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ABSTRACT

Describing the middle school as extending from the fifth or sixth through the eighth grades, this review describes current middle school philosophies and characteristics and cites middle school research and implications. Ideally, the report maintains, the middle school is designed to serve the needs of early adolescents through such techniques as interdisciplinary courses, exploratory classes, individualized instruction, team teaching, and flexible scheduling and student grouping. Research comparing the middle school and junior high is cited, concluding that at this time, no clear results are available. The report also reviews research on teacher competencies needed for middle school teaching, among them the abilities to structure teaching, use concrete materials and focus learning strategies, incorporate indirectness in teaching, and ask varied questions. Evidence of cognitive growth patterns of adolescents is explored, concluding that from age twelve to fourteen, adolescents experience a period of very slow intellectual growth. The research suggests that middle school teacher training needs to stress competencies identified as useful in working with adolescents and that curriculum should consider the seventh and eighth grade intellectual lull. It is noted that the inconclusive research on middle schools may merely indicate that the middle school philosophy has not yet been fully applied. (Author/JM)

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The Middle School

In education, as elsewhere, the most successful innovations are often those that creatively reshape, rather than discard, the practices of the past. This is certainly true of the middle school, an approach to educating early adolescents (children roughly between the ages of ten and fourteen) that resembles the traditional junior high. Like the junior high, the middle school is part of the effort to develop a system of intermediate education to meet the special needs of students at that "in-between" age when they are too mature for elementary school, yet not mature enough for high school.

Intermediate education was introduced into American public education in the early decades of the twentieth century, when seventh through ninth graders were placed in separate schools called junior highs. Many educators came to feel, however, that the junior high was more like a miniature version of a high school than an environment specifically tailored to the needs of intermediate-aged students. Beginning around 1960, a combination of disillusionment with the junior high, apparent evidence of earlier maturity among adolescents, and a host of other factors helped to foster the creation and subsequent spread of the middle school, which generally extends from the fifth or sixth through the eighth grades.

The Ideal Middle School

Ideally, a middle school is much more than simply a novel grade configuration. At its best, the middle school represents both a renewal and an extension of intermediate education's traditional commitment to serving the special needs of early adolescents. Above all, this commitment requires flexibility; intermediate level students are so diverse that a "typical" seventh-grade class can include students who are small and essentially childlike alongside others who are fully grown, well developed, and capable of reproducing.

To meet the varied needs of such students, a middle school should strive to educate the whole child, providing affective, social, and emotional as well as cognitive education. Comprehensive programs of health and physical education can also be helpful for students trying to understand and cope with the sometimes traumatic changes of early adolescence.

The middle school curriculum should emphasize the development of learning skills as much as the mastery of specific knowledge. Interdisciplinary course work and exploratory classes can offer students education from a broad perspective and exposure to a wide variety of subjects, interest areas, and potential career choices. In working to serve its diverse student population, a middle school can offer each student individualized instructional materials and programs and extensive developmental guidance and counseling. Team teaching, flexible scheduling, and student grouping (with, for example, students placed in classes based on developmental rather than chronological ages) are also often cited as ways of respond-

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ing to student diversity.

Many of these practices can, of course, be found at all levels of education, and not all of them are necessarily appropriate for every middle school. Nevertheless, taken together, these are some of the characteristics that implicitly define what has come to be called the middle school philosophy. Many middle schools fall short of realizing these ideals, so the philosophy itself is more an expression of what a middle school can be in theory than a reflection of what most middle schools actually are in practice.

Partly because its potential has yet to be fully realized, the middle school is surrounded by unanswered questions: Is the middle school "better" than the traditional junior high? What special skills do teachers need to work in middle schools? What are the specific learning needs and capacities of early adolescents? Indeed, do adolescents of a given age—with all their physical differences—even have enough in common to justify grouping them according to age? There are, as yet, few definitive answers to these questions, but research findings do point to some tentative conclusions.

The Middle School vs. the Junior High

Because of their common commitment to creating an environment specifically designed for early adolescents, any comparison of the middle school and the junior high must acknowledge that the two types of schooling are far more alike than different.

Doob examined the results of nineteen empirical studies that used various measures to compare middle and traditional schools. Overall, the evidence was inconclusive, failing either "to support the claims of middle school advocates or critics." Studies that fit this conclusion compared middle schools with comparable grades in traditional elementary or junior highs in terms of their effects on student achievement, student attendance, teacher attitudes, parent attitudes, administration, curriculum, staffing, and facilities. Even more dramatically mixed results came from studies of student self-concepts and attitudes. Doob reports that some studies "indicate a positive effect of the middle school, while others report no significant difference between middle school students and students in other types of schools; some suggest negative effects of the middle school upon student self-concept and attitudes."

These findings do not necessarily mean that the middle school cannot make a difference. To begin with, several writers criticize the low quality of much of the available middle school research. In addition, many middle schools seem to be that in name only. Some were established for administrative reasons—to promote desegregation, to relieve overcrowding, to use building space more efficiently—and therefore lack the commitment to serving early adolescent needs that is the essence of a genuine middle school. This problem of educational objectives being sacrificed to administrative expedience may be endemic to intermediate education; it has plagued the junior high almost since its introduction.

Teacher Competencies

Another persistent problem for both the middle school and the junior high is the lack of training programs and certification standards for teachers working at the intermediate level. In most states, in fact, intermediate teachers are trained and certified for either elementary or secondary-level work. Many educators argue that if intermediate education is to establish its own identity and function effectively, teachers must be trained and certified specifically for the intermediate level.

This makes it essential to identify the skills and competencies needed for middle school teaching. In an effort to do this, Strahan surveyed "over twenty reports or empirical studies and a number of research summaries" containing evidence about what teacher competencies affect student learning and "encourage desired outcomes in pupil growth" at the middle school level.

Strahan identified eighteen key behavior clusters, falling into three general areas: personal characteristics, understanding of adolescent needs, and instructional skills. The most important personal characteristics are a positive self-concept, warmth, optimism, enthusiasm, flexibility, and spontaneity. Acceptance of students and awareness of developmental levels are the two key clusters in the area of understanding adolescent needs.

In the instructional area, key skills include knowledge of subject matter, use of "structure" in teaching (typically by organizing lessons at the beginning and summarizing them at the end), attention to monitoring student learning, use of concrete materials and focused learning strategies, the ability to ask varied questions, willingness to incorporate indirectness in teaching, use of success-building behaviors in working with students, ability to diagnose individual learning needs and prescribe individual instruction, and listening skills.

Intellectual Development

The heart of a learner-centered organization like the middle school is the students it serves. Epstein's research into human brain development and learning capacity sheds valuable light on the limits and abilities of early adolescent learners.

In one article Epstein reports on his test of the hypothesis that "human brains have periods of large growth in weight that are not strongly correlated with periods of general body growth." Evaluating the available data on this question, Epstein reached the conclusion that most brain growth occurs in a series of four spurts, centering around the ages of 3, 7, 11, and 15-16 years.

In a companion study, Epstein turned to the question of whether intellectual development might likewise occur unevenly, in spurts, and if such spurts could be correlated with growth in brain size. He found that cognitive growth spurts do, indeed, exist, and that their peaks occur around the ages of 3, 7, 11, and 15, or roughly the same time as brain growth spurts. Additional evidence suggests that troughs—periods of unusually slow development—generally follow these spurts. The author notes that "around

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the age of the trough in intelligence growth, there is little or no capacity for new intellectual growth." One such period of slow growth occurs "around age 12-14."

These findings, though not definitive, do suggest that growth in brain size and intellectual capacity can be correlated. In addition, such growth, far from occurring in a gradual, even pattern, takes place primarily in a few relatively brief spurts. These spurts seem to occur at roughly the same age in all children, regardless of their levels of physical development. This means that student learning capacities are relatively consistent among children of the same age and can vary considerably from one grade to another; during growth spurts, rapid progress is possible, while during troughs, even modest gains may be difficult to achieve.

Implications

The lack of conclusive evidence that the middle school is more successful—in terms of the outcomes it produces—than traditional schooling points up the fact that both the middle school and the traditional junior high still have not reached their potential in creating an environment responsive to the special needs of early adolescents. The greatest "failing" of intermediate education may, in fact, be that its principles are too seldom applied in practice, in

either a middle school or a junior high school setting.

Thus one of the highest priorities for intermediate education is simply to put its philosophy into practice in either type of school. Careful, systematic planning is an essential first step in this effort. This means clearly defining, in both general and specific terms, what an intermediate level school's objectives are and how it intends to meet them. Extensive monitoring and systematic evaluation are also essential to ensure that those objectives remain the focus of the school's operation.

Strahan's list of the competencies needed for effective middle school teaching has a number of applications. Some important instructional skills clusters—knowledge of subject matter and the abilities to listen and to monitor learning effectively—seem so basic to quality teaching at every level that they should be part of any teacher training program. Conversely, useful personal characteristics, like warmth, optimism, enthusiasm, positive self-concept, flexibility, and spontaneity cannot readily be taught at all, though middle schools can look for such qualities at hiring time.

It is the remainder of Strahan's list that can be most useful in developing middle school teacher training programs. Specifically, such programs should aim to enhance teachers' abilities to structure teaching, use concrete materials and focused learning strategies, incorporate indirectness in teaching, ask varied questions, use success-building behaviors in working with students, and diagnose individual learning needs and prescribe individual instruction. Skills in the area of understanding adolescent needs—acceptance of students and awareness of developmental levels—are central to the goals of the middle school and should, therefore, be at the heart of efforts to prepare teachers to work in the middle school.

Epstein's findings have a number of implications for intermediate education. Since brain growth and cognitive development do not occur in a gradual or continuous manner, but rather in relatively discrete spurts, students of all ages cannot be taught in the same way nor expected to progress at a uniform rate from year to year. This points up the importance of the middle school goal of creating an environment that is primarily learner, rather than subject matter, centered. It further demonstrates the need for schools to employ a wide enough range of instructional approaches to accommodate the diverse needs of their students.

One particularly significant finding is that students between the ages of 12 and 14 (seventh and eighth graders, for the most part) experience a learning trough—a period when their brains and their cognitive abilities virtually cease to grow. At this stage, children are generally not capable of mastering complex new cognitive processes and are likely to experience frustration, a sense of failure, and a resulting loss of self-esteem if they are required to do so.

Instead of introducing new cognitive skills to seventh and eighth graders, then, instruction should present new information at students' existing levels, and should help students practice and mature skills they have already acquired. Along with these efforts to consolidate the gains

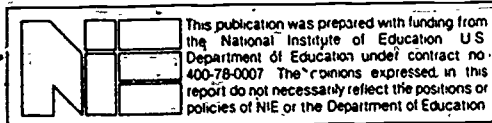
made during previous growth spurts, teaching at this level should also prepare students for the next spurt, which generally begins at around age 15.

Ultimately, though, the primary focus of seventh and eighth grade education should probably shift away from cognitive learning and toward personal experience. For example, mathematics might be taught in terms of students' daily lives in such areas as managing personal finances. Students may even do their best learning outside the classroom entirely. This might, for example, mean having students do service work in the community and then discuss that work in school.

Epstein's findings also tend to support certain specific goals of middle schooling. The emphasis on educating the whole child and helping children to understand themselves, their relationships to the world, and the physical changes they are going through seems particularly appropriate for seventh and eighth graders who are undergoing rapid physical and emotional changes and very little cognitive growth. Similarly, exploratory courses can help students define themselves and their interests at a time when such self-definition is particularly important.

The evidence of brain growth spurts also suggests answers to a pair of organizational questions. Cognitive growth is largely unrelated to physical growth and occurs at roughly the same age in all children. This implies that the traditional practice of grouping children in age-based classes can be justified. Finally, the fact that, for many children, the eighth grade marks the end of a learning trough and the ninth grade the beginning of a new growth spurt suggests an argument for ending intermediate education with the eighth grade and moving ninth graders on to high school.

These findings, though interesting and provocative, are far from conclusive. Indeed, for all the research that has been done, the principles of middle schooling are still neither fully understood nor widely practiced. Certainly, however, the middle school philosophy holds great promise as a means of reshaping and revitalizing education for early adolescents.



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