The administrator had envisioned a joint partnership between home and school. While teachers do work hard to develop strong networks with the parents of children in their own classroom, they show little enthusiasm for the joint decision-making advocated by the school's administration. Teachers will choose to work on a particular task alongside parents, such as organizing the school playground or planning for a new high school, but they, like many minority parents, may neither have the time nor the energy to return to school for a meeting.

Parent involvement is alive and well at the Bennett Park Montessori Center; and it is an immensely rewarding and enriching experience for those who exhibit so much devotion to the well-being of the school.
ONE SCHOOL'S STORY
ABOUT PARENT INVOLVEMENT

by Sandra J. Sommer

• Parents are the child's first and most important teachers. They are key to implementation of a Montessori program.

• The Golden Triangle of the child, teacher, and parent working in partnership will help the child to flourish.

• At Sands, school involvement by parents is considered a responsibility. Upon enrollment, membership in the Parent Organization is automatic.

• At Sands, parents volunteer in the classroom, seek funding, set program goals, oversee the budget and transportation system, and attend Board of Education meetings to provide a school-board liaison.

• Parents are wonderful salespersons with many community and business connections that can help the school develop effective partnerships.

INTRODUCTION

Sands Montessori is a Cincinnati Public Alternative School Program. The 740 students that attend Sands Montessori range in age from three to twelve. The students come to school each day from all 36 communities of Cincinnati. The school is racially balanced, gender balanced and represents all socio-economic backgrounds. Sands Montessori enjoys Merit School status in high achievement scores, high student and teacher attendance, good discipline, interracial and intercultural understanding, and positive attitudes toward school as evaluated by students, teachers and parents.

WHY PARENT INVOLVEMENT IS KEY TO A MONTESSORI EDUCATION: THE GOLDEN TRIANGLE

Parent involvement is the key to Montessori implementation; it is analogous to Montessori implementation in the classroom. Parents provide the first environment and are collaborators in the process of children "building" or "constructing" themselves. The emotional, social, intellectual, and physical growth of the child is fostered in the home. Parents are an "aid to life" for the child. It is the role of the school to support the higher principles of parenting — the transmission of care, knowledge, love, language, respect for life, democracy, etc., from one generation to the next.

Parents look to Montessori schools as an extension of their child rearing. They show an attraction to the Montessori principles and seek out information about Montessori with every opportunity. They look to the "natural" learning of the school process; they contrast their own traditional education as not being natural. They see the difference between memorizing facts, figures, and dates to be recited, with the Montessori approach of learning how to learn. They sense the personal interest of the teacher in each individual child. The parent feels a kinship to a school that is personal and natural. The "golden triangle" is formed: the

Sandra J. Sommer is the Principal of Sands Montessori School in Cincinnati, Ohio, and a member of the AMS Board of Directors. Sandra Sommer was named outstanding principal by the Cincinnatus Association in 1989.
parent, teacher and child are united in a partnership of school and home which lends a fundamental purpose to the operations of the school.

PARENT INVOLVEMENT AT SANDS MONTESSORI

Parents usually help schools in two ways: first, relating directly to the school, and second, assisting at home to aid their children. In the Cincinnati Public Schools we believe that parents are children's first and most important teachers and that the school becomes a partner with the parents in the education of their children.

The Sands Montessori Parent Organization (SMPO)

All parents are members of this umbrella organization. Once a child is enrolled at Sands Montessori, the parents automatically become members. Parents do not pay dues to the organization, rather membership in the organization is a parental responsibility.

It is the role of the school to support the higher principles of parenting — the transmission of care, knowledge, love, language, respect for life, democracy, etc., from one generation to the next.

The SMPO implements three main fundraisers each year: a candy sale, a Walk-A-Thon, and a raffle at the school's annual carnival. The money raised is returned directly to the children's classrooms for materials and equipment.

The SMPO recruits and trains parent volunteers for the following programs that enrich the academic and social program:

a. Great Books
b. Everybody Counts (a program to increase sensitivity toward people with handicaps)
c. Young Authors (children's writings, published twice a year)
d. Picture Person (teaches children about famous art and artists)
e. The Enrichment Program (one-time programs that enrich and enhance the cultural subjects)
f. Extended day activities program
g. Soccer
h. Material-making committee
i. Room parent — organized special events for children
j. Playground and Beautification Committee (B.E.S.T. — Beautiful Environments for Sands Together — plan and implement outside landscaping for the school, a creative play environment, and provide funds for the exterior sign mounted on the building)
k. Building committee (parents make minor repairs and improvements to the physical plant, classrooms, playground, etc.)
l. Sands Montessori Reporter Committee (monthly newsletter)
m. Volunteer in the classroom (tutor, resource provider, cook, teacher of a special talent or interest, or special trip supervisor)

The Sands Montessori Foundation, Inc.

This committee provides funding for long term projects for the school. The foundation has provided encyclopedias for each classroom, computers for the lab, replacement of Montessori materials, and has helped fund a trip for parents and teachers to visit private and public Montessori schools to research seventh and eighth grade Montessori programs. In addition, the foundation provides legal advice to the SMPO, the
SANDS MONTESSORI SCHOOL

PARENT INVOLVEMENT

Principal, and the preschool organization. It is the vehicle for most grant proposals for funding from established foundations within the Greater Cincinnati region. Recently, the foundation has provided the seed money and volunteers to start an alumni organization and newsletter.

The Sands Montessori-West End Preschool Foundation, Inc.

Parent involvement unique to the preschool includes: scholarship committee (the committee selects the candidates for scholarships), laundry volunteer, snack and phase-in coordinator, hospitality committee, publicity and recruitment committee, and liaison to the SMPO Sands Foundation.

The preschool parent group has been so successful that at the end of the first two years of implementation the preschool will expand from one classroom (40 children — two half-day sessions) to a second classroom (80 children — four half-day sessions). This expansion includes the building of two new classrooms, bathrooms, indoor play area, and storage area.

The Sands Montessori Governance Board/Local School Advisory Committee (L.S.A.C.)

The L.S.A.C. is a group of five parents, five teachers, five community members and two administrators who give input to the principal on future goals and objectives. It conducts a school/parent/community needs assessment each year, identifies successes and problems, and sets goals for the following school year.

The Local School Budget Committee (L.S.B.C.)

This sub-committee under the Governance Board/L.S.A.C. looks at the school budget and determines how financial resources can best be used.

The Local School Transportation Advisory Committee (L.S.T.A.C.)

Another sub-committee of the Governance Board/L.S.A.C., works with the transportation office to define and refine the transportation needs and concerns of the school. Each parent on the committee is responsible for approximately three bus routes (out of a total of 15). The parent volunteer learns the bus routes, their stops, and which children are involved. In addition, the L.S.T.A.C. conducts a yearly parent meeting, trouble shoots any problems, and keeps parents up-to-date about transportation issues through articles in the “Sands Montessori Reporter.”

Parents at Sands Montessori are also involved in the newly formed seventh and eighth grade Montessori committee. This committee, which also involves parents and teachers from all three Montessori schools (Carson Montessori, North Avondale Montessori and Sands Montessori) will help give direction to the Erdkinder project as it develops.

BOARD OF EDUCATION AND COMMUNITY INVOLVEMENT

Other parents like to work for Sands Montessori by involving themselves in the activities of the Cincinnati Board of Education. Several parents attend board meetings and meet with board members when an issue or curriculum item affects the school. These parents are Sands Montessori’s liaisons to the members of the Board of Education and the superintendent.

An even larger community group concerned about education in Cincinnati is the Citizens Active to Support Education (C.A.S.E.). Sands Montessori parents give input and direction to education at large. They actively work to pass school levies and promote citizen involvement for all schools.

The Partner in Education Program seeks businesses to become involved with schools and children. The Partners in Education aid children to see that skills they learn in school will be needed in the world of

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work. Sands Montessori's Partner in Education is Riverfront Coliseum. Show business personalities come to the school and relate how reading, writing and ciphering are necessities of their profession. Children visit the Coliseum to experience first-hand careers in action, from the president of the Coliseum to the marketing director to the engineers to the plant operators. Students can experience all the behind-the-scenes work that must take place before, during, and after an event. At Sands Montessori, our Partner in Education also underwrites the "Sands Reporter" each month and gives us access to their outside light sign to promote our activities and fundraisers.

THE FRIENDS OF SANDS MONTESSORI

Developing community resources, business and corporate funding, and in-kind services is another aspect of home/school/community/parent involvement. This collaboration of business with schools must start from a philosophical point of reference. It is my belief that many aspects of a school must be run like a business. In fact, schools are big business. Cincinnati Public Schools not only purchases services and goods locally and from around the country, it is one of the biggest employers in Cincinnati.

I believe learning is serious business. I believe Sands Montessori must be administered in an efficient yet productive manner just like any other business. You might say that a business sells a service or a product. That is true, but before that service can be rendered, or the product manufactured, there is a process the company goes through to produce their service or product. Schools sell process. In fact a Montessori school, probably more than a traditional school, sells process. If the process is based on sound principles, then the product or service will be of high quality. Sands Montessori, like all Montessori schools private or public, provides a quality process as evidenced by all the indicators of success (test scores, attendance, school climate, etc.). Our "product" is of high quality when it leaves the 9-12 class. It is from this theoretical base that I operate when I ask for help from community resources or businesses. I explain that Sands Montessori is a viable school, just like their business; that Sands Montessori's students come from all over the city, just like their customers; and that our students will someday be the ones implementing their service or manufacturing process.

Many "Friends of Sands Montessori" are developed from sources that parents can provide. As the principal, I cannot know all the community resources or business connections in the city. Parents can provide the extra help to "spread the word" that Sands Montessori is in need of a particular service or support. Parent networking combined with a good old fashioned "don't be afraid to ask" attitude will often lead successfully to a source. Parents are wonderful salespersons. They know first hand and on a daily basis just how their child is progressing and can communicate that to a "Friend of Sands Montessori." Often sources of help come from unlikely connections and collaborative efforts.

When developing your "Friends" it works best not to ask for money, ask rather for service that the company can provide. For example, if I need new brochures to advertise the school, I go to a printing company. I have found most businesses want to help schools, but expect the principal or representative to guide them in how they can help. When you ask for the same service that they render to their customers on a regular basis, your request becomes one they often can accommodate easily.

One last word about fundraising — my motto is: "Life is one big fundraiser."

The principal must set the tone for the whole school and that includes how the school is perceived by the parents and the general public.
SAYING THANK-YOU TO PARENTS

Saying thank-you to parent volunteers and others who help the school is certainly part of a good administrator's job. I try to say thank-you directly with formal letters but in other ways too. Here are some of those ways:

1. I have provided the parents with a room of their own. The Parent Room is a place where the parent organization can keep records and supplies. Parents can meet there, bring their younger children, and not disturb classes. The art prints for the Picture Person Program are stored here and the Great Books program meets here. They can make materials and duplicate letters and flyers to the general parent group. The parent room is used as a parent multi-purpose room.

2. Whenever Sands Montessori parents have helped in any way, they are recognized in the monthly "Sands Reporter" newspaper. When parents or alumni are featured in the news for an honor or their work, they receive recognition from the school. I write numerous thank-you letters and letters of congratulations each month. Articles about parents and alumni are also put in our yearly scrapbook that is displayed in the front hall.

3. Major projects deserve major recognition. Often we will have a plaque made and placed in our front hall. Upon completion of the landscaping project, not only did we dedicate the landscaping project with a plaque honoring all the donors, we also had a sign made that hangs outside thanking all the businesses who donated their service or product to make the project a success.

4. I hold a volunteer tea each year as a formal thank-you. Parents, community volunteers and business persons are invited.

5. I often make calls and send notes, in addition to a formal thank-you letter.

6. The most important way of saying “thank-you” is by taking a personal interest in the parent’s child. I am the advocate for every child at Sands Montessori, currently 740 students, preprimary through 9-12.

SUMMARY

The child is paramount. Everything is done for the children presently at school and those who come in the future. Many parts must come together to make a whole. The job of the principal can be compared to that of the leader of the orchestra. It takes various musical selections to form a great musical work and the principal is the conductor.

The principal must set the tone for the whole school and that includes how the school is perceived by the parents and the general public. Parent involvement in a Montessori school is extremely important. It can change a school into a community and ultimately into a family. At a recent Board of Education meeting one parent approached the podium, introduced herself, and began her speech with, “I am part of the Sands Montessori family.” It was one of the proudest moments of my life.
By Ana Maria Villegas and Paula Biwer

- Continuity between home and school must be developed and strengthened to improve the quality of education.
- Parents should be involved both at home and at school.
- Various activities include: orientation sessions, parent-student open houses, classroom observations, parent-teacher conferences, parent education nights, school information night, etc.

The school is the institution that provides members of our society with a formal education. Recently, however, we have come to the realization that regardless of how much money is channeled into public education, schools alone cannot ensure that children will reach their greatest potential. For the improvement of education, schools need to develop partnerships with other institutions in society, such as the family (Banks, 1983; Goodlad, 1984).

The role of parents in education is under discussion (Bennett, 1986; Epstein, 1986; Henderson, 1981) as more educators have become convinced that the continuity between home and school must be developed and strengthened in order to improve the quality of education. One way that educators can achieve this continuity is by developing provisions for parent involvement in school programs.

This article deals with the comprehensive effort to involve the parents of children enrolled in the Montessori program in the Denver Public Schools during the 1986-1987 school year. It consists of three sections. First, the literature on parent involvement in the educational process is reviewed. Different types of parent involvement activities are described and their consequences examined. Second, the Denver Montessori program is described, with particular attention given to its parent involvement component. The third section provides a summary and conclusion.

REVIEW OF THE LITERATURE

There are different opinions as to what constitutes parent involvement in education. Gordon, Olmsted, Rubin, and True (1978) proposed a framework to explain various types of activities that are included under the rubric of parent involvement. According to them, there are two broad categories—school-related and home-related activities.

Among the more popular school-related activities for parent involvement are the following: (a)
participating in governance groups that establish policies for the school or program; (b) attending parent-teacher conferences to gain information about the child's progress; (c) observing the child in the classroom to obtain first-hand knowledge of his or her pattern of participation; (d) volunteering services to the school, such as participating in fundraising efforts or preparing instructional materials; and (e) attending parent education sessions that provide information about the instructional program or ideas for recently received empirical attention because the school can play a major role in their effective implementation (see Comer, 1986; Stevens, 1985).

The second category suggested by Gordon, et al. (1978) consists of parents working directly with their children at home. The literature contains numerous examples of parent-child interaction that have been found to contribute to children's learning (see Brown, 1981; Cattermole & Robinson, 1985; Walberg, 1984). In each case, the parent assumes the role of teacher. Interactive situations at home include meal times, getting ready for school, reading and discussing story books, reviewing homework, and planning cultural activities, such as visits to museums.

Research has shown two major benefits are associated with parents' active involvement in the education of their children. First, there is a positive relationship between parent participation in school activities and student achievement (Comer, 1984; Epstein, 1986; Henderson, 1981; Herman & Yen, 1983; Seefeldt, 1985), that is, the greater the extent of parental involvement, the higher the academic gains, although this relationship is at best indirect. More specifically, through participation in school activities, parents gain knowledge and skills that enable them to help their children to learn at home (Bennett, 1986; Epstein, 1986; Howley, Rosenholtz, Goodstein & Masselbring, 1984; Schmitt, 1986).

Second, involvement of parents in school is significantly related to their satisfaction with instructional programs. According to Epstein (1986) and Herman and Yen (1983), participation increases parent knowledge of the educational program and gains support for it. Similarly, Marlarroga (1981) found that parents who participate in school activities become more at ease with the school setting, and better able to communicate with teachers and administrators about instructional issues. Comer (1984) showed that this involvement reduces parents' misunderstanding and distrust of school programs. He concluded that the presence of parents in the school conveys a message to the children about the importance of formal education.

Parental involvement is a variable that, when used to advantage by school personnel, can make a difference in pupil achievement.

THE DENVER MONTESSORI PROGRAM

Montessori education programs are generally identified with the private sector; however, since the early 1970s, they have been introduced increasingly into the public schools in efforts to promote voluntary desegregation. Williams (1987) estimates that there are approximately fifty such programs in the United States.

During the 1986-1987 school year, the Denver Public School System initiated its own Montessori program. In the first year, 175 three-, four-, and five-year-old children of various ethnic backgrounds were enrolled at the preschool and kindergarten levels in Mitchell Elementary School (see Table 1).

The minority groups were represented in proportion to their total numbers in the district at large: forty-eight percent of the student population was of Anglo background, twenty-seven percent Hispanic, twenty-three percent Black, and two percent Asian. This distribution conforms to the desegregation guidelines used by the district, the goal of which is to have an equal number of majority and minority students in every program.

Plans are to add one grade each successive year until 1992, by which time the entire school will utilize the Montessori system and serve children of ages three through twelve.
MITCHELL MONTESSORI SCHOOL

PARENT INVOLVEMENT

Table 1
Ethnic Distribution of Students in the Denver Montessori Program
(September, 1986)

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Number</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>41</td>
<td>.23</td>
</tr>
<tr>
<td>Hispanic</td>
<td>47</td>
<td>.27</td>
</tr>
<tr>
<td>Anglo</td>
<td>84</td>
<td>.48</td>
</tr>
<tr>
<td>Asian</td>
<td>3</td>
<td>.02</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>175</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The goals of the Montessori program are as follows: (1) to have ethnically integrated classrooms; (2) to provide instruction that will develop a strong academic foundation; (3) to foster positive attitudes toward school; and (4) to provide a classroom environment rich in instructional activities that will help children develop the learning-to-learn skills and behaviors associated with school success.

In designing the program, special attention was given to promoting strong parent involvement, including a wide variety of activities.

PARENT INVOLVEMENT COMPONENT

In the Montessori educational programs, parent involvement in the teaching-learning process is considered crucial. According to Maria Montessori, children learn from their environment. Adults promote the learning process by serving as the dynamic link between the environment and the child. That is, learning is not seen as the mere passing of information from the teacher to the student. Rather, it is the process through which the child gains insight about life from daily experiences, whether at school or elsewhere. Thus, teaching is a joint responsibility of the school and the family.

In keeping with the Montessori philosophy, the Denver program strives to maintain continuity between the school and the home. To attain this continuity, a varied series of parent activities was developed and implemented during the 1986-1987 school year. They included an orientation session, a parent-student open house day, classroom observations, parent-teacher conferences, parent education nights, and school information night.

Orientation Session

The initial parent activity was held on the first day of school. A parent, guardian, or relative attended an orientation session as a requirement for placement. Parents brought their children to the assigned classroom and were introduced to the teacher and other students. The children stayed in the classroom for approximately thirty minutes while the adults attended a meeting in which an overview of the Montessori program was given. The purpose of the orientation session was twofold: to begin the exchange of information between the school and home, and to make it clear that parent involvement is critical to the success of the children in the program.

Parent-Student Open House Day

The open house day was designed to promote parent understanding of classroom work. Each student invited his or her family to visit the class. During the visit, the student chose a set of instructional materials to demonstrate, thereby giving parents insight into their child's interest, social relations, and general attitude toward the learning environment.
Classroom Observations

Parents were invited to spend an hour observing in their child's classroom during the Fall semester. The observations were scheduled just before the initial parent-teacher conference to provide first-hand knowledge of their child's activities in the classroom and as preparation for a productive exchange with the teachers. A notice stressing the importance of the observation was sent to the parents. To maximize the benefits of the visit, the parents were asked to remain seated and not to interact with their child. They were encouraged to write down questions and discuss them with the Montessori program coordinator after the visit.

Parent-Teacher Conference

Formal parent-teacher conferences were scheduled in the fall and spring, but they also occurred throughout the year at parents' or teachers' request. The conferences provided parents with specific information about their child's academic progress as well as his or her social, emotional, physical, and artistic development. The teacher also explained and demonstrated the materials used in the classroom to further understanding of the Montessori curriculum.

Parent Education Nights

Education nights provided the opportunity to inform parents about the Montessori philosophy, curriculum, teaching and learning modes, learning environment, and the role of the teacher as the link between each student and the learning environment. Through presentations and discussions, parents became actively involved in their child's development. To maximize attendance, childcare was provided.

Three parent education nights were held during the 1986-1987 school year. At the first, basic principles of Montessori education were outlined, and suggestions were given for promoting children's growth at home. The dialogue between parents and teachers that began that night continued throughout the year in both formal and informal meetings. At the second parent education night, key features of Montessori and traditional education were compared and contrasted to help parents develop a deeper understanding of Montessori education. The final session dealt with the issue of discipline in the classroom and home. Parents were urged to contemplate their own disciplinary styles and encouraged to employ the disciplinary strategies used in the Montessori classrooms, thereby ensuring greater continuity between home and school.

School Information Night

This meeting was a review of the accomplishments of the Montessori program during the first year and a planning time for the 1987-1988 school year. The meeting was led by the coordinator of the Montessori program, who encouraged parents to comment on the plans and offer suggestions for revisions as a way for parents to gain ownership of the program.

A variety of attendance strategies were employed: an invitation was extended at least a week in advance stressing its importance. Those parents who did not respond were sent a second notice and/or called by the teachers as a reminder. Childcare was provided during major events. Special arrangements were made for parents who could not attend conferences with teachers or observe their child's class at the regularly scheduled times.

The strategies used to involve parents proved successful (see Table 2). Students in the program were well represented at activities occurring during school hours, with attendance in the range of sixty-two to one hundred percent. More specifically, the high attendance activities were the orientation session (100 percent), classroom observations (83 percent), and parent-teacher conferences (with 82 and 87 percent for the Fall and Spring semesters, respectively). Evening activities were also well attended; however, the attendance...
pattern for night activities was in the more moderate range of twenty-five to fifty percent, as is evident from the totals for the three parent education nights and the school information night.

Table 2
Relative Frequency Distribution of Students Represented at Parent Activities by Ethnic Group

<table>
<thead>
<tr>
<th>Activity</th>
<th>Ethnic Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Black (n = 41)</td>
<td>Hispanic (n = 47)</td>
</tr>
<tr>
<td>Orientation session</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Parent-student open house</td>
<td>.49</td>
<td>.66</td>
</tr>
<tr>
<td>Classroom observations</td>
<td>.78</td>
<td>.74</td>
</tr>
<tr>
<td>Parent-teacher conferences Fall</td>
<td>.78</td>
<td>.70</td>
</tr>
<tr>
<td>Spring</td>
<td>.73</td>
<td>.91</td>
</tr>
<tr>
<td>Extending Montessori into the home</td>
<td>.34</td>
<td>.45</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>Ethnic Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montessori and traditional education</td>
<td>.37</td>
<td>.38</td>
</tr>
<tr>
<td>Discipline</td>
<td>.15</td>
<td>.09</td>
</tr>
<tr>
<td>School information night</td>
<td>.15</td>
<td>.11</td>
</tr>
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</table>

A detailed examination of the attendance data for each ethnic group reveals differences between majority and minority participation. Proportionately, more Anglo students tended to be represented at parent activities than Blacks and Hispanics. This was particularly noticeable during classroom observations, the parent-teacher conference held during the fall semester, the three parent education nights, and the school information night. Despite these differences, the data shows that Black and Hispanic parents attended the scheduled activities in high numbers. According to the school principal, attendance of minority parents at Montessori program activities was more than double that of the previous year before Montessori was implemented. This is a significant accomplishment. Currently, strategies are being devised to increase participation even more during the 1987-1988 school year.

In light of the research findings, the high level of parent involvement in school activities suggests that the Denver Montessori Program is well on its way to success. Parent satisfaction with the program during the first year is a significant indicator of its popularity. A sample of forty-eight parents was interviewed regarding their perceptions of the program. Forty reported high satisfaction and gave numerous examples...
MITCHELL MONTESSORI SCHOOL

PARENT INVOLVEMENT

of positive changes they had observed in their children since their enrollment in the program. Among the changes mentioned were that the children were: (a) happier; (b) more independent and self-confident; (c) able to concentrate; (d) more accepting of responsibility; and (e) more expressive of their feelings and thoughts.

Across the ethnic groups, the overwhelming majority of the parents was highly satisfied with the Montessori program.

The relatively low attrition rate during the 1986-1987 school year attests to the high level of parent satisfaction and the effectiveness of the parent activities. Table 3 shows that in spite of the usual difficulties encountered when a program is initiated, only twenty-three percent of the total number of original students did not return for the second year. While this figure seems high, the reader is reminded that the program is located in an inner city school which has generally experienced an average of seventy-five percent turnover in the student population from year to year. Thus, the Montessori program has added stability to the school and continuity of instruction for many of its students.

Table 3
Attrition in the Denver Montessori Program during the 1986-1987 School Year by Ethnic Group

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Number</th>
<th>Proportion</th>
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</thead>
<tbody>
<tr>
<td>Black</td>
<td>14</td>
<td>.34</td>
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<tr>
<td>Hispanic</td>
<td>10</td>
<td>.21</td>
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<tr>
<td>Anglo</td>
<td>16</td>
<td>.19</td>
</tr>
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<td>Asian</td>
<td>1</td>
<td>.03</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>.23</td>
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</table>

An examination of the reasons that parents removed their children from the Montessori program provides additional insight into the dynamics of the school. Table 4 shows that the most frequent reason for discontinuing the program was relocation beyond the district boundaries, whether outside the city, state, or country. Moving accounted for fifty-six percent of the total attrition of forty-one percent. Interestingly, this factor accounted for ninety percent of the loss among Hispanics, for whom the mobility rate is highly affected by their immigration status. Thus, over half of the attrition rate was beyond the control of the school. Among the other reasons that parents withdrew their children from the program were disagreement with the Montessori philosophy, desire to keep siblings together in the same school, commitment to the neighborhood school concept (opposition to busing), and transportation problems. The last three concerns accounted for most of the attrition among Anglo students.
Table 4
Reasons for Leaving the Montessori Program
by Ethnic Group

<table>
<thead>
<tr>
<th>Reason</th>
<th>Black (n = 14)</th>
<th>Hispanic (n = 10)</th>
<th>Anglo (n = 16)</th>
<th>Asian (n = 1)</th>
<th>Total (n = 41)</th>
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<tbody>
<tr>
<td>Moving</td>
<td>.50</td>
<td>.90</td>
<td>.43</td>
<td>-</td>
<td>.56</td>
</tr>
<tr>
<td>Disagreement with program</td>
<td>.29</td>
<td>.10</td>
<td>.06</td>
<td>1.00</td>
<td>.17</td>
</tr>
<tr>
<td>philosophy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation difficulties</td>
<td>-</td>
<td>-</td>
<td>.25</td>
<td>-</td>
<td>.10</td>
</tr>
<tr>
<td>Keeping siblings together</td>
<td>.14</td>
<td>-</td>
<td>.13</td>
<td>-</td>
<td>.10</td>
</tr>
<tr>
<td>Appeal of neighborhood school</td>
<td>.07</td>
<td>-</td>
<td>.13</td>
<td>-</td>
<td>.07</td>
</tr>
<tr>
<td>concept</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>(1.00)</td>
<td>(1.00)</td>
<td>(1.00)</td>
<td>(1.00)</td>
<td>(1.00)</td>
</tr>
</tbody>
</table>

SUMMARY AND CONCLUSION

During its first year of implementation, the Montessori program in the Denver Public Schools made great strides toward increasing the educational opportunities for students in the district. A significant aspect of the program was the potential for parent involvement through a variety of activities. The program staff employed different strategies to ensure high attendance at those activities, including advance notice of the events, systematic follow-up for parents who did not respond to the initial invitation, special arrangements to accommodate parents' schedules, and childcare for selected activities.

The data show that every activity was well attended, but more parents attended those held during school hours than the ones in the evenings. More Anglo students were represented at the activities; however, Black and Hispanic students were relatively well represented. In comparison to previous years, before Montessori, the attendance of Black and Hispanic parents at school activities was improved significantly.

Across the ethnic groups, the overwhelming majority of the parents was highly satisfied with the Montessori program. In their view, the children were learning and program personnel were responsive to their needs. They considered the parent activities interesting and instructive. While some parents acknowledged that problems existed (e.g., delays in transportation, not having all siblings accepted into the program), they generally felt that the benefits of the program outweighed its drawbacks.

The history of the Denver Montessori program is brief. Based on the data collected during its initial year, it is clear that much has been accomplished, particularly with regard to involving parents in the education process. Additional time, however, is needed before the impact of the Montessori program can be determined, but it is evident that a strong partnership between school personnel and parents is being formed.
REFERENCES


Alicia Clifford, a prominent black educator, has over sixteen years' experience working as a teacher and school administrator in the inner city of Cleveland, Ohio. She has worked with economically disadvantaged families from a number of different cultural groups and has found that certain characteristics of lifestyle tend to transcend ethnic and cultural groups. While it can be unfair and inaccurate to generalize about all urban families, Mrs. Clifford believes that in order to best serve families of any population, it is important to be actively aware of lifestyle differences as well as similarities.

Kahn: The first thing I'd like to talk about is the development of teachers in the urban environment. What are their skills when they come from their training and what is the sequence for bringing them to a performance level that is satisfactory to your operations?

Clifford: When teachers come in from training, they have a bachelor's degree, at least, and an AMI Diploma. With those credentials they usually can understand the basics of early childhood education and child development. What they lack is specific training in dealing with the special problems they will encounter in the urban setting. Here at Marotta we give them what they need to know in a series of in-service meetings. We talk about the different strategies that can be used in the urban classroom. For example, we look at the home environment to try to come up with clues for teachers on how to speak to the child in a clear manner so the child understands and doesn't misinterpret what the teacher is saying, especially in the area of discipline.

Kahn: Give me an example.

Clifford: Sometimes in the urban environment you find that it is loud and noisy in the homes. Instructions are commonly given four, five, even six times before the child thinks about moving. When this happens in the classroom, the teacher needs to go over to the child and, at the child's eye level, repeat the instruction. In this way, the child learns that it is expected that instructions are to be followed immediately.

Kahn: So eye contact will take care of it?

Clifford: Eye contact is a start, it brings your voice to their attention and they learn to separate it from other noise in the classroom.

Kahn: What do you tell your new teachers who have no experience working in the inner city about discipline in the classroom?

Clifford: The most important thing to know about discipline is that the child is acting as he normally acts at home. If they understand this, that he is not acting out, then they can explain the rules of the classroom. The children need to know that there are different rules in the school environment than there are at home. But teachers should not expect these children to change their home rules right away because these are survival rules, and first and foremost we must all survive.
Sometimes the children curse. This might catch the teacher off guard because the child might not even be able to pronounce his name well. It is important when this happens not to look surprised. This is what they want. They don't really know it's wrong to curse but they do know they get a reaction when they do it. The best thing to do is to correct the pronunciation, ask if they know the meaning of the word, how to spell it, the same things that would normally be done with any other word. Then explain very clearly that it is inappropriate to use this word in school.

**Kahn:** What about other areas of discipline?

**Clifford:** We can always expect to encounter episodes of hitting, punching, biting and so on. First the teacher has to let the child know that we use words to convey our feelings, not violence. Oftentimes the children don't have enough vocabulary to express themselves appropriately. They have to be taught to say, "Would you stop that because I really don't like it," "Would you leave my work alone," or "I don't want to work with you because you have upset me." You must help them build their vocabulary. If you think about it, sub-urban children have the same problems, they just use words.

**Kahn:** That really relates to Montessori grace and courtesy lessons. How would your training be different in this area?

**Clifford:** Grace and courtesy is actually emphasized in the urban classroom. Whenever the child does the slightest thing for you, bring it to the attention of the entire class. Say, "thank you." When there is a birthday party and you are serving the children, make it a group lesson using the proper words. Say, "excuse me." You can't be subtle. Their words for kindness might be, "Get out of the way, stupid."

Grace and courtesy is handled as a group lesson at the end of the morning, although at the beginning of the year it is done first thing in the morning to set the stage for working together. We also use role playing and modeling to teach grace and courtesy in parent meetings.

**Kahn:** How do you convey "grace and courtesy" to parents?

**Clifford:** We do it primarily by modeling at the parent meetings, again overemphasizing politeness and the use of appropriate words. "Hello, good evening, would you like to come and work here?"

**Kahn:** I see. You present the classroom materials to the parents when they come to parent meetings.

**Clifford:** That's right. You put them in the role of the child.

**Kahn:** So in the presentation style you convey these principles of politeness and grace and courtesy. How about another aspect of discipline?

**Clifford:** One that worries most of the teachers is the way the children act out when their family splits up. When this happens, the best thing is to try to gather as much information as possible from the parent. So call home immediately. If the dad and mom say they were in jail over the weekend and the child is acting out because of this, then take the child aside into a private conference area and talk about it.

**Kahn:** So you always assume there is an underlying cause and you seek out the family for that information and then talk to the child to make sure he can communicate it properly. That makes a lot of sense. What about the child who comes from a terrible situation and there just doesn't seem to be any support at all?

**Clifford:** When the child comes from this situation you go to the parents. The parents may be nineteen or twenty and may not have any conception about what you're talking about, or about anything except their personal needs. What you do is give them a prescription, as a doctor would, that this is what the parent should do for the day. Then you give them a phase-in program.

**Kahn:** Who generates this prescription?

**Clifford:** That's between the teacher, the principal and the parent. Usually the young parent doesn't know what's going on and is rather lost and will agree with you that the problem happens at home, too, and at they don't know what to do about it either. So the three of you come up with a suggestion which might
be, “Let's start getting the child to bed on time. This week bed time will be at 8:30 every night. The child should start getting ready at 7:30.”

Kahn: I assume that you send a reminder note or checklist home every day which the parent signs, e.g. John went to bed on time, to maintain a visible communication.

Clifford: That's right. That's with the parent. Now with the child in the classroom, you put a checklist on the wall. On the checklist are five chances. Each day the child doesn't comply he or she uses up one chance. When the fifth chance is used the child is out of the school. The consequence has to be harsh, and the child has to know this.

Kahn: The child is sent home for the day?

Clifford: That's right. Then you decrease the number of chances the child gets over the next four weeks until the behavior becomes appropriate.

Kahn: So you give checks for misbehavior rather than positive reinforcement for good behavior. Have you ever suspended a child?

Clifford: Yes, we have. And when we do, it is done immediately and abruptly. If you can't get the parents then you get the grandparents and you emphasize the importance of their actions. If they want the child to come back to school at all they have to drop everything, look at the child's needs, and get him or her right then. This way there is no misunderstanding on anyone's part. The child's actions will not be tolerated.

Kahn: Why is it a five week program? Why doesn't it just diminish as the child diminishes the activity?

Clifford: Because both the parent and the child need to see some positive response, to see that they can do it. So for the first five weeks we work on maybe two major things. One is to get the child to bed on time instead of at twelve or one o'clock because that child is tired in the morning. The child might be working on trying to choose work.

Kahn: So in a way the sheet shows a positive action. In terms of the limitation of time, is this so things don't just go on forever?

Clifford: You can only keep the parents interested for five weeks. You can't keep them interested for longer than that; we've tried.

Kahn: What happens if results don't come through?

Clifford: Then we're back to the conference again. One way or the other, at the end of five weeks we have another conference. If we're lucky we can talk about how well things went. If not, we're back to, “Well, you know it didn't work. Why do you think it didn't work?” Maybe they'll say, “Well, you know my grandmother's the boss. She tells me what to do and my child what to do and I'm not happy.” So the child is like the mother, rebelling against someone else. So we go to a deeper stage of the problem. Usually if there isn't a positive change within the five weeks there is something else going on.

Kahn: So it's a way of dealing with pathology or serious family problems.

Clifford: And you know, it may come to a time when we can't fix the problem. That's when we call on our social service resources. But we do always try to handle the problem first ourselves.

Kahn: The next step is referral for teacher support and the last step is referral for family support. Doesn't that encourage the teacher to get in too deep?
Clifford: This is true. But if you're in the city, in the urban area, you're already in deep. You're in deep from the time you arrive at school to find a syringe or bullets on the playground. You're in there so you might as well go for the long run.

Kahn: So, if I can summarize, you're saying that as opposed to the suburban situation where the problems are referred out when the teachers feel they can't handle them, here you have to encourage the teachers to go as far as they can without relying on social services.

Clifford: Yes, because social services are looked on as a threat by most families. These families are on welfare; their health care is such that they have been passed from person to person and they feel that nobody cares. Their self-esteem is really low. Montessori works because the same person has three whole years to work with this family and this child. They eventually come to trust us.

Kahn: In terms of stages of development, how do the teachers finally come about in their formation?

Clifford: There are four stages that teachers go through in their development. The first stage is survival. This is the stage when they might be shocked by the way the parents look, what they say, when parents might hurt their feelings even though they won't mean to. The teachers worry about how they are going to make it through the year. At this stage they need a lot of on-site support.

Once they get through the survival node they are on to consolidation. They have withstood the initial pains and have learned to listen a little better. They have learned how to obtain and use colleague support and how to use outside resources.

The third stage is the renewal stage, which takes about four or five years in the urban area. Suddenly the teacher realizes that the first three-year class has gone all the way through the program, the classroom has settled down, and the children can really work. Now only a third of the parents are new to the school and to the teacher, and it's not so bad anymore. There are only seven new parents and maybe only one or two of them are difficult. So the teacher feels renewed. It's during this time that it's important to get to professional meetings like the ones NAMTA gives. They need to go to Montessori workshops to increase their Montessori skills, and they need to join professional groups so that they have colleague support. If there is an urban public school movement they need to get involved with that, to hear other people talk, to read magazines, and to start finding out about research.

The last stage is maturity. I'd say it takes ten to twelve years to reach the maturity level. At last you are comfortable with what you say when you talk to a parent, and you're comfortable when you see a child who has a problem. You just know what to do. If the teacher hasn't increased his or her degrees by this time, this is the time to do so, to increase the level of base knowledge and not become stale. They need to avoid the bulletin board syndrome, to come out with new and fresh ideas for the children.

Kahn: So here you are dealing mostly with teachers at the survival and consolidation stages. What if a teacher develops a kind of paralysis? What sort of intervention techniques do you use with teachers who seem to be in the middle of combat and freeze up?

Clifford: You have to make yourself available for that person, not just across the desk during school hours; you have to be a person they can call in the middle of the night. It's difficult for the administrator, but if they seek your help and advice they are trying. Some might just quit. If your car has been stolen, money is missing from your purse, you've been cursed out by a parent, and you have a child that can't stop kicking and hitting all the time, you can't compound that with an administrator who won't listen. The other thing the administrator can do is to go into that teacher's classroom and work with him or her as an assistant all day, maybe for a week. After that you continue to drop in to give them support.

If the teacher is doing something inappropriate you talk to him or her about it, give a warning for the second time, and if the behavior continues despite your intervention, the teacher is released.

Kahn: What techniques do you use when the parent acts out?
Clifford: Dr. Montessori talked about this. When a parent puts a child in the program he or she must respect the director and directresses, the environment, and must respect the rules and regulations of the school. Then she gave a list of rules and regulations for the children's house.

If a parent comes into the building and threatens a teacher, uses swear words, etc., we let them have their say and then tell them to leave the environment. To confront the person then is a mistake. The next day the office prepares a letter that is given to the parent when he or she drops off the child and a conference is held with the parent at that time.

The entire staff has to be put on notice that a parent has acted out and that that parent must be taken to the office because the parent will try to avoid you. All classrooms have a phone for security purposes, so if the parent refuses to go to the office, the teacher or assistant calls the office right then. I make it my business to go and confront that parent. If the parent is still acting out and disturbing the classroom, I stand close to the parent to help diffuse the anger and I tell the person in a very low voice that I want them out of the building now. Usually they take their instruction and go. I walk them towards the door and invite them to talk to me in my office. I alert my secretary to call the first line of security, our custodians, and, if the person is intoxicated, smells of drugs, is overly aggressive, inform the secretary to call the police. There should be a mini-precinct nearby with which the school has an ongoing relationship and from which you can expect a quick response.

Parent acting-out can also happen in the form of lies. A parent will talk to different teachers about one particular teacher that they don't like, or want to get rid of, or that they feel is prejudiced, or other unfounded things that they might have going on in their head. When this happens the entire staff is instructed not to hold conversations with parents who are not from their classrooms. They can say hello and should be polite, but if anything is said about a child or anyone else, they are instructed to direct that person to the office immediately. This stops the person from gossiping.

Sometimes the parent acts out toward the other parents. You have to be careful of this because it spreads like a cancer. If a parent accuses another parent of child abuse, you call the PTA president and report the matter. You then call the parent and tell him or her that you don't want to hear this from anyone else because you will know that they are spreading rumors, that it's sabotaging the school and it's grounds for dismissal.

This is a good time to reiterate the rules about threatening a teacher and using swear words. They get only one notice for this because you have to protect the teachers. You don't want to lose a teacher because a parent is having home problems. Encourage the parent to talk to you about the problems. Sometimes the husband has beaten up the wife and she comes to the school to beat up on me. It is the principal's place to help the parent solve the problem. You really have to get into it.

Kahn: What do you mean by that?
Clifford: Meaning you can't say you want to hear their problems and then not be there to hear them.
Kahn: In other words you have to take the time to really listen....
Clifford: ...and show that you really care. When they see that you do care, their attitude begins to change.
Kahn: What's the warning notice that you give the parents? Do you have a written notice that you give them?
Clifford: We have a written notice where we quote Dr. Montessori regarding behavior. We put it with a dismissal notice that says if the behavior continues they will be put out of the school.
Kahn: Compared with other schools, how do you structure parent conferences? How would you characterize the different relationship between your parents and the school?
Clifford: Here we try to become confidants to the parents, friends they can talk to about a divorce, family problems, anything going on in the household, and not feel ashamed. Because this is our goal, we
intensify the family part of the program. We meet with the families about three times a month. We have regular educational workshop meetings that are held Saturday or Sunday evenings when most parents can come. We talk about areas of parenting skills using Montessori in the home such as orderliness, lining up shoes, that sort of thing. We give examples of how to utilize a small space because most of these homes are small with a lot of people in them. We emphasize the child’s need for his or her own space. We show them how to use crates and cartons, shoeboxes and objects they have at home for storage of the child’s belongings or to reach the counters so they don’t have to spend money. This is really just sequencing, order and organization.

We give them tips on how to talk in a positive way with their children and how to reinforce good behavior. We talk about how the words we use may hurt the child’s feelings and lower his self-esteem. The way you do this is to make the parents feel so comfortable in the group that they start coming out with these words during the meetings. The children use them at school and you know they are coming from the home. So we ask the parents how they feel when someone says, “Girl, get your ass across the room.” That’s a whole different thing than just saying, “Come here.” The way to make them comfortable is to sit next to them, or on the floor, and share problems with them at their level, not in an authoritative way, but just as another human being. In this way we get them thinking about their children.

Another aspect of the parent groups is that we try to get the parents to take responsibility in the school, to make decisions and to run things themselves. I might say, “I notice that the classrooms need more books”; or “I see the coat racks are down. How about if we build them up?” You want them to start becoming a part of the school. In most schools parents come to help out in the environment at the stage when they read the notes sent home. Our parents read nothing but two-liners. When they first come in, they don’t notice things. They have to be called about every field trip because they don’t read the notes sent home. When you do write a note it must be short and to the point — preferably only a sentence or two.

The next step is to have the parents come into the classroom after an open house for cookies and punch. They get a chance to go through the environment and we give them a group session on what the children are doing in the classroom. They go around and handle the materials and finally sign up for individual conferences with the teacher. At their conferences, the teacher goes over the academic areas and then carefully gets into whether there are any problems going on in the home, especially if a change has been noted in a particular child’s behavior.

Kahn: What do you mean, change in the child’s behavior? Do you mean in terms of the child’s improvement to be reported on, or do you mean the desired change to happen, or all that?

Clifford: I really mean neither one. What I mean is that the teachers ask the parents to let them know if there are any changes in the home that might affect the child’s behavior. The family might move three times in one school year and remain in the same school. Some of them run from bill collectors constantly. The male may go in and out of the home or a new male person may join the home, that happens a lot — changes in boyfriends — and the child changes as this happens. When the teacher learns of particular family problems she lets me know and I make it my business to talk to the parents. The act of letting them talk and maybe cry with me just listening, seems to make them feel better.

Kahn: How does nutrition and teacher preparation become an active part of your operation in working with people?

Clifford: First, the teacher has a hand in what is ordered for the kitchen. There are certain things they don’t want because they are not nutritious. Second, at the beginning of the year we have a nutrition seminar for the parents where we talk about what food does to a child and the child’s body. We talk about caffeine in pop, we talk about sugar. This year we did what we called a Montessori commercial about insecticides used on foods and how to wash and cook foods. Then we give the parents a list of things that are nutritious to eat and they sign up to bring in nutritious snacks for the class.

Kahn: In terms of the Montessori Method, you have oftentimes said it is difficult for these teachers to adjust to the urban environment. You told me some things already about eye contact, swear words, biting, hitting, acting out, dealing with extreme conditions in the home, etc. But in terms of the actual presentations themselves, have you modified the pedagogy?
Clifford: No, there have been no modifications of any pedagogical AMI methods at all. Modifications cause problems. If you change something, adapt it for a child, it's almost like saying the child can't learn, and that's not true. The child can learn anything. In fact, I find that I must stay on the teachers about not modifying anything — not breaking down the vocabulary. Don't call the trapezoid anything but what it is. There is an ongoing controversy over changing standardized test questions to accommodate the urban dialects. If you do that, what are you doing? You're changing the criteria for people and people are supposed to be the same no matter where they are. So just because we have children from an environment where they might not see and experience all the things that other children see and experience, that means that it's up to us to see that they experience it. We have lots of field trips. Once a month we've got to get out of here and see something or else they won't get to see it. In three years the children experience a lot. We set up scholarship programs with other areas as an alternative measure. But I am totally against modification.

Kahn: What do you do about child abuse?

Clifford: We give the teachers two in-service meetings where outside agents come in and talk about identification of children who have been abused. There are different kinds of abuse: sexual abuse, verbal abuse, and physical abuse. Teachers tend to be reluctant to make out a report on a child who is acting out of school because they don't want the child to get a beating at home and be in worse shape than before. We get to the point where we just say to the parent, "Now I know you're not going to go home and give this child a whipping because he doesn't deserve one, but I wanted you to know that he's doing these things." Then you give the parent a suggestion of what they can do in the home to deal with the problem. A lot of parents, especially black parents, tend to feel that if you spare the rod you spoil the child. We talk to them about how this affects the children to the point where they won't do anything until you holler and spank them because that's all they're used to. The first year parents have the most trouble with this. If we find a child who we think is being sexually abused, the teacher informs me and I have a conversation with the parent. The teacher and I make a determination as to whether it should be reported to an outside agency. If I do call, they usually do go out and investigate.

Kahn: We've talked about child abuse and your work with parents. What is your ultimate goal as you work with families here at the school?

Clifford: The ultimate end is to try to improve the family's understanding that education helps integrate the family into society and to attain a better life. We try to build confidence and teach skills to help parents improve their roles. It's hoped that through the parent workshops the parents will gain a better understanding of good nutrition for the child, build a network among themselves, build community support, and find resources — places to take their children. They learn they can't leave children on their own just because they're ten or they look older and aren't babies anymore. They gain a sense that they can talk to teachers, that they can be friends. They can and should follow their child through the educational process like most suburban families already do. This is what we try to do. Research shows that the three years of Montessori training at the preschool level and parent education workshops set a model that parents follow throughout the child's education. They actually initiate contact with teachers.

Kahn: How then do you maintain the idea of this mission with yourself and your staff? How do you keep the urban mission in sight?

Clifford: You keep it in sight because you keep them in sight. Instead of being an administrator to the teachers I am a friend to the teachers, they are a friend to the parents and I'm a friend to the parents. We have events once a month — last night we just had the Community Chest which we have every fall. We have canapes and cake and an educational workshop to start up the year. I met great-grandparents and all kinds of extended family members. It's nice to touch them, give them a pat on the shoulder, give hugs to the people who need hugs. One mother just told me that she was so happy because she got an extra hundred dollars today and that she'll be able to pay on her tuition. Just to think that she wants to do that for her child is really admirable because there were clearly other things she could do with a hundred dollars. I think we keep the mission clear because the closer you get to the families the more you know that they really need and appreciate what you do.
I also think telephone calls are important and that home visits play a role. When children drop out we call to find out the situation and try to get them to return. Sometimes I have to make a call after the teachers make calls. The parents appreciate this and it keeps me in touch with them. They know that this isn’t just another program that stops with the child. We care about them and we are always here for them.

Kahn: How do you get everyone, including yourself, to keep the urban mission in sight?

Clifford: We are turning out independent, intelligent, capable human beings who will add new dimensions to a new world, and it’s the productivity of those children that really motivates the staff. They can see the change within two years, both with the child and the family. The community also changes. I saw a ninth grader the other day. He said, “Hey, Ms. Clifford.” I looked up and he was so big I didn’t know him. And then all of a sudden his face came back. He was one of the children I had over on the other side of town in my kindergarten class. And here he was at a Junior High School over here and doing OK. He’s polite and mannerly and coping with the streets, not necessarily as a part of the streets, but he can deal with what’s going on. I asked him what he was doing. I had seen his mother earlier and she had said he’s just not challenged enough at school. I told him he just had to challenge himself. So now he drops by after school to say “hi” and I ask him what’s up. It’s nice to know that older youngsters realize they have a role model to go back to. It also makes you aware that the whole community can and is changing because there’s one little place where children learn in their formative years. Their behavior then influences others.

Kahn: It’s important what you said about the extended family — your influence goes beyond the immediate school and family scene.

Clifford: That’s right. It’s the seeds that Dr. Montessori talked about. We are sowing seeds.
Montessori expansion requires a slow, year-by-year, phase-in approach. Because Montessori cannot admit older non-Montessori children, enrollment projections must be formulated carefully. As programs grow, relocation and independent administration may become necessary. A comprehensive planning document can ensure a successful transition.
EXPANSION: PLANNING PROPOSALS

The national statistics in a 1988 review of Montessori research (Kahn, Boehnlein, Villegas, 1988 NAMTA Study) indicate that almost seventy percent of Montessori public schools predict expansion — half by grade level and half by adding buildings. Only four percent of the schools indicate that they are shrinking. The survey shows new programs are being established at the rate of about six to ten school district programs per year in 1988 and 1989. In relation to use within the districts, Montessori is in great demand, with two-thirds of the Montessori schools claiming to have waiting lists ranging from fifty to over five hundred children.

USEFUL PRINCIPLES FOR MONTESSORI EXPANSION IN THE PUBLIC SECTOR

Multi-age groups

Montessori programs conventionally start at age three with multi-age groups expanding one year at a time. Expansion works best if multi-age classrooms are maintained as much as possible and consolidated within Montessori conventions: preschool ages three to six; lower elementary ages six to nine, upper elementary ages nine to twelve. The admittance of children over age four without Montessori background should be limited.

Pyramid Structure

Student attrition after age four cannot be replaced in a Montessori system. This is because Montessori has a rigorous curriculum of indirect preparation which assumes certain habits of learning, independence, and special understanding of the materials. Although successful admissions of two or three students per class without Montessori background can be facilitated, latecomers to Montessori must be screened carefully for both social and academic skills so that they will not be excluded from the established pace and social constellation of the class.

Generally Montessori schools deal with their attrition by utilizing a pyramid structure where, proportionate to the school pupil retention patterns, the lower levels of the program have more students in order to feed the declining numbers at the upper levels. This provides a maximum servicing of new entrants at the starting level and allows for natural attrition to occur without compromising the program with late entrants who do not have Montessori experience.

Curriculum Planning

Although curriculum is internally consistent within the AMI Teacher Trainer program, expansion should consider some advanced program planning. There will be some variety of training backgrounds which should be balanced by curriculum dialogue and presentations among the faculty as to scope, sequences, and skill levels within the school’s Montessori program. If a school is expanding one year at a time, general curriculum goals should be committed in writing ahead of the school year to guarantee full Montessori realization appropriate to expanded levels. This assumes that the existing Montessori program is already establishing clear curriculum goals which still allow for classroom interpretation related to individual children.
Personnel Management

Montessori teacher-hiring requires careful planning. Expansion sometimes requires hiring Montessori teachers without state teaching credentials. For this reason, it is important to arrange a grace period with personnel offices for obtaining a state teaching license. Grace periods extend from about eighteen months to two years — or however long is necessary, as long as a minimum of six credits towards the state credential are taken each year. Teacher unions can present obstacles when hiring Montessori trained teachers over more senior teachers within the system. It is essential that unions recognize Montessori training as an indispensable qualification for doing Montessori education.

It is also important to be aware of national training timetables in order to establish enough lead time to train teachers. Many schools utilize summer training programs which may take more than one summer. Partially trained teachers may need to rely on pedagogy other than Montessori in their classrooms until they have the complete Montessori point of view (see Chapter Four: Implementation).

As elementary programs expand, it is common practice that faculty move with the children to each successive grade. The current teachers, who know the children and who are experienced, are preferred candidates if they are perceived by their principal and parents as suited to the older child. The nine to twelve class requires considerably more preparation time and organization, and the more experienced teacher is better qualified to accomplish the work.

Building Conversion to Montessori

In certain situations, Montessori expands within a building by converting a non-Montessori section year by year. Montessori teachers and non-Montessori teachers must work as one staff while maintaining separate parent meetings, curriculum discussions, and schedules dealing with unique Montessori issues. Although Montessori may have distinct advantages over the building curriculum approach which it is gradually displacing, it is best not to oversell the program with non-Montessori staff present. Furthermore, non-Montessori staff many times become interested in Montessori and may desire Montessori training. Making such an option available improves overall building morale.

Materials

Since expansion involves capital expenditures of close to $25,000 per class including furniture, careful projections should be made to make sure that the district will accommodate the anticipated "start-up" costs. Program expansion may also have hidden costs, which include more books, additional specialty teachers, additional office personnel, etc.
RELOCATION

When a Montessori school-within-a-school comes of age and its numbers appear to be increasing beyond what a mother school can accommodate, it may seek to relocate to its own facility. A case for relocation can often be made if Montessori split locations existing throughout a city can come together under one roof.

Relocation is a positive move which will allow the program to develop a unique Montessori identity by being at one site. Staff teamwork, goal setting, program continuity, and clarity of mission are supported by the Montessori program having its own building. The program is removed from the stress of comparisons and pettiness which might occur when a Montessori and non-Montessori program compete for resources within the same building.

IMPORTANT RELOCATION FACTORS

Program Size

When consolidating as one school, the developing Montessori program may require more support than its program enrollment can justify in terms of library, assistant staff, a full-time principal, auxiliary services, fine arts, etc. Yet initially, as an experimental program, it may need special exemptions to accommodate upfront costs of materials, expanded program supervision (see Chapter Four, Appendix 7), and consultation. The Montessori program must gain the credibility that comes with fully equipped operations that resemble other public schools in the district while still maintaining the uniqueness of Montessori programming. To fully anticipate all needs, the program size must be projected over five years in order to justify allocation of resources.

Relocation Site

The choice of location must consider the convenience of present and future clientele. Pinpointing neighborhood residences of current families and private Montessori schools will help justify the relocation site. Simple demographic studies should include neighborhood racial statistics to encourage voluntary desegregation, existing early childhood programs, nearby private schools, housing projects, church organizations sympathetic to early childhood education, and political contacts. The location of the new school is dependent on individual district needs.

Budget

A five year budget corresponding to enrollment projections needs to anticipate staffing, new classroom materials, library and building refurbishing including shelving, office equipment, science lab, athletic equipment, and audio-visual needs.
Facility Description

Most buildings will accommodate Montessori. The facility description will need to consider desired outdoor area, size of classrooms, window height, restroom accessibility, media accessibility, etc. Although Montessori programs do work in open classroom spaces, self-contained classrooms still provide privacy, quiet, and minimal disruption which some teachers might prefer over the aesthetic advantages of the open classroom. Private cloakroom space, wet space with water source, and low windows are excellent features for a primary program (see Environment, Chapter Two).

Other

If the program is expanding into new levels (lower elementary, upper elementary), a description of mission, orientation, and curriculum for the advancing level will enhance the request for physical space. (You may wish to include the curriculum programs included in this publication.)
All planning aspects of an expansion program are included in a clear statement of programming needs, physical environment needs, elementary goals, retention and growth statistics.

INTRODUCTION

On March 10, 1986, the VSB Montessori Advisory Committee was informed by Facilities Services, "...that the present site would accommodate a maximum of 3 classes ... expansion would require a complete program re-location. There are now 3 classes at the present site and expansion is scheduled for next year.

At the Montessori Advisory Committee meeting October 20, 1986, the possibility of remaining at Nightingale for the 1987/88 school term was broached. Two options for providing classroom space were mentioned: use of the art room and relocation of the district ESL class. Concerns regarding these two options included:
- the possible adverse effects upon the entire school's art program in order to accommodate the additional Montessori class
- a one year postponement of relocation might adversely affect Nightingale's enrolment if the ESL class is removed in 1987/88, followed by the Montessori program in 1988/89. Also, students within Nightingale's catchment area would likely continue to enrol in this alternative program, further reducing enrolment in Nightingale's other classes.

MOST IMPORTANTLY, the program has had difficulty attracting students with previous Montessori experience. Parents have stated that they elected to keep their children in Private Montessori programs until a more central location is identified with an assurance of expansion. These factors (location and assurance of expansion potential) are of concern if the VSB is interested in attracting children from the Private sector. The ideal site therefore, would provide adequate classroom space for future expansion should the VSB incorporate this program on a permanent basis. This would encourage enrolment during the final year of the pilot project, and provide a long term stabilizing effect.
CONSIDERATIONS

In response to the Facilities Services report and the concerns raised by Montessori Parents, the Columbia Association of Montessori Parents (CAMP) would like to request that the Montessori program be relocated in September 1987 to a location in closer proximity to the majority of Montessori pre-schools which are potential feeder programs. (See location map on page 15.)

Relocation considerations include the following key areas:

1. Short and long term needs of the Vancouver Program (Page 5)
2. Physical environment required for an elementary Montessori Program (Page 7)
3. Goals of Montessori elementary education (Pages 8 & 9)
4. Supportive and cooperative atmosphere
5. Access to as many public transportation routes as possible (to allow older students to commute)
6. Access to support services (LAC, Teacher/Librarian and ESL)
7. A location with drop-off and parking areas
8. The ideal location would have access to a community centre to allow swimming and skating programs for grades 1-7.

SHORT AND LONG TERM NEEDS OF THE VANCOUVER PROGRAM

This is a district alternative program. The majority of the children enrolled in the Montessori classes require transportation to and from school. Families commute from all over Vancouver as well as adjacent municipalities.

At the present time, most of the parents are employed. Many are single parent families or families in which both parents work. Survey results indicate that 66.5% of the children will need out of school care and 63% of the children have younger siblings who will be attending Montessori preschool and will later enroll in the alternative program.

A questionnaire was distributed to parents in an effort to assess the needs of the Montessori Program as they relate to the anticipated relocation of this Program. The following points summarize the findings:

1. Before- and after-school care for children of working parents
2. On site pre-school facilities for siblings (to help keep the family unit intact)
3. One central site, capable of accommodating all future expansion projections. (Repeated relocations would be detrimental, resulting in an unstable atmosphere.) The ideal site would have classes phasing out as the Montessori program expanded.
4. Long term planning for a gradual, controlled growth pattern
5. Supportive and cooperative atmosphere
6. Accessibility to as many public transportation routes as possible (to allow older students to commute)
7. Access to support services (LAC, Teacher/Librarian and ESL)
8. A location with drop-off and parking areas
9. The ideal location would have access to a community centre to allow swimming and skating programs for grades 1-7.
PHYSICAL ENVIRONMENT NEEDS

The 'ideal' site would have:

- Space for individual, small group and whole class learning activities
- Mobile furniture with both group and individual work tables
- Adequate shelving for display of materials
- Low sink units
- Pin-up boards at children's eye level
- Easy access to a public library for extensive research projects at the intermediate level in addition to a well-established school library
- Adequate facilities for art, science experimentation and a full nutrition program
- Outdoor area large enough to accommodate rigorous physical activities and other outdoor education programs such as gardening
- Close proximity to parks or wooded area for nature studies

GOALS IN SUMMARY

- To help children develop their personalities in accordance with their nature and potential at their own pace. The aim is always the formation of the total personality, not of independent functions or processes.
- To achieve the optimal relationship between the child and the adult as described by Dr. Montessori.
- To provide an environment in which competencies are fostered through repetitive experiences of success; failure is not emphasized.
- To respect the self-directed activity of the child.
- To strive towards a cultural environment which will enlarge the child's cultural horizons to allow intellectual as well as moral development.
- To allow freedom of movement and encourage vigorous physical activity and outdoor work.
- To encourage intrinsic motivation and self-education.
- To encourage cooperation and accept (but not encourage) competition.
- To develop an interdisciplinary curriculum to meet the needs of the growing child.
- To promote a home/school environment consistent with the Montessori philosophy.
GOAL OF MONTESSORI ELEMENTARY EDUCATION

The following excerpts are from 'Looking Ahead to Montessori Elementary' and 'Identifying the Elementary Environment' by David Kahn, Vice-President of the North America Montessori Teachers Association (NAMTA). (Underlining has been added).

The Elementary environment reflects a new plane of education for the Montessori child. The environment should strike the imagination and lead to abstraction. The adult (teacher/director) functions as the link between the prepared environment and the child. The curriculum is interdisciplinary where concepts of biology, geology and history converge on the study of life's evolution from the origin of the universe to the emergence of man and civilization. The child's studies stem from spontaneous humanistic questions which Dr. Montessori thought were universal to all children. Who am I? Where do I come from? What is human about humans? What are universal human needs? How do I cooperate with the world?

'The curriculum is open ended, but the classroom defines itself through certain key materials which utilize scientifically classified facts as a means of widening the abstract outreach of the child. Each key detail relates to the whole. The key then becomes an associated fact. The natural sciences lead to the social and physical sciences. Math and geometry concepts flow from basic number operations moving through Euclidian geometry to solid geometry always on a fully integrated basis. Language becomes the final synthesis of all experiences with creative writing and grammar analysis built on the cultural content of the curriculum.'

Dr. Montessori observed that the elementary child is characterized socially by a marked development of the 'clan' instinct. They enjoy group activities. Intellectually the problem moves away from the concrete emphasis of the pre-school years and strives to allow abstraction and the imagination to reach its fullest potential. The indoor environment points to the outside world and the exploration of the outdoor environment encourages further research indoors. Freedom of movement and outdoor work in a safe, secure and orderly setting are encouraged.

CONCERNS ABOUT GROWTH

CAMP has concerns regarding the growth of this Program. Ideally there would be controlled growth with monitoring of student distribution throughout the grades. The proposal on the following page demonstrates such a growth pattern. This example:

- deals with attrition
- allows for intake of students without Montessori experience at the kindergarten and grade 4 level (the beginning of the second three year elementary cycle)
- attempts to control the size of the Program
- insures stability within the Program by suggesting a maximum number of students at each grade level
- allows for intake of students with Montessori experience during the 3 year cycles (Gr.1-3 and 4-6)
PROJECTED GROWTH OF MONTESSORI PROGRAM (Proposal)

CRAE K

TOTAL ENROLMENT, INTAKE AND GRADE DISTRIBUTION

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CLASS GROUPINGS (once maximum of nine classes is reached):
- One kindergarten (transition)
- Three primary classes (grades 1, 2, and 3)
- Five intermediate classes

EXPANSION OF PRIVATE MONTESSORI SCHOOLS IN VANCOUVER

VANCOUVER PRIVATE MONTESSORI PROGRAMS:

1. Vancouver Montessori
   1545 W. 62 ave
   1975
   35

2. Montessori Daycare
   2091 W. 8 ave
   1975
   25

3. Family Montessori
   1099 Nicola Square
   1980
   40

4. " site 2
   1545 W. 62 ave
   1980
   40

5. Ivy Montessori
   1416 W. 6 ave
   1980
   40

6. " site 2
   1916 W. 6 ave
   1980
   40

7. Community Montessori
   2740 Guelph St
   1981
   40

8. Plum Blossom Daycare
   2419 W. 45 ave
   1981
   40

9. Westside Montessori
   2050 Oak St
   1981
   40

10. East Vancouver Montessori
    1140 Oak St
    1981
    40

11. Marpole Bilingual
    1256 W. 67 ave
    1981
    40

12. Kereisdale Montessori
    2050 Oak St
    1981
    40

EXPANSION OF PRIVATE MONTESSORI SCHOOLS IN VANCOUVER

YEAR ESTABLISHED


PROJECTED GROWTH OF MONTESSORI PROGRAM (proposal)

* students

YEAR

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

TOTAL ENROLMENT, INTAKE AND GRADE DISTRIBUTION


15 24 31 22 22 22 22 22 22 22 22

9 25 31 31 27 27 27 27 27 27 27

10 28 31 31 32 32 32 32 32 32 32

24 24 24 24 24 24 24 24 24 24 24

1 4 7 5 4 4 4 4 4 4 4

INTAKE ENROLMENT CLASSROOMS

250 200 150 100 50 0


1585 1586 1587 1588 1589 1590 1591 1592 1593 1594 1595

8 27 32 24 28 205 41 29 32 179 205

8 students 5 6 7 8 9 10 11 12 13 14 15

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Appendix 2: Montessori Enhancement and Expansion Proposal — Lorain City Schools, Lorain, Ohio

An excellent funds development proposal for training support from foundations for Montessori teachers, this proposal requests almost $200,000 for start-up in wake of non-renewal of magnet school funding.

Montessori Enhancement and Expansion Project
for the
Lorain City Schools

January 12, 1990

PROJECT ABSTRACT

Between 1986 and 1989, the Lorain City Schools established two Montessori Schools—Palm and Lincoln Academies which presently serve a total of 245 children in a racially balanced setting. These schools were designated "Montessori-like" insofar as federal and district funds could purchase only minimal training and partial materials for its twelve Montessori classrooms. Because of the already improved educational results and strong popularity of the programs, the Lorain City Schools have decided to provide fully certified Montessori teachers and materials for Palm and Lincoln Academies and to add six additional classrooms for a total of eighteen Montessori classes. As a result of the proposed enhancement and expansion project, continuous Montessori programming will be made available to the district for children ages three to twelve years. The expansion design includes four Montessori preschool classes (ages 3-5), one of which will be a pilot Spanish bilingual immersion class. The Montessori-like approach would be presently retained for three additional bilingual classes, which are not included in the eighteen count. The schools will reach maximum Montessori enrollment of 450 pupils by 1991-1992.

Objectives

The Lorain City Schools, with the support of community foundations, will endeavor to complete the already initiated Montessori programs at Palm Academy and Lincoln Academy for children ages three to twelve years by:

- providing certified Montessori Training by the Association Montessori Internationale, through the auspices of the Ohio Montessori Training Institute, for fifteen teachers at Palm Academy and Lincoln Academy;
- providing supervisory personnel with Montessori curriculum knowledge and management skills to nurture and oversee the project;
- establishing the first public Montessori preschool classes in northern Ohio;
- establishing a model bilingual Montessori preschool class to promote English as a second language in an early age for more natural and effective bilingual growth;
- providing a successful curriculum mesh allowing Montessori and District outcomes to be compared and integrated;
- equipping Montessori classes with the full complement of Montessori manipulatives.

The Need — Montessori for an Economically Disadvantaged Community

The Lorain City School District is located in an economically depressed metropolitan area with a limited tax base. Yet Lorain residents have supported fourteen alternative education programs throughout the city, including an expanding Montessori program for children at the preschool and elementary level. The continued well being of the Montessori effort is diminished however, because:
• the teaching staff has received only limited "in-house" training and has an incomplete knowledge of Montessori technique and materials.
• of a 24% tax base reduction from $609 million to $469 million, the largest portion being intangible personal property tax reductions.
• of the loss of a $3.7 million federal magnet grant due to a 2 year funding cycle.
• trained Montessori teachers are not available due to a national shortage of Montessori teachers.

For this reason, Lorain City Schools must provide training for their Montessori teachers utilizing a localized training program.

The district is suffering a financial crisis and cannot support the one-time training and materials purchase costs that the project start-up requires. In order to continue its innovative city-based program for desegregation and strategic restructuring of curriculum, the district will need to bring its developing Montessori model to completion.

The Solution
The Lorain City Schools, in conjunction with the Ohio Montessori Training Institute and Cleveland State University, is seeking funding to support certified Montessori coursework for fifteen teachers, two principals, and one supervisor. In addition, nine assistants, support personnel, and counselors will receive select coursework. Curriculum implementation and on-site supervision is included in the training package.

The Request
The District needs outside funding in order to equip the Montessori school and sponsor Montessori training for its current teaching staff. For this reason, the Lorain City School District respectfully requests of the Nord Family Foundation a two-year grant in the amount of $31,800 to be used to accomplish this goal as outlined in the following detailed proposal:

To date, the District has expended $95,969 for Montessori equipment and supplies. The annual cost of staffing the Montessori program (in 1990-91 figured) is $731,046. This cost includes teachers, aides, and materials; building costs and administrative costs are not included.

The Lorain City School District is committed to maintaining the Montessori program (age 3-12) as a means of providing students with an alternate type of education – an enrichment opportunity that seeks to be reserved for upper economic or academic level, majority families, and primarily available only in private school settings – a child-centered environment where students can continuously progress at their individual rates and in a stimulating environment for all children. The District's financial crisis is real; the $31,800 cost for teacher aides – which will be needed to release the Montessori teachers during their practical experience which, unlike the summer training sessions, is held during the school year – will be absorbed internally. The remaining $719,182 must be sought elsewhere.

The Lorain City School District is formally requesting a grant from The George Gund Foundation, in the amount of $56,000, to help support the Montessori Age 6-9 Component. Such funding will provide the $31,800 needed to support the training of seven teachers and the $19,600 needed to purchase supplies and materials for the seven age 6-9 classes. Due to the large nature of this request and the bi-summer training schedule, it is suggested that funding be considered on a three-year basis, with 33% for each of the 1990 & 1991 summers and the remaining 33% for the summer of 1992.

ESTIMATED FUNDING SOURCES & ANTICIPATED REQUESTS

<table>
<thead>
<tr>
<th>Source</th>
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<tr>
<td>Lorain City School District</td>
<td>$30,344</td>
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<tr>
<td>Nord Family Foundation</td>
<td>$43,800</td>
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<tr>
<td>The George Gund Foundation</td>
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<td>The Martha Holden Jennings Foundation</td>
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<td>The Community Foundation of Greater Eden County</td>
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<td>The Stocker Foundation</td>
<td>$4,000</td>
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<tr>
<td>Total</td>
<td>$192,344</td>
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INTRODUCTION

The Lorain City School District is one of a small number of public schools nationwide that emphasizes the Montessori approach to classroom instruction. Two schools, Palm and Lincoln, have been established as Montessori Magnet Academies. The success of the Montessori Magnet Program is crucial in effecting Lorain City School's unique instructional environment and in complying with federal court-ordered desegregation.

Palm Academy not only provides for the desegregation of Hispanic students, but also offers English for Hispanic students in need and Spanish immersion - as a foreign language - for all students. The development of new programs require material purchases beyond the scope of everyday needs. Palm Academy's unique instructional environment and the Montessori Magnet Program are costly.

The Montessori Magnet Program is offered by the Ohio Montessori Training Institute in cooperation with Cleveland State University specifically for Lorain City Schools. In exchange for participating in such training, teachers will be required to make a commitment to remain with the District for a period of 2 to 5 years. Teachers who, with further training, can meet the needed certification criteria. Three of the every-one Montessori teachers & administrators needed to accomplish program objectives possess such credentials. Eighteen need to be trained at the appropriate level. A six-week Montessori teacher training program is being offered by the Ohio Montessori Training Institute in cooperation with Cleveland State University specifically for Lorain City Schools. In exchange for participating in such training, teachers will be required to make a commitment to remain with the District for a period of 2 to 5 years.

The development of new programs require material purchases beyond the scope of everyday needs. Montessori materials and supplies are not readily available; the majority of the items are imported from the Netherlands by the Montessori of California and are costly. The District has expended $55,089 to date for such materials and supplies. Outside resources must be secured for the remaining amounts. In order to meet the above goals, foundation support must be sought for:

- The creation of a Montessori preschool facility and educational opportunities for three and four year olds.
- The program expansion of Montessori units at Palm Academy - 5 preschool and 1 age 6-9.
- The program expansion of Montessori units at Lincoln Academy and
- The establishment of a 3 summer training program for 18 Teachers' Supervision.

PROGRAM DESCRIPTION

The Lorain City School District, rich in cultural heritage, is unique among urban districts. Even though the system is in the more economically depressed metropolitan area of the country, its residents have chosen to demonstrate support for desegregation through the establishment of a magnet schools process which fulfills a Federal court-ordered Consent Decree. Palm and Lincoln Academies are two such magnet schools which are based upon the Montessori school of thought. The curricular goals, however, extend beyond the total Montessori experience to include language immersion and bilingual education. Spanish for all Montessori students and English as a Second Language for Hispanic children in need, respectively.

Palm Academy had been a closed building for two years and was reopened as a Montessori-like and bilingual language magnet in September, 1986. Due to continued community interest, the Montessori-like program was expanded to the higher grade levels during the 1988-89 and 1989-90 school years. In the initial year 2 grade four classes were established, in 1986-87, 2 grade five classes were added. This expansion incorporated Lincoln Academy into the continuum.

The Montessori-like program was initially composed of two classes each of an all-day kindergarten, grade one, grade two and grade three. The newly created preschool component would charge this to five classes - each consisting of a multi-age one-half day program for three, four, five and six year olds (one of which would be for preschool bilingual students) in need of English as a Second Language skill. The five-year olds would then remain for a full day program, to complete the full-day kindergarten program. Instruction, designed to meet the curricular requirements of the Lorain City School District, is incorporated into the Montessori program methods. This enables a child to easily adapt to any school setting. Although children have been successful when entering at the kindergarten level, according to the Montessori philosophy it is desirable that children enter the school experience at the age of three, therefore, the preschool concept.

Students are selected for Palm & Lincoln Academies, by using a district wide lottery process (new entrants are funded to the preschool and age 5 kindergarten levels). This process accepts voluntary applications from all interested parents. Applications are first coded by grade level, ethnicity and sequence of receipt to ensure that all eligible applicants are given an equal opportunity to fill magnet school openings. Although there is no rigid criteria for selection, students interested in the curricular goals, suitable aptitude, and the ability to adapt to the Montessori environment are considered in the selection process.

The current program, and each classroom individually, is balanced by race and ethnicity according to district proportions. 56.6% - 21.4% - 22% representing White, Black, and Hispanic populations respectively. Students number 24 in each Montessori classroom. At the present time, there are 182 students in grades K-3 at Palm Academy and 63 grade four and five students at Lincoln Academy. The program will be expanded to grade six for the 1990-91 school year. Lincoln Academy's enrollment of 63, as opposed to a full enrollment of 96, is due to attrition.
grade at Lincoln. The addition of new units at Palm will increase the number of Montessori students participating in the continuum from age 3 through 12 resulting in full Lincoln enrollment.

In Lorain City School’s effort to become voluntarily integrated, the Montessori-like opportunity enabled two schools, historically of Hispanic enrollment, to attain a balanced racial composition, as well as, offer an innovative program well adapted to both a multicultural setting and to a new educational approach for public schools for low and middle socioeconomic children.

Literature indicates that the Montessori technique achieves positive results - that Lorain City School’s magnet test scores show a significant percentage of students scoring in the “high performance category” in vocabulary, reading and math. This is also substantiated by the nationally-normed Comprehensive Test of Basic Skills (CTBS) scores from Palm Academy. Spring 1989 CTBS results show second graders, who had been in the Montessori program since kindergarten, scoring in the 82nd percentile in reading, the 83rd percentile in language, and the 94th percentile in mathematics.

The following page is a visual presentation of Lorain City Schools’ Montessori program. Each teacher on this chart represents a class of twenty-five students.

This chart is followed by a demographic presentation of Lincoln and Palm Academies. It should be noted that:

- 42.1% of Lorain City School students are economically disadvantaged (based upon the accepted criteria of free & reduced lunch count),
- 35% of Palm’s enrollment and 81.5% of Lincoln’s enrollment are economically disadvantaged,
- 36.6% of Palm’s Montessori enrollment and 47.6% of Lincoln’s Montessori enrollment are economically disadvantaged, and
- the ethnic composition of both academies closely parallel the District’s ethnic composition.

![Diagram of Lorain City School's Montessori Program]
Palm Montessori Academy
% Economically Disadvantaged
% Neighborhood Students

Palm Montessori Academy
Ethnicity
LINCOLN MONTESSORI ACADEMY
% Economically Disadvantaged
% Neighborhood Students

LINCOLN MONTESSORI ACADEMY
Ethnicity
Appendix 3: New Faxon Montessori Magnet School Site Plan — Kansas City, Missouri

Formulated by parents, teachers, and community members, this short document, published here in total, contains one organization's planning, scope and timetable for a school. Although a number of references such as size of the kindergarten, separate classrooms for Special Ed., and computer lab are not in keeping with Montessori philosophy, the document is a concise and complete example of a magnet school site plan.

Please consult Implementation: Chapter Four, for cost and implementation suggestions for the real standards and needs.

Project Management Team
Kansas City Missouri School District Capital Improvement Program

The Elementary School Montessori Magnet is designed to provide an environment conducive to self-motivated, continuous-progress learning. Each classroom shall be a self-contained, non-directional multi-use space capable of fostering a variety of interactive and exploratory experiences for students.

91 45.01 Kindergarten Classrooms (ages 3, 4, 5)

A. Spaces

1. The maximum number of students allowed in a Kindergarten classroom is 20.

2. Montessori kindergarten age children are involved in both movement and rest activities. Areas shall be provided for the following three major activities:
   - Quiet Activity: Requirements include hard surface floors (vinyl composition tile), with cubbies for art and cabinets for book storage.
   - Play Activity: Areas provide movement activities. Requirements include hard surface floors (vinyl composition tile) and shelving for toys.
   - Creative Activity: Arts and crafts, science experiments, etc. Requirements include low tables for 1-2 children with arts and cabinets for storage of crafts and science materials. Floors shall be in vinyl composition laminate for ease of cleaning.

3. Evolution of Students: Students will work with live invertebrates (fish, pets, reptiles, amphibians, birds) which will require counter space for aquariums, terrariums, incubators, and cages. Students will also work with plants and counter space will be required for planting, planting, plant care, watering, and maintenance. Storage shall be provided for microwaves and microscopes.

4. Physical Education: Students will watch teachers perform physical science experiments as well as performing individual experiments. Storage space shall be provided for equipment such as microscopes, beakers, tools, displays, etc.

5. Art: Students shall have initial experiences with art within the classroom, such as finger painting, coloring, etc. Students will learn to develop control over various types of media.
Music Students shall have initial experiences with music within the classroom such as singing, rhythmic exercises with wood blocks and sandpaper blocks, etc.

Outdoor Activities

Access to the outdoor environment is very important to the Montessori program. Students shall have initial experiences with music within the classroom such as singing, rhythmic exercises with wood blocks and sandpaper blocks, etc.

OutdoorActivities

Direct access to outdoor areas is mandatory because without it teachers have no control. A courtyard and protected area is preferable in an urban neighborhood. Protection from noise is important.

5. Kindergarten Classrooms shall be located on the ground level near the administration area and close to the main entrance of the building. Kindergarten outdoor play areas shall be directly accessible from kindergarten classrooms.

6. Isolate classrooms from visual distractions.

3. Special Requirements

i. Kindergarten Classrooms (280 ft each)

a. In each classroom space shall be provided for two double-height rolling tables 42" x 72" with six chairs each. Space for eight chairs shall be provided for the height of 3-year-old children (20 in.) and four chairs for 4-year-old heights (42-12 in.). Tables may be used at opposite ends of the classroom for separate activities. Chairs should be used in lieu of plastic or metal.

b. In each classroom space shall be provided for two double-height rolling tables 42" x 72" with six chairs each. Space for eight chairs shall be provided for the height of 3-year-old children (20 in.) and four chairs for 4-year-old heights (42-12 in.). Tables may be used at opposite ends of the classroom for separate activities. Chairs should be used in lieu of plastic or metal.

c. One girls' and one boys' toilet room in each classroom. Toilets shall be sized to accommodate 3-year-old children (24 in. high). Locate a counter top with two sinks directly outside the toilet rooms. One sink shall be for the 3-year-old children (24 in. high), and the other shall be for the 4-year-old children (20 in. high).

4. Kindergarten Classrooms (280 ft each)

a. In each classroom space shall be provided for two double-height rolling tables 42" x 72" with six chairs each. Space for eight chairs shall be provided for the height of 3-year-old children (20 in.) and four chairs for 4-year-old heights (42-12 in.). Tables may be used at opposite ends of the classroom for separate activities. Chairs should be used in lieu of plastic or metal.

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5. Kindergarten Classrooms (280 ft each)

a. In each classroom space shall be provided for two double-height rolling tables 42" x 72" with six chairs each. Space for eight chairs shall be provided for the height of 3-year-old children (20 in.) and four chairs for 4-year-old heights (42-12 in.). Tables may be used at opposite ends of the classroom for separate activities. Chairs should be used in lieu of plastic or metal.

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6. Kindergarten Classrooms (280 ft each)

a. In each classroom space shall be provided for two double-height rolling tables 42" x 72" with six chairs each. Space for eight chairs shall be provided for the height of 3-year-old children (20 in.) and four chairs for 4-year-old heights (42-12 in.). Tables may be used at opposite ends of the classroom for separate activities. Chairs should be used in lieu of plastic or metal.

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7. Kindergarten Classrooms (280 ft each)

a. In each classroom space shall be provided for two double-height rolling tables 42" x 72" with six chairs each. Space for eight chairs shall be provided for the height of 3-year-old children (20 in.) and four chairs for 4-year-old heights (42-12 in.). Tables may be used at opposite ends of the classroom for separate activities. Chairs should be used in lieu of plastic or metal.

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c. One girls' and one boys' toilet room in each classroom. Toilets shall be sized to accommodate 3-year-old children (24 in. high). Locate a counter top with two sinks directly outside the toilet rooms. One sink shall be for the 3-year-old children (24 in. high), and the other shall be for the 4-year-old children (20 in. high).
2. Third grade and fifth grade classes in a building should be located on the second or first floor. Classrooms should be adjacent to restrooms.

3. Classrooms should be located near the rear of the building to minimize distractions from exterior noise.

4. Classrooms should be equipped with adequate lighting and air conditioning.

5. Classrooms should be equipped with adequate storage for materials and supplies.

6. Classrooms should be equipped with adequate seating for students.

7. Classrooms should be equipped with adequate electrical outlets for equipment.

8. Classrooms should be equipped with adequate windows for natural light.

9. Classrooms should be equipped with adequate blackboards or whiteboards.

10. Classrooms should be equipped with adequate desks and chairs.

11. Classrooms should be equipped with adequate safety features, such as fire extinguishers and smoke detectors.

12. Classrooms should be equipped with adequate security features, such as locked doors.

13. Classrooms should be equipped with adequate accessibility features, such as ramps.

14. Classrooms should be equipped with adequate technology features, such as computers and projectors.

15. Classrooms should be equipped with adequate environmental features, such as air quality monitors.

16. Classrooms should be equipped with adequate food storage and preparation areas.

17. Classrooms should be equipped with adequate outdoor space for recess.

18. Classrooms should be equipped with adequate transportation features for field trips.

19. Classrooms should be equipped with adequate communication features, such as intercom systems.

20. Classrooms should be equipped with adequate maintenance features, such as janitorial supplies.

21. Classrooms should be equipped with adequate cleaning features, such as cleaning supplies.

22. Classrooms should be equipped with adequate heating and cooling features.

23. Classrooms should be equipped with adequate ventilation features.

24. Classrooms should be equipped with adequate lighting features.

25. Classrooms should be equipped with adequate electrical features.

26. Classrooms should be equipped with adequate storage features.

27. Classrooms should be equipped with adequate seating features.

28. Classrooms should be equipped with adequate黑board/whiteboard features.

29. Classrooms should be equipped with adequate classroom features.

30. Classrooms should be equipped with adequate safety features.

31. Classrooms should be equipped with adequate security features.

32. Classrooms should be equipped with adequate accessibility features.

33. Classrooms should be equipped with adequate technology features.

34. Classrooms should be equipped with adequate environmental features.

35. Classrooms should be equipped with adequate food storage and preparation areas.

36. Classrooms should be equipped with adequate outdoor space for recess.

37. Classrooms should be equipped with adequate transportation features for field trips.

38. Classrooms should be equipped with adequate communication features.

39. Classrooms should be equipped with adequate maintenance features.

40. Classrooms should be equipped with adequate cleaning features.

41. Classrooms should be equipped with adequate heating and cooling features.

42. Classrooms should be equipped with adequate ventilation features.

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47. Classrooms should be equipped with adequate黑board/whiteboard features.

48. Classrooms should be equipped with adequate classroom features.

49. Classrooms should be equipped with adequate safety features.

50. Classrooms should be equipped with adequate security features.

51. Classrooms should be equipped with adequate accessibility features.

52. Classrooms should be equipped with adequate technology features.

53. Classrooms should be equipped with adequate environmental features.

54. Classrooms should be equipped with adequate food storage and preparation areas.

55. Classrooms should be equipped with adequate outdoor space for recess.

56. Classrooms should be equipped with adequate transportation features for field trips.

57. Classrooms should be equipped with adequate communication features.

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59. Classrooms should be equipped with adequate cleaning features.

60. Classrooms should be equipped with adequate heating and cooling features.

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minimum of three grounded double-duplex electrical outlets in
the Teacher's Workroom. Provide counterspace for a laminator
in the Teacher's Workroom. Provide a minimum of three
grounded double-duplex electrical outlets in the lounge.
Locate the principal's office to allow for supervision of
busses loading and unloading from the office.

4. 15 Guidance Counseling Health Center
All requirements shall be the same as Section 41.2

5. 11 Cafeteria
All requirements shall be the same as Section 51.10

5. 12 Maintenance and Operations
All requirements shall be the same as Section 51.11

6. 13 Circulation Mechanical Electrical
All requirements shall be the same as Section 61.12

9. 14 Auditor Recreational Facilities
All requirements shall be the same as Section 91.13

6. 15 Site Circulation
All requirements shall be the same as Section 61.15
School improvement is predicated on goal setting and evaluation. Research provides information as to whether the school is achieving its goals. The document included here (as an example of comprehensive evaluation) is unique because it represents Montessori goals articulated in non-Montessori terms. The planning document orches-trates evaluation in the following areas: integrated school environment, academic foundations, parent participation, staff rejuvenation, and community partnerships.

The articles and case studies by Ana Maria Villegas in this section are part of the integrated school improvement data collection at Mitchell Montessori School.
MITCHELL SCHOOL IMPROVEMENT PLAN

EVALUATION

MITCHELL MONTESSORI SCHOOL IMPROVEMENT PLAN

INTRODUCTION

Instrumentation for planning, evaluation, and research in the public sector is critical because it allows the Montessori school to measure its impact on diverse student populations and to speak the language of the district regarding its successes. The combination of planning, evaluation and research allows the Montessori school to provide information to the district, parents and public, while instituting program refinement and excellence through research-informed planning.

Featured in this section is a comprehensive, integrated plan for school improvement which has developed out of a current project sponsored by the Mitchell Montessori School in Denver. Principal, Paula Biever, and Researcher, Ana Maria Villegas, chose to document a Montessori school from the inception of the school in 1986 with the intention of not only influencing district decisions about the future of the project, but entering the national educational forum with new research data and literature. Ms. Biever refers to her plan as a road map to the future. The uniqueness of the document and its related study outcomes is its ability to integrate Montessori concepts with public school organizational formats. The result of this work will be a new comprehensive planning and evaluation approach for both the private and public sector.

INTRODUCTION TO THE SCHOOL IMPROVEMENT PLAN

This plan has been prepared by staff, parents and community participants to guide improvement activities at Mitchell Elementary School between now and the end of the 1990 calendar year.

The plan was developed in a participatory process that included needs assessment, goal setting, and implementation planning. The process has heightened our awareness of who we are and how we can best help the students, parents, and public we serve.

October 18, 1988

The Process

An important part of the planning process has been the analysis of needs, the review of school effectiveness literature, school reform and improvement literature, and Montessori philosophy and pedagogy. The School Improvement Planning Committee, the Mitchell faculty, the principal, and an educational researcher met several times to list and discuss needs. Twenty-three needs were identified by the committee with input from staff, parents, and community members.

Needs were identified through the following sources:

- Analysis and evaluation of ITBS scores for 1987-88
- Recommendation of teaching staff
- Recommendations of building School Improvement Accountability Council Committee
- Discussion with Parent Teacher Student Association Board
Feedback from parent conferences
- Recommendations of Director
- Recommendations of Montessori consultants
- Recommendations of clerical and custodial staff

After the needs were listed, the committee, with the assistance of the researcher, helped prioritize the needs using a process to identify the most important and manageable ones. We were able to include all of the identified needs by organizing them under the five goals of the program. A brief rationale statement introduces each goal and provides the context for our improvement plan.

Mission Statement

The mission of the Mitchell Montessori program is to enable all students to develop strategies for the acquisition of knowledge, skills and values they need to participate meaningfully in our pluralistic society.

Consistent with this mission, the program strives to reach five goals addressing the following areas:

A. Integrated school environment
B. Academic foundation
C. Parent participation
D. Staff rejuvenation
E. Community partnerships

The rationale of the program goals is listed below along with the objectives thereby making the program philosophy more explicit.

A. Integrated School Environment

From a Montessori perspective, the cultural, social, age and individual differences evident in our society are assets that should be cultivated. Accordingly, the best education possible is one in which children from diverse backgrounds are free to interact and learn in an atmosphere that respects their differences. In keeping with this view of society and education, the Mitchell Montessori program is carefully designed to offer students an integrated school environment. The commitment to integration is embodied in the following program goal:

Goal 1 — To provide parents in the Denver Public Schools with the opportunity to enroll their children in classrooms that are integrated on the basis of ethnicity, social background, age, gender and cognitive differences.

Objectives

1.1 — The Mitchell Elementary School program will select students in accordance with district policy regarding ethnic integration.
1.2 — Each classroom in the program will mix students by ethnic group, socioeconomic level, age, gender and cognitive ability.

B. Academic Foundation

According to Maria Montessori, no human being is educated by another person. Rather, children learn through their own efforts from their environment. Adults promote the learning process by serving as the dynamic link between the environment and the child. That is, learning is not the mere passing of information from teacher to student; it is the process through which the child develops strategies for the acquisition of knowledge and skills.
The important task of schools is to provide students with a general foundation that will enable them to acquire more specialized knowledge and skills later in life. Such a foundation is a prerequisite for meaningful participation in a rapidly changing society and world and serves as the best deterrent to the school dropout problem. This concern informs the second goal of the Mitchell Montessori program.

**Goal 2** — To provide a carefully planned and stimulating instructional program to help children develop within themselves a strong academic foundation.

**Objectives**

2.1 — Teachers will implement the Montessori curriculum

2.2 — Students will develop the following skills as reported on a teacher pre/post rating scale:
   a. a positive attitude toward school
   b. inner security and sense of order
   c. pride for the physical environment
   d. abiding curiosity
   e. a habit of concentration
   f. habits of initiative and persistence
   g. the ability to make decisions
   h. a sense of independence/self-confidence
   i. self-discipline
   j. a sense of responsibility to other members of the class, school and community

2.3 — Students will develop proficiency in the following basic skills areas and will achieve at or above the district average on the IOWA Test of Basic Skills:
   a. listening
   b. speaking
   c. reading
   d. writing
   e. mathematics
   f. social studies
   g. science
   h. art appreciation
   i. music appreciation

2.4 — Teachers and principal will adopt a written report form to keep elementary school parents informed of students' academic and social progress

2.5 — Staff and parents will develop procedures to identify at-risk students
   a. developmental screening for all preschool students
   b. at-risk profile on each student

2.6 — Staff and parents will provide students who are identified at risk with successful learning experiences and additional personal support

2.7 — Parents and faculty will work together to maintain high student attendance rates

C. Parent Participation

Research shows three major benefits associated with parents' active involvement in the education of their children. First, children tend to attain higher achievement gains when parents participate in school activities. It is thought that through such participation parents gain knowledge and skills to help their children to learn at home. Second, parent involvement in schools generally increases their satisfaction with the instructional programs which leads to greater support of those programs. Last, the presence of parents in the school conveys a message to the children about the importance of formal education.
Parent participation in the teaching-learning process of their children is crucial in Montessori educational programs. Since children are thought to learn from their environment, whether at school or elsewhere, teaching is necessarily a joint responsibility of the school and family. In accordance with the Montessori philosophy, the Mitchell program includes a parental component in which activities are guided by the following goal:

**Goal 3** — To promote and maintain continuity in the learning process between home and school through an active parent education program.

**Objectives**

3.1 — Implement a varied series of parent activities including:
- orientation session
- parent-student open house
- classroom observations
- parent-teacher conferences
- parent education nights on topics of Montessori curricula

3.2 — Sustain high rate of parent participation at Mitchell School events

3.3 — Establish a strong and active Parent/Teacher Organization and School Improvement Accountability Council

D. Staff Rejuvenation

Quality instructional programs must necessarily make ongoing adaptations to meet the evolving needs of a diverse student population. Additionally, maintenance of quality instructional efforts requires collegial support. Given these concerns for the establishment and maintenance of educational excellence, the Mitchell Montessori program has planned staff rejuvenation activities. The goal of the activities is as follows:

**Goal 4** — To provide support to the Mitchell Montessori program staff in order to refine and extend their ability to deliver quality instruction.

**Objectives**

4.1 — Montessori principal will observe in classrooms, provide feedback to the teacher and assistants, and support their professional growth.

4.2 — Administration, teachers and assistants will observe other Montessori classrooms in Mitchell as well as other Montessori schools.

4.3 — Staff will attend regional and national Montessori conferences, workshops, and other staff development activities.

4.4 — Staff will attend weekly meetings that will address:
- curricular issues
- primary and elementary level concerns
- program planning issues
- program implementation procedures

4.5 — Teachers and assistants will meet periodically to coordinate their instructional efforts.

4.6 — Parents will recognize staff excellence through appreciation activities.

E. Community Partnerships

The school is the institution that provides members of our society with a formal education. Recently, however, we have come to the realization that schools alone cannot ensure that children will reach their
greatest potential. For the most effective education possible, schools need to develop partnerships with other agencies and organizations at the local, state and national levels. This realization has led to the fifth goal for the Mitchell Montessori program:

**Goal 5** — To develop meaningful partnerships with local, state and national agencies and organizations for the purpose of strengthening the Mitchell Montessori program.

**Objectives**

5.1 — Promote the involvement of community resources at Mitchell School.

5.2 — Inform the community about the Montessori program at Mitchell and promote positive perception and interaction.

5.3 — Form partnerships with business agencies within Denver.

5.4 — Nurture district-wide understanding and respect for the program.

5.5 — Program administrators and faculty will serve in leadership roles in local, state and national educational efforts.
<table>
<thead>
<tr>
<th>Action Plan</th>
<th>Source of Data</th>
<th>Data Collection Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal</strong></td>
<td><strong>Objectives</strong></td>
<td><strong>Descriptive Narrative</strong></td>
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<tr>
<td>Integration</td>
<td>Ethnic integration schoolside (1.1) Integrated classrooms (1.2)</td>
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<tr>
<td></td>
<td>Teacher implement Montessori curriculum (2.1)</td>
<td>X</td>
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<tr>
<td></td>
<td>Student outcome — non academic (2.2)</td>
<td>X</td>
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<tr>
<td></td>
<td>Student outcome — academic — Iowa (2.3)</td>
<td>X X X</td>
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<tr>
<td></td>
<td>Student outcome — academic — report form (2.4)</td>
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<tr>
<td></td>
<td>Staff and Parent develop identification procedures for students at risk (2.5)</td>
<td>X X X X</td>
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<tr>
<td></td>
<td>Staff and Parent develop additional support for identified students (2.6)</td>
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<tr>
<td></td>
<td>High attendance rates (2.7)</td>
<td>X</td>
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<tr>
<td>Academic Foundation</td>
<td></td>
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<tr>
<td>Parent Participation</td>
<td>Implement a variety of parent activities (3.1)</td>
<td>X</td>
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<tr>
<td></td>
<td>Sustain high levels of parent participation (3.2)</td>
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<tr>
<td></td>
<td>Parent-teacher organization SIAC (3.3)</td>
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<tr>
<td></td>
<td>Teacher implement Montessori curriculum (4.1)</td>
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<td></td>
<td>Observe other Montessori programs (4.2)</td>
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<tr>
<td></td>
<td>Attend regional/national conferences (4.3)</td>
<td>X X</td>
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<td></td>
<td>Attend weekly meetings (4.4)</td>
<td>X X</td>
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<td></td>
<td>Coordination between teacher and assistant (4.5)</td>
<td>X X</td>
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<tr>
<td></td>
<td>Parent recognition of staff excellence (4.6)</td>
<td>X</td>
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<tr>
<td>Community Partnerships</td>
<td>Involve community resources (5.1)</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Inform community about program (5.2)</td>
<td>X</td>
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<tr>
<td></td>
<td>Partnerships with business (5.3)</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Nurture districtwide respect for program (5.4)</td>
<td>X</td>
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<tr>
<td></td>
<td>Administration/faculty will serve leadership role — local, state, national Montessori community (5.5)</td>
<td>X X</td>
</tr>
</tbody>
</table>
DATA GATHERING FORMS

The following forms were utilized in establishing accountability and a measure of goal realization. Outcomes are published in the chart formats which make the information easily accessible to the faculty, administration, and district officials.

GOAL 1 — INTEGRATION

STUDENT DISTRIBUTION BY AGE, ETHNICITY AND GENDER FORM*
(By Classroom)

<table>
<thead>
<tr>
<th>AGES AS OF SEPTEMBER</th>
<th>NATIVE AMERICAN</th>
<th>BLACK</th>
<th>ASIAN</th>
<th>HISPANIC</th>
<th>ANGLO/OTHER</th>
<th>TOTALS</th>
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<tbody>
<tr>
<td>3 year olds</td>
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<td>5 year olds</td>
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<td>6 year olds</td>
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<td>7 year olds</td>
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<td>8 year olds</td>
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<tr>
<td>9 year olds</td>
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<tr>
<td>Totals</td>
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</tbody>
</table>

Key: Girls are at the bottom right triangle  
Boys are at the top left triangle  
Class # ________________

*This form is used to compare classroom populations. The precision of this instrument allows for maximum fine tuning in constructing class composition.
Montessorians in the public sector need to develop assessment measures that reflect the very special nature of Montessori education and its impact on the emerging personality. Through a review of Montessori literature, discussion with parents, staff, and researcher; the following ten qualities were identified as critical indicators of a student's healthy and normal development in a Montessori classroom. We believe that these personal, social, and emotional attributes are the basis for foundation skills for all learning and should be respected as a legitimate measure of program success.

**GOAL 2 — ACADEMIC FOUNDATION**

**ATTITUDES TOWARD SCHOOL FORM**

<table>
<thead>
<tr>
<th>STUDENT NAME</th>
<th>Positive Attitude Toward School</th>
<th>Inner Security</th>
<th>Sense of Order</th>
<th>Pride in Physical Environment</th>
<th>Curiosity</th>
<th>Habit of Concentration</th>
<th>Initiative/Persistence</th>
<th>Ability to Decide</th>
<th>Sense of Independence/ Self-Confidence</th>
<th>Self-Discipline</th>
<th>Sense of Responsibility To Others</th>
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</thead>
<tbody>
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</tbody>
</table>

*Teachers are asked to rate each student in their class in terms of development of basic attitudes toward school and learning using a scale of 1-5 (1 = lowest level of development and 5 = highest level of development. See Attributes of the Learner, next page, for sample indicators.*
In discussion of this new assessment tool, the Montessori staff and researcher believed that all evaluators needed a common basis on which to rate students. The researcher, principal, and a teacher met to create a list of sample behaviors, “Attributes of the Learner,” that were understandable to the raters. This working-through process helped to bring meaning and a measure of reliability to pre- and post-ratings. Pre-ratings were done within the first six weeks of the beginning of the academic school year and post-ratings were done within the last three weeks of school. The analysis of findings from this assessment is being compiled.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Rating</th>
<th>Sample Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Attitude toward-school</td>
<td>(1)</td>
<td>Signs of fear and panic at separation from parent/guardian; anxious behavior; hysterical behavior</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>Shows signs of fear of separation, but displays confidence in overcoming fear of separation</td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>Signs that child looks forward to going to school; strong desire to be in school; talks to parents about what occurred in school</td>
</tr>
<tr>
<td>Inner Security sense of order</td>
<td>(1)</td>
<td>Someone who constantly needs physical and/or verbal reassurance from adult; blind to the environment; work done carelessly and incompletely</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>Completes work that has been presented; handles materials properly</td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>Child goes readily to work; spontaneously cares for the work and the environment; high evidence of organization in work</td>
</tr>
<tr>
<td>Pride in Physical environment</td>
<td>(1)</td>
<td>Carelessness; not returning materials to proper place; taking more than his/her share; not cleaning up</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>Completing work and maintaining good order</td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>Care and love of the environment; selflessness of the environment; contribute to environment (e.g., bringing objects from home)</td>
</tr>
<tr>
<td>Curiosity</td>
<td>(1)</td>
<td>Passive disinterest; fear to try; oblivious; out of touch; low-level reaction to stimulus of materials</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>Choosing to use materials; being involved to the point of interest with the materials</td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>Raising questions; deep search; sense of wonder</td>
</tr>
<tr>
<td>Habit of concentration</td>
<td>(1)</td>
<td>Easily distracted; hyperactivity; interrupts others</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>Concentrated work without being totally absorbed; controlled work; focused work; center on work</td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>Total absorption in activity leading to contemplation in older child; satisfaction</td>
</tr>
<tr>
<td>Initiative persistence</td>
<td>(1)</td>
<td>Child is dependent on adult or other children; scattered attention; flighty</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>Follows through with work; completing work satisfactorily</td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>Self-directed; wide range of interest; displays an inner motivation; thoroughness in perfecting tasks</td>
</tr>
<tr>
<td>Ability to make decisions</td>
<td>(1)</td>
<td>Child cannot make choices; becomes inactive because he/she cannot make decisions; fear of failure</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>Making appropriate choices without needing adult direction</td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>Self-assured; risk-taking; disinterested judgment (making decisions based on perception of what is right)</td>
</tr>
<tr>
<td>Self-confidence sense of independence</td>
<td>(1)</td>
<td>Timidity; uninvolved; dependent on others</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>Child displays happiness, interestedness, involvement; can work alone</td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>Expressiveness; courage; takes on challenges; sets out on his/her own; adventurous</td>
</tr>
<tr>
<td>Self-discipline</td>
<td>(1)</td>
<td>Child mis-behaves; disruptive behavior</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>L. coping up with work; working on his/her own; getting along with peers</td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>In control of self in different settings; highly focused; in harmony with the group</td>
</tr>
<tr>
<td>Sense of responsibility to others</td>
<td>(1)</td>
<td>Hostility; egocentric; selfishness; aggression toward others</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>Performs class-room jobs; shares with others</td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>Charismatic leadership; commitment to good works; commitment to social causes</td>
</tr>
</tbody>
</table>
GOAL 3 — PARENT PARTICIPATION

ACTIVITIES INVOLVEMENT FORM*
1989-90

<table>
<thead>
<tr>
<th>Activity</th>
<th>Mother</th>
<th>Father</th>
<th>Guardian/Grandparents</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get Acquainted</td>
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<td></td>
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<tr>
<td>Picnic</td>
<td></td>
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<tr>
<td>Parent-Child Open House</td>
<td></td>
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<tr>
<td>Parent Education Meetings</td>
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<td>1.</td>
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<td>4.</td>
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<tr>
<td>Grandparents' Day</td>
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<tr>
<td>Guided Student Observation</td>
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<tr>
<td>1st Semester</td>
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<td>2nd Semester</td>
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<tr>
<td>Parent-Teacher Conference</td>
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<td>1st Semester</td>
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<tr>
<td>2nd Semester</td>
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<tr>
<td>Cinco de Mayo</td>
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<tr>
<td>Voluntary Activities</td>
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</tbody>
</table>

*Each class' master sheet is compiled from these forms which remain in each student's file. This information enables the teachers to promote greater participation, if necessary.
MITCHELL SCHOOL IMPROVEMENT PLAN

EVALUATION

GOAL 4 — STAFF REJUVENATION

STAFF DEVELOPMENT PARTICIPATION FORM

NAME: ____________________________

DATE: ___________ EVENT: ___________________________ TIME: ___________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
GOAL 4 — STAFF REJUVENATION*

This form is useful to assist the recordkeeping task required by the Denver Public Schools. Each principal should observe each teacher three times per semester and document feedback and topic discussed.

SUPERVISORY SUPPORT SUMMARY FORM

<table>
<thead>
<tr>
<th>TEACHER</th>
<th>CONFERENCE DATE</th>
<th>TOPIC</th>
<th>OBSERVATION DATE</th>
<th>TIME</th>
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| 1.      |                 |       |                  |      |
| 2.      |                 |       |                  |      |
| 3.      |                 |       |                  |      |
| 4.      |                 |       |                  |      |
| 5.      |                 |       |                  |      |
| 6.      |                 |       |                  |      |

*Each box contains one teacher's name per box in alphabetical order. Keep the pages on a clipboard where it is always handy to record supervisory activity. It provides a journal of sorts to refer to when conferring with staff.
GOAL 4 — STAFF REJUVENATION

OBSERVATION FORMS

Faculty Member: ________________________________

1. Observation of other Montessori Classrooms in Mitchell program, or other Montessori programs.

<table>
<thead>
<tr>
<th>Mitchell</th>
<th>Other</th>
<th>Date</th>
<th>Comment</th>
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</table>

2. Attendance at Regional/National Conferences.

<table>
<thead>
<tr>
<th>Conference</th>
<th>Regional/National</th>
<th>Comment</th>
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</thead>
<tbody>
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GOAL 5 — COMMUNITY PARTNERSHIPS
NURTURE DISTRICTWIDE RESPECT FOR PROGRAM FORM

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<th>Date</th>
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GOAL 5 — COMMUNITY PARTNERSHIPS
INFORMATION TO COMMUNITY ABOUT PROGRAM FORM

<table>
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<th>Recipient of Information</th>
<th>Date</th>
<th>Means of Dissemination</th>
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GOAL 5 — COMMUNITY PARTNERSHIPS
PARTNERSHIPS WITH BUSINESS FORM

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<tr>
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<th>Type of Partnership</th>
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GOAL 5 — COMMUNITY PARTNERSHIPS
IN VolVE ME NT OF COMMUNITY RESOURCES FORM

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<tr>
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<th>Date</th>
<th>Type of Involvement</th>
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</tbody>
</table>

*This form and the one on the next page are designed to keep the recording task simple and well organized.*
GOAL 5 — COMMUNITY PARTNERSHIPS
ADMINISTRATION/FACULTY LEADERSHIP ROLE
LOCAL, STATE, NATIONAL MONTESSORI COMMUNITY FORM

<table>
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<tr>
<th>Adm./Fac.</th>
<th>Local/State/National</th>
<th>Describe Role</th>
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</table>
CHARTS GENERATED BY DATA GATHERING FORMS
Data collection can provide clearly reported information for annual reports by utilizing a chart medium which school districts can readily understand.

GOAL 1 — INTEGRATION

STUDENT ENROLLMENT AT MITCHELL SCHOOL BY ETHNIC MEMBERSHIP
SEPTEMBER, 1988

<table>
<thead>
<tr>
<th>AGE GROUP</th>
<th>Native American</th>
<th>Black</th>
<th>Asian</th>
<th>Hispanic</th>
<th>Anglo/Other</th>
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</thead>
<tbody>
<tr>
<td>3 Year Old</td>
<td>2</td>
<td>17</td>
<td>3</td>
<td>16</td>
<td>27</td>
</tr>
<tr>
<td>4 Year Old</td>
<td>1</td>
<td>14</td>
<td>4</td>
<td>13</td>
<td>27</td>
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<tr>
<td>5 Year Old</td>
<td>1</td>
<td>18</td>
<td>2</td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td>6 Year Old</td>
<td>—</td>
<td>9</td>
<td>3</td>
<td>13</td>
<td>38</td>
</tr>
<tr>
<td>7 Year Old</td>
<td>—</td>
<td>7</td>
<td>1</td>
<td>16</td>
<td>28</td>
</tr>
<tr>
<td>Grand Total</td>
<td>4</td>
<td>65</td>
<td>13</td>
<td>75</td>
<td>147</td>
</tr>
<tr>
<td>Percentage</td>
<td>1%</td>
<td>22%</td>
<td>4%</td>
<td>25%</td>
<td>48%</td>
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</table>

PROJECTED STUDENT ENROLLMENT FOR FALL '89 AT MITCHELL SCHOOL
BY ETHNIC MEMBERSHIP
APRIL, 1989

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<th>AGE GROUP</th>
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<th>Anglo/Other</th>
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<tbody>
<tr>
<td>3 Year Old</td>
<td>—</td>
<td>15</td>
<td>2</td>
<td>15</td>
<td>26</td>
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<tr>
<td>4 Year Old</td>
<td>2</td>
<td>17</td>
<td>4</td>
<td>16</td>
<td>27</td>
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<tr>
<td>5 Year Old</td>
<td>1</td>
<td>14</td>
<td>4</td>
<td>13</td>
<td>27</td>
</tr>
<tr>
<td>6 Year Old</td>
<td>1</td>
<td>18</td>
<td>2</td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td>7 Year Old</td>
<td>—</td>
<td>11</td>
<td>3</td>
<td>15</td>
<td>41</td>
</tr>
<tr>
<td>8 Year Old</td>
<td>—</td>
<td>7</td>
<td>1</td>
<td>1*</td>
<td>29</td>
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<tr>
<td>Grand Total</td>
<td>4</td>
<td>82</td>
<td>16</td>
<td>92</td>
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<tr>
<td>Percentage</td>
<td>1%</td>
<td>22%</td>
<td>4%</td>
<td>25%</td>
<td>48%</td>
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</table>
IOWA TESTS

This year it was mandatory to give the IOWA tests the day after a change to daylight savings time. Students, families, and teachers were disoriented and the entire district's scores dropped drastically from the previous year. We also realized that six out of eleven teachers had never administered an IOWA before or the level was new to them. Finally, as our program grows, we service an increasingly Hispanic and Asian population whose mother tongue is not English who tend to score between 0-20% on the IOWA. Through a more detailed analysis of the pounds of IOWA computer printouts, the researcher was able to highlight to the staff and ultimately to the parents the areas of greatest measured academic performance, the areas that needed improvement, and measured out that we had still accomplished our goal of having students score at or above the Denver Public School average.

Based on this very thorough analysis, our staff has decided to focus next year on strategies that will better prepare and enhance our students' ability to respond to the test-taking situation and the actual test with greater ease and preparation.

GOAL 2 - ACADEMIC FOUNDATION

IOWA TESTS OF BASIC SKILLS: COMPOSITE SCORES FOR MITCHELL AND DPS
By Grade Level (Spring 1989)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Mitchell %ile</th>
<th>DPS %ile</th>
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<tr>
<td>Kindergarten</td>
<td>64</td>
<td>47</td>
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<tr>
<td>First</td>
<td>57</td>
<td>52</td>
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<tr>
<td>Second</td>
<td>52</td>
<td>52</td>
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</table>

GOAL 2 - ACADEMIC FOUNDATION

TOTAL LANGUAGE/TOTAL MATH COMPOSITE IOWA SCORES

<table>
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<th>Years</th>
<th>Grade</th>
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<th>1</th>
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<tbody>
<tr>
<td>1986</td>
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<td>24</td>
<td>27</td>
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<tr>
<td>1987</td>
<td>36</td>
<td>42</td>
<td>31</td>
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<tr>
<td>1988</td>
<td>77</td>
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<td></td>
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<tr>
<td>1989</td>
<td>64</td>
<td>57</td>
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AVERAGE DAILY ATTENDANCE
(In Percents)

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<td>1986-87</td>
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<td>1988-89</td>
<td>95.0</td>
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MITCHELL SCHOOL IMPROVEMENT PLAN

EVALUATION

GOAL 3 — PARENT PARTICIPATION

PARENT ACTIVITIES*

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<tr>
<th>DATE</th>
<th>ACTIVITY</th>
<th>ATTENDANCE</th>
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<tbody>
<tr>
<td>08-27-88</td>
<td>Get Acquainted Picnic</td>
<td>500 +</td>
</tr>
<tr>
<td>09-22-88 &amp;</td>
<td>Parent-Child Open Houses</td>
<td>500 +</td>
</tr>
<tr>
<td></td>
<td>10-06-88</td>
<td></td>
</tr>
<tr>
<td>1st Semester</td>
<td>Parent Observation of Student's Classroom</td>
<td>447</td>
</tr>
<tr>
<td>1st Semester</td>
<td>Parent/Teacher Conferences</td>
<td>341</td>
</tr>
<tr>
<td>10-20-88</td>
<td>Parent Education “Parenting Issues”</td>
<td>115</td>
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<tr>
<td>11-04-88</td>
<td>Grandparents' Day at Mitchell</td>
<td>79</td>
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<tr>
<td>11-26-88</td>
<td>Fall general PTSA meeting</td>
<td>118</td>
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<tr>
<td>12-03-88</td>
<td>Transportation Appreciation Breakfast</td>
<td>100 +</td>
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<tr>
<td>01-12-89</td>
<td>Parent Education “The Special Child in Each of Us”</td>
<td>48</td>
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<tr>
<td>02-16-89</td>
<td>Parent Education “Montessori as an Aid to Life”</td>
<td>44</td>
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<tr>
<td>02-26-89</td>
<td>Parent Education “The Psychological Development of the Child in the First Three Years of Life and its Impact on Personality”</td>
<td>100 +</td>
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<tr>
<td>03-06-89</td>
<td>Elementary Parent Education — Montessori curriculum</td>
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<tr>
<td>03-13-89</td>
<td>Primary Parent Education — Montessori curriculum</td>
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<td>03-13-89–</td>
<td>International Studies Week</td>
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<td>03-17-89</td>
<td>Parent Education “How to Make Home Experiences = Learning Experiences”</td>
<td>75</td>
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<td>Parent/Teacher Conferences</td>
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<td>2nd Semester</td>
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<td>05-03-89</td>
<td>New Parent Orientation Meeting</td>
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<td>05-05-89</td>
<td>Cinco de Mayo Celebration</td>
<td>609</td>
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<td>05-15-89</td>
<td>1st Annual Student's Science Fair</td>
<td>435</td>
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<tr>
<td>05-16-89</td>
<td>Spring General PTSA Meeting</td>
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</tr>
<tr>
<td>05-23-89 &amp;</td>
<td>Spring Suzuki Violin Concerts</td>
<td>700 +</td>
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<tr>
<td>05-25-89</td>
<td>“New Cooperative Games” Field Day</td>
<td>465</td>
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*1988-1989 Total enrollment is 300 students.
GOAL 3 — PARENT PARTICIPATION

PROPORTION OF STUDENTS REPRESENTED AT OPTIONAL PARENT EDUCATION ACTIVITIES
BY ETHNIC GROUP
(SCHOOL YEAR 1988-89)

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<tr>
<td>Parent-Parenting Issues</td>
<td>.50</td>
<td>.26</td>
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<tr>
<td>The Special Child in Each of Us</td>
<td>.25</td>
<td>.02</td>
<td>.23</td>
<td>.08</td>
<td>.19</td>
</tr>
<tr>
<td>Montessori as an Aid to Life</td>
<td>.00</td>
<td>.09</td>
<td>.31</td>
<td>.08</td>
<td>.14</td>
</tr>
<tr>
<td>School Information Night</td>
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<td>.15</td>
<td>.09</td>
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</table>

PROPORTION OF STUDENTS REPRESENTED AT MAJOR PARENT EDUCATION ACTIVITIES
BY ETHNIC GROUP
(SCHOOL YEAR 1988-89)

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<tr>
<th>Activity</th>
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<th></th>
<th></th>
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<td>Anglo/Other</td>
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<td></td>
<td>(n = 4)</td>
<td>(n = 65)</td>
<td>(n = 13)</td>
<td>(n = 75)</td>
<td>(n = 147)</td>
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<tr>
<td>Parent-Parent Open House</td>
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<td>.84</td>
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<td>Classroom Observations</td>
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<td>Parent/Teacher Conf. — Fall '88</td>
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<td>.85</td>
<td>1.00</td>
<td>.75</td>
<td>1.00</td>
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<tr>
<td>Parent/Teacher Conf. — Spring '89</td>
<td>.75</td>
<td>.73</td>
<td>.80</td>
<td>.81</td>
<td>.95</td>
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<tr>
<td>Get Acquainted Picnic</td>
<td>.50</td>
<td>.20</td>
<td>.33</td>
<td>.07</td>
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<tr>
<td>Cinco de Mayo</td>
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<td>.54</td>
<td>.23</td>
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</tbody>
</table>

*This form gives figures on proportional representation at events by ethnic group and enables us to target areas for future improvement. Encouraging target group participation in the planning process leads to more meaningful and better outcomes.

Elementary education requires a less formal reporting on parent involvement: date, event, number of participants. Mitchell used total school data to report the required information.
**MITCHELL SCHOOL IMPROVEMENT PLAN**

**EVALUATION**

**GOAL 3 — PARENT PARTICIPATION**

**MASTER SHEET**

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<tbody>
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<tr>
<td>Anthony</td>
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Key: 1 = Native American  2 = Black  3 = Asian  4 = Hispanic  5 = Anglo/other
*right top = mother  left bottom = father  /= relative, guardian, friend
*From these completed forms from each class total school information can be compiled. This collection process is time consuming, but ultimately it provides the most precise and useful data which can be formatted in a number of different ways for different audiences.

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GOAL 4 — STAFF REJUVENATION

IMPROVED TEACHING METHODS
PLANNING, INSERVICE AND CONFERENCE ACTIVITIES

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>08-20-88</td>
<td>Entire Faculty (teachers &amp; paraprofessionals) social &amp; school planning retreat</td>
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<tr>
<td>09-14-88</td>
<td>Dr. Ana Maria Villegas presents status of Montessori research to faculty</td>
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<td>10-06-88</td>
<td>Computer in-service begins for elementary staff</td>
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<td>10-20-88</td>
<td>Begins a series of lectures by nationally prominent Montessorians (Judi Bodi, Sanford Jones, Dr. Silvano Montanaro)</td>
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<tr>
<td>11-17-88</td>
<td>In-service on cooperative games</td>
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<tr>
<td>01-09-89–</td>
<td>Intensive week of afternoon Montessori training for paraprofessionals and support staff</td>
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<tr>
<td>01-13-89</td>
<td>In-service on classroom discipline strategies</td>
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<tr>
<td>02-18-89</td>
<td>Music &amp; Movement day-long workshop</td>
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<td>03-02-89</td>
<td>DPS Aids Curriculum Instruction In-service</td>
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<td>03-07-89</td>
<td>Elementary teachers planning meeting for 1st Science Fair</td>
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<td>04-04-89</td>
<td>Staff &amp; parent meeting for planning Cinco de Mayo</td>
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<td>05-13-89</td>
<td>PE. — staff planning for New Cooperative games on Field Day</td>
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<tr>
<td>05-31-89</td>
<td>Dr. Ana Maria Villegas — Faculty in-service on IOWA results</td>
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A SAMPLE OF ADDITIONAL STAFF DEVELOPMENT ACTIVITIES PURSUED BY INDIVIDUAL OR GROUP STAFF MEMBERS

ABC Conference — Special Education
Art Appreciation
Autoharp lessons
Colorado Educational Media Association annual conference
Conflict management
Creative writing
Elementary Montessori Review Course — Cleveland State University
Grant Writing DPS in-service
Manipulative mathematics
Minority Students — three-five years olds — CEC sponsored
Montessori — Association Montessori Internationale Study Conference
Montessori — North American Montessori Teachers’ Association — Montessori in the Public Schools conference
Orff music workshop
Project Wild
Self-esteem workshops
Spanish as a Second Language in-services
University of Colorado Storyteller’s Conference
Vision Therapy Conference
Whole Language: Reading and Writing
GOAL 5 — COMMUNITY PARTNERSHIPS

Community Relations

RECOGNITION

Black Education Advisory Council — Certificate of Merit for Academic Achievement (Spring 1989).
Denver Public Schools — Science proposal selected for Chapter 2 funding (Spring 1989).
Denver Public Schools Public Relations Department — Acknowledgement of the Montessori early childhood program as featured in Mill Levy promotional video (Fall 1989).
Mayor’s Office — Education Project for school year 1989-90 (Spring 1989).
Neighborhood Housing Services in Cole — Acknowledgement of Mitchell School’s impact on neighborhood revitalization — presentation of 100 flower bulbs and trees (Fall 1988).
North American Montessori Teachers’ Association — Acknowledgement of Mitchell Montessori’s program contribution to Montessori in the public schools — filmed program as part of national documentary (Spring 1989).
Public Education Coalition — Selected to participate in the League of Pilot Schools Literacy Project (Spring 1989).

PRESENTATIONS

8-1-88 — Association Montessori Internationale — presentation “Montessori in the Public Schools”
1-10-89 — University of Colorado at Denver — presented the Montessori philosophy and curriculum to graduate classes
2-17-89 — Colorado Partnership for Educational Renewal — presentation “Alternatives to Standardized Testing — Student Portfolios”
2-23-89 — University of Denver — presented the Montessori philosophy and curriculum to graduate classes
4-5-89 — Colorado Forum — Mitchell Team (principal, IMC specialist and three parents) do a slide presentation and panel discussion about Montessori education.
4-28-89 — North American Montessori Teachers’ Association — presentation “The Importance of Research in Montessori Schools”
5-30-89 — Denver Department of Social Services — presentation to Family Opportunity Program case workers: “Parent Empowerment/Participation”
7-26-89 — Colorado Department of Education — Mitchell team presentation at “Strategic Options Initiative”

SUZUKI VIOLIN PERFORMANCE SCHEDULE

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<th>Date</th>
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<tr>
<td>9/22/88</td>
<td>Mitchell — Back to school night</td>
<td>3/17/89</td>
<td>Mitchell — International Week</td>
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<td>10/1/88</td>
<td>West Pines Psychiatric Hospital</td>
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<td>Heritage Club</td>
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<td>11/4/88</td>
<td>Mitchell — Grandparents Day</td>
<td>4/20/89</td>
<td>Citywide Honor Concert — South High School</td>
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<td>11/21/88</td>
<td>Stock Elementary</td>
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<td>Larimer Hall</td>
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<td>United Airlines</td>
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<td>Goddess Elementary</td>
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<td>12/22/88</td>
<td>Hope Center</td>
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<td>St. Martin Plaza — Senior Citizen Home</td>
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<td>12/14/88</td>
<td>United Airlines</td>
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<td>Gilpin Elementary</td>
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<td>12/15/88</td>
<td>Colorado National Bank</td>
<td>5/23/89</td>
<td>Mitchell — Primary spring concert</td>
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<td>12/16/88</td>
<td>Mitchell — bus driver breakfast</td>
<td>5/25/89</td>
<td>Mitchell — Elementary spring concert</td>
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<tr>
<td>12/18/88</td>
<td>Mitchell — Channel 9 filmed here for “Twelve Colorado”</td>
<td>5/31/89</td>
<td>Mitchell — North East Childcare Center</td>
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INSTITUTIONS OF HIGHER LEARNING
Metropolitan State College — participated in the Youth/Early Childhood Development Project.
Colorado State University — participated in the cooperative extension vegetable gardening project.
University of Colorado at Denver — participated in a three-year research/evaluation project.

CHARITY SUPPORT
March of Dimes “Walk-A-Thon” with United Airlines
National Multiple Sclerosis Society “Read-A-Thon”

COMMUNITY / BUSINESS PARTNERS
Close relationship with United Airlines
Friendship with the Colorado Forum

INTERESTED FOUNDATIONS AND AGENCIES
Center for the New West
Family Star
Piton Foundation
Public Education Coalition
United Way

MARIA MITCHELL ELEMENTARY SCHOOL
MONTESSORI PROGRAM BOARD OF EDUCATION

Edward J. Garner, President
Dorothy A. Gottlieb, Vice-President
Sharon Bailey
Naomi L. Bradford
Marcia Johnson
Thomas Mauro
Carole H. McCotter

RICHARD P. KOEPPE
SUPERINTENDENT OF SCHOOLS
Paula Biwer, Principal
Socialization in a Montessori Classroom

Evaluation

The Socialization of Children in a Montessori Classroom

By Ana Maria Villegas, Ph.D.

- To be successful in the classroom, students need to be socially as well as academically competent.
- In addition to the correct answer to the teacher's questions, students need to recognize and understand different directives, informatives and elicitations.
- Traditional classrooms develop a hierarchical order in which "low groups" are more tightly controlled than "high groups."
- In a Montessori classroom the roles of teacher and student are less marked than in typical public schools.
- In a Montessori classroom students are not grouped by ability. Because they do not compete for grades they are open to cooperation with their peers and helping others learn and grow.
- Montessori children make individual choices with an understanding of situational constraints tempered by a sense of social responsibility.
- Montessori develops productive future citizens. The public school system has much to learn from the classroom socialization used in the Montessori system.
- Case studies bear out the effectiveness of the Montessori system. (Two examples are included.)

Educational success and failure is a topic of major concern to teachers, parents, and the public at large. No doubt this interest stems from the documented fact that educational attainment in the United States is a fairly accurate predictor of an individual's future (Blau & Duncan, 1967). How well a student performs in school has profound implications for his or her adult life.

Traditionally, educational success has been measured in terms of academic knowledge and skills. Students considered academically successful are those who have learned the factual content of the curriculum, mastered the basic skills of decoding and computing, and developed higher-order thinking skills. Generally, schools measure academic competence with standardized achievement tests.

Recently, an emerging line of inquiry has produced convincing evidence that educational success involves more than academic knowledge and skills (see Hymes, 1972; Gumperz, 1981; Mehan, 1979). To be successful, students also need to know with whom, when, and where they can speak and interact in class. Said differently, pupils must be socially competent in the ways of the classroom to gain access to instruction and to display their knowledge. However, this social dimension of learning is generally ignored by educators.

To understand the broad implications of educational success and failure, one must examine schooling in relation to society. One of the functions of school is to prepare children for adulthood. Undoubtedly the society of the future will need individuals with a solid academic background. To this end, our country invests heavily in curriculum and materials development, teacher education, student program development, and educational research. However, of equal importance are social skills and attitudes that enable one to live in a

Dr. Ana Maria Villegas was Assistant Professor at the University of Colorado at Denver where she taught courses in multicultural education, linguistic and cultural issues in testing, and communicative competence in the classroom. Currently, she is a research scientist at Educational Testing Service in Princeton, New Jersey.
diverse and complex society. Unfortunately, our investment in this important social dimension of schooling is minimal. The failure to recognize the significance of classroom socialization is certain to have serious repercussions.

While attention is given to the academic dimension of school life, this chapter also emphasizes the often neglected socialization process that occurs in classrooms. Specifically, it reports the findings of a study of the socialization of children in a multi-ethnic Montessori primary class. The purpose of the study was twofold—to describe what the students needed to do to be considered competent members of their class; and to illustrate how qualitative research can be used in planning for the future.

REVIEW OF THE LITERATURE

Our understanding of the social dimension of academic success and failure owes much to qualitative research methodologies. During the past 15 years, classroom studies have appeared under the rubrics of context analysis (McDermott, 1976), micro-ethnography (Erickson & Shultz, 1981), constitutive ethnography (Mehan, 1978), and conversational analysis (Gumperz, 1977). Each of these qualitative research approaches treats classrooms as social systems or communities organized into different instructional events by teacher and pupils. Examples of events that routinely occur in public school classrooms are “reading time,” “mathematics group,” and “science lesson.”

Micro-ethnographic studies, the broader term for this line of research, describe the interactional work of teacher and students that constitutes instructional events. The studies reveal that the actions of participants do not occur randomly. Rather, the ways of talking and acting in the classroom are governed by rules of appropriateness. The function of the rules is to regulate the actions of the participants, thereby facilitating an orderly exchange. To the extent that learning is a function of the pupil’s ability to engage in and sustain interaction, competence in interpreting and using the rules of different learning situations determines educational success.

Micro-ethnography has broadened our understanding of educational success by showing that students must learn not only to do well academically, but also to act in ways that are appropriate to the academic environment. Additionally, this line of investigation provides insight into the socialization process by describing in detail the social skills students must have to succeed in a variety of classroom situations or events.

While the micro-ethnographic approach to studying classrooms is relatively recent, the literature includes a number of studies describing the interactional work of teacher and students during specific events. Among the events analyzed are the reading lesson (Au, 1980); the procedural meeting (Bremme, 1976); the mathematics lesson (Florio & Shultz, 1979); the teacher-directed lesson (Griffin & Humphrey; 1978; Mehan, 1979; Villegas, 1986); the reading group session (McDermott, 1976); game playing time (Shultz, 1976); preparation for reading (Van Ness, 1977); and circle time (Florio, 1978). No study of this nature, however, has been conducted in a Montessori classroom.

TEACHER-DIRECTED LESSONS – TRADITIONAL CLASSROOMS

Villegas’ (1986) study of teacher-directed lessons will be used to illustrate the ethnographic tradition. The study was selected because teacher-directed lessons occur frequently in public schools today. The findings provide insight into the type of socialization students generally experience throughout their school career.

Villegas collected and analyzed videorecording data of teacher-directed lessons with high and low reading groups in a second grade classroom. She found that the lessons conformed to the structural model reported previously by Mehan (1979). Specifically, the lessons were organized into opening, instructional and closing phases, with the opening and closing phases consisting of directives and informatives. Directives from the teacher required action from the pupils that supported the academic exchange. For example the utterance, “open your book to page 59,” was a request for action. The act was completed interactively when the
pupils complied with the teacher's request. Informatives from the instructor provided pupils with information. They in turn were expected to attend to the teacher's utterances and acknowledge their content. The major portion of the lesson, however, was the instructional phase, which was developed primarily through the teacher's use of successive elicitation sequences. Each elicitation conveyed academic information among the participants, and consisted of a question from the teacher, a reply from a student, and an evaluation from the teacher.

To be successful in these lessons, students had to satisfy the teacher's criteria for academic accuracy. Additionally, pupils needed to recognize the different interactional demands placed upon them by the teacher's directive (carrying out her requests for action); informatives (attending to her as she provided information); and elicitations (responding to the topic initiated by the instructor; and knowing how to gain turns at talk and what to do once the floor was given). Furthermore, if students wanted to interject their own topics during these lessons, they needed to time their statements to occur precisely between the end of one interactional sequence and the beginning of another. Students who lacked the skills to interact during the lessons were virtually blocked out of the academic exchange and lost opportunities to display their knowledge to the teacher and fellow classmates. In brief, this study shows that lessons involve much more than knowledge of the correct answer to the teacher's questions.

While the structural organization of the lessons was the same for all groups, Villegas found important differences in the teacher's treatment of high and low achievers. Specifically, the teacher paced instruction more slowly for the less advanced pupils and exerted even tighter control over their actions.

In brief, the students in this class were being socialized to submit to the teacher's authority. This was evident from the instructor's tight control over the pupils' actions, which accorded them little or no responsibility for their own learning. The teacher had full command of the pacing and content of the lessons. Additionally, she controlled turns at talk and determined which answers qualified as correct. Moreover, by dividing the class into high and low "ability" groups, the pupils were being socialized into accepting a hierarchical order in which the actions of members of the "low group" were even more tightly controlled than those of the "high group." Over time this type of socialization is likely to develop the attitudes that authority is not to be questioned and social hierarchies are natural and unproblematic. These attitudes seem to contradict the basic tenets of a democratic social system, the survival of which depends on thoughtful and questioning individuals.

THE STUDY

The study reported herein is a micro-ethnography of a class of three- to five-year-olds attending a Montessori public school in an urban district. Montessori education is generally associated with the private sector; however, this approach has been used increasingly in public schools since the early 1970s to promote ethnic integration. Williams (1987) estimated that there were approximately 50 Montessori programs in the public schools throughout this country; just one year later, Kahn, Boehnlein and Villegas (1988) reported over 90 such programs. These data suggest that the use of the Montessori approach is expanding rapidly in inner-city public schools, a phenomenon which makes the Montessori classroom of special interest to urban educators.

The Classroom

There are 31 students in the classroom examined in this study. Of these, 13 were Anglo-Americans, 5 were African-Americans, and 13 were Hispanics. The ethnic distribution conformed to the desegregation policy of the district, the goal of which is to have a near equal number of majority and minority students in every school and whenever possible in every classroom.

Bertha, a pseudonym for the classroom teacher, had five years of teaching experience using a Montessori approach. She was assisted in the classroom by Maximilia (a pseudonym), a woman of Mexican descent with ties to the local Hispanic community.
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The classroom was on the ground floor of the school building. Upon entering the room, one encountered a lively environment, decorated with attractive colors and equipped with inviting materials. The child-sized chairs, tables, stools, and shelves made the room comfortable for the pupils.

Bertha had organized the room into five general areas — practical life, sensorial, language, mathematics, and culture. The practical life section included a variety of materials intended to involve the children in the physical care of the environment. Among the activities were: putting lids on jars, pouring water from one jar to another, transferring grain from one bowl to another, using tongs, polishing bowls, vacuuming and mopping the floor, and scrubbing tables. Breakable materials were used to teach the children to handle them with care and to convey the message that they were trusted in this classroom.

The sensorial area contained materials designed to lay the foundation for complex mathematical and language concepts. These included rods, cylinders, color tablets, bells, and sandpaper letters.

The language, mathematics, and cultural areas contained materials intended to develop academic knowledge and skills on the part of students. These included sandpaper letters and numbers, letter and number cards, metal inserts used to trace geometric shapes, a variety of card sets used for learning initial and ending sounds, and a library amply stocked with children's books, puzzles, maps, and globes.

In brief, the child-sized furniture and the beautifully designed and carefully arranged materials conveyed the message that this environment was created for children.

Methodology

Observational data were collected from August through December of 1988 by two trained observers. The class, which met every weekday morning (from 9:00 a.m. to 12:00 noon), was observed on 35 days for the entire half-day session. The data were collected in two phases. During the initial phase, which ended in mid-September, the observations were broad in focus. Notes taken at the time provided a general account of the sequence of events in a typical day. When the notes or descriptive protocols were analyzed for patterns, they revealed four recurrent events — “greetings,” “doing work,” “clean-up time,” and “group time at the circle.” Each event required different social strategies on the part of the students.

Observations became more focused in the second phase of data collection, during which time attention was given to the interactional work comprising each event. Six three-year-old students served as the primary subjects. On each visit, the observer took detailed notes describing the sequence of actions for one of the six target students. Because the observer focused on one student per session, these protocols reveal the more detailed aspects of interaction that were overlooked during the initial phase of data collection. The detailed protocols were analyzed for patterns in order to determine what pupils had to do in order to be considered competent participants in each event. The results of those analyses follow.

FINDINGS

The data from the protocol analyses showed that this Montessori classroom was an interactionally differentiated environment in which four recurrent events took place — “greetings,” “doing work,” “clean-up time,” and “group time at the circle.” Members of the class used these names to refer to their activities. Each event progressed in an orderly fashion. Underlying that order were rules that guided the teacher's and pupils' actions.
Greetings

Greetings occurred after the teacher and/or the assistant brought the children from the playground into the school building. Before entering the room, the students were expected to hang their coats and backpacks in the hall on hooks that were assigned to each of them. As students completed this task, sometimes with the help of the assistant or other students, they were greeted individually by the teacher.

The teacher sat on a small chair by the door to the classroom, positioning herself at eye level with the student in front of her. Before entering the classroom, each student spent 15 to 30 seconds conversing with the teacher. During these conversations the instructor greeted the pupil while shaking hands, and they spoke about a personal topic. For example, Bertha might inquire about a new pair of shoes or a colorful shirt. Additionally, she often asked pupils about what work they would like to do when they entered the room.

Students who remained silent throughout the exchange were not urged to speak. The teacher respected their silence, but there was a subtle expectation that the polite behavior during greetings was to respond to her inquiries, especially when it came to stating their work preference. The teacher was never observed telling the students how to engage in greetings; however, by participating in the routine daily students were indirectly socialized into the expected behaviors. By October most students had internalized the rules of greetings.

Greetings functioned as a transition between playground and classroom activities. This event guaranteed at least one daily point of communication between the teacher and each student. The communication was important in this highly individualized learning environment. As will be described next, it was possible for a child to go through the entire day without speaking to the teacher again.

Doing Work

"Doing work" began as the students entered the classroom at 9:00 a.m. and continued until 11:15 a.m., at which time Bertha typically rang a tiny bell to signal the end of work. During the work period the children were free to move about the room at will. There were no seat assignments, and time was not divided into a formal schedule of language, mathematics, science, and geography lessons. The only requirement was to begin and end work at the appointed time.

Broadly speaking, the students' work was to learn, and this occurred in a highly individualized manner. Students were expected to make numerous decisions daily regarding the selection of work, the length of time spent with each material, and whether to join in group lessons or to accept the teacher's invitations to engage in individual lessons. Still, the teacher did not abandon the children to the environment. To assist them with their decisions, Bertha had established an orderly environment. Materials were grouped in practical life, sensorial, language, mathematics, and cultural areas. Within each area, the materials were placed on the shelves in the order of difficulty, beginning with the easiest ones. Only one set of each materials was provided, and it had an assigned place on the shelves. At the beginning of the school year, only a few materials were made available for the students to use. By limiting the repertoire of materials the teacher narrowed the students' choices, thereby simplifying their decision-making process. As the students learned how to use other materials, these were added to the shelves, thereby increasing their options.

Students were expected to engage in a series of individual work cycles. A cycle consisted of three phases—choosing and preparing work, doing work, and returning the materials to their proper place. Each of these phases was complex, making different demands on the pupils.

The initial phase of choosing and preparing work was highly demanding, especially for the three year olds. Because the children were expected to handle the materials properly, their choice was limited to those involving familiar materials. Since many materials were available to them, the students had to distinguish between those they knew how to use and those they did not. Students learned to use the materials in three different ways: (a) by receiving an individual lesson from the teacher, who would model the use of a specific material; (b) by participating in a group lesson during which the teacher would demonstrate the use of the material; and (c) by observing other students (usually the five year olds) use the materials properly.
When students struggled with decisions about work Bertha would assist them. For example, on one occasion she noticed Ken (a pseudonym for one of the three-year-old boys in the class) standing by the practical life shelves and staring at the materials. She approached Ken and reminded him of the lessons he had completed. Then she asked, "Would you like to pick some work now?" Ken remained silent, so Bertha suggested the following alternative: "Would you like to work with the rice (a pouring activity) or with the beans (another pouring activity)?" Ken chose the beans. Bertha's inquiry conveyed two separate but related messages to Ken. First, during work time, students must do work. Second, students must choose their own work.

After choosing work, the students were responsible for preparing their work environment. This preparation entailed deciding whether to work at a table or on a rug. Those students choosing to work on rugs had to select one from the designated shelf and place it on a vacant spot in the classroom. The initial stage of the work cycle ended when the student chose his or her work and prepared to engage in it.

The second stage consisted of doing work. During this phase the students were expected to use the materials in the manner they had learned either during lessons from the teacher or by observing other students. This entailed using strategies that were specific to each set of materials. Once satisfied that the work was completed, the students brought the activity to a close. That is, students were responsible for the pacing of their own work.

The final phase of the work cycle consisted of cleaning up and returning the material to its proper place on the shelves. It was expected that the materials would be returned in serviceable condition for the use of other students. If the pupils spilled water or dropped beans, rice, etc., on the floor, they were obliged to clean up. Additionally, the students were responsible for pushing their chairs in and putting rugs away, which contributed to the order of the environment.

Students engaged in different numbers of work cycles daily and gave different amounts of time to each. It was not unusual for three year olds to engage in four to seven individual work cycles. The time spent on each might be as brief as one minute or as long as 30 minutes.

"Doing work" involved work cycles as described previously. Additionally, it entailed participating in individual or group lessons, or observing other students at work. The age range of students in the class provided ample opportunities for peer learning. It was not unusual for a three year old to watch attentively as an older classmate worked. Thus, the older children served as role models for the younger ones. The teacher encouraged the students to observe one another, as long as they did not interrupt work in progress. The five year olds had internalized this rule, and it was their responsibility not only to demonstrate the use of materials for their younger classmates, but also to teach them not to interrupt. For example, Howard (a pseudonym for a three-year-old student) watched Junior (a pseudonym for a five-year-old classmate) working with a set of mathematical material. At one point Howard tried to manipulate the material, and Junior reminded him in a stern voice, "No, Howard, no. This is my work. If you want to work, go get your own."

Students received individual lessons either by requesting them from the teacher or by accepting her invitation. There was no obligation for students to accept Bertha's invitation to have a lesson. During a typical lesson the teacher demonstrated the proper use of material and observed the student practicing with it until she was satisfied that the student understood its use. At that point she would leave, and the student was free to continue practicing alone or to put the material back on the shelves.

Most individual lessons were initiated by the teacher; however, students would occasionally request lessons. In order to be given an individual lesson, the student first had to secure the teacher's attention without interrupting her work. This was not easy, because the student was required to (a) identify junctures in the sequential flow of the teacher's activities; (b) position himself strategically to be close to the teacher at those junctures; (c) use proper procedures to let the teacher know that he was waiting to speak to her; and (d) wait patiently until the teacher acknowledged his overture. Only then could a student request a lesson. While these tasks may appear simple to an adult, they were highly problematic for the young children in this
The most challenging aspect appeared to be that of waiting for the teacher's acknowledgement. Given their brief attention span, it is conceivable that a few seconds seemed an eternity to the three year olds. The pupils most skilled at getting the teacher's attention had an advantage over others in the class in that they exerted greater control over their own learning. When they were ready for new work, these students could make the teacher aware of their need immediately, instead of waiting for her to notice them.

The importance of knowing how to secure the teacher's attention is evident from the case of Catherine, a pseudonym for a three-year-old Anglo-American girl. Catherine was an expert at getting Bertha's attention. She knew when to approach the teacher, how to situate herself near her, and how to wait. A review of the teacher's records revealed that by November, Catherine had received many more lessons than any other three year old in the class. In this case, Catherine's social skills resulted in academic advantages for her.

Bertha used group lessons mostly as a tool for classroom management. Typically, she initiated these lessons toward the end of the work period when students became restless and began to lose concentration. The teacher invited the least-focused students to join her for lessons. The children were not required to join the lesson, but those who accepted the invitation were expected to pay attention and to comply with the instructor's directives.

During work time the students had two overriding obligations. First, they were expected to engage in focused activity, whether through individual work cycles, observation of other students, or participation in lessons singly or in groups. This interactional work was described previously. Second, the pupils were required to respect the work of the teacher and other students. This was shown by adhering to the following specific rules of courtesy: (a) talk softly so others can concentrate on their work; (b) avoid running because others may become distracted; (c) walking around the room is acceptable as long as it does not interrupt the work of others; (d) avoid walking on work rugs; and (e) do not interrupt others as they work.

Clean-up Time

The end of the work period and the beginning of clean-up time was indicated by Bertha's ringing a bell at approximately 11:15 a.m. When the bell rang, students were required to "freeze" and wait silently for the teacher's directions. Typically, Bertha would ask them to stop their work and to clean up.

During clean-up time, which usually lasted about 15 minutes, the five-year-old children were expected to perform the jobs for which they had volunteered earlier in the school year. For example, some students swept the floor, others cleaned the tables, and still others made sure that materials were returned to their proper place on the shelves. The five-year-old children chose younger classmates to assist them in carrying out their tasks. Thus, all of the children were engaged in cleaning up. Bertha was also responsible for a share of the cleaning. Moreover, she monitored the work of the students and, when necessary, reminded them of their responsibilities through statements such as the following: "I'm going to look around in case someone forgot to do his or her work." On one occasion, a five-year-old complained to Bertha that Maria (a pseudonym used for her three-year-old partner) was reluctant to help. The teacher approached Maria and asked her softly: "Is it possible that you don't want to help?" Maria looked sheepishly at Bertha and remained silent. At this point, the teacher invited Maria to be her helper for the day, an invitation that the young girl accepted readily. As these examples show, Bertha expected all students, regardless of their age, to assume responsibility for the care of the shared environment.

Once the students were finished with their tasks they were to sit in a circle in an open space near the front of the room, thereby signaling their readiness to engage in the last event of the day — "group time at the circle."
Group Time at the Circle

Students who had finished their cleaning tasks would wait for the teacher in the circle. They were expected to sit with their legs crossed in order to avoid tripping or stepping on others. While they waited, the children had to solve problems that arose (e.g., arguments, competition for a particular spot in the circle, and pushing). The general rule was that if someone bothered a child, he or she was to move to a different spot on the circle.

The event got underway as soon as the teacher, the assistant, and all of the students were in the circle. The time together was used for group conversations and singing. Conversations generally dealt with seasonal themes (e.g., Thanksgiving). At other times, and especially during the earlier portion of the school year, Bertha guided the students in discussions of classroom procedures that seemed problematic for them (e.g., returning materials in serviceable condition to their proper place on the shelves). The one-speaker-at-a-time rule was in effect during these conversations, and pupils who called out while someone else was speaking were reminded not to interrupt.

When preparing for singing, Bertha invited the students to choose songs from their repertoire. Once the selection was made, the teacher would lead the group in song. Everyone was encouraged to sing, but those students who preferred to remain silent could do so.

Socially, "group time at the circle" stands in sharp contrast to the three other events described previously in that it was the only event in which all the members of the class participated as a group. That is, to be successful, students had to orient their actions to a collective order.

DISCUSSION

To succeed in the Montessori classroom described above, students had to combine academic and social competence. Academically, they were expected to lay the foundation for future learning. The initial stage entailed gaining a sense of inner discipline through sustained engagement in the completion of work cycles. To this end, students were required to work with the materials in the classroom, particularly in the less cognitively demanding practical life exercises. The basic goal of this stage was to have the children internalize the concept of the “full work cycle,” which consisted of choosing appropriate work, engaging with the chosen material until completion of the exercises, and returning the materials to their proper place once they were finished with them. Mastery of the work cycle prepared the children for the more cognitively demanding sensorial, language, mathematics, and cultural materials. In essence, learning in this classroom occurred through self-discovery.

Socially, the pupils needed to coordinate their actions with the demands of different classroom situations. These demands, which varied by instructional event, were prescribed when and how the pupils were to interact with other members of the class and with the environment. In a sense the social demands of the classroom are the “hidden curriculum” of schools in that they cultivate the social skills and attitudes children will manifest as adults. Sadly, this link between classroom socialization and long-term social patterns is rarely considered by those who plan educational programs.

Micro-ethnography is a means of exploring classroom socialization and hypothesizing about the implications of social patterns for the future. In turn, such analyses might allow us to consider alternative ways of organizing classrooms so that the socialization occurring therein may match our goals for the future. Data from the Montessori classroom described in this chapter will be used to illustrate such an analysis.

The boundaries between the roles of teacher and student were less marked in the Montessori class studied than in typical public school classrooms. Admittedly, the teacher was the authority figure in the Montessori classroom, as she established and enforced rules of behavior. Even so, the students had considerable control over their own learning, and while they were required to “do work,” they were allowed to make choices regarding it. They chose their activities from the many possibilities available to them, controlled the pace, and could refuse the teacher’s invitation to participate in lessons. Additionally, the
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Pupils were encouraged to learn from one another, and indeed they did, the older students often serving as role models for the younger ones.

The hierarchical structure of many public school classrooms, as evident in the popular practice of grouping by "ability," whether between or within classes, was not present in this Montessori school. Students were praised for their individual talents and were not ranked within their own age group on the basis of a uniform criterion. Because students did not compete with one another for grades, they seemed open to cooperation with their peers and helping others grow and learn.

A strong sense of individualism was promoted in this class. The children worked at their own pace, unhampered by whole-group teaching that imposes the same pace of instruction for all students. There was no formal schedule dividing the day into discrete units of instruction (e.g., mathematics lesson, group reading time) and the only obligation was to work. Furthermore, students were required to assume a fair amount of responsibility for their own learning.

Contemporary society stands to gain from the union of individual empowerment and social commitment being cultivated in this Montessori class.

The strong individualism promoted in this class was balanced by an equally strong sense of community. Because there was only one piece of each type of equipment in the classroom, students had to wait their turn if the equipment of their choice was in use. They learned to respect one another and not to interrupt those at work. They taught each other and shared responsibility for maintaining order in the class. Additionally, during group time at the circle, they learned about the constraints of the collective order.

In brief, given the way in which the teacher organized this Montessori classroom, the children were being socialized as to the importance of making individual choices with an understanding of situational constraints. Moreover, the sense of individualism was tempered by a sense of social responsibility.

Contemporary society stands to gain from the union of individual empowerment and social commitment being cultivated in this Montessori class. Our society needs citizens with solid academic preparation and critical thinking skills. Additionally, and of equal importance, it needs individuals who are prepared to make decisions in the service of the community: The threat of nuclear destruction and permanent damage to our environment, among other social concerns, calls for immediate action. As a society we cannot afford to ignore the importance of socialization experiences in the classroom and their implications for the future generations. I am not suggesting that all public school classrooms be made to conform to the Montessori model. The merit of a Montessori education in preparing the citizens of the future needs to be examined more carefully, and longitudinal studies are needed. However, on the basis of this exploratory study, I see that public education has much to learn from the Montessori system, particularly in the realm of classroom socialization. The main point I want to make here is that we need to explore alternative ways of organizing classrooms and to consider those alternatives in light of our goals for the future. Certainly, the Montessori approach seems highly suitable for contemporary society and ought to be considered an option in the public school sector.

REFERENCES


THE CULTURE OF A MONTESSORI CLASSROOM

Summary

A. Events
1. "Greetings" — teacher greeted each student individually and invited him/her to enter the room to "do work."
2. "Doing work" — students were expected to engage in individualized or small group learning activities.
3. "Clean-up time" — students were expected to assume responsibility for maintaining the order of the classroom.
4. "Group time at the circle" — only event in which all members of the class participated as a group. To be successful, students had to orient their actions to a collective order.

B. Doing work — There were two overriding rules: (a) to engage in work; and (b) to respect the work of others.
1. Engaging in individual work cycles
   a. Choose set of material to work with
   b. Be familiar with materials chosen
   c. Use the materials properly
   d. Face own instruction
   e. Clean-up
   f. Return materials to proper place on shelves in serviceable condition for others to use
2. Observing others at work — peer teaching/learning
   a. Do not interrupt the work of others
3. Getting a lesson from the teacher
   a. Students were free to accept or decline the teacher's invitation to a lesson
   b. Once a student accepted the teacher's invitation, he/she was expected to be attentive
   c. Students could request lessons from the teacher, but to do so they had to secure the instructor's attention without interrupting her work. This consisted of: (i) identifying junctures in the sequential flow of the teacher's activities; (ii) locating themselves strategically near her at those junctures; (iii) signalling to the teacher that they were waiting for her; and (iv) waiting patiently until the teacher acknowledged them.

C. Socialization — what attitudes were the students internalizing?
1. Strong sense of individualism
2. Sense of social responsibility and group cooperation
3. Decentralization of strict hierarchical structure
4. Awareness of the necessity of making choices of their own and of acting on those choices, with an understanding of situational constraints
5. Cooperation rather than competition
6. Value of diversity
TWO CASE STUDIES

EVALUATION

TWO SAMPLE CASE STUDIES

by Ana Maria Villegas, Ph.D.

INTRODUCTION

The case studies presented herein were prepared with a twofold purpose. First, they provide qualitative descriptions of the development of two students and complement the quantitative analyses contained in the main body of this evaluation report. Second, the cases illustrate the concept of academic foundation which is considered by the Mitchell Montessori staff to be crucial to children's development. Specifically, the development of the two pupils selected for the studies is explained in terms of the variables comprising the concept of academic foundation. Before presenting the case studies, a review of this concept is in order.

The concept of academic foundation builds on the view of learning shared by the Mitchell Montessori teachers and principal. From their perspective, learning is not the mere passing of information from teacher to students. Instead, learning is considered to be a process by which the child develops strategies for the acquisition of knowledge and skills. Thus, the important task of schools is to provide students with a general foundation that will enable them to acquire more specialized knowledge and skills throughout their school career. According to the Mitchell staff, this academic preparedness or foundation is comprised of ten variables:

- a positive attitude toward school
- inner security and sense of order
- pride in the physical environment
- abiding curiosity
- a habit of concentration
- habits of initiative and persistence
- ability to make decisions
- a sense of independence and self-confidence
- self-discipline
- a sense of responsibility to other members of the class, school, and community

These ten variables served as the organizing framework for describing the growth of the two children depicted in the case studies.

Three sources of data were used in preparing the case studies — descriptive notes of the pupils' classroom behavior; interviews with one parent of each child; and the teacher's pre- and post-ratings of the children for each of the academic foundation variables. Observational data were collected from August through December of 1988 by two trained observers. Each child was observed on seven separate occasions, four of those observations extending throughout the entire half-day session attended by the three year olds.

During the observations, attention was given to the interactions of the student. The interviews with parents were conducted in May 1989. During the interviews, the parents were asked to comment on changes they had noted (if any) in their child regarding each of the ten academic foundation variables. To the extent possible, parents were asked to provide specific examples of these changes. Finally, the teacher's June 1989 academic foundation ratings for each pupil were compared to the September 1988 ratings to determine her perception of their growth. These three sets of data were combined to produce the two profiles that follow.
Catherine is an Anglo-American girl of middle-class background. Catherine was three years of age when she started the Montessori program in September 1988. This was Catherine's first year in school; however, the school experience was not totally foreign to her because she has an older sister who had started school the year before. Furthermore, Catherine's mother and father, both professional educators, reported having spent a portion of the summer of 1988 preparing their daughter for the Montessori program. As part of that preparation, the parents frequently drove by Mitchell with Catherine to show her the school. Moreover, they often spoke to the child about the schooling experience. Thus, the parents facilitated the transition between home and school for the young girl.

Positive attitude toward school
When the school year began, Catherine seemed ambivalent about school. According to Catherine's father, the school schedule was very demanding for her initially and it was not until December that the three-year-old girl began to handle the demands with ease. Catherine's father reported that by December his young daughter began to “look forward to going to school daily.” The classroom observations lend support to this assessment of Catherine's shifting attitude toward school. For example, Catherine seemed tired and lacking in focus initially; however, as the school year progressed, she seemed more energetic and became more focused on work. By December she appeared very comfortable in the classroom. She looked happy, and exhibited curiosity and interest in work, which indicated that she was developing a positive attitude toward school.

Inner security and sense of order
According to the teacher, Catherine made important gains during the school year regarding her inner security and sense of order. At the beginning of the school year, Catherine was able to complete work previously presented to her by the instructor. While doing so, she handled the materials properly. As the year came to an end, the teacher reported that her young pupil displayed a more open attitude toward work, more spontaneous care of the environment, and greater organization during activities. The field notes support the instructor's view of Catherine's growth. By December Catherine seemed secure. This sense of security was evident as she interacted with adults and other children in the room. She handled materials adeptly and carefully. In brief, Catherine had internalized the rules of the classroom. She seemed to know what was expected of her and acted accordingly.

Pride in the physical environment
The information gleaned from the classroom observations, interview with parent, and the teacher's pre- and post-ratings suggest that Catherine began her schooling with a highly developed sense of pride in her physical environment. According to the teacher, Catherine completed her work and maintained good order consistently throughout the year. Catherine's father praised her organization at home, and as an example cited that "her room is always tidy." Analysis of the field notes reveals that the young girl was cautious and meticulous about her work. She handled materials purposefully and carefully, and always returned the materials to their proper place on the shelves.

Abiding curiosity
Catherine's curiosity expanded as she became more secure in the classroom environment. The field notes show her to be highly curious. She frequently sought new work. She worked intently and in an engaged and focused manner. She often took the initiative to request new lessons from the adults in the classroom. Usually transitions between activities were brief because her curiosity quickly attracted her to new work. In the teacher's view, Catherine was involved with the materials "to the point of interest." According to the father, Catherine's sense of curiosity is reinforced at home consistently. For example, her parents encourage her to ask questions and speculate about matters of importance to her. Thus, it seems that the teacher and parents both strengthened Catherine's sense of curiosity.
Habit of concentration

According to the teacher, Catherine made significant progress over the span of the school year regarding her habit of concentration. As the year began, the three year old demonstrated limited concentration and was never totally absorbed in her work. In contrast, by June of 1989 the instructor perceived her pupil to be nearly totally absorbed in and highly satisfied with her work. The observations confirmed this change. Initially, Catherine seemed somewhat distracted and not focused on work. As time progressed, she became more centered, increased her attention span, and rarely became distracted. This was evident during both individual work cycles and lessons with the teacher. Catherine's father noticed considerable progress in her ability to concentrate. In his own words, "she is more focused now than when she began school. Here at home, she attends to and completes tasks with greater ease."

Habits of initiative and persistence

In the instructor's view, Catherine began the school year lacking somewhat in initiative and persistence. Her attention seemed scattered, and she was dependent on adults. However, by June 1989, the teacher considered the young girl capable of following through with work and completing it satisfactorily. The field notes suggest that Catherine was more advanced in this area than the instructor assumed. Analysis of the field notes reveals that Catherine initiated most of her own activities without adult assistance. She frequently initiated contact with the teacher, but typically did so to advance an activity that she had chosen for herself or to get new lessons from the instructor. When seeking the teacher's attention, she was persistent. She knew how to situate herself near the instructor, make eye contact with her, and wait patiently until the adult responded to her. Unlike most other three-year-old children in the class who generally gave up trying to get the teacher's attention if she did not notice them within a few seconds, Catherine was willing to wait her turn. Consequently, Catherine nearly always managed to engage the teacher when she sought to do so. Her persistence in seeking the instructor's attention gave her an academic edge over other children. For example, by November, Catherine had received several more lessons than any other three year old in the class.

Ability to decide

While initially hesitant to make decisions, Catherine soon expanded her ability in this area. In the teacher's view, she learned to make appropriate choices without adult direction. The field notes show that decision making was one of Catherine's major strengths. She wasted little time choosing work, as was evident in the brief transition periods between work cycles. Additionally, she made her choices independent of adults or other children in the room. Catherine's father saw major progress over the span of the year regarding her ability to make decisions. As he explained, before Catherine began the Montessori program she was given many opportunities to make decisions at home, but was often hesitant to do so. By the end of her first year in the program, Catherine was able to make decisions on her own with greater ease. Her father attributed this change to the girl's Montessori experience.

Sense of independence and self-confidence

Catherine's father considers her to be highly independent and self-confident. This view is shared by Catherine's teacher who describes her as being happy, interested, involved, and able to work alone. The field notes substantiate the claims made by both the father and teacher. For example, Catherine rarely hesitated when approaching older students whom she did not know. At times she joined group lessons given in Spanish, even though she did not speak the language. She was brave, confident, and independent.

Self-discipline

The instructor considered Catherine to be consistently self-disciplined. In her view, the young girl kept up with work, moved at her own pace, and got along well with her peers. The observational data support the teacher's impression. Catherine monitored her own work. Her behavior was purposeful and controlled. She seemed highly focused and in harmony with the group.
Sensc of responsibility to others

Both Catherine's father and teacher concurred that the young pupil has a fairly well-developed sense of responsibility given her age, but neither noticed significant changes in this area over the school year. At home, Catherine was helpful to her parents and sister. In school, she performed classroom jobs. The field notes show that Catherine was highly responsible for her own behavior but took limited interest in the work of others. However, she acted in socially appropriate ways. When joining groups she was quiet and polite. When group tasks demanded it, she cooperated with others.

Summary

The data presented in this case study show that Catherine expanded her foundation for learning in significant ways during the 1988-89 school year. The young student improved her attitude toward school as she became accustomed to the demands of the school schedule. Her inner sense of security increased as she became knowledgeable of the rules of the classroom. This knowledge augmented her sense of order and fostered her curiosity. With time, Catherine enhanced her abilities to concentrate on work and to make decisions. Additionally, she became more persistent and took more initiative. Growth in these areas strengthened Catherine's sense of independence and self-confidence.

The data showed no major changes in Catherine's sense of pride in the physical environment, self-discipline, and sense of responsibility toward others. However, both the father and teacher reported that she had begun the school year already highly developed in these three areas.

Catherine is an example of a highly successful young student. In her case, one can see the profound impact of the home-school link. Specifically, the ten basic attitudes toward learning and school valued by the Mitchell Montessori staff were valued by Catherine's parents as well. This close match in values led to similar socialization experiences in the home and school contexts, and supported her academic development throughout the school year:

HARRIET

Harriet is an African-American girl of lower middle-class background. She began the Mitchell Montessori Program as a three-year-old in August 1988. Her parents learned about the program by reading an advertisement in the local newspaper inviting interested parties to inquire about special educational options in the Denver Public Schools. At the time, they had no first-hand knowledge about the Montessori approach to education, but were well aware of its high level of success in the private school sector. For this reason, Harriet's parents submitted an application to the program on her behalf.

Positive attitude toward school

Harriet's father reported that the young pupil looked forward to going to school even before beginning the program. In his view, Harriet experienced no fear of separation from home. Once school began, she talked frequently to her parents about what had transpired during the day. The field notes lend support to the father's assessment of Harriet's early positive attitude toward school. For example, nearly all three-year-old pupils in the class, particularly those of minority background, cried during their first day in school. In contrast, Harriet seemed happy to be there, and appeared ready and eager to participate in the planned activities. Thus, the interview and observational data suggest that the young girl was positively predisposed to school from the beginning of the school year: Harriet's teacher, however, noted some signs of separation anxiety at the beginning of the year which disappeared with time. In the instructor's view, by the end of the year the child demonstrated a strong desire to be in school.

Inner security and sense of order

According to the teacher, Harriet made some progress regarding her inner security and sense of order over the span of the school year. In her assessment, the young girl constantly needed verbal reassurance from adults at the beginning of the school year. She seemed blind to the environment, and she performed her work carelessly and incompletely. By the end of the year, the teacher reported that Harriet typically
completed work that had been presented to her. Additionally, she seemed to handle the materials properly. As was evident from the observational data, Harriet frequently sought attention from the adults in the class. Without this attention, the child lost interest in her work and became distracted. Her own sense of order seemed to clash with what was expected of her in the classroom. She had difficulty attending to tasks and appeared unable to work independently. Her behavior was observed to be inappropriate on many occasions. She interrupted the work of other pupils, and was frequently observed not attending to a task. However, as the school year progressed, Harriet became more work-oriented and her behavior conformed more closely with the rules of the classroom. Harriet's father noticed a slight improvement in the young child's sense of order over the school year; while aware of Harriet's difficulty in this area, the father seemed at a loss regarding the kind of help he could offer his daughter at home. In his own words, the problem stemmed from "differences in the way things are done at home and in school." However, he was unable to pinpoint what these differences were.

**Pride in the physical environment**

Harriet's teacher noticed little progress throughout the year regarding her pupil's sense of pride in the physical environment. In the instructor's view, Harriet was somewhat careless, and she had to be reminded often to return materials to their proper place on the shelves. The field notes also show that the physical environment was not a high priority for Harriet. She often failed to put materials away after using them. She jumped over work rugs and generally moved around the room carelessly. Harriet's father reported an improvement in the girl's care of the home environment as a consequence of her participation in the Montessori program. For example, at times she told her parents that it was important for her to be orderly, thereby demonstrating the impact of her socialization in school. However, her home behavior lagged behind her expressed concern for order.

**Abiding curiosity**

The observations show that Harriet was very curious about social matters, but less so regarding academic concerns. She seemed more interested in chatting with other students in the class than in doing work. While working directly with the teacher, Harriet appeared curious and asked many questions of her. However, in the teacher's absence, Harriet seemed relatively disengaged from her work. According to the instructor, the young student was fearful of trying new work, and rarely became involved with the material to the point of interest. It is interesting to note that the school data revealed little improvement in Harriet's academic curiosity over the span of the year; however, the girl's father reported significant growth in this area. As he explained, midway through the school year, Harriet began to ask more complex questions at home. Additionally, she persisted with the questioning until receiving answers that were satisfactory to her.

**Habit of concentration**

The field notes and the teacher's assessment of Harriet's habit of concentration suggest that the young girl was weak in this area of academic foundation. Harriet was easily distracted, and she often interrupted other pupils as they worked. Very slight progress was observed in Harriet's pattern of concentration throughout the year. In contrast, the girl's father reported considerable improvement in her ability to concentrate on tasks undertaken at home. Specifically, he mentioned that his daughter's attention span had increased dramatically over the year. He attributed this behavioral change to the girl's Montessori schooling.

**Habits of initiative and persistence**

When academic tasks were concerned, Harriet demonstrated little initiative and persistence in the classroom. In the teacher's view, the child was highly dependent on adults, her attention was somewhat scattered, and she rarely completed her work. There was little evidence of change in this pattern during the school year. However, Harriet's father had a radically different opinion of the girl's habits of initiative and persistence. While at home, Harriet initiated her own activities and persisted until attaining the goals she had set for herself, regardless of the complexity of the task.
TWO CASE STUDIES

EVALUATION

Ability to decide

At the beginning of the school year, Harriet struggled with making decisions in the classroom. In the instructor's view, Harriet was inactive because she lacked the ability to make decisions. Part of the problem seemed to be the child's fear of failure. By the end of the school year, Harriet had made significant progress in this area. In the teacher's assessment, the young girl was more at ease in making choices without needing adult direction. Progress in the area of decision making was evident at home as well. According to the father, Harriet was more assertive when deciding. Additionally, she monitored the decisions made by her parents at times, pointing out inconsistencies in their logic.

Sense of independence and self-confidence

Harriet rarely seemed timid when interacting with the students or adults in the class. However, she was highly dependent on others to get work done. When it came to work, she appeared uninterested and uninvolved unless others assisted her with the task. This behavior changed over time, however. By the end of the school year, the teacher reported that Harriet was able to work alone for longer periods of time, and seemed more engaged in her work.

Self-discipline

Progress was noted during the school year regarding Harriet's self-discipline. Initially, the young girl displayed disruptive behavior and failed to conform to the rules of the class. As time progressed, she became more focused on work and learned to get along better with peers. Improvements were observed in Harriet's home behavior as well. For example, her father reported a decrease in arguments with other children in her home environment. However, he admitted that his daughter needed to work harder to improve her self-discipline.

Sense of responsibility to others

Positive changes in Harriet's sense of responsibility toward other members of her class were evident to the teacher. Specifically, the young pupil frequently interrupted the work of her classmates at the beginning of the year. At times, she displayed aggressive behavior toward other students. By the end of the year, however, she was more likely to perform classroom jobs and to share with others.

Summary

A consistent picture of Harriet's development emerges from the classroom observation data and the teacher's ratings of the child's academic foundation. A significant improvement was noted in Harriet's ability to make decisions. Moderate progress was detected in the child's attitude toward inner security and sense of order at school, independence and self-confidence, self-discipline, and sense of responsibility to others. Lastly, little or no change was evident in Harriet's sense of pride in the physical environment, curiosity regarding academic matters, and habits of concentration, initiative, and persistence. In brief, Harriet experienced moderate growth in academic foundation during the 1988-89 school year.

It is interesting to note that the view of Harriet's development derived from the classroom observations and the teacher's ratings clashes with the father's impression of the child's development, as observed at home, in all but two areas—decision making and self-discipline. In each discrepant case, Harriet's father had a more favorable view of the young girl's progress than that held by the teacher and/or evident from the field notes. At one point during the interview, the father expressed his awareness of differences in the way life is organized at home and in school for Harriet. While he was unable to expand upon these differences, the fact that his assessment of Harriet clashed with the school's assessment of her seems to substantiate the claim.
The findings from the two case studies point to the importance of the home-school connection in students' school success. As appears from these data, the strong link between home and school experienced by Catherine seemed to have supported her development in school. In Harriet's case, it appears that the home-school connection was weaker. Harriet's father seems less aware of the expectations of the Montessori classroom, and imagined differences between home and school. These differences may account for the slower progress made by Harriet during the school year.
RESEARCH AND EVALUATION SUMMARY
OF MONTESSORI PROGRAMS
by Mary Maher Boehnlein, Ph.D.

- Early research gives evidence that the Montessori method and environment are beneficial to low and middle SES children.
- Current research corroborates the early findings, in particular, the importance of Montessori preschool experience.
- Of specific importance for best results long-term are: the full three-year preschool program, trained Montessori teachers, and multi-age groupings.

Public schools considering the implementation of Montessori programs need some assurance that the time, effort, and money invested will yield positive results, if not better results than other programs. Schools also will want to monitor their own implementation through within-district research. This chapter provides a brief overview of research of the Montessori approach and describes current public school research procedures.

INTRODUCTION

Between 1913 and 1985, 244 studies of the Montessori approach were conducted. Of these, most were conducted between 1970 and 1980. Forty studies were of academic achievement, twenty-eight of teachers, schools, and the effects of teacher training, twenty-three were concerned with the effects of the Montessori method on cognitive or intellectual functioning, and twenty-five were of low socioeconomic status (SES) children exclusively. The remaining studies were of the history and philosophy of the method and the other curriculum areas. In an analysis of Montessori research, Boehnlein (1988) focused on several areas of the research of interest to public schools. The analysis is summarized below.

Do low socioeconomic children benefit from Montessori preschool programs?

Few of the reported studies were of full three-year Montessori preschool programs yet the analysis revealed that low SES children benefited significantly. Often the significant differences in competence, social and academic, did not appear until later in the child's school career. Longitudinal studies by Karnes (1969, 1975 & 1983), Miller (1970a, 1970b, 1971, 1975, 1983a, 1983b, & 1984), and Stodolsky (1969a, 1969b, 1970, 1972, 1973, & 1974) showed nonsignificant differences immediately after the program but in subsequent years the Montessori children exhibited increased competence, better achievement, and a more positive attitude toward school than their peers from other preschool programs. Montessori children did show significantly superior performance on measures of autonomy and curiosity after one year of Montessori preschool. Karnes' studies showed significantly higher numbers of Montessori children completing school.

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Stodolsky’s work showed that low SES children used preschool environments differently than middle SES children. The data indicated that low SES children do benefit from a structured, cognitive or academically oriented preschool rather than the traditional preschool emphasizing socialization.

Does Montessori preschool experience increase low SES children’s ability to benefit from traditional educational practices during elementary and secondary school?

Without a doubt, Montessori preschool experience had a positive, lasting effect on low SES children, particularly in academic achievement. This was true even when the Montessori subjects’ intelligence test scores were similar to children in the other experimental programs. Karnes, in particular, noted that in her sample the Montessori children’s intelligence test scores were lower than those of the other groups, yet more of them persisted in school and more completed high school. Both Karnes and Miller attribute to the Montessori program the development of certain attitudes and work habits that are needed to succeed in school including an “I can do it” attitude reflective of high self-esteem.

Do middle SES children benefit from Montessori school experience and in what way(s)?

Again the research results were in favor of the Montessori program children. In particular, Montessori program children demonstrated higher achievement, better language skills, more initiative, better mathematical skill, and better higher level thinking and memory skills. Back (1977) found that Montessori children showed an intellectual aggressiveness characteristic of highly intelligent children. They requested more cognitive information from the adults yet still socialized more with peers than did the British Infant School children. Fleege et al. (1967) found that Montessori children increased their intelligence test scores significantly more than non-Montessori children and also evidenced the acquisition of positive learning traits more definitively. His subjects made significant gains in verbal ability.

Does the Montessori experience aid in social development?

A persistent criticism of the Montessori preschool program by traditional educators is that the individualized nature of most of the activities is deleterious to the children’s social development. The analysis of 20 studies in this area demonstrated rather strikingly that Montessori children are as much, if not more, socially developed than children in other programs. Regardless of the limited duration of the Montessori experience or the aspect of socialization studied, Montessori children fared very well. They were described as having high levels of self-confidence, participating in much more social interaction with their peers for longer periods of time than their non-Montessori peers. They were as self-reliant as other preschoolers, showing equal internalization of social mores and self-control and seeking as much interaction with others (Baines & Snorten, 1978; Berk, 1970 & 1973; Berger, 1969 & 1970; Goldberg, 1975; Karnes et al., 1978; Stodolsky & Karlson, 1972; Tatem, 1977; Reuter & Yudnik, 1973; and Wirtz, 1976).

Does Montessori experience enhance curiosity and inventiveness?

Studies such as Miller and Dyer (1971 & 1975) and Fleege et al. (1967) found that Montessori children showed significantly increased perceptual abilities, curiosity, and inventiveness, all abilities thought to contribute to success in the academic environment.

Do Montessori classrooms differ from those of other programs?

Miller (1970a) asked this question in order to attribute differences in results to differences in program implementation. She found that Montessori trained teachers realized and articulated their goals better than other teachers, were less verbal with the children, and that their classrooms reflected their training.
RESEARCH SUMMARY

EVALUATION

Do children use the Montessori program differentially?

Considering the richness of the Montessori environment, several researchers were interested in how preschoolers responded to that environment. Of particular interest was how the child used the environment given freedom of choice. Banta (1970) and Stodolsky (1973 & 1974) found that children, whether low or middle SES, differentiated their time among the choices of activities in the Montessori classroom. Banta's study showed that given the opportunity to choose interesting work, children do become autonomous. Stodolsky also found autonomous behavior including more task orientation than among children in other preschool environments.

In summary, the research gives evidence that the Montessori method and environment have unique characteristics that aid both the low and middle SES child in development of cognitive, social, and academic functioning. However, because of limitations in some of the studies, many questions remain unanswered or partially answered. Given that most of the programs studied were of short duration and the children did not have the benefit of a complete three year cycle of a Montessori program, the research is quite positive. The current research discussed in the next section provides positive evidence of the benefits of an authentic, three year Montessori preschool program and of the complete elementary program.

CURRENT STUDIES

Denver Public Schools

In 1976 the Denver schools initiated the Mitchell School Montessori program beginning with three year olds. They simultaneously initiated the collection of data to report the results of the program. Three studies have been completed to date by Villegas and Biwer (1987) and Villegas (1988 & 1989) that demonstrate the power of using quantitative as well as qualitative research methodologies such as microethnography. The qualitative approaches are able to quantify the social systems operating in classrooms and describe the interaction of teacher with students and students with students. Villegas is the first to use these approaches to study Montessori classrooms, although earlier studies by Miller analyzed video tapes of classroom activity.

Villegas and Biwer (1987) evaluated the success of various strategies to involve Hispanic, Black, and Anglo-American parents in their children's education at the Mitchell Montessori school. Strategies implemented were designed to maintain continuity between the home and school environments and to encourage joint responsibility for the education of the children. Attendance, participation, and satisfaction of 175 parents with the parent involvement program were studied. Various strategies were attempted and included special orientation sessions, parent-student open house days, classroom observations, parent-teacher conferences, parent education sessions, and school information nights. Ethnic group response to the programs indicated that the most highly attended activities were orientation sessions, classroom observations, and parent-teacher conferences, with a range of 82 to 100 percent parent participation. Moderate response was obtained for evening parent education sessions. Anglo students tended to be represented at parent activities more frequently than Blacks and Hispanics, but the latter attended in higher numbers than parents of children in non-Montessori programs. Parents indicated a high level of satisfaction with the program which was corroborated by the low attrition rate from the school in a district that generally experiences an average of 70 percent turnover of its student population.

Villegas (1988) studied the process by which three-year-old Hispanic, Black, and Anglo-American children were socialized into a Montessori classroom at the Mitchell Montessori School. Mitchell's particular focus is on promoting ethnic integration among students. Villegas defined skillful classroom competence as involving academic knowledge and skills as well as the ability to use socially appropriate ways of gaining access to and displaying academic content. That is, to know with whom, when, and where they could speak, and how to act at any given time. Observation data were collected over a period of six months, and the field notes were analyzed for recurrent patterns. She described what students needed to do to be judged competent in the classroom community, how the students learned the social rules of the classroom including...
descriptions used by various ethnic groups of children, and implications for the socialization of young children into other Montessori and non-Montessori classrooms.

Villegas found that to succeed in the Montessori classroom students had to combine academic and social competence. Students gained a sense of inner discipline through sustained engagement in and completion of a work cycle, choosing appropriate work, engaging with the chosen material until completion of the exercise, and returning the materials to their proper place once finished with them. Acquiring this inner discipline appeared to prepare the children for more cognitively demanding materials that promoted learning through self-discovery.

Socially, the children had to adapt to differing classroom situations. However, in the Montessori classroom, Villegas found the boundaries between teacher and pupil roles were less marked than in the typical public school classroom. Although the Montessori teacher was an authority figure, the students had considerable control over their own learning. Pupils were encouraged to learn from one another, and the older students served as role models for the younger children. Villegas found no grouping by ability and no competition for grades. Rather she found promotion of cooperative learning yet also a strong sense of individualism. Because there are not multiple sets of materials in Montessori classrooms, children learn to wait their turn and to respect one another by not interrupting another's work. There was evidence of shared responsibility for maintaining order in the classroom. This sense of social responsibility and community service was considered as important as solid academic preparation.

In another study, Villegas (1989) used a case study approach to provide qualitative descriptions of the development of two students to complement the quantitative analyses of a larger study. In addition, the cases illustrate the concept of academic foundation which is considered by the Mitchell Montessori staff to be crucial to children's development. Learning is considered to be a process by which children develop strategies for the acquisition of knowledge and skills. Villegas studied the ten variables enumerated by the Mitchell staff providing students with a general foundation that would enable students to acquire more specialized knowledge and skills throughout their school career. The variables studied were:

- a positive attitude toward school
- inner security and a sense of order
- pride in the physical environment
- abiding curiosity
- a habit of concentration
- habits of initiative and persistence
- ability to make decisions
- a sense of independence and self-confidence
- self-discipline
- a sense of responsibility to other members of the class, school, and community.

Villegas reported that differences in the progress of two children could be attributed to the home-school connection. One child seemed to have a strong link between home and school experiences and made better progress than the child whose father seemed less aware of the expectations of the Montessori classroom. However, both children made significant progress towards the acquisition of the above listed variables.

Milwaukee Public Schools

Duax (1989) conducted a follow-up study of children who had attended the McDowell Montessori School in the Milwaukee Public School system. The school had been in operation since 1976 and has been recognized by the Association Montessori Internationale for making significant strides toward the full implementation of Montessori theory and practice. The school has a complete Montessori program beginning with three year olds. Duax's study is one of the few studies of Montessori elementary school experience and provides valuable data for schools considering the implementation of a Montessori program.
Duax used a representative sample of graduates of the program who were then in the middle school program in the district. Fifteen children were randomly selected and matched the total population of 84 graduates of the classes of 1987 and 1988. All children had entered the program at age four. Thirty-six percent were eligible for free hot lunch and 50 percent were minority children.

Children's scores on the Iowa Test for Basic Skills and a survey questionnaire completed by twenty-seven middle school teachers were used to collect data. The results of the standardized test showed that the Montessori children achieved high scores; 84 percent scored above the 50th percentile. The survey asked teachers to rank the Montessori students on such aspects of school performance as responsibility, multicultural awareness, understanding of global issues, fundamental human needs, and displaying leadership. On a ten point scale every Montessori graduate scored above the 5.5 mean. Particularly high were the ability to use basic skills to succeed in middle school, responsibility, enthusiasm for learning, individualistic attitudes (not afraid to be different from peers), and demonstration of multicultural awareness.

Marotta Montessori Schools of Cleveland

The Marotta Montessori Schools of Cleveland did a follow-up study of 58 graduates of its preschool program currently attending kindergarten through sixth grade in the Cleveland Public Schools. Takaes and Clifford (1988) compared the standardized test scores of 58 children in reading and mathematics with the building grade averages in the 27 schools the children attended. Comparison to national percentile norms also were made. Their teachers were individually interviewed using a questionnaire which assessed six aspects of Montessori schooling hypothesized to be related to achievement. Correlations between teacher ratings and differences in test scores were examined. Compared to classmates bussed from the same neighborhoods to the same classrooms, Montessori trained children achieved one stanine higher in reading achievement and 76 percent of those low SES children scored above school norms on the California Achievement Test. Mathematics achievement was one-half stanine above comparison peers. The strongest correlations between teacher ratings and achievement were with regular attendance and parent involvement. Length of time in a Montessori preschool (six months to three years) was significantly related to autonomy and pursuit of a task beyond the minimum. The longer the preschool experience the more autonomous the child.

Franciscan Montessori Earth School

Glenn (1989) did a longitudinal assessment of graduates of a private Montessori school compared to public school counterparts. Among other things measured, Glenn asked children to select an occupation they wanted to pursue when finished with school. The Montessori group chose occupations that are considered investigative such as being a botanist, computer programmer or scientist while the comparison public school group chose social-type occupations such as being a teacher or social worker. Glenn also found that the longer the child stayed in the Montessori program, the greater the academic achievement, particularly in the language arts, and the higher the creativity level. As in Miller's studies, Glenn found that males were rated significantly higher in reading ability as compared to females.

CONCLUSION

In summary, recent studies corroborate earlier findings and present strong evidence of the value of Montessori programs to children's social and academic development. In particular there is mounting evidence of the important contribution the Montessori preschool experience makes to children's sustained...
RESEARCH SUMMARY

EVALUATION

cognitive and affective development. The recent studies with inner city children from more complete Montessori programs validate the small number of earlier studies which examined children from minimum Montessori experiences through a variety of later school experiences. What appears to be emerging from this research is solid evidence that the Montessori preschool and elementary environments help to develop sustaining habits and attitudes necessary to social and academic success. There appears to be an appropriate blend of freedom to choose engaging and self-directed, developmentally appropriate learning activity within a supportive and natural (multi-aged grouping) social milieu. It must be noted that these strong results are coming from schools with fully trained Montessori teachers, unlike earlier studies which often used non-certified teachers. If research is to inform education decisions, public schools considering the implementation of Montessori schools should heed what past research has discovered:

1. A complete three-six year old program provides the best results long term.
2. Montessori trained teachers are vitally necessary to implement the program.
3. Multi-age grouping and the full complement of Montessori apparatus and materials are essential.

The above characterize the schools in the current research studies. Continual research on a wider scale will provide schools with the data needed to implement programs of excellence.

REFERENCES


RESEARCH SUMMARY

EVALUATION


A MONTESSORI APPROACH

EVALUATION

TOWARDS A MONTESSORI EVALUATION APPROACH

by Lakshmi Kripalani

Montessori evaluation seeks to transcend testing and external accountability pressures and involves the child as an effective partner in his or her evaluation.

In a multi-age group setting, each child is an observer and recorder of the other; the teacher's evaluation is enhanced — through the eyes of the children and their interaction.

The "control of error" allows the children to evaluate their work and correct their own mistakes. This process of mastery of the materials is mechanical and therefore only part of the evaluation process.

In order for the teacher to evaluate, he or she must continually verify the learning process which occurs as the child progresses from one material to the next. It is the application of the work by the child that measures the child's real ability. This is implicit in the child's degree of exploration, discovery, generalizing, researching, and ability to apply what he knows.

The child's ability to present to and correct other children demonstrates a measure of competence, a process that eliminates self-conscious testing.

Meaningful record keeping does not need to be a detailed checklist, but rather a summary of skills mastered. This is demonstrated by activities completed; knowledge and applications in the advanced activities determined by which activities the child seeks out and completes successfully and with true understanding.

INTRODUCTION

In an attempt to meet the demands of teacher accountability, educational experts and professionals have presented numerous evaluation approaches. Faced with a multitude of options, school districts demand accountability from experimental programs. It is the teacher who must meet the changing demands for accountability as programs develop. How can the Montessori teacher stay focused on his or her unique educational mission and still meet demands for institutional information and evaluation by standardized tests?

Montessori reminds us that, no matter what direction we take, we have to continually keep the child in focus...the child who has the capacity and the potential to educate him or herself. Without the cooperation and active participation of the child in the evaluative process, teachers will fail to reach their goals. Parents, too, must share in the responsibility. Educators are becoming so reliant on the mechanical information acquired through testing that they fail to look at the child's true formative characteristics.

Montessori educators today are faced with many difficulties, including:

1. How to transcend the narrow limits of testing and to evaluate the intrinsic value of the child's own work;
2. What format to use in record keeping;
3. How to meet school district demands for standardized testing without interfering with Montessori work;

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4. What to expect from the child who is entering the elementary class; and

5. How to direct the child who hasn't had a Montessori primary experience or the child who lacks exposure to an enriched and complex environment.

THE IMPORTANCE OF EVALUATION

Evaluation is the essence of life. Whatever action we take is an outcome of the process of direct or indirect evaluation that may take place consciously or unconsciously. We evaluate every aspect of our lives. We compare ourselves to our siblings, our friends, our neighbors, our co-workers, our community. Our own personal evaluation makes it possible for us to be secure or insecure and feel good about ourselves or others.

Our yardsticks of measurement vary from individual to individual, from group to group, from time to time, culture to culture, and from nation to nation. It is not merely the group or the culture that demands different standards at different stages of development. It is each of us who changes our own standard of evaluation according to the changing times, environment, and personal needs.

The current crisis in education has created a mania for accountability for educators. It is like a mouse trap for all those concerned with education. Parents, politicians, educators, and administrators are going wild in a maze of alternatives for the educational process and for the means that would make the teachers accountable for the children's success. What is forgotten is that children themselves are an essential part of the process of education. It is overwhelming to note that with the approaching twenty-first century, we are still confused by the idea that children are empty capsules to be filled with knowledge that can be poured out on demand to prove if the capsules are empty, half-filled, or full. We have lost sight of the basic issue: that it is the responsibility of all concerned to be equal partners in this process. The educators can function effectively only with the equal partnership and direct participation of the children in the decision-making process. The children have to be aware of why they are being educated, and they have to be actively involved in their own observations and record keeping. In this way, they will share the responsibility for their own success with great pride. Parents must also shoulder the same load of participation.

When any program becomes, in itself, more important than those it sets out to serve, then that program proves to be worthless. To succeed in the educative process, it is pertinent that we follow an evaluative process that reflects the intrinsic task of the learner; that does not merely respond to those in authority. Evaluation belongs to the teacher, the parents, and most importantly, to the children themselves. If the child does not experience the value of the educative process within him or herself, then any amount of mechanical motivation provided from without will prove to be ineffective.

Let us now examine how we can put into practice the process that will help the educator transcend the narrow limits of merely getting a subject across and then testing the subject content.

We know how to find pearls in the shells of oysters, gold in the mountains and coal in the bowels of earth, but we are unaware of the spiritual gems, the creative nebulae that the child hides in himself when he enters this world to renew mankind.

*Absorbent Mind,* — translator's note — 1958, Claude A. Claremont

Dr. Montessori's vision of the future was not of people taking tests and proceeding on the results of the tests from one grade to another, from primary to the university. She talked about the individual passing from one stage of independence to a higher stage by means of his or her own potential effort and will, which constitutes the inner evolution of the individual (*From Childhood to Adolescence*).
EVALUATION THROUGH THE CHILD'S INTERACTION

In a Montessori classroom, the teacher's role is that of a constant observer who records and analyzes details of the work of each child and provides the necessary tools that each child needs at a particular stage of development. This is considered a monumental task for any one individual dealing with a multi-age setting. Yet, paradoxically, it is even more difficult for the teacher dealing with a classroom of children who are all approximately the same age. In a classroom of five year olds, it may be very difficult for the teacher to give individual attention to one child because each individual child demands attention simultaneously. In a mixed-age group where children have learned to work independently, they are enabled to teach each other. The children, so prepared, take on some of the leadership role otherwise provided solely by the teacher.

Homogeneous groups provide fewer chances for development of leadership qualities than do multi-age groupings. Multi-age groups are more likely to provide a rotating leadership, which enables children to learn from each other in a positive way. Generally, children perform better in some areas than they do in others. In a multi-age setting, there is less competition between students since they are used to seeing the uneven development of both older and younger children. Children are more likely to recognize the unique attributes of each individual than are adults. The development of leadership enables the children to teach and to learn from each other.

The teacher’s role, then, is to record his or her own evaluation of the progress of each child. This is successful when the observation is clinical and active. Generally, observation is classified as subjective or objective. Subjective observation occurs when the observer interprets the behavior of the observed from his or her personal experience and point of view, which may or may not reflect the true feelings or abilities of the observed. An objective observation is primarily a mechanical recording of activities and events. If no action is taken on the findings, then objective observation is passive; it merely classifies the individuals or behaviors into categories.

Objective observation, however, can be analyzed clinically. Then direct and indirect activities can be provided to help the progress of the individual. This is the meaning of active clinical observation. The process of active clinical observation starts with parents from the day the child is born and with the teacher from the day the child is interviewed for the primary. Adults utilize this process without being actively conscious of it. Teachers must train themselves to utilize this inborn sensitivity of observation and evaluation in order to be of any help to the children.

EVALUATION THROUGH THE MONTESSORI MATERIALS AND ACTIVITIES

The Montessori educative process is developed so that in many pieces of material and many activities there are built-in controls of error. In the early stages of learning this may be very mechanical, limited to the beginning explorations of the materials by the children. When the children have some experience, they begin to search for their answers and control of error in books, in the dictionary, and finally in the research media available in the libraries. As children learn to utilize a greater variety of materials they become more independent, learning to be self-reliant and capable enough to realize when to seek help from another child, from the teacher, or from an outside source.

The very first sensorial materials that the child handles are the knobbed cylinder blocks. At this stage, the control of error is mechanical. If the child puts a small cylinder in the large cavity, one of the large cylinders will be left out. The teacher does not intervene. Through trial and error, the child succeeds in replacing all the cylinders correctly. This forces the child to look and make judgments. At this stage the child does not become cognitively aware of the differences in the various sizes and shapes. Only after the child has succeeded in replacing the cylinders correctly is the language of dimensions (length, width, height) given. There are other pieces of material that convey the same concept without boring the child. In the third period of the three period lesson, we find out whether the child can associate a correct object with its correct name. For most teachers, the process stops here and the information is entered on a chart or individual record booklet indicating the child knows the material.
A MONTESSORI APPROACH

EVALUATION

This, however, is merely a mechanical, passive evaluation, and is parallel to traditional record keeping. However objective it appears to be, it fails to give any depth of information to the teacher or to the child. It does not give information to the authorities or to the parents. Most importantly such an evaluation gives no direction for further exploration, either to the child or the teacher. When the emphasis is solely on the presentation of materials, the principles to be learned are often overlooked. Each item in the Montessori environment should be presented with a clear idea of what learning has preceded this lesson and what principles need to be developed in succeeding lessons. In the example above, the child may give you the correct object or the correct name every time you ask for it. However, this does not prove that the information will be of practical application in another learning situation. In this case, such evaluation is as worthless as our current system of testing has proven to be. Nor does this type of evaluation enhance the teacher's perspective or the child's ability to progress.

If, however, after sufficient work with one set of materials that conveys the same concept, we follow up with games that are progressive in nature and in difficulty, children will be challenged to explore and to discover what other aspects can be perceived and experienced. Exploration and discovery is then followed by questioning, generalizing, and researching. One of the earliest games is to bring from the shelf another cylinder that has the same height or base; later the child is asked to find all the cylinders that have the same base, etc. Once the child catches on to the concept, he or she will continue to explore how many other cylinders have the same height or if there are any other objects in the room of the same height. The teacher's role is to spark the enthusiasm. Children will ignite other children accordingly. When children discover that there are three cylinders that have the smallest base, they may excitedly share the information with others and each one will search to discover other kinds of similarities. This encourages questioning and reasoning, and later on, even generalizing. Caution must be taken by the teacher to let the children do the exploration by themselves and not provide all the information. With enough exploration, the child finds out how one cylinder differs from another and exactly in which block each of the cylinders belongs. The child then may proceed to find other objects in the environment that have the same dimensions for comparison.

Now you can imagine that if this type of exploration is initiated, how much excitement there will be when the children are presented with the colored knobless cylinders. The child who arrives in the elementary class with these experiences is armed with all the tools to acquire further knowledge. The child with this sensorial background is ready to receive lessons which explain the height, area and volume of the cylinder. Because the child has already compared the cylinders for size and shape, he or she is ready now to do comparisons in mathematical terms, e.g., the children may start to find the area of the table by measuring the width and length of the table, or the area of the floor the table occupies. Other computations might be: the area of the distance between the two tables, the total area required to put eight tables two feet apart from each other, how many tables can be put in a room of 500 sq. ft., or how many children can comfortably work in a room of 750 sq. ft. with so much space occupied by the shelves, doors and windows. The difficulty of the practical examples increases as the ability of comprehension and application of mathematical concepts is acquired.

Simple or complex problems such as these can be solved and scored according to the child's ability. This type of scoring helps the child to evaluate his or her own progress. Parallel activities can be easily initiated in other subjects that reflect reasoning, thinking and judging different aspects of life whether in history, geography or science. After the initial introduction, the children acquire the ability to create their own problems in a multi-age grouping. In a cosmic approach to education, it is inevitable that the curriculum broadens and manifests itself in all areas. It is practically beyond the scope of one teacher to encompass everything alone. If the process of creating and solving problems is initiated even with a small number of children, the rest of it proceeds spontaneously. The children thus direct, create and maintain the record of their own progress and achievement through journal writing. The teacher's role, then, truly becomes that of a director who observes and initiates new challenges according to the potentiality of each child and guides those in need. Most of the guidance comes from the experienced children who help the younger ones. The cumulative journal thus maintained can then be easily transformed into some type of scoring system that supersedes onetime mechanical testing. Caution has to be taken by the teacher that these problems are progressive in nature as the children mature in their ability to think and solve problems.

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These experiences are not out of the ordinary. The only caution to be taken is to initiate the right activity at the right moment and at the right stage of the development of the child. It is through active observation of each child, along with the teacher's understanding of child development, that the teacher knows the appropriate timing for the introduction of new materials.

Exercises in guided discovery not only enhance knowledge, but this type of experience is never forgotten. Further, children who have already experienced exploration are ready to introduce activities to younger children who arrive later. When children are graduated to elementary classes, they have mastered the knowledge to such an extent that they can help new students who arrive without primary experience. Because of this sharing of information among peers, the number of new children in proportion to those with experience has to be controlled. Otherwise there will be an imbalance for the children as well as for the teacher.

Record keeping of the above activities provides clinical analysis of the child's progress and comprehension of the concepts thus experienced. The teacher knows that the child has not merely mastered the activity, but can judge the extent to which he or she is ready to transmit the knowledge to another child and is able to work within a particular group. Generalized remarks, combined with the child's portfolio, will give a true picture of the child's progress. It will also satisfactorily fulfill the need for accountability.

The teacher does not need tedious and boring forms to mark down each activity that the child touches such as phonogram ch, phonogram sh, and ph, cl, gl, th...to infinity. What we need is the summary of the achievement in general terms, such as, "the child has mastered the ability of recognizing and taking dictation of words with almost all the combinations of phonograms." If the class is functioning with all the variations of the above activities, the results and the continuous record kept by the children and the teacher will reflect each child's involvement and progress in the class. The enthusiasm of children researching from books and libraries on their own time, and their interest in solving quizzes, puzzles, problems, etc., will indicate the progress of the learning that is taking place.

The difference between the preschool and the elementary class in student evaluations is that, early in the preschool class, the evaluation starts with games that reflect the assimilation of concepts and simple problem solving and relevant questions that involve thinking. In the elementary classes, the evaluation continues to be reflected through problem solving that enhances the thinking process combined with the research activities and written work portfolios of each child. The data acquired from the cumulative progress record, as referred to earlier, can be summarized by the teacher during weekly or bi-weekly conferences to enable the child to be aware of his or her progress and shortcomings. This not only enables the teacher to continuously evaluate a child's progress, but the child becomes master of his or her own progress and proceeds confidently to cross over the hurdles without being trapped in the concept of failure.

It is the teacher's role to give generalized problems as necessary, to classify the levels of difficulty, to vary the format, and to make them meaningful at all times. Variety eliminates the potential for mechanical, boring work. Relating math to practical life situations at home and at work will promote challenge and curiosity for progress.

The simple example given above was chosen to demonstrate the process of evaluation by the teacher that commences from the moment the child enters the class. Using careful, analytical observation that is clinically active at all times, the teacher has a living description of the child's progress. The example illustrated starts with a very early sensorial experience of the cylinder blocks and progresses to abstract mathematical experiences. Further, it clarifies the direct as well as the indirect acquisition of meaningful knowledge that can be evaluated in concrete ways. Parallel concepts follow in the language area: simple phonetic three-letter words, phonograms and sentences, grammar, sentence analysis, and synthesis of sentences. Language continues with simple reading and writing to dramatic reading and comprehension. This same basic principle is followed in history, geography, and sciences.
STANDARDIZED TESTS

A survey of private Montessori schools reveals that in most cases the Montessori program is carried on as usual. At the end of the year, the children are introduced to tests. They either take the state required tests, California Test of Basic Skills, Iowa Achievement Test, or Stanford Achievement Test. Test taking techniques are not usually taught. The majority of the private Montessori schools surveyed reported that their children tested better than the local public school children (Kripalani, 1989).

At present, we must continue to enhance our understanding and application of techniques of Montessori philosophy and education. We must answer the demand for accountability and satisfy the authorities, despite the fact that results of their tests may not reflect an accurate evaluation of our work. At the same time, we must be on guard that we communicate what is uniquely Montessori, assess our goals, and maintain our standards in order to achieve these goals. If the Montessori approach is put into practice, then all we need is to introduce the idea of testing to the children. The rest will fall into place. We do not need to “teach to the test.” We do, however, need to teach the kind of thinking process objective tests require and how to respond to objective test items; otherwise the children are at a disadvantage.

When the children share the responsibility of education and evaluation, the teacher will experience the joy of directing the process and will be less likely to be overtaxed by the end of the day or burned out by the end of the year.

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