DOCUMENT RESUME

ED 363 420 PS 021 818

AUTHOR	Pizarro, Rafael A. Espinoza
TITLE	Exploring Integrative Curriculum for More Effective Learning by Primary Students in Costa Rica.
PUB DATE	Aug 93
NOTE	92p.; Master's Thesis, New Mexico State University.
PUB TYPE	Dissertations/Theses - Masters Theses (042)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	*Curriculum Development; *Curriculum Evaluation; Curriculum Research; Elementary Education; *Elementary School Curriculum; *Elementary School Students; Feasibility Studies; Foreign Countries; *Integrated Curriculum
IDENTIFIERS	*Costa Rica

ABSTRACT

The purpose of this thesis was to review a number of integrated curriculum models developed in the United States and examine their suitability for implementation in primary schools in Costa Rica. The primary objectives of this study were to analyze the Costa Rican primary school structure and the feasibility of establishing an integrated curriculum at this level, investigate selected curriculum integration models in the United States, ascertain the possibilities of the selected models' integration in Costa Rica, and recommend a plan to the National University of Costa Rica for exploring ways to determine each selected model's appropriateness for implementation in Costa Rican primary schools. Six models selected and reviewed in this study were: (1) Jacob's Interdisciplinary Units; (2) Clark's Integrative Education Model; (3) Palmer's Curricular Connections; (4) Drake's Story Model; (5) Miller's Holistic Model; and (6) Kovalik's Integrated Thematic Instruction. Palmer's Curricular Connections model was found to be the most promising for implementation in Costa Rican primary schools. An appendix provides a list of possible curriculum selection criteria. Contains 45 references. (MDM)

EXPLORING INTEGRATIVE CURRICULUM FOR MORE EFFECTIVE LEARNING BY PRIMARY STUDENTS IN COSTA RICA

BY

RAFAEL A. ESPINOZA PIZARRO, B.A.

A Thesis Submitted to the Graduate School

in partial fulfillment of the requirements

for the Degree

Master of Arts

Major Subject: Education

Minor Subject: Educational Management

New Mexico State University

Las Cruces, New Mexico

August 1993

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DEDICATION

This thesis is dedicated to the memory of my father, Rafael Espinoza Bermudez (1927-1992) who supported me while I was in the United States.

Also, to my family, whose encouragement from Costa Rica gave me the strength to continue with my graduate program.

And to my fiance, Rhonda Craig, whose trust and continued support contributed to a satisfying completion of my program and for showing me her love in time of joy and crises. She was my source of inspiration during my graduate studies.

ACKNOWLEDGMENTS

Graduate school has been the most enjoyable and exciting experience for someone whose second language is English. Graduate school in the United States has allowed me to acquire new prospectives concerning curriculum development, and has increased my level of knowledge in my first language. Many instructors have made this experience possible for me.

I would like to express my sincere appreciation to the following persons: Dr. John Thomas, for his valuable time in assisting me in the production of this document. I could not have completed the project without his hard work and assistance; Dr. Sharon Wooden, who has worked as my graduate advisor during my training at New Mexico State University; the staff at the Inter-Library Loan Office, for their assistance in locating the material for writing this thesis. Dr. Daniel Doorn, for volunteering much of his free time to this project. Without his support, encouragement and guidance, the completion of this study may have never been realized.

A gracious thank you to all my committee members, Sharon Wooden, Herman Garcia, Harold Matteson, Maria L. Gonzalez, and John Thomas for helping me to realize my goals.

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ABSTRACT

EXPLORING INTEGRATIVE CURRICULUM FOR MORE EFFECTIVE LEARNING BY PRIMARY STUDENTS IN COSTA RICA

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The purpose of this exploratory study was to review and study a number of curriculum models of integration developed in the United States that may have special promise for primary schooling in Costa Rica. Among the models reviewed and studied, Joan Palmer's model (1990) showed the most promise for curriculum implementation for the primary schools of Costa Rica.

The primary objectives of this study were to (a) analyze the Costa Rican primary school structure and the feasibility of establishing an integrated curriculum at this level; (b) investigate selected curriculum integration models in the United States; (c) ascertain the possibilities of the selected models' integration in Costa Rica; and (d) recommend a plan to the National University of Costa Rica for exploring ways to determine its appropriateness for implementation in Costa Rican

primary schools. Six models of curriculum integration were selected and described in this study. Criteria as formulated by Ball and Marvin (1975) were used to evaluate the degree of appropriateness of each of the models for inclusion in the curriculum of Costa Rica's primary schools. These criteria consisted of five primary areas: a) coverage/context, b) instructional approach, c) utility, d) evaluation/validity, and e) special considerations.

This exploratory study was organized in four chapters. Specifically, the focus in each chapter is as follows:

Chapter I - describes the statement of the problem, objectives of the study, need for the study and the method used.

Chapter II - addresses the history and educational system of Costa Rica.

Chapter III - Reviews the literature on integrative curriculum. Descriptions of six selected curriculum models are included in this chapter.

Chapter IV - Summarizes and interprets the study and provides possible directions for future research and implementation in Costa Rica's primary schools.

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Chapter I

INTRODUCTION

Background and Setting of the Problem

Costa Rica enjoys a strong tradition of education as a means of improving the quality of life for its citizens, commencing with childhood. Indeed, the entire nation is mobilized behind children and their education (Institute of International Education, 1986).

The Costa Rican government provides one-third of its national budget for education. As a result of such strong financial support, education plays a very important role and is considered to be a fundamental factor for empowering the democratic political system of the country. Costa Rica has one of the highest literacy rates in Latin America, which is at 93% of the population, according to the 1984 national survey (World Bank, 1990). Ninety-eight percent of the population's children from 6 to 12 years old undergo schooling in Costa Rica (Reimers, 1991).

In comparison to other third world and/or Latin American countries Costa Rica has accomplished much in education (Wahab, 1983, p. 11). Though Costa Rica has accomplished much in education, serious problems still exist. In particular, albeit at the conceptual level there is a good curricular foundation from preschool through high school, curriculum suffers from rigid uniformity, is bookish and examination oriented and teacher centered (Wahab, 1983).

Major curriculum reforms, including diversification, integration and flexibility of the schools' programs are needed. Currently, education fails to produce the necessary mix of knowledge, skills and attitudes required by Costa Rican society so that its labor force touches base with local realities and the demands of the country's contemporary societal needs. If education is to play a significant role in Costa Rican national development, its development must be conceptualized and implemented on a sector wide, systemic basis, and its content must be made more consonant with local realities to improve the education of the nation's primary school children (Wahab, 1983).

Need for the Study

The increased attention given to curriculum reform by recent and current Costa Rican governments in the primary schools curriculum has promoted a great interest in and awareness of by the country's colleges of education. Training in curriculum integration with prospective teachers has been in process since 1986 by The National University of Costa Rica. However, these first steps have been taken without any strong theoretical background in the meaning of integration. More information is needed about the different models for integrating curriculum in Costa Rica. Also, more insights are needed into what other countries are doing, particularly in the primary schools in the area of curriculum integration that may be beneficial to Costa Rica's educational progress. This information is essential to improving curriculum in the country's primary schools because, despite its high

literacy rate, the curriculum of the schools suffers from rigid uniformity. In fact, according to Dr. Marvin Herrera, Costa Rica's Minister of Education (Ministerio de Educación Pública, 1990a), this rigidity restricts students's critical thinking, openness to diverse ideas, and their ability to analyze problems and events adequately. How knowledge is portioned and presented in the school day reflects the traditional curriculum that does not allow for developing those skills in the students. Presently, there is a need for new curricular and instructional models because existing of a paradox: the instruction is boring and traditional (Ministerio Educación Pública, 1990b). Most of the primary schools in Costa Rica organize curriculum through fragmented and narrow conceptions of subject areas. Primary emphasis is on language arts, math, science, and social studies. Thus, new curriculum theory organization is needed. In summary, the problem of creating a model of curriculum and instruction is a response to the following needs:

1. Developing a curriculum theory which allows for the exploration of new ways of curriculum organization in Costa Rica.
2. Encouraging students to make connections among the disciplines.

Statement of the Problem

The urgent need for changing Costa Rica's education system, especially in the primary schools, comes from an official openly held beliefs that Costa Rican schools no longer serve children adequately. There has been a growing concern in Costa Rica to direct educational efforts toward achieving the balanced development

of children by adequately preparing them to adjust to a rapidly changing society. In order to accomplish this, consideration needs to be given to restructuring education. The strong emphasis on the structure of disciplines which has been so evident in recent curriculum revisions has aroused a correlative interest in the search for suitable curriculum models.

Thus, integration of the curriculum would be an essential first step. To move away from the teacher-centered approach now in place, many curricular changes would need to occur in order to meet the needs of the students. Curriculum would need to be reviewed and efforts made to integrate changes within the curriculum. This study will explore a number of models of curriculum integration which have promise for Costa Rica and will recommend a curriculum model for a pilot study in Costa Rica.

Purpose of the Study

The purpose of this study is to review and study a number of models of curricular integration developed in the United States that may have special promise for primary schooling in Costa Rica. These models of curricular integration developed in the USA will be reviewed and synthesized. Specific models which seem most promising will be selected and recommended for possible application in the primary schools of Costa Rica. The intention here is to look at ideas, findings, and values from the range and specificity in the educational field in order to develop theory and a pilot program for curriculum integration in Costa Rica.

Objectives of the Study

The objectives of the study are to the followin ·

1. Analyze the Costa Rican primary school structure and the feasibility of establishing an integrated curriculum at this level.
2. Investigate selected curriculum integration models in the United States.
3. Ascertain the possibilities of selected models' integration in Costa Rica.
4. Recommend a plan to the National University of Costa Rica for exploring ways to integrate these models as appropriate to the Costa Rican primary schools.

Motivation for the Study

As a product of the first generation of teachers trained in integrative education developed by the National University of Costa, the education that the writer received was very valuable. However, the lack of literature about curriculum integration in the course of training makes it imperative that the field of curriculum integration be studied in greater deep.

Methodology and Procedure of Investigation

The method used in this study is an exploratory comparison study. The study is supported through empirical studies used as a references. This thesis is based on critical analysis and a search of the literature was completed to provide the conceptual framework for developing recommendations for integrative education in Costa Rica's primary schools. The search of the literature addressed the historical background and issues relevant to curricular integration. Input was

sought from different state departments, curriculum developers and from the Educational Resources Information Center (ERIC). Searches were performed to locate and select six curriculum model, worthy for consideration of adoption in Costa Rica. As a means of analyzing the curriculum models, in order to find ones which would be most appropriate for Costa Rica, the instrument, Curriculum Program Selection: A Cost Effectiveness Approach (Ball & Marvin, 1975), was used as a criterion for comparing and contrasting the models.

This instrument will be used to compare and contrast the curriculum models investigated because it provides a comprehensive list of curriculum selection criteria (see Appendix A). Included in each criterion is a set of specific questions pertaining to the coverage/content, instructional approach, utility, evaluation/validity, and special considerations of each of the curriculum models studied. By answereing these questions, curriculum developers will be able to decide the degree to which each model meets the selection criteria. The relative importance of each criterion listed may be ascertained in terms of a Likert scale ranging from the very important (9) to the unimportant (1) as shown in Worksheet A, Initial Rating of Selection Criteria (Appendix A).

Definitions of Terms

The following definitions are given to provide focus to the reader for terms used in the study:

Primary Education: Six years of elementary education divided in two three year cycles.

First cycle: First three years of primary school, grades one to three.

Second cycle: Last three years of primary school, grades four through six.

Integrative Education: An approach to teaching, learning, and curriculum design that consciously applies materials, methods , and language from more than one discipline to examine a central theme, issue, problem, concept, topic, or experience. It views learning and teaching in a holistic way that reflects the real world.

MEP: Ministerio de Educación Publica, Ministry of Public Education

Politica Educativa (Educational Policies): Educational philosophy adopted by the government of Costa Rica.

Transdisciplinary: Beyond the scope of the disciplines, that is, to start with a problem and to convey knowledge from the disciplines.

Discipline: A specific body of teachable knowledge with its own background of education training, procedures, methods, and content areas. (English, Mathematics, Science, etc.).

Curriculum: All learning experiences planned and implemented by the school.

Student Centered: Process of learning where the students' developmental needs and inquiry interests are the main focus in planning and implementing instruction.

Traditional Education: Education that is centered on the teacher or set in the syllabus, skills and information, rather than the student. The student is a passive learner in the process.

Content: Identified as the knowledge or information gained by the student and/or presented by the teacher. For example, addition and substraction and multiplication tables.

Chapter II

HISTORICAL REVIEW AND EDUCATIONAL DEVELOPMENT IN COSTA RICA

Background about Costa Rica

When the "campesinos" (farmers) of Costa Rica learned of the successful revolt and separation from Spain in 1821 by the regions to the north, the citizens of Costa Rica declared their own independence (Gonzalez, 1987). By December 1, 1821, the Costa Ricans had drafted their first constitution. From the early sighting of its shores by Columbus in 1502, Costa Rica has moved progressively toward a representative democracy. It is today a country with a president, a legislative assembly and a judicial system. Internationally, it is a member of the United Nations and the Organization of America States.

With 51,000 square kilometers, and bordered to the north by Nicaragua and to the south by Panama, Costa Rica is almost the same size as West Virginia. It is the smallest country in Central America. It is the most peaceful country in Latin America, and the only one with no army. In comparison with the people of other Latin America countries, Costa Ricans are physically and culturally homogeneous (Biesanz, 1982).

Approximately, ninety-five percent of the Costa Ricans have varying mixtures of the mestizo combination of Spanish and Indians, including some African combination in many cases (Biesanz, 1982). Most Costa Ricans share

similar ways of thinking and feeling. Cultural homogeneity is shown in religion, language, and many other values and customs. This homogeneity is fostered by the fact that the capital San Jose, and the national government control or influences almost all of the aspects of life even in the rural areas including education, health services, the mass media, political administration, religion, and commerce.

Educational System

Since its colonial origins Costa Rica has been defined as a very unique society, thus and the development of the educational system should be understood within the development of its socio-economic framework. In order to understand this very complex educational development three periods can be distinguished: the first, from the colonial origins until independence in 1821; the second, from independence to the end of 1948; and a third period from 1948 until the present time.

The first period. Costa Rica was slow to be colonized, for there was neither an alluring quantity of gold or silver, nor Indian labor to work the land (Waggoner, 1971). Thus, the economy of colonial Costa Rica was based on agriculture. The colonists worked their own subsistence farms due to the lack of a large labor force. In this context, Costa Rica's educational system was given little attention during the colonial period (Cummings & Lemke, 1973). However, the influences of the Spanish conquests were present through the "Catequización" (Conversion) of the

Indians. The period of evangelization started by Franciscan priests with the Indians is considered the beginning of education in Costa Rica (Gonzalez, 1987).

The Escuela de Primeras Letras (School of First Literature) constituted the only existing educational provision in the country, which was located in Cartago, the colonial capital of Costa Rica. The curriculum of colonial schooling; as Gonzalez (1987) points out was based upon the teaching of Christian doctrine, reading, writing, and arithmetic. The "Cartilla" (a book for learning to read) was the fundamental text used in the teaching of reading and doctrine (Gonzalez, 1987). The colonial school had imposed discipline through fear, and physical and psychological punishment was common. By the end of the eighteenth century there were very few schools in Costa Rica.

Second period - The independence of 1821. After the independence in 1821 from Spain, the concern for education increased. The Constitutions of 1844 and 1847 provided specific attributions for the development of education. The constitution of 1869 established free, compulsory and public supported primary education. The role of the teacher in Costa Rica was defined by the Law of 1899, which accorded professional status to teachers. These constitutional provisions played a very important role in the development of Costa Rica's democratic way of life (Cummings, 1973). Throughout these years, education in Costa Rica played a very important political role as a way of integrating all of the population into a single national society.

Third period. The Constitution of 1949, approved after the Revolution of 1948, has ten brief articles relating to education. Article 77 states that "public education shall be organized as an integral process correlated in its various phases, from the preschool period to the university" (Constitution, 1970). Primary education is obligatory; primary education and secondary education is free and paid by the nation.

In general, the system of education in Costa Rica is structured into two major segments: formal education and non-formal education. The first is regulated, and supervised by the government. This part of education is represented by preschool education, general basic education, diversified education (specialized), and higher education.

Non-formal education provides an open system for Costa Rican citizens to enhance their knowledge and skills (Viquez, 1991). In this education are included such programs as literacy and basics, as well as secondary education for adults. Informal education is also imparted through written communication, the media (newspapers, magazines), radio and television. For example, in television, there is a special cultural and educational channel which focuses on informal education.

Goals of the Costa Rican Educational System

The fundamental law of Education (ley fundamental de educación) in Chapter I, Objectives of Costa Rica's Educational System, defines the purpose of education in Costa Rica as follows:

Chapter I

Article 1

All the inhabitants of the republic have the right to an education and to provide and offer it in a broad and good manner.

Article 2

Objectives of the Costarican's educational system:

1. The development of citizens that care for their country, and are conscious of their rights, fundamental liberty with deep feelings of responsibility, and respect for the dignity of humanity.

2. Contribution to the full development of the personality.

3. Development of citizens for a democracy with conciliation between the individuals' interest and the community's interests.

4. To stimulate the development of solidarity and comprehension for humanity.

5. To conserve the culture heritage by providing knowledge of fine literature, and philosophical works about the history of his/her stories.

Chapter II - Article 13 -- Educational System

The objectives of primary education:

1. To stimulate and develop harmoniously the personality of the child.

2. To provide the basic knowledge and activities that favor the development of intelligence, abilities, skills and creation of attitudes and habits necessary to function efficiently in society.

3. To develop social consciousness, and to foster the common goal of the development of citizens that favor the democratic way of life in Costa Rica.

4. To preserve the health of the child.

5. To comprehend the universe.

6. To preserve the democratic principles for a just society in a civil manner.

7. To be skilled for work and to foster social-economic development.

8. To nurture the spiritual, moral, and religious customs, according to Christian traditions.

Viquez (1991) states that essentially, the educational system in Costa Rica has eight important characteristics: relationships among human beings, family, and the society; constant search for continuing education; relationships among education, work and production; relationships between education and democracy; preoccupation for knowledge in and for the use of science and technology; humanism; culture and education; and promotion of education as an important factor in the development of the country (p.190-191).

Primary Education

Children enter school at the age of six years and six months. However, based on special testing or attendance at preschool programs, the age requirements may be waived by three months. Since 1972, based on the National Plan for Educational Development, students are given a general basic education for nine years, consisting of three cycles of three years each. Primary education is six years in length, and is compulsory and free of charge (funded by the government) from ages 7 to 14. It is divided into two cycles. The first cycle includes grades one through three, and the second is grades four through six. When students complete the second cycles, they students receive a certificated or diploma called Conclusion of cycle I and II. The grading system at this level is based on a scale of 0-100 with 65 as a the minimum passing grade. The third cycle corresponds to the initial years of secondary education.

Curriculum

In most respects, the national curriculum enshrined in education, reflects a model of mechanistic, subject-specific curriculum with central emphasis on information and factual content. Each cycle has its contents established by the Ministerio de Educación (Ministry of Education). There is a specific number of directed lessons per week that each teacher has to teach. Table 1 shows the different number of lessons in the primary education level taught weekly.

Each teacher has to develop a schedule indicating which subjects she/he is going to teach every day.

Table 1. Primary education level lessons taught weekly.

Spanish	10 lessons
Mathematics	8 lessons
Science	4 lessons
Social Studies	4 lessons
Agriculture	2 lessons
Religion	2 lessons
Computer Sciences	2 lessons
Physical Education	2 lessons
Arts	2 lessons
Music Education	2 lessons

Educational Policy (1990-1994)

As was previously explained, every four years there is a set of new educational policies when the government changes. The curriculum guide which the new Ministry of Education provides contained proposals for a new curricular reform. Under the direction of Lic. Marvin Herrera, Costa Rica's present Minister of Education, analyzed the Costarican educational system and the problems that the curriculum is having. The current curricular policy is based on the problems expressed earlier about what is occurring at the primary educational level. This new policy gives extreme importance to curriculum reform. The Ministerio de Educación Pública's document (1990b) points out the problems that the different participants in curriculum are having.

The students. The former educational policy acknowledged the role that students are playing as passive actors in curriculum decision making. Because of the stress of the disciplines on the curriculum, the students did not participate in the selection of learning experiences.

Educators. In the past, the educators have been oppressed in the decision making process; therefore, their role was to develop curriculum policy that was designed by authorities in high positions. Many of the educators were trained a long time ago and actually developing educational theories that were no longer useful. Professional educators have been denied the freedom to create innovation in teaching or education.

The parents. The parents' role has been to provide materials for the school. The actual curriculum did not recognize parents as active subjects who can provide positive educational experiences to the development of curriculum.

Elements of the Curriculum

The elements of the curriculum are as follows: objectives, contents methods, resources. learning experiences, and strategies of evaluation. All of these are focused on the development of disciplines, thus the objectives and goals of the Costarican's education has been forgotten. The main goal of the educational system is to develop the curriculum in the different disciplines of knowledge.

In the context described above, the new curriculum policy pretends to give new roles to the different agents that participate in the development of the curriculum.

The above description is intended to illustrate the realities of education in Costa Rica in most primary classroom during the 80's and 90's.

Priority Areas of the Educational Policy

The educational policy expressed in the National Plan of Education 1990-1994 has set five priority areas of concern. These areas are as follows:

- Values
- Education for living in a democracy
- Quality of education
- Education for ecology, science, and technology
- Educational opportunities and culture

Participants of the Curriculum

In this new proposal, participants of the curriculum, are all those people that participate in the development of the curriculum. Thus, the students, educators, parents, community, are all the participants of the curriculum; therefore, they will be called on to integrate the different situations or contexts of learning.

The Students

The students will be the main focus of the curriculum development process. The other participants of the curriculum (teachers, parents, community) are facilitators of the educational experiences.

Students as social agents with their cultural backgrounds, individual experiences, different learning styles, characteristics, and their problems and realities will be considered in the curriculum development processes.

The Educators

Educators are professionally authorized by society for organizing and orientating the different contexts of learning, taking into account the different characteristics of the students. The learning experiences developed by the educators are to respond and accomplish the objectives of the Costa Rican educational system. Educators are the responsible participant for the quality of teaching; their task is to orientate the learning experiences of students in a very attractive way and make it essential to the development of their learning experiences that will be useful in life.

Community Members

Educator are not alone in the educational process. Adults have experiences to share with the students; professionals possess new scientific techniques and religious groups play a very important role in ethics. Artists, players, and musicians are creators and transformers of the culture. Thus, educators have to

open the doors of the school to all these groups or bring the students to them. By doing so, educators will accomplish the integration of education with the real world.

Elements of the Curriculum

In this new proposal, the different elements of the curriculum (objectives, contents, activities, methodology, resources, time, evaluation) will acquire new perspective.

The Objectives

In this proposal, the objectives are formulated to develop higher structures of thinking that students have to use in everyday life.

It is hoped that the developments of the objectives foster the students as an integrated human beings in the three areas of personal and social development: cognitive, social-affective, and psychomotor. Rather than proposing a behavioral objectives focus which does not allow for creativity the new proposal stresses objectives in terms of processes versus products.

The Content

The content will come from real life situations. In this way, students will have tools for confronting problems and real life situations.

Situations in Learning

All students experiences are organized under the supervision of educators and the school. In this proposal, the contexts of learning are seen from an

integrated and global perspective and not as a simple and single activity. The learning experiences have to promote critical thinking, be attractive, and take into account all of the dimensions of human development (cognitive, social, psychomotor), all of which encompass going beyond the classroom walls and going to other places for developing learning experiences.

Methodology

Newer methodology will replace the behavioristic and traditional ways of teaching that produce superficial learning and is no longer valid.

Resources

Environmental surroundings will become the primary resources to be used by the students. For example, math calculations can be done in the field, and scientific experiments can be conducted in natural settings.

Time

The concept of time is invalid due to the nature of the proposal. Learning does not take place in a rigid schedule of time. Learning is facilitated by other processes such cognitive development and learning styles.

Evaluation

Evaluation is considered a process, and is no longer seen only in terms of a product. The evaluation of the process is as important as the product. Formative evaluation is as important as summative evaluation.

Changes Expected from the New Educational Policy

The Plan General de Educacion (General Educational Plan, MEP, 1990b) gives some strategies and action for accomplishing the educational changes outlined below. The following actions are proposed:

1. Revision and actualization of plans and programs of study.

With this action it is hoped that the changes needed will be accomplished in the curriculum. Committees will be formed to develop proposals with an integrated vision of the curriculum.

2. Strengthening of the elements in charge of the development of curriculum.

Strengthening of old elements will be implemented. New departments for research and innovation in education will also be added.

3. Democratization of the educational process.

All government offices and schools will be placed for practicing democracy. This means that all of the participants involved will play an active role. Participation in the decision making process by all of the subjects involved in the curriculum development is crucial.

4. Equality in education.

The school becomes an instrument for promotion of equality in education for everyone. It provides educational opportunities to all children especially those who become drop-outs in the system, particularly at the elementary level.

5. The linkage of formal education with no formal education.

The idea is to relate the students' real life with the curricula. Media communication is to be incorporated into curriculum activities.

6. Transformation of schools into attractive places for learning.

The school has to be interesting to the students. It has to be a place that develops motivation for study and participation in the educational process.

Chapter III

INTEGRATIVE CURRICULUM

Curriculum specialists have for many years argued about the way in which curricula should be organized. Thus, attempts to integrate curriculum have a very long historical background.

Referenced in the literature by many terms (interdisciplinary units, integrated studies, thematic approach), integrated curriculum is not a new idea. For many years, leaders in education have pointed to the fragmentation of the school curriculum and have argued for a far more integrative curriculum (Dressel, 1958; Goodlad, 1984; Oberholtzer, 1937; Thomas, 1937).

Thus, we find different perspectives calling for an integrative curriculum. Harvill (1954) points out the contribution to science in the development of integration concepts. He argues that establishing a scientific study of the interdependent nervous and endocrine systems of the human body allows for the concept of humankind as an integrated organism. Psychology has also made major contributions to the development of the concept of integration. For example, the German psychologist Herbart suggested the importance of understanding the unity of learning experiences of school youth. Harvill (1954) attributes the Herbartian doctrine of correlation as that which led to the introduction of integrative education in America in the 19th Century by Charles De Garmo and Charles McMurray. These men, and later John Dewey, continually indicated the lack of unity in the

school curriculum (Harvill, 1954). Over four decades ago, Tyler (1949) pointed out that integration of the curriculum was needed so that process of learning experiences could be more effective for learners.

As previously noted, the concept of integrative curriculum has basically been interpreted in different ways. The basic difference has been in the organization, scope, and purpose of integration. Definitions of integrative education vary as follows:

Good's definition (cited by Shoemaker, 1989) defines integrative curriculum as a "curriculum organization which cuts across subject-matter lines to focus upon comprehensive life problems or broad areas of study that bring together the various segments of the curriculum into meaningful associations" (p. 2).

Hennes (1990) defined integrated curriculum as a conceptual framework which weaves the various concepts, skills, and principles in the traditional, fragmented curriculum into a unified whole (p. 110).

Jacobs (1989) defined integrated curriculum as an interdisciplinary approach. A curriculum approach that consciously applies methodology and language from more than one discipline to examine a central theme, issue, problem, topic, or experience (p. 8).

The North Carolina Department of Public Instruction (1987) refers to integrative curriculum as the interrelatedness of subject and skill areas within and across grades of school programs (p. 7).

Tchudi (1991) defines integrative curriculum as looking for issues, problems, school content, and the world as a whole from many different perspectives, without a great deal of worry about whether, at any given moment, students are studying math or history or science, or ideally, all elements of the curriculum in content (p. 17).

The Need for Integrative Curriculum

Today, the discrete subject-focused curriculum is a target of criticism because it fails to provide learners with the desirable intellectual skills needed for a competitive society (Relan, 1991). Society is experiencing changes faster than ever before in history. Relan (1991) suggests the need for an integrated global curriculum to keep pace with these changes. Today's students are asked to make intelligent decisions about different and important political, economic and environmental issues. It is imperative that these students acquire a good understanding of the power of knowledge and their responsibility to act on that knowledge with the highest degree of human intelligence (Hughes, 1992 p.130).

Teachers and students are frustrated with fragmented schedules in school today. Jacobs (1991) notes that primary school students view subjects as "changes in behavior, teacher attitude, areas of room, and times of day" (p. 22) rather than their substance and application to real life situations. Rarely do teachers explain to the students the nature of the disciplines and how the subjects relate to one another. Thus, Jacobs (1989) suggested that a unified curriculum would not only resolve

these problems, but make curriculum more relevant and useful to the learners regardless of the content being taught. A key argument supporting integrated curriculum is that students need opportunities to apply the skills that they develop in the various disciplines to real life problems (Jacobs, 1981).

Cullinan (1989) states that the typical school day is segmented according to subjects; however, we know that learning is not similarly compartmentalized; children do not learn reading in reading class alone, science in science class alone, or history in social studies alone. "Children learn best to think, read, write, speak, and listen when instruction in all curriculum areas is integrated" (p 527).

Gaff (1989) notes that an integrated curriculum helps students understand a complex interrelated world. In support of integrative education, the North Carolina Department of Public Instruction (1987) outlines five reasons for curricular integration

The Real World Is Integrated

Though learning is a natural, integrated process, educators have seen fit to organize school time as separate and unrelated learning experiences in different disciplines. Despite this arrangement, one relies on the interrelatedness of learning in hands-on work and every-day life.

Students Do Best When Learning is Connected

Recent research in the areas of teaching reading in the content areas, and writing across the curriculum suggests that students learn and remember best those things that are reinforced and integrated in more than one curricular area.

Students Become the Focus of Learning, Not the Teacher

Students first get involved by a topic or focus that has a sense of wholeness. Because of the process that integrative education plays, students become active learners as decision makers and problem solvers. Students can have choices and work with their peers.

It is Difficult to Teach Subjects and Skills in Isolation During the Typical 5.5-Hour Instructional Day

Integrated learning activities can contribute to the efficient use of time. Program offerings can be expanded and strengthened if students can work on two or more subject-area objectives.

Integrated Programs are Useful in Tackling Other Areas of Concern

Individual teachers or the entire professional staff have other goals that can be addressed successfully through an integrated curriculum approach (Sigurdson, 1981).

The Teaching/Learning Process

In the integrated curriculum, teachers and students undertake new roles. Rather than passively learning academic knowledge from the subject matter

disciplines, teachers and students actively create knowledge using the processes from the disciplines (White, 1986, p. 338). Young (1992) explains the philosophical differences between integrated curriculum and the traditional way of organizing the curriculum as shown in Table 2.

Table 2. Purpose of the school.

Traditional	Integrated
Transmission of knowledge from teacher to student	Helping children construct their own knowledge from their experience.
View of Knowledge	
Public knowledge which consists of accumulated traditions	Private knowledge that enables the child to make sense of his/her experience
Focus of Planning	
Delivery of knowledge through the separate subjects.; focus on teaching	Arrangement of activities through which children can experience their world; focus on learning
Role of the Teacher	
Owner and transmitter of knowledge to the children	Facilitator, guide, and co-learner with the children
Role of the Student	
Receiver of public knowledge	Creator of personal knowledge through experience

Source: Young, 1992, p. 7.

Criteria Necessary For Adopting An Integrating Approach

To suggest curriculum integration as an appropriate curricular option, it is necessary to understand the basis for it prior to its adoption and implementation. The following criteria for adoption is outlined by the North Carolina Department of Public Instruction (1987) regarding personnel, time, resources, and facilities:

Personnel

Teachers must be willing to participate in a team project with enthusiasm and commitment. In order for this to occur, in-service education will need to be provided so that teachers see the advantages of integration of the curriculum.

Time

Adequate time to plan and develop integrated units must be available. Teachers may be able to develop integrated programs using their regular planning time. Teachers will first, moreover, need to learn how to do this type of planning and then be supported in their effort to develop teaching units which integrate subject matter. Ackerman (1989) notes that sufficient time is necessary for curriculum development, communication, coordination with colleagues, and teaching the students the curricular connections.

Resources

Materials should be available for developing integrated curriculum. Unless resources are provided, including time and materials, teachers will not change. The

economic factor is important. It is necessary that an adequate budget to support curriculum development, staff and materials be provided.

Facilities

Because students will be more actively involved in the integrated curriculum, teachers may need to utilize the halls, cafeteria, and auditorium to have sufficient work space. Cross-sharing of the school facilities will need to be encouraged.

Another factor pointed out by Ackerman (1989) is "political" support. Because integrative curriculum is often viewed as outside the norms of the culture of the school system, support from key elements as colleagues, parents, supervisors, and students is needed.

Also important to the integration of school curriculum are eight important criteria for successful integrated units which have been pointed out by Marry Strubbe (1990):

1. Relevant topics.

Students enjoy units more if they perceive a direct relevance to their lives. Getting the input of the students is very important.

2. Clear goals and objectives.

Student learning correlated with clearly stated goals and objectives results in more effective learning.

3. Variety in process, structures , activities, grouping.

Structuring units in different ways is important: individual/group research, simulations, films, guest speakers, field trips, discussions are examples of such structuring.

4. Choice in topics, projects, groupings.

Giving opportunity for selection increases student motivation for participating in the unit.

5. Adequate time.

Sufficient time for students is necessary to explore, discuss ideas, practice skills, and complete the work.

6. Group cooperation.

Essential to productive learning are positive peer interactions, such as committee work and group projects.

7. Sharing.

Students sharing knowledge and projects are valuable components of learning.

8. Community involvement.

Involving parents and community members as resource people students' views of learning and builds bridges between school and community.

Models of Integrative Education

Current practices and experiences in the United States to create curricular integration demonstrates the great variety of approaches and different forms of curriculum integration. Table 3 lists five models currently implemented in the United States.

Table 3. Integrative models and approaches used.

Approach	Model
Interdisciplinary	Jacobs' Interdisciplinary Units
Using All Mind Brain Functions	Clark's Integrative Education Model
Subject Topic	Palmer's Curricular Connections Planning Wheel
Transdisciplinary Web	Drake's The Story Model
Holistic	Miller's Holistic Model
Thematic	Kovalik's Integrated Thematic Instruction

Model 1: Jacobs' Interdisciplinary Units

This model was developed by Heidi Hayes at Columbia University in New York. Its central aim is to bring together the discipline perspectives and focus them on the investigation of a theme, issue, or problem (Jacobs, 1989). The objective of this model is that students become conscious of the relationships among disciplines as they investigate the subject matter (Jacobs, 1989). Figure 1

shows this relationship as presented by Jacobs. The following systematic approach for integrating the curriculum is outlined.

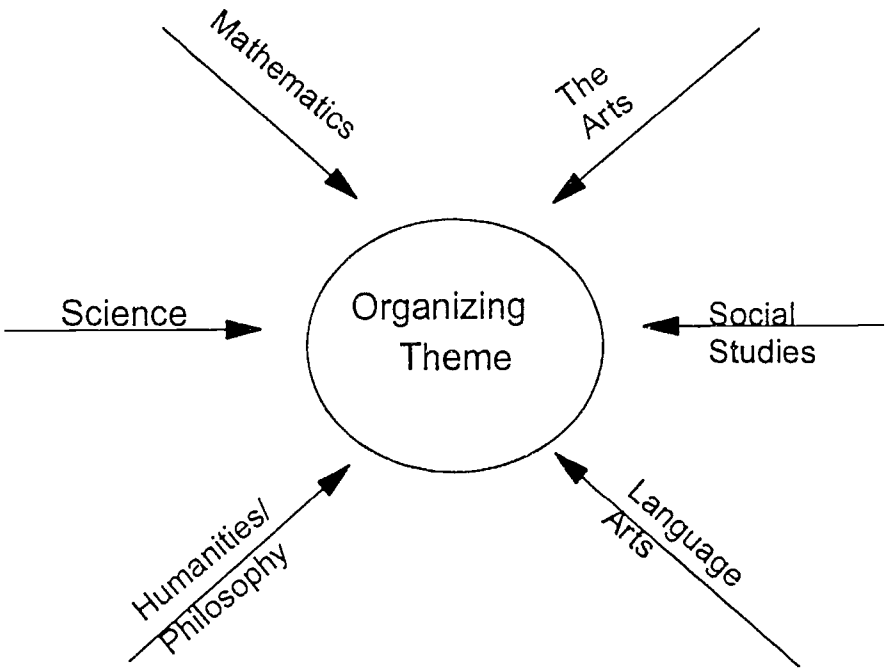


Figure 1. Interdisciplinary concept model.
Source: Jacobs, 1989, p. 56.

Step 1: Selecting and organizing center

The teacher begins by selecting an organizing center that is the focus of curriculum development. The topic can be a theme, subject area, event, issue, or problem as the focus of study.

Step 2: Brainstorming for associations

Brainstorming is an open-ended technique for generating ideas. To generate exploration of the theme from all of the disciplines or fields, teachers and students use a graphic device: a six-spoked wheel as shown in Figure 1.

As the graphic shows, the organizing center for the topic or theme is the center of the wheel. Each of these spokes is a discipline area. The idea is to find connections between the organizing theme and each disciplinary area involved: mathematics, science, the arts, social studies, humanities, philosophy.

Step 3: Establishing guiding questions to serve as a scope and sequence

This step takes the array of brainstormed associations from the wheel and organizes them in the form of guiding questions which serve to help students organize the unit, its sequence of study, and the reasons for it.

Step 4: Writing activities for implementation

The curriculum makers develop goals, methods, and materials for helping students answer questions. Means for exploring the guiding questions must be developed as activities.

The interdisciplinary concept model has been used at all levels of instruction. It has been adapted to different contexts: semester courses at a university level, elementary programs, and in all traditional formats.

Model 2: Clark's Integrative Education Model

Barbara Clark (1986) developed the Integrative Education Model (IEM) as an interactive approach for developing human potential. This model combines the student's four mind/brain functions of thinking, feeling, senses, and intuition (Figure 2). The Integrative Educational Model uses data from such diverse fields as physics, psychology, and the neurosciences.

In each subject area, this model combines thinking with feelings, the senses, and the intuition. The thinking function includes the analytic, problem-solving, sequential, evaluative specialization of the left hemisphere of the brain. The feeling

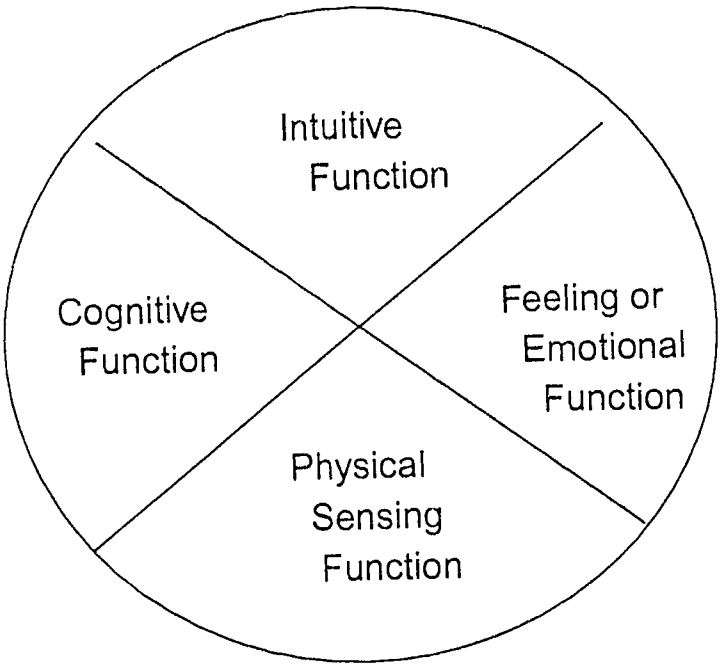


Figure 2. Integrative education: a model for developing human potential
Source: Clark, 1986, p. 27.

or emotional function expresses itself in emotions and affects every part of the brain/mind system. The physical sensing function involves the senses of hearing, sight, taste, touch, and smell, as well as movement and physical activity. The intuitive function involves insight and creativity.

The purpose of the integrative education model is to empower the learner physically, emotionally, cognitively, and intuitively. Through this model each function of the brain is allowed to support the others, resulting in a very coherent and powerful learning experience (Clark, 1986). The integration is accomplished through the use of seven key components within the classroom that optimizes learning as follows:

Responsive learning environment. In this component, the classroom looks more like a laboratory, rich in materials with a variety of many learning activities. Students, parents and teachers function as a team. The emphasis is on experimentation and involvement. The atmosphere is based on trust, acceptance, and respect. The curriculum is flexible and integrative. The needs and interests of the students provides the base from which the curriculum is developed.

Relaxation and tension reduction. The environment reflects relaxation and tension reduction. The teacher instructs the students in strategies for coping with tension. Teacher vocabulary is stimulating in order to develop this sense of relaxation.

Movement and physical encoding. Movement and physical encoding support learning. Students are encouraged to use movement and their senses fully in learning experiences.

Empowering language and behavior. The teacher uses language and behavior that reflect support, caring, and competence.

Choice and perceived control. Opportunities for student choices within the classroom are provided. The teacher actively encourages decision-making, alternative views, and self-evaluation.

Complex and challenging cognitive activities. Students are allowed to use both rational-linear and spatial-gestalt processing. Lessons reflect complexity, variety, and challenge.

Intuition and integration. Multisensory, multidisciplinary, and integrated lessons are taught. Students are encouraged to use fantasy, imagery, and visualization in learning. Creativity is encouraged.

Clark (1986) notes that students who are taught using IEM are found to be more relaxed with themselves and others, more caring, more creative, more excited about learning, and more independent and responsible.

Model 3: Palmer' Curricular Connections

Palmer's model has been developed by Joan M. Palmer for the Howard County Public School System in Maryland for the last five years. The Howard

county, Maryland. Public School System recognizes that students learn more, remember more and apply their knowledge when the curriculum is integrated.

The planning model currently in use allows teachers to focus on a particular subject area while identifying appropriate connections with other areas. This model involves the integration of concepts, skills, and content across curricular areas. Table 4 shows a 7th grade science course, where students collect data for a

Table 4. Planning for curriculum connections.

Units	Major Concepts	Connections	
The Human Body System	-identification -comparison -investigation -interpretation -evaluation	**Social Studies** Society's needs Sewage disposal **Language Arts**	**Art** Human figure proportions
Living Organisms Virus Monera Protista Animals	-observation -comparison -interpretation -questioning -evaluation	**Social Studies** Ozone layer-pollution **Language Arts** **Home Economics** Cheese making Bread making	**Art** Models Drawing
Interrelationships Ecology	-observation -comparison and contrast -modeling -interpretation -questioning -evaluating	**Social Studies** Community problems **Art** Drawings of habitats **Math** Data collection-pollen count	

Source: Palmer, 1991, p. 57.

pollen count in the math segment, identify parts of the human body in science, and draw the human figure in art (palmer, 1991, p. 58). Palmer (1990) suggests that the planning wheel (Figure 3) is an organizer that can be used to:

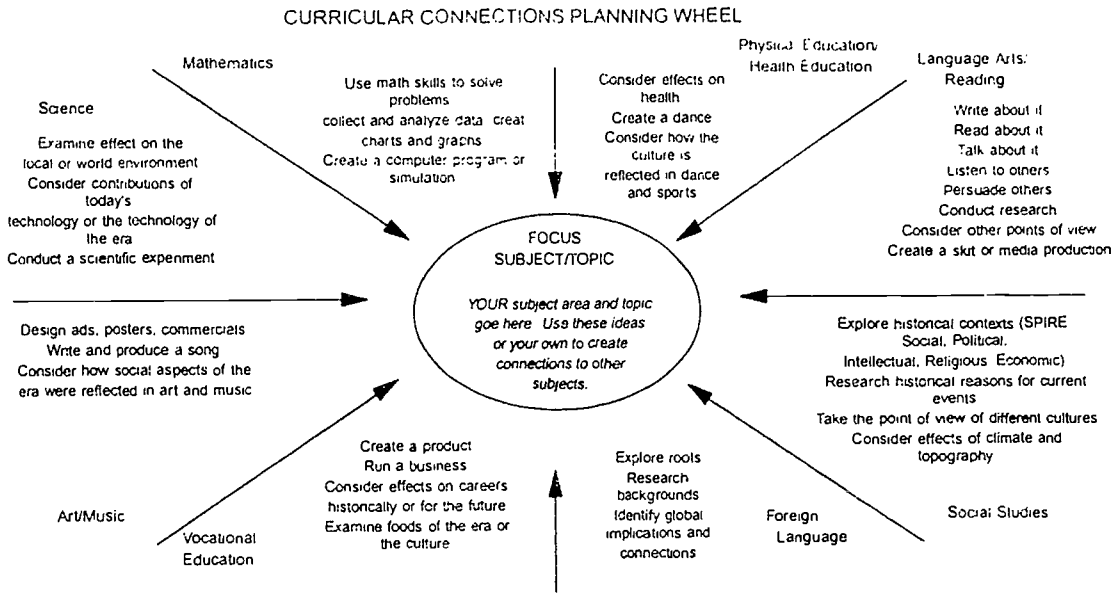


Figure 3. Curricular connections planning wheel.
Source: Palmer, 1990, p. 15.

- Connect existing curricula

- Design new curricula

- Plan units or single lessons

- Involve students in making connections

The planning wheel is intended to be a flexible graphic organizer and to meet the needs of the user (Palmer. 1990). The design of this model, using the planning wheel, allows the teacher to integrate themes, contents, subjects areas, and problems.

Model 4: Drake's Story Model

The Story Model has been developed by Susan Drake in Canada. This transdisciplinary curriculum emphasizes the story as a way of learning. The story model is a generic curriculum that can be used at any age level to examine a wide variety of inquiry topics (Figure 4). The story model is a curriculum that seems to work for any number of topics or issues, for example. stress, environmental issues, poverty, and conflict resolution. The theme is examined in its real life context and the transdiciplinary web is a way for exploring the connections that emerge.

Drake (1992) suggests that the teacher who wants to adapt this curriculum to the classroom can begin with posting a large diagram of "A story model" that shows the students the whole picture. The following steps are suggested for developing the story model:

1. Begin with any inquiry topic chosen by the student or the teacher. Develop the topic as a cultural story by examining it through the trandisciplinary web shown in Figure 4.
2. Webbing together creates a picture of the context that is to be studied.
3. Examining of the past allows the student to understand the present.
4. This stage involves examining the future through two different perspectives, each of which should be incorporated as a trandisciplinary focus. First, students can explore the future of the inquiry topic if we continue to act and behave the way that we do now. This involves taking the students into the

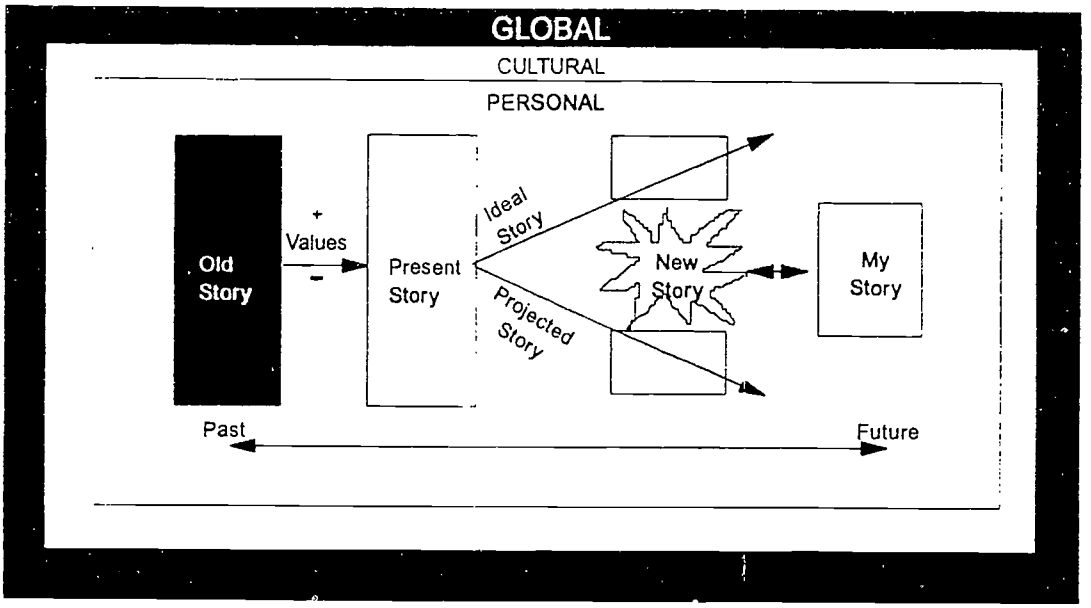


Figure 4. The story model.
Source: Drake, 1992, p. 12.

future and seeing where the values of today are taking us. Second, the students can explore what the ideal future might be.

5. This stage involves collaboratively developing the new story so that the students learn to act in new ways.

6. This next stage is the action stage that involves connecting the new story to the personal story. Once students have articulated new values, it becomes necessary to act out those values.

Drake (1992) notes that this curriculum model can be adapted to any age level. The student as a researcher is the key to the process. Thus, the teacher and the librarian become very important resources.

Model 5: Miller's Holistic Model

Jack Miller has developed a holistic curriculum based on the idea of connectedness and interdependence. It attempts to move away from the fragmented curriculum to one where subjects are connected and even integrated (Miller, 1992). Miller defined this holistic curriculum model as:

> The focus of holistic education is on relationships between linear thinking and intuition, the relationship between mind and body, the relationship between various domains of knowledge, the relationship between the individual and community, and the relationship between self and self. In the holistic curriculum the student examines these relationships so that she/he gains both an awareness of them and the skills necessary to transform the relationships where it is appropriate (Miller, 1988, p. 3).

In order to accomplish this connection (relationship) Miller (1992) explains five connections/relationships that enhance integration of the learning processes:

Linear thinking and intuition. The holistic curriculum attempts to restore a balance between linear thinking and intuition. Techniques such as metaphor and visualization can be integrated with more traditional thinking.

Relationship between mind and body. The holistic curriculum explores the relationship between mind and body. This relationship can be explored by movement, dance, and yoga.

Relationships among domains of knowledge. There are many different ways for connecting academic disciplines and school subjects. For example, interdisciplinary approaches to thinking and theme-based approaches can link various subjects.

Relationship between self and community. The holistic curriculum views the student in relation to community. The community refers to the school community. The student develops interpersonal skills, community service skills, and social action skills.

Relationship between self and self. Holistic curriculum allows students to connect with their deepest innerselves. One vehicle for developing this relationship is through the arts. For example, dance, music, poetry, painting, and drama are excellent ways of developing this deeper connection.

Model 6: Kovalik's Integrated Thematic Instruction

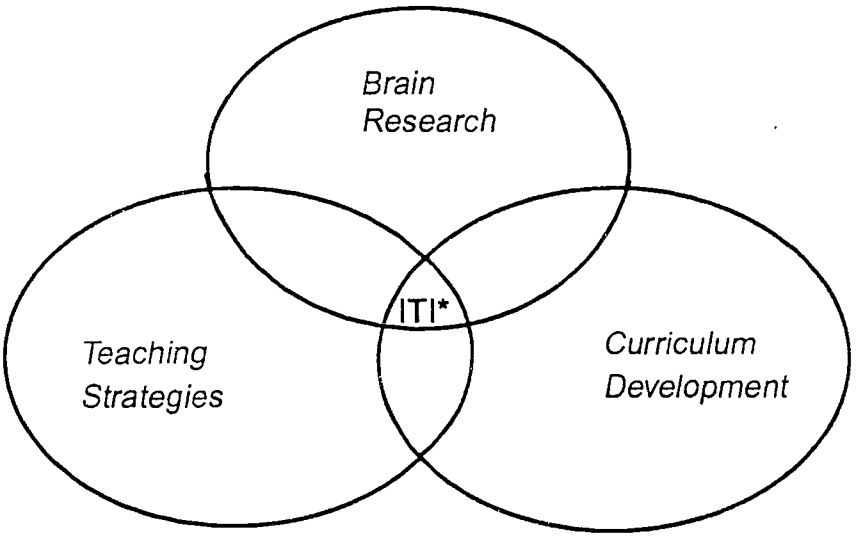
The Integrated Thematic Instruction (ITI) was developed by Susan Kovalik (1989). The ITI model is designed on three interlocking, interdependent principles. The first of these discusses how students learn. Human brain research has given new insights into learning never before available in history. This knowledge has become the basis for all decisions made to improve student and teacher performance.

The second factor addresses concerned teachers' strategies to convey learning in the classroom in the areas of both art and science. Kovalik (1993) says that it is, "poetry in motion when a teacher can work with thirty students, all with different backgrounds and needs" (p. 1). Teaching becomes a science when one possesses knowledge of brain research findings, looks at their implications for teaching, synthesizes and then implements in the classroom (Kovalik, 1993, p. 1).

The last component of this model involves the publisher's amount of influence on classroom curriculum. The curriculum of any school should not be mandated by textbook publishers, instead it must be developed at the classroom level from the knowledge and understanding of the classroom teacher.

"Integrated Thematic Instruction is the vehicle for bringing these three areas together, a way of conceptualizing and implementing a brain-compatible learning environment for students and teachers" (Kovalik, 1993, p. 3). Figure 5 shows this relationship among all these three areas.

The model consists of a central yearlong theme, monthly components, weekly topics, key points, inquiries, and political and social action.



*Integrated Thematic Instruction

Figure 5. Integrated thematic instruction.
Source: Kovalik, 1993, p. 2.

The Year-Long Theme

"The year-long theme is the heart and soul, the inner engine of the ITI classroom" (Kovalik, 1993, p. 4). It is the source of curriculum development and gives directions for different instructional strategies.

Figure 6 dipicts the year-long theme as the organizer for the components from which later weekly and daily topics are organized.

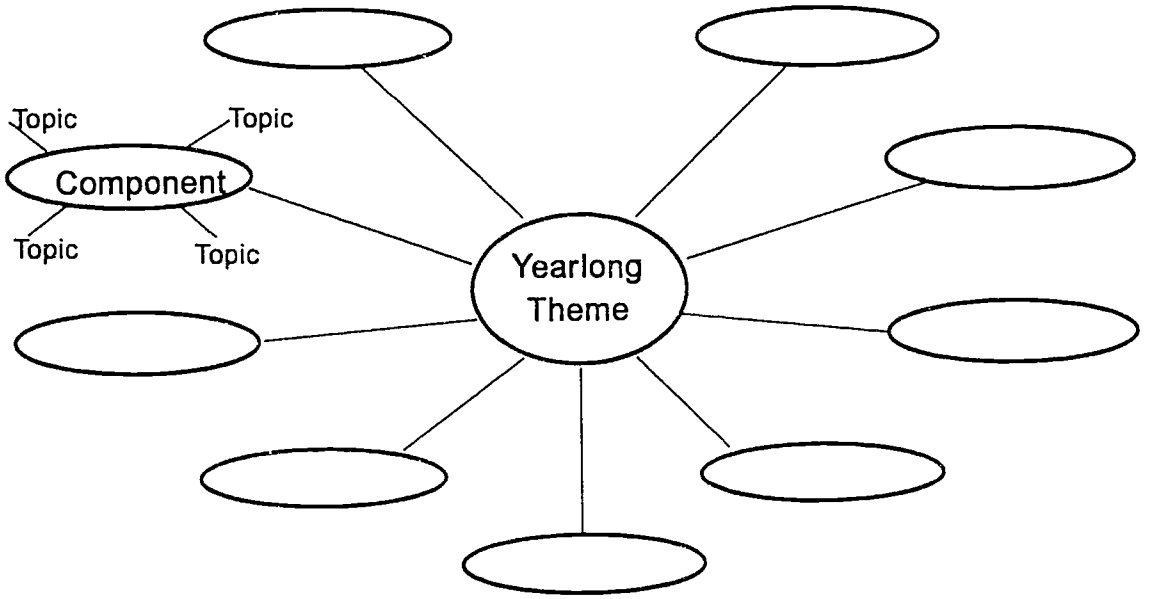


Figure 6. Year-long theme.
Source: Kovalik, 1993, p. 4.

Because the theme is so critical in developing this model, Kovalik (1993) suggests six criteria for selecting a yearlong theme as follows:

1. It must have substance and application to the real world. The theme should
    a. Provide a picture of reality around the students.
    b. Engender students' recognition of the application and value of what is studied outside the classroom.
    c. Impact students' lives and the way they relate to the world around them.
2. It must have readily available resources.

    The theme has to be one whose reality teachers can recreate in their classroom, an environment or situation.

3. It must be age-appropriate.

    Although the brain grows best when it is challenged and high expectations for children's learning are important, it is also true that curriculum needs to be considered in terms of age-appropriate challenge. The concepts that are going to be developed must not be abstract to the students.

4. It must be worthy of the time spent on it.

    Curriculum development takes time. Thus being careful when selecting the theme is crucial to the time allocated.

5. It should flow from month-to-month and back to center.

    F - footbridge between components

    L - linking the months

O - opening doors to generalizations

W - weaving the components together (Kovalik, 1993, p. 8)

Kovalik (1993) believes that a significant advantage of a year-long theme is the capacity to provide the foundation for making generalizations and connections across the content areas.

6. The title should be a "kid-grabber."

The title has to be attractive to the students. "Let the title speak for the action of the year, capturing students' imagination as well as reflecting the big idea or concept being studied" (Kovalik, 1993, p. 8).

"Once the theme is created, one can continue with defining what every student is expected to learn. Key points give the essential core of knowledge and skills all the students are to master each week, month, or year" (Kovalik, 1993, p. 8).

The ITI model is powerful when the brain-compatible components are understood and practiced by everyone in the class. The following eight components should be present in every classroom. They are trust, meaningful content, choices, adequate time, enriched environment, collaboration, immediate feedback, and mastery (application).

Trust

Within the classroom, students have to be able to count on daily activities that include thinking and problem-solving in a respectful and caring environment. This includes the absence of threats from teachers and peers.

Meaningful Content

The brain is naturally seeking patterns and can handle high amounts of input. Solving real problems within meaningful contexts is key to learning.

Choices

Choice enhances success for all students, because they respond to the different learning styles exemplified in the classroom. Choices have to be available in the areas of curriculum, assignments, learning environments, and resources.

Adequate Time

There must be adequate time to thoroughly develop the entire theme.

An Enriched Environment

There is a connection between intelligence and experience. Therefore, classrooms have to contain a variety of learning activities, resources, material, and people. Experiences should also be provided in the real world outside of the classroom.

Collaboration

Collaboration is a means of working together toward a common goal which is crucial in the ITI model. The common goal in an ITI classroom is achievement

of mastery and competence of skills and knowledge that have application in the real world, not a short-term goal of completing a worksheet.

Immediate Feedback

Immediate feedback is a necessary element in the learning environment. The importance of immediate feedback to the students is that it helps the student to build his/her mental program.

Mastery

Mastery does not mean the memorization of the concepts or mastery of learning, but rather mastery as in competence: capacity, sufficiency, enough to live on with comfort. It means that when students understand the skill or concept, they also know how to apply it in the real world in similar or different situations, and have incorporated it into a mental program.

Comparison Results of Model's Evaluation

Criteria used to evaluate the selected curriculum models described in this study were adapted from Selecting a Curriculum Program: Balancing Requirements and Costs (Ball & Marvin, 1975). The criteria listed below (also see Table 5) are used to compare and contrast the six models selected in this study:

- Coverage/Content
- Instructional Approach
- Utility
- Evaluation/Validity

Table 5. Comparison of six curriculum models using Ball and Marvin criteria.

Criterion	Model: 1	2	3	4	5	6
A. Coverage/Content						
1. Clear objectives	9	7	9	9	5	9
2. Appropriate scope	7	7	9	7	7	7
3. Logical sequence	9	7	7	7	7	7
4. Accuracy/detail	7	1	9	7	7	9
5. Appropriate grade/difficult level	9	9	9	7	7	7
B. Instructional Approach						
6. Sound theoretical/empirical	9	9	9	9	9	9
7. Varied learning activities	9	7	7	7	7	7
8. Extent of individualization	1	1	3	1	1	1
9. Appropriate cognitive level	9	9	9	7	7	9
C. Utility						
10. Provision of staff training	9	9	9	9	9	9
11. Ease of student use	7	7	9	5	1	5
12. Equipment required	3	5	7	5	5	5
13. Facilities required	5	5	7	5	5	5
14. Organization/staff	7	7	9	7	9	9
D. Evaluation/Validity						
15. Expert authorship	9	9	9	9	9	9
16. Availability of formal	7	1	9	1	1	1
17. Availability of informal	7	1	9	1	1	1
E. Special Considerations						
18. Interdisciplinary approach	9	5	9	9	9	9
19. Local acceptance	9	7	9	9	7	9
TOTAL	139	113	156	121	113	127

- Special Considerations (see Appendix A for more detail about subcategories).

Table 5 displays the results of this analysis. A summary of each model investigated is as follows:

Model 1: Jacobs' Interdisciplinary Units

Jacobs' model presents a clearly stated instructional objective. This model includes an appropriate scope and logical sequence for developing it. It is based on an excellent foundation of developmental cognition and sociology of education. This model is designed for any school level. Jacobs' model requires staff training for its implementation with minimum equipment. One of the important features of this model is that it can be implemented with little modification of the existing facilities.

This interdisciplinary model was developed by Heidi Jacobs. Jacobs is a professor at Teachers College, Columbia University, New York. Dr. Jacobs has published numerous articles in different journals such as Educational Leadership, Instructor, and Early Childhood in Education. Interdisciplinary Curriculum: Design and Implementation (1989), authored by Dr. Jacobs has been a very successful book published by the Association for Supervision and Curriculum Development (ASCD). This model has had broad acceptance across all of the United States by different school districts that have implemented the model, for example, in the Fort River School in Amherst, Massachusetts, and in the

Springfield, Chicago, and Peoria, Illinois, and Newburgh, New York public schools. However, the writer believes that this model is not the best choice for Costa Rica because this model is too specific; it is not broad enough to meet Costa Rica's needs.

Model 2: Clark's Integrative Educational Model

Clark' integrative educational model presents a clearly expressed objective. However, this model does not cover all the areas of the curriculum; its orientation is more toward psychological and mental processes of development. Clark's model is designed for preschoolers, elementary pupils, and secondary students. Thus, the content takes into account the individual differences of students who will use the model. Although Clark's model is not based on holistic learning, it is founded on the basis of brain/mind research for optimizing learning. In implementing this model effectively, staff have to be trained. The directions for students in developing the lessons are simple and easy to follow.

Existing facilities and equipment are sufficient for implementing this model. However, crucial to its implementation, is staff organization and training. Dr. Barbara Clark, since the late 1960s has been conducting research in Berkeley, California with a major concern for the environmental impact on the brain. She began to research early learning and applied brain studies to educational practices. This curriculum model does not integrate subject matter/contents from various

disciplines of study or areas of study, thus, is not appropriate for improving curriculum in Costa Rica's primary schools.

Model 3: Palmer's Curricular Connections

Joan Palmer provides a clear curriculum model for implementation. This model integrates subject matter in a holistic manner of learning. The theoretical background that supports this model is based on studies about the interrelationship of subject matter. Palmer's model can be implemented at preschool, elementary, high school, and university levels. Thus, the content presented in each level is appropriate to the students. Staff training has to be provided in order to implement Palmer's model. This integrated model can be implemented with the staff, equipment and materials already available in the schools.

Dr. Joan M. Palmer is associate superintendent in The Howard County Public School System in Maryland where she has been working in curriculum supervision and staff development. After July 1, 1993, Dr. Palmer, an expert in curriculum development, will be working for the United Stated Department of Education in Washington, D.C. Dr. Palmer has published in different educational journals such as Educational Leadership.

Palmer's model has been evaluated with good results. In the last district testing conducted in the Howard County Schools, the elementary schools in this district received the highest test scores. Dr. Palmer believes that the outstanding results are the product of the integrated curriculum that is being used. Teachers,

parents, and administration are satisfied with the program implemented through this integrated model. Of all the model, the Palmer model seems to best fit the conditions necessary to incorporate integrated curriculum into Costa Rican's primary schools. Because of its flexibility, this model allows the use of existing curriculum available in Costa Rica. That is, curriculum integration can be implemented within the framework of the school districts and school contexts in Costa Rican primary schools.

Model 4: Drake's Story Model

The concepts undergirding this model are expressed very clearly and logically. Drake's model can be used from the elementary school level through the university level of schooling. The model is based on the concept developed by Kieran Egan's Teaching as Storytelling (1986). The instructional methods used for developing integration are based on the most recent approaches used in interdisciplinary curriculum. Training is needed for developing this model and the model can be used with available equipment and facilities.

Susan M. Drake is currently teaching at the faculty of education at Brock University, St. Catharines, Ontario. She is author of Developing an Integrated Curriculum Using the Story Model (1992). Through the story model teachers can integrate subject matter from different disciplines or areas of study. The writer believes that this model can be applied to Costa Rica. However, it was denied because there is not enough research in practical implementation.

Model 5: Miller's Holistic Model

John Miller's model does not show clear objectives and sequence in its structure. The theoretical foundation shows an eclectic approach that takes ideas from different disciplines of study that does not make clear how to implement this approach in the classroom as a model of curriculum implementation. According to Miller, this model can be applied to any educational setting. However, in the search for support of this statement there was no information available. In implementing this model a strong staff training is needed, and Miller's model can be implemented with the equipment and resources available.

John P. Miller is a professor in the Curriculum Department at OISE, Toronto, and Head of the Niagara Center. He has been training personnel to integrate this model in different school districts in the United States. Miller has published many articles in different educational journals across the United States and Canada. Information related to the outcomes in school district that are using this program were not available. In order to implement this model into the Costa Rican system, the entire system would have to be restructured. Costa Rica does not possess the capability to do this in the primary schools. Therefore, this model is irrelevant.

Model 6: Kovalik's Integrated Thematic Instruction

This model expresses clearly stated objectives at different levels. Kovalik's integrated thematic instruction model is based on a strong theoretical background.

It was originally conceptualized 20 years ago during the era of programs such as the Gifted and Talented, and Extended Learning Programs in California. This model offers a variety of learning activities through the development of integrated units throughout the school year.

The success of this program is strongly supported by a good training program. This support has to come from the state department, the district, the school, and parents. The kind of planning involved for adopting this model requires the support of all the elements pointed out above.

Susan Kovalik is founder and president of Susan Kovalik & Associates, Inc. She is well known through the United States, Canada, and Europe for her work in translating recent brain research for practical application in the classroom. Kovalik is the author of numerous handbooks, audiocassette programs, and videotapes that support the implementation of this curriculum model. This model would require at least six years for training and implementation. Considering the socio-political structure of Costa Rica, this time frame is not practical.

A Pilot Program for Implementing Integrative Curriculum in Costa Rica

This pilot program will have as its objective the instruction of Primary Teachers to integrate curriculum through an In-Service Program. This training will be designed around the Palmer integrating curriculum model (1990).

The goal of this training will be to enable primary teachers to possess the necessary skills to develop instructional strategies which integrate the curriculum at

the primary levels in Costa Rica. This training attempts to provide a framework for teachers to construct integrated units for specific situations and for primary students in Costa Rica.

Joan Palmer's Curricular Connections Approach

Palmer's model was selected as a curriculum integration model for beginning the first steps of this process in Costa Rica. This model presents easy conditions for implementation in Costa Rica. First, the advantages of using this curriculum model is that the integration comes from existing curriculum available in Costa Rica. That is, curriculum integration will be conveyed within the framework of the school districts and school contexts in Costa Rica's primary schools.

Thus, taking into consideration the structure of the educational system in Costa Rica, resources, and educational policies, Palmer's model is a vehicle for making connections within the existing curriculum in Costa Rica. The planning model that is currently used in the Howard County Public School System allowing the teachers and/or the curriculum developers to focus on particular subject areas while identifying appropriate connections with other areas (Palmer, 1990, p. 1).

In Costa Rica teachers have specific subject areas to teach. Using the planning wheel suggested in this model allows teachers to make connections among subjects, themes, and skills, and provides teachers the advantage of appropriate decision making. The planning wheel can be used to

- Connect existing curricula
- Design new curricula
- Plan units or single lessons
- Involve students in making connections

Practical Consideration and Implementation

Only one of the models described in this study, that of Joan Palmer's curriculum connections is recommended for implementation. The educational policies that Costa Rica outlines have to be taken into account before any new curriculum changes or implementation takes place. It is not the intent to convey foreign curriculum models into Costa Rica that are not in accordance with the Costarican's educational system. Thus, the idea of this study is not to provide a detailed prescription of what may be implemented in each stage, but rather to suggest guidelines for the professional development of teachers in Costa Rica. The concepts, aims, and objectives of Palmer's integrated curriculum, as well as its methods for curriculum implementation, are in concert with Costa Rica's educational goals and objectives even though the administration staffing, socioeconomics structure, and the needs of the country may differ.

As Goodlad (1979) notes, "sociopolitical processes are inextricably part and parcel of the practice and study of curriculum" (p. 345). Thus, Goodlad (1979) offers a conceptual framework for curriculum development that deals with all the realities that one implements in an educational setting. Specifically, Goodlad points

to three levels of decision making: the societal level, the institutional level, and the instructional level.

This framework is valid in discussing the different changes that the Costa Rican educational system has to make in order to implement Palmer's curricular connection. The societal level of curriculum decision-making refers to those decisions made by federal, state, and local agencies. The institutional level of decisions deals with school faculty, curriculum committees, and others in the school system working together within the framework provided by societal decisions (Goodlad, 1979). The instructional level concerns the single teacher, or teams of teachers who make curricular decisions in the educational setting--the classroom.

The objective of using Goodlad's conceptualization is examining practical considerations for the implementation of a pilot program in Costa Rica.

The societal level. In Costa Rica there are curriculum requirements made by the government under the Head of the Ministry of Education. The Ministry of Education articulates curriculum goals. It makes the different curriculum policies for all of the country. Given the guidelines, primary schools are subject to this department, thus it is essential to consider this level in implementing Palmer's model.

The potential for successful implementation of the recommended pilot program increases with support from the societal level. The Minister of Education has to make provisions for time, teachers' training, and organizational structure.

The institutional level. The institutional level is concerned with administrators, faculty, or the school system. In order for teachers to implement Palmer's model in the classroom (instructional level), support and commitment has to come from the institutional level in Costa Rica. The administrative staff has to provide time for teacher training, and a good school climate for curriculum development. In order to accomplish this support, educational administrators need orientation to understand the goals and objectives of Palmer's curriculum connection.

The instructional level. This level is crucial for carrying out the pilot program in Costa Rica. Teachers are the key meaningful element in any curriculum reform. Teacher training is the crucial point for developing this pilot program successfully. Thus, the institutional level has to provide time for training in Palmer's model. The training provides the way to engage teachers in developing their professional skills and to evaluate their future practices. Teachers will need to review the different methodologies of teaching, and a strong theoretical background in curriculum integration.

Implementation

This training will take place by phases with the support of the National University of Costa Rica.

First Phase

The primary steps in this first phase will be the development of the pilot program based on the following organization.

1. Training needs -- In formulating this program the initial step will be to find the training needs at the different levels: societal, institutional, and instructional.

2. Formulation of objectives -- The objectives of this pilot program will be based on the training needs and on the Costarican's educational reality.

3. Identification of groups involved -- After completion of 1 and 2 above, it is important to identify the right officials and personnel who need to be trained in order to develop the pilot program.

4. Elaboration of training manual -- Integrated curriculum will be new for many teachers, thus innovation cannot be successful without a strong theoretical background that allows implementation. For example, some of the content that can be considered in the instructional manual are the following:

1. Concepts and meaning of curriculum integration
2. Rationale for curriculum integration
3. Educational goals of curriculum integration
4. Models of curriculum integration
5. Teaching and learning in an integrated curriculum
6. School and classroom management in an integrated curriculum
7. Design and implementation of integrated curriculum

8. Evaluation of curriculum integration

5. Methodology adopted for training -- The kind of methodology adopted will be crucial. During training periods, the emphasis will be on a full participatory methodology that involves the teachers making and designing their own integrated units.

6. Institutions that will be involved -- In the process of implementing the integrated curriculum. different institutions have to be involved for success. Some of the possible institutions to be involved are Directorates of Education, Planning Office in the Ministry of Education, local education offices, and local government administration offices.

7. The evaluation process for assessment of the pilot program -- Evaluation will be a constant process carried out by all the participants. The input from teachers' training is essential for the development of the pilot program.

Chapter IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This final chapter contains a summary of the study, the conclusions, and recommendations. Conclusions drawn from the study and recommendations for future research are also presented.

Summary

The purpose of the study was to review and study a number of models of curriculum integration developed in the United States that may have special promise for primary schooling in Costa Rica. Ideas, findings, and values on curriculum development were investigated in order to develop a theoretical framework for a pilot program in the primary schools of Costa Rica.

The objectives of the study were the following:

1. Analyze the Costa Rican primary school structure and the feasibility of establishing an integrated curriculum at this level.
2. Investigate selected curriculum integration models in the United States.
3. Ascertain the possibilities of selected models' integration in Costa Rica.
4. Recommend a plan to the National University of Costa Rica to integrate these models as appropriate to the Costa Rican primary schools.

A historical review and the development of education in Costa Rica was addressed in this study as well as the goals of the educational system of Costa Rica. Actual educational policies were analyzed to determine the possibilities for

new curriculum implementation. These new educational policies require a new reform in curriculum and instruction that fits the educational needs of students in Costa Rica.

In the literature review related to models for curriculum integration, six models were studied:

1. Jacobs' Interdisciplinary Units
2. Clark's Integrative Education Model
3. Palmer's Curricular Connections
4. Drake's The Story Model
5. Miller's Holistic Model
6. Kovalik's Integrated Thematic Instruction

To analyze the selected curriculum, the Curriculum Program Selection adopted from Ball and Marvin (1975) was used as criteria for comparing and contrasting the models. The model selected for the introduction of curriculum integration in the primary schools of Costa Rica was derived from Palmer's Curricular Connections Model as having the most promise for implementation in Costa Rica. According to the checklist, Palmer's model best fits the selection criteria (coverage/content, instructional approach, utility, evaluation validity, and special considerations), most effectively.

Finally a pilot program for training elementary school teachers in Costa Rica was presented as a first step for initiating curriculum integration in the primary schools of Costa Rica.

Conclusions

A historical review of educational development in Costa Rica has shown that since primary schools in Costa Rica came into existence the traditional education has been practiced in Costa Rica. The new educational policy for 1 '90-1994 encourages the development of new models of curriculum development based on the needs of students. This new policy has encouraged new roles for students, educators, and parents. The new curriculum reform established the problems of Costa Rican's educational system and the means for addressing them. However, it did not present how these changes were going to be implemented. Thus, researching and analyzing the six selected curriculum models that constitute the focus of this study forms the basis for putting the theory developed by Costa Rica's Minister of Education into practice in the primary schools of the country.

Despite the diversity of the selected models for curriculum integration of the curriculum, they do have one thing in common. They are concerned with the fragmentation of current curriculum and the compartmentalization of knowledge. Each model emphasizes different processes to bring about curriculum integration. Research has shown that curriculum integration can be found in many curricula

forms. Thus, there is no one best way to design and develop a curriculum for integration in the primary schools of Costa Rica.

In this study's literature review, evaluation studies regarding the integration of curriculum were not found. Nor did recent studies show specific steps for implementing integrated curriculum in the primary schools.

The model suggested in this thesis for introducing change would be to request that Costa Rican government support the pilot schools where curricular integration would be practiced. To do this the following aspects have to be considered:

1. Appropriate pilot schools would be selected and incentives for participation given.
2. Teachers and school administrators would be given intensive training (in service) in the theory which supports curricular integration.
3. Materials would be provided for curriculum development.

Recommendations

1. Time for grade-level or cross-departmental groups of teachers is necessary for curriculum integration to be successful.
2. Faculty/teachers have to express their support for integration prior to having such occur.
3. Teacher training colleges and universities must change their curricula to prepare the new generation of teachers to support this innovation in Costa Rica.

4. Universities should have a total or partial integrated approach, rather than a separate subject approach in the training of prospective elementary schools teachers.

5. Research is needed to

- Compare educational outcomes of integrated school programs with outcomes of non-integrated school programs.
- Investigate school leadership and management leading to successful curriculum integration.
- Find out what actually takes place in an integrated program.
- Document how schools in the United States convey or implement integrated curricula.

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APPENDIX A: LIST OF POSSIBLE SELECTION CRITERIA

List of possible selection criteria

General Category	Criterion	Specific Questions to be Answered
A. Coverage/Content	1. Clear Objectives	Is this curriculum program based upon clearly stated instructional objectives? Are the objectives stated on at least two levels ranging from broad goals to specific behavioral objectives? Are the objectives related to specific units or lessons?
	2. Appropriate Scope	Does the curriculum program cover all of the areas you are interested in:? If not, can any gaps be filled easily if it is selected?
	3. Logical Sequence	Are the concepts or topics presented in a logical order? Will the pupils be able to follow the sequence of instructional activities with minimal difficulty?
	4 Accuracy/Detail	Is the information presented in the program accurate? Is the content accurate in terms of the level of detail presented? Is the content in agreement with recent findings in this subject area?
	5. Appropriate Grade/ Difficulty Level	Is the content presented at an appropriate level of difficulty for the grade/ability level of the pupils who will be using the program? Is the reading level appropriate for the pupils?
B. Instructional Approach	6 Sound Theoretical/ Empirical Foundations	Is the overall instructional approach based upon an established theory of learning? Are the instructional methods based upon the results of research on the teaching/learning process? Does this methodology support a curriculum philosophy or learning theory accepted or preferred in the district?
	7. V 'earning ties	Does the program provide a variety of learning activities for the pupils? Are alternative teaching strategies suggested for assisting the pupils in the learning of concepts and the achievement of instructional objectives? Are multimedia techniques employed?
	8. Pupil Information on Performance	Are pupils regularly provided with information on how well they are doing? Are the diagnosis and careful monitoring of pupil progress elements of this program? Is pupil self-evaluation used?
	9 Provision for Review	Is a spiral presentation of content or concepts employed? Are ample opportunities provided for review and remediation? Are new concepts related to those presented previously? Are familiar concepts presented at higher levels and in different contexts?
	10 Extent of Individualization	Is it possible for pupils to begin at different points in the program? Can pupils progress at their own pace through different instructional sequences? Is any provision made for matching the instructional mode and sequence to individual pupils?
	11 Appropriate Cognitive Level	Does the program provide pupils with opportunities to analyze, synthesize, and evaluate concepts, ideas, or generalizations related to different topics? Do pupils have opportunities to apply what they have learned?

C. Utility	12. Provision for Staff Teaching	Can members of the staff (teachers, counselors, aides, etc.) use the program with little or no additional training? Are explicit, comprehensive instructions provided for the teaching staff? Is the program relatively easy for the staff to use? What planning, training, and support are needed if this program is to be implemented effectively?
	13. Ease of Student Use	Can the pupils become easily oriented to the procedures of the program? Are explicit, comprehensive directions provided to guide the pupils? Is the program relatively easy for pupils to use? Is the program designed to foster pupil self-motivation and self-management of the learning process?
	14. Attractive Appearance/ Format	Will the pupils find the instructional materials attractive or visually interesting? Is the format used to present program materials logical and clear? Are the illustrations or graphics well done in an appropriate size? Is the size and style of the type used to print the materials appropriate for the pupils?
	15 Equipment Required	Can the program be implemented without any additional equipment? Can the program be implemented if the equipment already available is modified slightly? (Costs related to equipment are considered under Criterion 18 - Reasonable Cost.)
	16. Facilities Required	Can the program be implemented with little or no modification of existing facilities? Can the program be used for various organizational arrangements: self-contained classrooms or clusters, open or traditional classrooms, etc.? (Again, cost should not be considered here, but as part of Criterion 18 - Reasonable Cost.)
	17. Organizational/Staff Changes Required	Can the program be implemented and operated with little or no change in the organization of the school staff? Can the program be implemented without hiring and/or training any additional personnel? Can the program be implemented without reassigning any current staff members? (Again, cost should not be considered here.)
	18. Reasonable Cost	Can the program be implemented at a relatively reasonable cost? Once in operation, can the program be operated from year to year at a relatively reasonable cost? Can implementation costs be spread over several years? What costs would be incurred for the purchase of materials and equipment? What costs would be necessitated by equipment or facilities and/or staff changes required?
D Evaluation Validity	19 Expert Authorship	Are the developers/authors well known in their field? Are they respected by their professional colleagues?
	20 Availability of Formal Evaluation Findings	Have any evaluation studies of the program been published? If so, were the findings positive, neutral, or negative? Was the program evaluated with positive results in a setting similar to your own? Were the evaluation studies comprehensive and technically sound?
	21. Availability of Informal Evaluation Data	Have other school districts used this program successfully? Do experts within your school district or from a nearby university consider this a high quality program? Have many school districts across the state or the nation adopted this program?

E. Special Considerations	22. Lack of Bias	Is the program acceptable for use by pupils from all racial, religious, or regional/national origin groups? Are materials free of any sexual, class, cultural, or racial bias? Are females and members of minority groups mentioned in the materials with reasonable frequency and in varied roles which avoid stereotyped characterizations?
	23. Interdisciplinary Approach	Does the program integrate subject matter from various disciplines or areas of study? Do the materials reflect a multidisciplinary approach to problem solving and learning? Is the program designed to encourage affective development and foster specific interpersonal behavioral skills, e.g., group problem solving?
	24. Local Acceptance	Is the program appropriate in terms of any concerns expressed by parents and/or pupils? Are the teachers likely to accept the program, or might they object to using it? Could the program have a positive effect upon future school funding efforts? How might the program be perceived by community leaders and influential groups?