A Study of the Thematic Integrated Curriculum (TIC) of the Focus 2000 Program

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A STUDY OF THE THEMATIC INTEGRATED CURRICULUM (TIC) OF THE FOCUS 2000 PROGRAM

by

Sherry Collins

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Education
Department of Educational Leadership

Western Michigan University
Kalamazoo, Michigan
December 1993
The purpose of this research study was to describe how a thematic integrated curriculum (TIC) enhances the quality of education by examining three outcomes of a TIC. These outcomes are: (1) the instruction of critical thinking skills, (2) the motivation of students to be self-directed and assume responsibility for their own learning, and (3) the empowerment of teachers to become educational leaders. The underlying assumption of the study was that the more the three outcomes are used in the learning process, the better will be the quality of education.

For this study, the process of "enhancing the quality of education" was defined by the extent to which the three outcomes facilitate the learning process. TIC was defined as a curriculum that connects subject areas through the use of broad themes (Weckler, 1991).

Educational literature and research were used to verify the fact that the three outcomes do facilitate the learning process. A survey research was conducted with three groups of teachers to ascertain the extent that the three outcomes were present in a TIC and to compare that extent with a non-TIC. Teachers in Group 1 used TIC most of the time. Teachers in Group 2 used TIC sometimes. Teachers in Group 3 used a non-TIC. Descriptive data were used to described the extent to which the three outcomes were present in each group. Inferential data were used to compare the extent of the three outcomes between the groups. One-way Analysis of Variance test and the Scheffe test with an alpha
level of .05 were used to test the null hypotheses of no differences in the means of the three independent groups.

In this study, the null hypothesis of no difference was rejected for each of the three hypotheses. Therefore, the conclusion of this study was that the three outcomes are present more in a TIC than a non-TIC. This research was limited to the perspectives of teachers. The recommendation was made that future studies include students, administrators and parents.
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A study of the thematic integrated curriculum (TIC) of the Focus 2000 program

Collins, Sherry, Ed.D.
Western Michigan University, 1993

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ACKNOWLEDGMENTS

My heroines and heroes have always been teachers. When students enter a classroom at the beginning of a term, the goal for them is to change by the end of the term because to learn is to change. Any psychologist will verify that it is very difficult for a person to change. Yet, our society expects teachers to effect a change in many people every year. What a challenge teachers face! Therefore, I would like to first acknowledge all teachers. Specifically, I would like to say thank you to those teachers who graciously took part in completing the questionnaire for this research study. I would like to thank the teachers on my staff for being supportive, patient and understanding while I completed my studies. I would like to especially thank Gloria Cleveland and Joan Tynes for being a part of the observation and interview team. I also would like to especially thank Cindy Birch, Jolene Prosper, Delia Tally, Barb Pence, Prudence Pollard, Barb Peeples and Fred Phillips for serving as judges for the refinement of the Teacher Questionnaire. Finally, I would like to thank those teachers who were members of my committee, Dr. Pat Jenlink, Dr. Suzanne Davis and Dr. Uldis Smidchens. I appreciate their support, encouragement and instruction.

Secondly, I would like to thank those principals and other administrators who so graciously allowed us to observe and interview them and their staffs. I especially am grateful to Elaine Weckler and Mary Spessard for their time and for the information they gave me concerning the Focus 2000 Program. Also, I would like to thank each school's secretary for assisting in the distributing and collecting of the questionnaires. I specifically would like to thank my secretary, Dora Robinson, for her support, encouragement and assistance.

Finally, I would like to thank my close friends and family for believing in me, editing the paper and assisting me in numerous other ways. I especially want
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to thank Alvin & Debbie Davis, Aunt Margaret, Grandma, Russell Tynes, Leslie Pollard and Rick Garrison. I am deeply grateful to my husband, Solomon, for his support, assistance and for the many sacrifices that he made in order for me to successfully reach this goal.

I humbly dedicate this dissertation to all teachers.

Sherry Collins
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CHAPTER I

INTRODUCTION

Purpose of the Study

The publication of A Nation at Risk (Commission on Excellence in Education, 1984) by The National Commission of Excellence in Education, documents the decline in the quality of education in the United States. Due to the results of the study, many states have instituted legislation designed to improve their educational system. The result of such legislation has been the development of programs that restructure the present educational system in order to achieve quality. One such program is the Focus 2000 Program developed by Elaine Weckler. Ms. Weckler is a Professional and Curriculum Development Coordinator for an intermediate school district located in the state of Michigan. Focus 2000 was first implemented during the 1989-90 school year in a Michigan school district. Since the 1989-90 school year, the program has been implemented in several other Michigan school districts.

Focus 2000 restructures the curriculum from focusing on basic skills to focusing on higher order thinking skills. It restructures the role of the teacher from being the dispenser of knowledge to being a guide to help students discover knowledge. It restructures the role of the student from being a passive learner to being an active learner (Weckler, 1991).

Also, in restructuring the educational process, Focus 2000 emphasizes the departure from the traditional method of instruction to an integrated method of instruction. For this research study, the traditional method of instruction is defined as teachers instructing students one subject at a time. The integrated method is defined as teachers combining the objectives of two or more subjects
for instructional purposes (VanTassel-Baska, 1988). Nielsen (1989) describes the integrated approach as a learning process that helps students to synthesize separate pieces of information into a cohesive, holistic view of the world.

The development of Focus 2000 was based on several theoretical premises. These premises include several theories concerning (a) the function of the brain, (b) learning styles, and (c) instructional methods. The program restructures three major components that are important to the educational process. These components consist of the curriculum, the student and the teacher. However, the main focus of this study is on the curriculum.

The Focus 2000 Program's curriculum is a thematic integrated curriculum (TIC). The TIC "coordinates knowledge and competence" across the subject areas in an effort to show a connection of ideas and to make learning meaningful (Weckler, 1991, p. 53). The connection of the subject areas are accomplished through the use of broad themes (Weckler, 1991, p. 53). The theme is expanded throughout the appropriate subject areas such as reading, language arts, math, science, social studies, art, music, and physical education. In the Focus 2000 Program, the TIC is purported to have three outcomes that enhance the quality of education. These outcomes are: (1) the instruction of critical thinking skills, (2) the motivation of students to be self-directed and assume responsibility for their own learning, and (3) the empowerment of teachers to become educational leaders.

Therefore, the purpose of this research study was to describe how a TIC enhances the quality of education by examining the three outcomes of a TIC. For this research study, the process of "enhancing the quality of education" is defined by the extent to which the three outcomes facilitate the learning process. Glasser (1992), Bonstingl (1992) and Plante and Moran (1991) define quality of education as a process that aims at the optimum performance level. Therefore, the assumption for this research study is that the more the three outcomes are

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used in the learning process, the better will be the quality of education.

As the educators who were involved in the Milwaukee's Project Rise (1979) school improvement plan discovered, quality education is going beyond effective education (McCormack-Larkin & Kritek, 1982). Effective education focused on the instruction of basic skills, high expectations for students, accomplishing math and reading objectives, strong instructional leadership ability of the principal and high levels of parent-initiated involvement (Edmond & Fredericksen, 1977 & Brookover & Lezotte, 1977). The educators in Milwaukee, being successful in implementing the improvement plan which was based on the effective education correlates, began striving for excellence or quality of education by expanding those correlates (McCormack-Larkin & Kritek, 1982). The effective education correlates expanded to excellence or quality in the following domains: (a) an emphasis on basic skills expanded to include higher order thinking skills, (b) an emphasis on teachers having high expectations for students expanded to include students having high expectations for themselves, and (c) an emphasis on the principal as the educational leader expanded to the empowering of teachers to be educational leaders (McCormack-Larkin & Kritek, 1982).

Problem Statement

The problem statement of this study asks the following questions: (a) Do the three outcomes of the TIC within the Focus 2000 Program enhance the quality of education? (b) If they do enhance the quality of education, to what extent are they present in a TIC? (c) Furthermore, are they present more in a TIC than in a non-thematic integrated curriculum (non-TIC)?

Recent studies such as The National Education Goals Report (National Education Summit of the Nation's Governors and President, 1991) and The Condition of Education Report (Alsalam, Ogle, et al., 1992) reveal that the
quality of education in the United States continues to show little improvement, despite the number of school improvement plans instituted by school districts in such states as New York, Delaware, Connecticut, Illinois, Wisconsin, Michigan, Arkansas, Louisiana, Texas and California (Edmonds, 1979; Edmonds, 1982; McCormack-Larkin & Kritek, 1982; Purkey & Smith, 1982; Murphy, Weil, Hallinger, Mitman, 1982; Lezotte & Bancroft, 1985; Stringfield & Teddlie, 1988). Therefore, educators and state legislators are beginning to understand that America's educational system needs restructuring in order to meet the needs of the 21rst century (Schlechty, 1990).

The technological revolution of the 20th century has initiated the development of telecommunication systems, robots, computers, and remote control. Such technologies make the knowledge, which is necessary for students to survive successfully within our society, rapid, comprehensive and unlimited (Resnick & Klopper, 1989). The speed at which new ideas are developed, has made it almost impossible for teachers to keep abreast of "new knowledge" (Resnick & Klopper, 1989). However, the structure of America's schools basically remains the same as that of colonial America. In colonial America, agriculture was the main focus of America's society.

Context of the Problem

The National Context

In April 1984, The National Commission of Excellence in Education published a report which summarized 18 months of study and research concerning the education status of the United States. The Commission's charter was to assess the nation's quality of learning in the schools and colleges. The assessment process included comparing America's educational institutions with those of other industrial nations such as Japan, Ireland, the United Kingdom,
Korea, Spain, France, Belgium, Canada, and Israel. They compared such variables as (a) content of the curriculum, (b) standards and expectations of the educational system, (c) time spent on educating students and (c) instructional methods (Commission on Excellence In Education, 1984).

The members of the Commission included university presidents, CEOs of major industries, school superintendents, principals and professors. They relied upon the following sources for information: (a) input from administrators, teachers, students, representatives from other professions, parents, business leaders, public officials and scholars; (b) current analyses of problems in education; (c) volunteer responses from concerned citizens; and (d) descriptions of notable programs (Commission on Excellence In Education, 1984).

The outcome of the study was so startling that the Commission entitled the report A Nation at Risk. The report documented evidence that the achievement standards of American schools did not equate with achievement standards of other industrialized nations. The following is a summary of the results:

1. On 19 academic tests, American students were never first or second in comparison with other industrialized nations (p. 8).

2. Approximately 13% of all students, who were 17 years old and lived in the United States, could be considered functionally illiterate. Approximately 40% of minority students, who were 17 years old and lived in the United States, were considered functionally illiterate (p. 8).

3. Average achievement of high school students on most standardized tests was lower than it was 30 years ago (p. 8).

4. College Board achievement tests show a decline in students of 50 points in verbal achievement, 40 points in math achievement and a steady decline in science achievement over a period of 17 years (p. 9).

5. Twenty-three million American adults were functionally illiterate by the simplest of tests (p. 8).
6. The secondary school curricula has been homogenized, diluted and diffused in comparison to the curricula of other industrialized nations. Also, more American high school students take the "general track" courses instead of the vocational and college preparatory courses (p. 61).

7. The expectations for students were low as expressed by the absence of rigorous examinations and college admissions requirements. The time spent in academic subjects such as mathematics, biology, chemistry, and physics was far less than the time spent in the same subjects in other industrialized nations (p. 62).

8. Compared to other nations, American students spent much less time on school work. The study also showed that time spent in the classroom and on homework is often used ineffectively (p. 64).

Several subsequent national reports such as The National Education Goals Report (National Education Summitt of The Nation's Governors and President, 1991) and The Condition of Education (Alsalam, Ogle, et al., 1992) revealed there has been little improvement in the quality of education since 1984. Those reports revealed that:

1. In 1990, fewer than one out of every five students in grades 4, 8 and 12 had reached the national education goal of demonstrating competency in mathematics. Most of the U.S. students scored at the basic level in mathematics achievement. In 1988, American 13 years old students scored lowest among students in five nations on an international mathematics test (Alsalam, Ogle, et al., p. 13).

2. Average reading scores for 9, 13 and 17 years old students showed little change between 1988 & 1990 (Alsalam, Ogle, et al., p. 46). (See Table 1.)

3. In 1988, 14 years old American students ranked among the lowest in science achievement on an international assessment (National Education Summitt of The Nation's Governors and President, 1991, pp. 17 & 18.) (See Table 2.)

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National Average Reading Proficiency by Age: 1984-1990

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<td>1990</td>
<td>209</td>
<td>257</td>
<td>290</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Reading Proficiency Scale
- **Level 150:** Carries out simple discrete reading tasks
- **Level 200:** Understands specific or sequentially related information
- **Level 250:** Searches for specific information, interrelate ideas, and make generalizations
- **Level 300:** Finds, understands, summarizes, and explains relatively complicated information
- **Level 350:** Synthesizes and learns from specialized reading materials.

Table 2
International Comparisons of Science Performance With Percentage Correct on Science Assessment, by Country: 1991

<table>
<thead>
<tr>
<th>Age in Years:</th>
<th>9</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larger Countries:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korea</td>
<td>67.5</td>
<td>77.5</td>
</tr>
<tr>
<td>Taiwan</td>
<td>66.7</td>
<td>75.6</td>
</tr>
<tr>
<td>United States</td>
<td>64.7</td>
<td>67.0</td>
</tr>
<tr>
<td>Canada</td>
<td>62.8</td>
<td>68.8</td>
</tr>
<tr>
<td>Spain</td>
<td>61.7</td>
<td>67.5</td>
</tr>
<tr>
<td>Soviet Union</td>
<td>61.5</td>
<td>69.6</td>
</tr>
</tbody>
</table>

4. In 1990, nearly 4 million young adults between the ages of 16 to 24 years old, were high school dropouts. Dropout rates for Afro-American students
have declined steadily over time. Dropout rates for Hispanics have been consistently higher than the rates for Blacks and Whites (National Education Summit of The Nation's Governors and President, 1991, p. 42).

5. Average writing scores for students in grades 4, 8 and 11 remain relatively unchanged between 1984 and 1990 (p. 46).

Decline in the educational quality was not only reflected in national studies, but the decline of quality in education was also reflected in studies performed by individual states. An example of such studies can be seen in the state of Michigan.

The Problem Within the State of Michigan

Michigan's Department of Education measures the quality of education by using The Michigan Educational Assessment Program (M.E.A.P.). For years, the M.E.A.P. was used to assess the basic skills in reading and math of students in grades 4, 7 and 10. However, in an effort to upgrade the assessment program, committees were formed to add science, social studies and writing to the assessment program. These tests were designed to assess students in grades 5, 8, and 11.

Committees were also formed to change the emphasis of the assessment program from measuring students' basic skills to measuring students' essential or critical thinking skills. Reading was the first subject to undergo this change.

In 1989, 36% of Michigan's grade 4 students attained satisfactory performance in reading, 33% of Michigan's grade 7 students attained satisfactory performance in reading, and 29% of Michigan's grade 10 students attained satisfactory performance in reading (Sayegh, 1991). (See Table 3.)

In 1990, 37% of Michigan's grade 4 students attained satisfactory performance in reading, 33% of Michigan's grade 7 students attained satisfactory
Table 3

<table>
<thead>
<tr>
<th>Grades</th>
<th>Year</th>
<th>Subjects</th>
<th>4</th>
<th>7</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1989</td>
<td>Reading</td>
<td>36%</td>
<td>33%</td>
<td>29%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Math</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>1990</td>
<td>Reading</td>
<td>37%</td>
<td>33%</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Math</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>1991</td>
<td>Reading</td>
<td>35%</td>
<td>30%</td>
<td>39%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Math</td>
<td>36%</td>
<td>32%</td>
<td>19%</td>
</tr>
</tbody>
</table>

*Essentials skills not administered for those years

performance in reading, and 37% of Michigan's grade 10 students attained satisfactory performance in reading (Sayegh, 1992). (See Table 3.)

In 1991, M.E.A.P. math assessment changed from measuring students' basic skills to measuring students' essential skills or critical thinking skills in math. In 1991, 36% of Michigan's grade 4 students attained satisfactory performance in math, 32% of Michigan's grade 7 students attained satisfactory performance in math, and 19% of Michigan's grade 10 students attained satisfactory performance in math (Sayegh, 1992). (See Table 3.)

Reading scores for those grades also remained relatively low. Thirty-five percent of Michigan's grade 4 students attained satisfactory performance in reading, 30% of Michigan's grade 7 students attained satisfactory performance in reading, and 39% of Michigan's grade 10 students attained satisfactory performance in reading (Sayegh, 1992). (See Table 3.)

The Economic Context

Due to the fact, that money has an impact on quality and that education is
basically financed by local property taxes and state disbursements, the country's economic context should also be briefly discussed. Coalescing with the deterioration of the quality of the United States' educational system is the erosion of the country's economic system (Demings, 1992). In 1987, the United States federal government debt exceeded $2 trillion. The interest payment on this debt amounted to $20 million an hour.

Besides the extreme national debt, productivity (the lifeblood of an economic system) has also decreased. Evidence of the decline in productivity can be seen in (a) the shut down of major industries and businesses, (b) the growth of inflation (c) the tapering off of international trade, and (d) the increase in unemployment (Guthrie, 1988). These are some of the factors which have precipitated tax revolts, such as the 1978 Proposition 13 in California and the 1978 Headley Amendment Act in Michigan. Both laws directly impact upon the school finance level and have caused many school districts to forego quality for economy.

Amidst the efforts to improve the country's educational quality is another effort (just as intense) to provide equity to America's educational system. Wealthy school districts are usually located in the suburbs and experience high-quality schools. The class sizes are generally small and the community can afford high caliber teachers. The students have access to a tremendous array of cultural experiences and books (Ward & Anthony, 1992, p. 13). In reverse, poorer school districts are located in the urban areas and experience all the problems that are associated with urban life. The classrooms are overcrowded. The instructional materials are often out-dated. The schools usually have inadequate or no libraries and few or no computers. Crime and discipline problems compete strongly with instruction and learning (Ward & Anthony, 1992, p. 13).

Another sign of the disparity between the wealthy school districts and the
poorer school districts is the dearth of school improvement literature for suburban and upper-level income communities. Literature concerning school improvement studies are concentrated in urban areas and low economic areas such as cities like New York (Edmonds, 1982), Chicago (Edmonds, 1982), Detroit (Edmonds, 1982), New Haven (Brandt, 1986), Milwaukee (McCormack-Larkin, 1985), Los Angeles (Murphy, Weil, Hallinger, and Mitman, 1982) and Philadelphia (D'Amico, 1982). The frustration that exists from the disparity between the "have" school districts and the "have-not" school districts can be seen in such court cases as the 1989 Council for Better Education v. Wilkerson Case in Kentucky and the 1990 Committee for Educational Rights v. Thompson, et al. Case in Illinois.

This disparity has been one of the obstacles in enhancing the quality of education. The bitterness that has slowly developed between districts, which resent sharing their wealth and districts which feel that they have a right to some wealth, has caused a reluctance by wealthy districts to assist the poorer districts in achieving educational equity and quality. All educators' total efforts throughout the country must be concentrated on improving the quality of education as an impetus for improving the country's economic system. As William Glasser (1992) stated during a lecture, "If we don't improve our educational system, we will not be able to improve our economy. As a result, the United States will slide to a third class nation."

Significance of the Study

As mentioned earlier, the purpose of this paper was to examine the three outcomes of the TIC of The Focus 2000 Program in order to discern if the outcomes enhance the quality of education, to what extent the outcomes are present in a TIC and to discern if the outcomes are present more in a TIC than a non-TIC. The limited significance of such a study is to assist educators in the
decision-making process, as they consider restructuring their educational system by using a TIC. However, a more extensive significance of the study is to help educators understand a TIC and how such a curriculum can enhance the quality of education.

Summary

In summary, the purpose of the study was to describe how a TIC enhances the quality of education by examining the three outcomes of a TIC. Enhancing the quality of education was defined by the extent to which the three outcomes facilitate the learning process.

Before assessing the extent to which the three outcomes enhance the quality of education, they are defined in Chapter II. Also, the theoretical foundations for the TIC, within the Focus 2000 Program, are discussed and the three outcomes are connected to studies which relate them to the facilitation of the learning process.
CHAPTER II

LITERATURE REVIEW CONCERNING THE THEMATIC INTEGRATED CURRICULUM (TIC) OF FOCUS 2000 PROGRAM

Overview of the Chapter

In describing the TIC of The Focus 2000 Program, the three main outcomes of the TIC are defined. Furthermore, a relationship is established between the outcomes and facilitating the learning process. Establishing such a relationship is necessary because the quality of education is defined by the extent to which the three outcomes facilitate the learning process. The three outcomes are (1) the instruction of critical thinking skills, (2) the motivation of students to be self-directed and assume responsibility for their own learning, and (3) the empowerment of teachers to become educational leaders.

The organization of the chapter is as follows: (a) a conceptual definition for critical thinking skills, student self-motivation and teacher empowerment; (b) a discussion of the theoretical foundations for the TIC; (c) a description of the TIC implementation process; and (d) a discussion of the research that connects the three outcomes to facilitating the learning process.

Definition of the Three Outcomes of the TIC

Critical Thinking Skills

In Focus 2000's TIC, Bloom's Taxonomy of Critical Thinking Skills is used to help students (a) apply, synthesize, analyze and evaluate knowledge; (b) make connections between the subjects; and (c) make connections between what is learned in the classroom to real life situations. Lipman, Sharp and Oscanyan (1980) define thinking skills as the ability of students (a) to make connections and
- draw distinctions; (b) to define, and to classify; (c) to assess factual information objectively and critically; (d) to deal reflectively with the relationship between facts and values; and (e) to differentiate their beliefs of what is true from their understanding of what is logically possible. Lipman (1988) defines critical thinking as using wisdom and good judgment in applying knowledge and experience to practice.

Benjamin Bloom (1965) delineated six thinking skills as critical to the learning process. They are knowledge, comprehension, application, analysis, synthesis and evaluation. Knowledge consists of acquiring information through such processes as lectures, books and/or exhibits (VanTassel-Baska, 1988). Comprehension is showing understanding by interpreting, extrapolating, and/or translating (VanTassel-Baska). Application refers to intellectual activities which involve students in using principles, concepts, theories, generalizations, or other abstractions in solving problems or applying them in a new situation (VanTassel-Baska, 1988). Analysis involves students in identifying major elements, seeing connections between concepts, dissecting, and breaking compounds and elements down in order to see relationships among the parts (VanTassel-Baska, 1988). Synthesis refers to those intellectual activities in which students combine or integrate ideas, concepts, principles, or information into unified wholes that represent a new pattern or structure (VanTassel-Baska, 1988). Evaluation involves students in making judgments by using standards and criteria (VanTassel-Baska, 1988).

**Students Who Assume Responsibility for Their Learning and Are Self-directed Learners**

The author of the Focus 2000 Program envisions students as collaborators in the instructional process. Exit outcomes for students of the Focus 2000 Program include: (a) students being self-directed learners, (b) students who use positive core values to create a positive vision for themselves, (c) students who
set priorities and achievable goals, (d) students who create options for themselves, (e) students who monitor and evaluate their progress, and (f) students who assume responsibility for their learning (Weckler, 1991, p. 39). The objective of the Focus 2000 Program is to achieve self-directed students by developing a curriculum that is relevant and of interest to students. With such a curriculum, students are intrinsically motivated to learn.

Madeline Hunter (1982) defines motivation as the intent of the student to learn. Motivation causes students to pay attention and to focus on the learning. There are two types of motivation - intrinsic and extrinsic. Extrinsic motivation is caused by external forces and intrinsic motivation comes from within the student. Literature on the function of the brain, as it relates to learning, says that intrinsic motivation facilitates learning better than extrinsic motivation because it is automatic and natural (O'Keefe and Nadel, 1978).

Empowerment of Teachers

Bolin (1989) believes that empowering teachers to become educational leaders is "investing in teachers the right to participate in the determination of school goals and policies and the right to exercise professional judgment about the content of the curriculum and means of instruction" (p. 82). He believes "teachers should be empowered because teaching is a moral activity and moral agents, in order to be responsible for their acts, must be free to act according to their best judgment" (p. 82).

In The Focus 2000 Program, the teacher is known as the "vision keeper" and the "climate maker." Research studies conducted by Rosenthal & Jacobsen (1968) and Rosenthal & Rubin (1971) on teacher expectations, as they relate to student achievement, show "teachers make the difference between 'picking' winners and 'creating' winners" (Weckler, 1991, p. 15). Teachers, who have direct impact upon student learning, formulate visions for their classrooms.
These visions are formulated from a combination of knowledge about the students, knowledge about the community culture, knowledge about learning styles, and knowledge about instructional methods. Given the opportunity to develop curriculum policies, teachers can fulfill these visions through the development of an enriched classroom curriculum in order to provide a climate in which all students can be successful.

Theoretical Foundations for the TIC

Theories Concerning the Function and Structure of the Brain

Adhering to the premise that the brain is essential in the learning process, the author of the Focus 2000 Program uses theories concerning the brain's function and facts regarding the brain's structure as the basis for designing a TIC (Weckler, 1991). Caine & Caine, (1991); Kolb, (1985); Gardner, (1983); Ornstein & Sobel, (1987) have delineated how knowledge concerning the brain has implications for education about facilitating the learning process. Kovalik (1986) and Jacobs (1989) explain that because the brain constantly searches for meaning by connecting parts, the TIC, which connects the instruction of the subjects, exploits the natural learning process of the brain. The brain's innate characteristic of searching for meaning in processing information is called "patterning" (Caine & Caine, 1991).

In the brain, many events such as the transmission of sensitivity messages, the activation and monitoring of physiological functions, and the processing and storing of information are occurring simultaneously. Thus, the brain is regarded as a parallel processor (Caine & Caine, 1991). In order to facilitate this parallel processing, the brain operates in a "patterning" mode. Patterning is a meaningful connection of relevant information.

In operating, the brain is designed to perceive and generate meaning.
Therefore, it resists isolated pieces of information that do not fit into a meaningful pattern (Caine & Caine, 1991). This patterning facilitates the recall process as evidenced in research on infants. Stuch, Kauffman & Kauffman (1987) in their research show that infants, after only a few months, are alert and can identify faces because of the patterning processes. Therefore, if educators want to facilitate the recall of information, they need to connect that information with prior knowledge and other relevant information for students. Kovalik (1986) posits that connecting the instruction of the subjects with a theme, and showing how these subjects relate to each other in a TIC are methods that facilitate the recall process for learners.

Instructing to the patterning process of the brain does not only facilitates the recall process, but it also facilitates the transference of information. If teachers connect the instruction of subjects, because of the brain's innate patterning characteristic, students will be able to perceive how information learned in one situation can be used in another similar situation (Kovalik, 1986 & Jacobs, 1989).

In summary, proponents of a TIC believe that such a curriculum can facilitate learning by exploiting the brain's innate patterning process. Therefore, if students can relate pieces of information into a meaningful "whole", then the retention and the recall of that information is increased.

Caine and Caine (1991) in their book *Making Connections* explain another brain theory that facilitates the brain's recall and transference processes. This theory deals with natural memory versus memorization as posited by research performed by O'Keefe and Nadel (1978).

O'Keefe and Nadel (1978), in their experiments with rats, discovered that the brain has at least two memory systems with different properties. These two systems are the taxon memory systems and the locale memory systems. Although these two systems interact with each other in processing information, there are...
basic differences between the method in which they process information.

The taxon memory system is composed of several systems specializing in separate isolated memories. Information processed in this system is usually short-term memory. Only rehearsing the information long and well enough, will cause the information to become long-term memory. Also, information processed through the taxon memory systems will become long-term memory if the information is linked to relevant extrinsic motivation such as grades and privileges (O'Keefe & Nadel, 1978). Pieces of information that are stored in the taxon memory systems are relatively isolated entities that have no relevant meaning to each other. They only interact with other items stored in the taxon memory systems on a needed basis (O'Keefe and Nadel, 1978).

The other memory system is the locale memory system. O'Keefe and Nadel (1978) define the locale memory system as composed of mental maps that connect incoming information with a person's environment. Thus, people process incoming information to experiences and prior knowledge. For example, if you need to move around in a new airport, your brain begins to relate the pieces of information that you are receiving to prior knowledge about airports (Caine & Caine, 1991).

You may remember about ticket counters, standing in lines, security checks, smells, and the feel of the escalator under your feet. You would use all of this prior knowledge to process the new information that you are receiving in the new environment. Thus, the information received in this environment, because it is related to experiences and has immediate meaning for you, will automatically become long term memory. The intrinsic motivation is your present need for the information, as well as the novelty of the situation (Caine & Caine, 1991). People are "literally driven to make sense of the unfamiliar" (Caine & Caine, 1991, p. 92).

According to O'Keefe and Nadel (1978) the locale memory is survival
oriented. It is virtually unlimited in capacity and is enhanced by the sense organs of smell, touch, taste and sound. Memories formed in the locale memory system are the consequences of many experiences that gradually come together as a person tries to make sense of the environment.

Caine & Caine (1991) posit that to facilitate the learning process, teachers must exploit the brain's automatic recall system (locale memory system) in helping students recall needed information and in assisting students in transferring that information appropriately. Using the TIC, teachers are able to contrive experiences that connect the separate information in the subject areas to a meaningful whole; thus, helping students to transfer and apply their learning by using relevant situations. Caine & Caine (1991) suggest that the holistic approach to learning and the thematic integrated approach to learning facilitate the natural memory processes by showing interconnectedness to facts and ideas. According to Caine & Caine (1991), there are three brain-based learning principles that form the theoretical foundation for the TIC. These principles are: (1) the search for meaning is innate, (2) the search for meaning occurs through patterning, and (3) people understand and remember best when facts and skills are embedded in natural memory that occurs in a meaningful context.

**Brain-based Learning Principles Facilitate the Learning Process**

Invoking the brain's innate characteristic of "searching for meaning" through the patterning process and the natural memory process system (the locale memory system), teachers can facilitate the recall of information and the transference of information, thereby facilitating the learning process. For example, in helping students to learn and understand biology, teachers can contrive meaningful learning situations such as requiring students to use their knowledge in biology to solve current ecological problems. This instructional blend of the physical sciences with the social sciences, not only facilitates the
learning process by embedding facts into a meaningful context, but teachers also can help students to analyze, synthesize and apply their learning.

Bloom (1956) labels these skills as critical thinking skills because students do more than just memorize biological facts. They begin to show that they understand these biological facts by comparing them with the facts they learned in social studies in order to develop a solution to an ecological problem. If students have an interest with making the environment safe for humans, then learning is further facilitated by an intrinsic motivation. It is at this point that learning becomes self-directed, with the students assuming the responsibility for learning the information.

In crossing the arbitrary subject boundary lines, often times teachers have to contrive meaningful learning experiences for students. It is at this point that teachers become educational leaders in their classrooms. When teachers make instructional decisions based on a combination of research knowledge and knowledge about their various students, Madeline Hunter (1979) exclaims that it is at this point that education becomes an art. "This synthesis of science and sensitivity to a situation explains why we (researchers) can't supply pat answers to teachers" (Hunter, 1979, p. 63). However, Hunter (1979) posits that teachers can be provided with information that can improve their decision-making process, influence students' motivation to learn and provide appropriate new situations for students to transfer their learning.

Therefore, by basing the development of the Focus 2000's TIC on the three brain-based principles, critical thinking skills, students' self-motivation, and the empowerment of teachers, the TIC facilitates the learning process. The function of the brain is to connect isolated information into meaningful wholes, and the function of the TIC is to connect isolated subject areas into meaningful wholes by using the three outcomes.
Bloom's Mastery of Learning Theory

The implementation process of the Focus' 2000 TIC is based on Bloom's Mastery of Learning Theory. Mastery Learning was developed by Benjamin Bloom (1968) to maximize the instructional process in an effort to provide "success for all" within the classroom structure. His model is based on John B. Carroll's (1963) theoretical concept of aptitude as an index of student learning and not an index as to how much a student can learn. All students have the potential to learn but at different rates. This learning rate depends on the time expended in learning, the characteristics of the learner and the characteristics of the instruction. Briefly stated, if the quality of the instruction is very high, than students will understand the material and will need little time to learn. However, if the quality of instruction is not high, than students will have greater difficulty understanding and will need more time to learn.

There are three phases of implementation when following The Mastery Learning Model (Guskey, 1985). These phases consist of (1) planning the learning, (2) managing the learning, and (3) evaluating the learning. Bloom believed there is no one absolute method of instruction; therefore, he did not elaborate on any specific instructional methods. However, he did feel that instructional methods should be closely matched to the students' learning styles. He felt that teachers should have a potpourri of methods, based on research, when designing the actual assignments.

Learning Style Theories

Matching students' learning styles is an important element of the Focus 2000's TIC. Teachers are to base their instructional strategies on theories about learning styles. When planning the learning activities, the teacher should attempt to match students' learning styles by varying the instructional methods. The reason for matching instructional methods to learning styles is to give each
student an opportunity to be successful.

Research literature on the function of the brain (Jung, 1926 & 1971; Meyers, 1962, Kolb, 1976) purports that because the brain is used in feeling, as well as thinking, the senses also must have a part in the receiving and processing of information. Although there is an interaction in both the intellect and senses in processing information, McCarthy (1990) theorized that people tend to hover more at one end of the continuum than the other end.

McCarthy (1990) & Mamchur (1984) posited that learners, who receive and process information with their senses, need to learn in a classroom environment that is rich with experiential activities. Furthermore, to facilitate their learning process, these learners need to "do" and "apply" the information learned. In contrast, learners who receive and process information by thinking, need opportunities to watch, listen, read and reflect new information as they mentally filter information through their own experiences.

Learning styles theory has also been supported by research dealing with the right and left hemisphere of the brain (Sperry, 1968). Although each hemisphere interacts in receiving and processing information, each hemisphere also has a specialized functioning. A predominant left hemisphere person is highly verbal, primarily a sequential learner who is time conscious, outcome oriented and prefers logical and analytical thinking (Caine & Caine, 1991). He would learn better in a classroom environment that is highly structured and is enriched with many reference materials that can be used for research. On the other hand, a predominant right hemisphere person is not very verbal, has excellent spatial memory and a highly developed sensory recall. He would learn better in a classroom with activities that appeal to the senses and where the curriculum is enriched with experiential activities (McCarthy, 1990 & Mamchur, 1984).

Gardner's (1983) research concerning multiple intelligences has had an impact on learning styles theory. Gardner, in his empirical studies on the brain,
theorizes that people have a variety of intelligences. He defines intelligence as the capacity to solve problems in one or more cultural context that includes sense of self, sense of others, linguistic, musical, logical/mathematical, spatial and kinesthetic. Gardner posits that one or more of these intelligences are dominant within every person. Therefore, a teacher can facilitate learning for a student by instructing to his dominant intelligence/s.

Cooperative learning is a learning style theory that is compatible to the brain-based learning principles. One of the characteristics of the brain is that it is social (Gazzaniga, 1985). The brain has a drive to belong to a group and to relate to others. By using cooperative learning, teachers exploit this characteristic of the brain and thereby facilitate the learning process (Caine & Caine, 1991).

Cooperative learning encourages students to discuss, debate, disagree, and ultimately to teach one another (Slavin, 1991). Slavin (1991) describes many different forms of cooperative learning. All of the forms involve students depending on each other to get a job completed. Cooperative learning usually supplements the teacher's instruction by giving students an opportunity to discuss information or practice skills originally presented by the teachers. Sometimes, cooperative methods require students to find or discover information on their own.

**Learning Style Theories Facilitate the Learning Process**

According to Guskey (1985, p. 141), "Research has shown that the most effective teachers are those who have a fairly broad repertoire of tactics and strategies for presenting new material." Caine & Caine (1991, p. 35) say it best:

> No teacher can adequately deal with all of these variations or attempt to reach one child at a time with customized teaching methods. Variation and creativity in school, as well as a teacher's thorough knowledge of content, are all critical ingredients in helping the learner pattern correctly . . . The more we approach meaningful, challenging, and relevant learning in the classroom, the more likely that children of all types will learn well.
The TIC Implementation Process

A review of the definition of the TIC and a delineation of the implementation process reveal that the three outcomes naturally flow from a TIC. The TIC "coordinates knowledge and competence" across the subject areas to show a connection of ideas and to make learning meaningful (Weckler, 1991, p. 53). The connection of the subject areas are accomplished with a broad theme. The theme is expanded throughout the appropriate subject areas by using various methods. In the delineation of the TIC implementation process, these methods are explained.

The steps in the TIC implementation process are based on Bloom's Mastery Learning Model (1968) which is divided into three phases: (1) planning the learning, (2) managing the learning, and (3) evaluating the learning.

Planning for the Learning

Steps 1-5 of implementing the TIC coincide with phase 1 of Bloom's Mastery Learning Model. These steps are:

1. Determine the student exit outcomes which compose the anticipated student profile at the conclusion of the unit.
2. Use state and/or district curriculum guide to select the appropriate outcomes for each core subject.
3. Decide the theme. It can be anything. However, it must be something about which the teachers are knowledgeable and they would enjoy teaching for a semester or year.
4. Develop the thematic units. Thematic units broaden the basics for investigation. The various subjects are connected together by the theme.
5. Develop the thematic topics for the student activities. The topics should be narrow in focus and should be taught for approximately a week.
The teacher or teacher team determines the student outcomes which compose the student profile that is anticipated at the completion of the unit of study. Next, the teacher or teacher team identifies unit and lesson outcomes. Teachers are usually guided by the districts' core curriculum for each subject. In developing a thematic design, the crucial step is to determine how the thematic curriculum will be constructed to achieve the student exit outcomes for each content or subject area. (Weckler, 1991).

In determining how to design a thematic curriculum, several methods can be used (Weckler, 1991). Two examples of methods are:

1. The teacher may choose to integrate the theme into the appropriate subjects to develop the units. Then from the unit, develop the P's and Q's. The P's and Q's are the student assignment activities (Weckler, 1991).

2. The teacher may choose to proceed down through the theme to develop thematic units and identify the subjects through the thematic unit topics. Then the teacher can develop the P's and Q's (Weckler, 1991).

There is no right or wrong way. In choosing a method, consideration should be given to the teacher's instructional style and the student's learning style. A theme should be something enjoyable, broad and meaningful (Weckler, 1991). Jacobs (1989) describes an appropriate theme as one that is broad enough to cover several subjects, as well as being discreet and capturing the small intricacies and fundamentals. A theme also should be able to disclose fundamental similarities and at the same time delineate differences within and across the subjects. Examples of such themes are change, dependence and independence, and patterns (Weckler, 1991).

Managing the Learning

Steps 6-10 in developing the thematic design consist of phase 2 of Bloom's Mastery Learning - managing the learning in the classroom. These steps are:
6. Collect instructional materials and identify resources which coincide with the theme.

7. Identify major thoughts or ideas that students will have to master. They should directly correlate with purposeful exit outcomes.

8. Brainstorm possible products that may emerge from the topics. Examples of such products are: (a) dramatic skits, (b) raps, or (c) relief maps.

9. Develop the P's and Q's (Products/Questions). The P's and Q's are products and questions students will develop and research in their quest for learning. The P's and Q's are the culminating activities that demonstrate what students have learned. They should be based on Gardner's multiple intelligences and Bloom's Taxonomy of Thinking Skills.

10. Teach the unit. Provide direct instruction or lecture no more than one quarter of the time. To teach for mastery the major concepts must be presented several times in a variety of methods.

In the TIC the most important goal, when instructing students, is to use a variety of instructional methods to match the students' learning styles. Use of textbooks and lectures are encouraged only as two of the many activities that students should experience in the learning environment.

When writing P's and Q's, emphasis is placed on creating tasks or assignments that are related to the theme at varying degrees of complexity (Weckler, 1991, p. 72). According to the brain-base principle that the brain is driven to find meaning in the novel and complex, student assignments should be challenging. (Caine & Caine, 1991).

Although cooperative learning is used, students are also allowed to work independently, as well as with the entire class on assignments. By using Bloom's Taxonomy of Critical Thinking Skills, teachers can expand natural knowledge to expertise knowledge (Caine & Caine, 1991). Caine & Caine (1991) explains that requiring students to synthesize, analyze, and evaluate information in order to
apply that information in a meaningful context is capitalizing on the brain's natural memory system (locale memory system) and going beyond the natural memory process. When students have to recall information and appropriately apply it, they are demonstrating expertise of knowledge (Caine & Caine, 1991). Caine & Caine (1991) define expertise of knowledge as going beyond teaching for memory to knowledge that can be accurately applied when needed.

The use of Gardner's multiple intelligence theory in designing P's and Q's is an attempt of the teacher to accommodate several learning styles in order to optimize all students' learning processes (Weckler, 1991). Presenting lessons in several contexts (linguistic, musical, logical/mathematical, spatial and kinesthetic) should facilitate the learning process of students who process information by thinking and students who process information by feeling.

Evaluating the Learning

Steps 11-13 of the TIC design comprise the third and final phase of Bloom's Mastery Learning - evaluating in mastery learning. These steps are:

11. Develop assessments and rubrics. Assessments must be based on the written curriculum that is part of the taught curriculum. Rubrics are the standards upon which decisions are made as students complete their assignments.

12. Develop corrective assignments and reteach. When mastery is not gained on important concepts and outcomes, it is necessary to reteach in a different manner.

13. Celebrate the learning. At the conclusion of each unit, plan a special event to celebrate the demonstration of learning. These celebrations add closure to the unit. They can be as small as sharing a class book or project with another class or as large as an evening program for the parents and community.

This phase involves the development of formative tests, and corrective activities. In the TIC, items used to assess students are developed simultaneously

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with the learning activities in an effort to align the assessment instrument with the taught curriculum. These items comprise the formative tests that are given at the end of each lesson to assess students for diagnostic purposes. Emphasis for tests are placed on students' understanding of major concepts for each lesson, instead of memorization of isolated facts. If students demonstrate that they do not understand the major concepts, then the teacher uses a corrective lesson design that is different from the first lesson design. A different lesson design is stressed in order to ensure that a successful learning style for the student is achieved.

Formative tests are not always pencil and paper tests. Formative tests are designed to assess students' understanding by evaluating a student's demonstration of a learned skill or appraising a student's oral presentation or observing a student working on a project or accumulating examples of a student's work in a portfolio. Portfolios may include pictures of students' projects, examples of expository and research writing, journal entries, and summaries of a variety of students' learning activities. The major difference of the evaluation phase in Bloom's Mastery Learning theory from traditional testing is that formative tests are used for diagnostic purposes and to guide in the development of corrective lesson designs instead of judging students' learning. The primary emphasis of the evaluation phase "is success for all."

The Implementation Process of the TIC Facilitates the Learning Process

In the TIC, the process of involving the students in (a) the choosing of the theme, (b) cooperative learning methods, (c) problem-solving, (d) hands-on activities, (e) the diagnostic evaluation process, and (f) the corrective reteaching, motivates students to learn by allowing them to experience success (Guskey, 1985). Guskey (1985), in his evaluation of the Mastery Learning Model, observed that when students experience success in one unit, they are motivated to continue that good feeling by working to be successful in the next unit. Bloom
(1977) contends that by providing students with successful learning experiences, the mastery learning process can have a very strong and systematic influence on students' self-esteem, interest in the subject, attitudes and general mental health. Influence on these affective feelings will motivate students to be self-directed and assume responsibility for their learning.

In following the Mastery Learning implementation process, the Focus 2000 teachers, as instructional leaders, define their roles. Teachers not only influence what their students learn, they also shape students' attitudes toward learning and toward themselves as learners. With knowledge about each student's learning styles, teachers have a powerful tool that increases their effectiveness in helping students gain the many positive benefits of successful learning (Guskey, 1985).

Caine & Caine (1991) establish the point that TIC teachers provide a sense of wholeness to the curriculum through the use of themes in an effort to make students' learning meaningful and relevant. Using Gardner's multiple intelligence theory, teachers are guided in designing a multisensory curriculum that engages the learners' intellect, as well as their emotions. The teacher is empowered to be the designer and the orchestrator of the instructional curriculum when he allows the students' characteristics to be the guide for developing that curriculum (p. 109).

Using Bloom's Taxonomy of Critical Thinking Skills to help students apply their knowledge in a meaningful context, teachers are able to exploit the natural memory system and thus facilitate the learning process. As Caine and Caine (1991) emphasize, the objective of education is not just memorization and recall of natural knowledge, but it is the expansion of natural knowledge by teaching students to apply that knowledge in relevant contexts. By being able to use the knowledge, students not only fulfill their highest potential but they also help those around them to be fulfilled as well.
Results of Studies That Link the Three Outcomes to Facilitating of the Learning Process

This section of the paper discusses results of studies describing the impact that (1) the instruction of critical thinking skills, (2) student self motivation, and (3) teacher empowerment have on facilitating the learning process. Linking the three outcomes to such studies is done to show how they enhance the quality of education by facilitating the learning process.

Synthesis of Research Concerning Mastery Learning and Student Self-Motivation

Since Bloom's Mastery Learning provides students with successful learning experiences, basing the TIC implementation process on Bloom's Mastery Learning theory is an impetus for stimulating students' self motivation.

Results of studies concerning Bloom's Mastery Learning on students' involvement in learning revealed that students in mastery learning classes maintained high level of involvement throughout the term or semester (Anderson, 1973, 1975). Measures of involvement were made by observers in the classroom watching a randomly selected sample of students and judging their behavior at regular intervals as either on or off-task overt behavior.

Attendance rates in mastery learning classes were usually higher than in classes taught by the traditional methods (Clark, Guskey, & Benniga, 1983). Student retention in school was also higher for students in mastery learning classes than for students who were in conventional classes (Guskey & Monsaas, 1979; Jones, Gordon & Schechtman, 1975).

Research studies (Hecht, 1977) have shown that students using the mastery learning process of feedback and corrective procedures improved their learning-to-learn skills. Also, once students learned how to learn, their confidence in learning situations increased, thus resulting in consistent high academic scores (Guskey, 1985).
Studies performed by Mevarech (1980) showed that the mastery learning process of feedback and corrective procedures improved students' acquisition of higher level cognitive skills such as analyzing and synthesizing at a higher percent then with conventional instructional techniques (Guskey, 1985). Also, studies performed by Leyton (1983) showed that when students review prerequisite concepts in combination with the mastery learning process of feedback and corrective procedures, they attained a level of learning above the ninetieth percentile. (Guskey, 1985).

Synthesis of Research on Empowerment of Teachers to Be Educational Leaders

Research literature revealed that when teachers were involved in the decision-making process concerning the goals and policies for curriculum, commitment for those decisions were high (Glickman, 1992; Kessler, 1992; Bergman, 1992). Also, the trust level for co-workers and building administrators was elevated; thus resulting in a collaborative effort within schools. This collaborative effort created a positive and collegial school climate. (Bergman, 1992; Kessler, 1992).

Kessler (1992), principal of a small high school in California, found that when teachers collaborated with each other, the communication was facilitated, the adversarial environment dissipated and teachers and principals could focus their attention on improvements in curriculum and school programs. Also in a warm and collegial environment, teachers began to feel positive about their school and these positive feelings extended to the community. Kessler explained how three years before implementing the shared decision-making model the community turned down a special local tax assessment for schools. However, after three years of implementing a shared decision-making model, the same measure passed by a two-thirds margin.

When teachers are empowered to make instructional decisions based on
research and knowledge about their students' learning styles, more students experience success at learning. Studies involving teachers using a variety of instructional methods to match students' learning styles showed improvement in student outcomes (Marshall, 1990; Curry, 1990; Kelly, 1990; Blair & Judah, 1990). In Monroe County Community Schools, and Bloomington, Indiana, teachers found that when they designed a curriculum based on students' learning styles, students' motivation was enhanced, thus causing students to learn the concepts quicker and retain them longer (Blair & Judah, 1990).

Kelly (1990), a university law professor, discovered that when she changed the curriculum from a predominantly abstract and objective curriculum to an experiential and practical application of theory curriculum, her instructional techniques matched the majority of students' learning styles. As a result, more students experienced success in law school. She explains that "most of our law school careers were spent reflecting on abstract legal principles, and we were never given the opportunity to 'complete the cycle' and use our knowledge to solve concrete, real-world problems" (Kelly, 1990, p. 40).

In five separate studies, subjects who were instructed with methods that matched their learning styles demonstrated higher achievement than those whose environments did not match their learning styles (Konstadt, 1965; Douglas and Kahle, 1978; Walters & Sieben, 1974; Distefano, 1970; Packer & Bain, 1978). The Learning Styles Network Newsletter has consistently published research reports citing data in which teachers, by teaching to learning style, have helped their students increase their academic achievement (Keefe & Ferrell, 1990).

Synthesis of Research on the Instruction of Critical Thinking Skills

HOTS (Higher Order Thinking Skills) is a thinking skills program for Chapter 1 students in grades 4-6. The purpose of the program is to increase conceptual skills by providing learning experiences in analyzing, predicting,
inferring and evaluating (Pogrow, 1988). Chapter 1 is a classification for students who are labeled as "at-risk" or students working below the expected level of other students their age. In 1987, Chapter 1 students in six schools produced average gains of 13 percentile in reading and 17 percentile in math after using the HOTS program (Pogrow, 1988).

Chapter 1 Hispanic students, participating in the HOTS program, did better in both reading and math than Chapter 1 Hispanic students in conventional programs. In one school, 10 percent of the Chapter 1 students in the HOTS program were re-diagnosed and placed in gifted programs after a year. In another school, 36 percent of the Chapter 1 students in the HOTS program made the honor roll. In all three schools, where thinking skills were measured, HOTS students did better than control students (Pogrow, 1988).

Not only was there an increase in achievement scores, but closely related to the increase of achievement scores was an increase in self-confidence as students experienced success at completing complex tasks. "The sense of accomplishment that comes from routinely mastering what, at first, seemed incomprehensible is a far more powerful learning experience than a teacher's telling students how smart they are and giving them simple tasks" (Pogrow, 1988, p. 80).

Summary

The discussion of the literature revealed that by following Bloom's Mastery of Learning process, the implementation process for the TIC facilitates the natural flow of (1) the empowerment of teachers to become educational leaders, (2) the instruction of critical thinking skills and, (3) the motivation of students to be self-directed and assume responsibility for their own learning. Also, the discussion of the implementation process of the TIC revealed that the three outcomes enhance the educational quality of the Focus 2000 Program by
facilitating the learning process.

When teachers are free to make critical decisions concerning their classroom curriculum, they become empowered as educational leaders. By designing their classroom curriculum to meet the needs and learning styles of their students, teachers positively influence the learning rate of the students. Thus, students begin to have more successful learning experiences.

As students begin to experience success at learning, they become collaborators with their teachers concerning learning activities and other curriculum decisions. Thus, students become self-directed and assume responsibility for their own learning.

Discussion of the literature also revealed that people are born to learn because of the brain's innate characteristic of searching for meaning. Teachers can exploit this characteristic with the use of critical thinking skills to help students go beyond learning "natural" knowledge to learning "expertise" knowledge. Expertise knowledge is knowledge that can be appropriately transferred and applied (Caine & Caine, 1991).

The discussion of the literature verifies there is a relationship between the three outcomes of a TIC with facilitating the learning process. Therefore, according to this study's definition of quality, the three outcomes of the TIC do enhance the quality of education.

As a result of this premise, the investigation for this research study examines the extent to which the three outcomes are present in a TIC and compares that extent with the extent which the three outcomes are present in a non-TIC. The hypotheses that guided the research were that each of the three outcomes are present more for a TIC teacher than a non-TIC teacher.

In Chapter III, the methodology for comparing the extent to which the three outcomes are present in a TIC with a non-TIC is discussed.
CHAPTER III

METHODOLOGY

Overview of Chapter

Chapter III consists of a description of: (a) an overview the research design, (b) the population and the sample, (c) the research environment, (d) the instrument and procedures for collecting data, and (e) the procedures that were used to analyze the data. The problem inherent in this study asks the questions, do the outcomes of a TIC enhance the quality of education and to what extent are these outcomes present in a TIC? These three outcomes are: (1) the instruction of critical thinking skills, (2) the motivation of students to be self-directed and to assume responsibility for their learning, and (3) the empowerment of teachers to be educational leaders.

The discussions that occurred in the review of literature section supported that these outcomes enhance the quality of education by facilitating the learning process for students. The research described the extent that these outcomes are present in the TIC from the perspectives of teachers who are using the curriculum. Also, the research compared the presence of these outcomes in the TIC with their presence in a non-TIC.

An Overview of the Research Design

A survey research describing the extent that the three outcomes are present in a TIC from teachers’ perspectives was used for this investigation. The research also compared the perspectives of teachers who are using a TIC most of the time with teachers who are using the TIC sometimes and with teachers who are using a non-TIC. Thus, the study consisted of three groups of independent

35

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samples. The presence or absence of a TIC was the independent variable and the three outcomes were the dependent variables. These outcomes were (1) critical thinking skills, (2) student self-motivation, and (3) teacher empowerment. The following were the three conceptual hypotheses for the research:

1. TIC teachers use activities that facilitate the instruction of critical thinking skills more times than non-TIC teachers.

2. TIC teachers use activities that facilitate students to assume responsibility for their learning and be self-directed more times than the non-TIC teachers.

3. TIC teachers experience activities that facilitate teacher empowerment more times than the non-TIC teachers.

The Research Environment

The research occurred within three Michigan school districts. The following information concerning the demographics of the school districts was obtained from classroom observations, interviews with teachers and administrators, and information from the 1990 Census report. Two of the school districts, District A and District B, are located in small rural communities. The third school district, District C, is located in a small urban community.

School District A

According to the 1990 census, District A serves a community of approximately 6,624. The median family income of this school district is approximately $20,000. Approximately 15% of the people are below the 125% poverty level. (See Table 4.) The major industry is farming.

The school district has 109 teachers and approximately 1,850 students. (See Table 4.) Since a private university is located within this school district, approximately 5% of the enrollment consists of students from other countries.
Table 4
Demographics for the Three School Districts

<table>
<thead>
<tr>
<th>Demographics</th>
<th>School Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Community Population</td>
<td>*6624</td>
</tr>
<tr>
<td>Predominant minority %</td>
<td>*5% Black</td>
</tr>
<tr>
<td>Industry</td>
<td>*Farming</td>
</tr>
<tr>
<td>Median Income</td>
<td>*$20,000.00</td>
</tr>
<tr>
<td>Below 125% Poverty</td>
<td>*15%</td>
</tr>
<tr>
<td>Student Count</td>
<td>*1850</td>
</tr>
<tr>
<td>Minority Student Count</td>
<td>*14% Afro-American</td>
</tr>
<tr>
<td>Mills</td>
<td>*25.1</td>
</tr>
</tbody>
</table>

*Approximate

Many of these foreign students have a difficult time adapting to the school environment. As a result, they experience social and academic problems.

Hispanic students from migrant homes are also approximately 5% of the enrollment. Being migrant students, they attend school for only a few months of the year. As a result of their situation, they also experience difficulty being successful at school.

According to the principal of the Focus 2000 school, one of the main goals for the TIC is to help the school environment become more relevant and appropriate for both groups of students. The teachers in this school district have been in The Focus 2000 Program for two years.
School District B

According to the 1990 census, District B serves a community with a population of approximately 10,614. The predominant minority group is Hispanic. They are approximately 4% of the population. (See Table 4.) The median income per family of this school district is approximately $20,000. Approximately 11% of the people are below 125% of the poverty level. (See Table 4.) The major industry is farming.

The school district has a student enrollment of 2,471. The teacher population is 106. Although there are very few Afro-Americans in District A's community, the student enrollment is approximately 14% Afro-American. A court ordered desegregation plan involving District B and District C is the reason for the high Afro-American student population.

Due to the court order, District B has experienced an influx of Afro-American students from District C. Many of these students were not academically or socially successful. As a result, they were being placed in special education classes. With the growth of special education classes, school administrators began looking for programs that could help these students be successful within the regular classrooms.

Also, many of the Hispanic students, 11% of District B's student population, were not academically or socially successful at school. As children of migrant workers, they spend only a few months of the year in school. Therefore, one of the major goals of the TIC in this district is to help the school environment become more relevant and appropriate for the Afro-American students and for the Hispanic students within the regular classrooms.

Both of the K-5 schools, as well as the middle school and the high school in this district, have some teachers using the TIC. These teachers have been involved the Focus 2000 program for five years.
School District C

The third school district, School District C, is located within an urban community. This urban community is besieged by many of the problems that are common to poverty-stricken and predominantly Afro-American urban communities. The community has a high unemployment rate of approximately 20% (Michigan Employment Security Commission, 1990). The community also has a high crime index rate of 71,025 for every 100,000 people (Michigan State Police, 1990). According to the 1990 census, District C serves a community with a population of approximately 47,497. This population includes an approximate 48% Afro-American minority. (See Table 4.) Also, according to the 1990 census, approximately 62% of the families are one-parent families. The median income per family is approximately $10,000. Approximately 30% of the people are below the 125% poverty level. The industries are farming and manufacturing. (See Table 4.)

The student population is 6,787 and the teacher population is 375. Although District C's community population is predominantly Caucasian, the student population is 90% Afro-American. Eleven years ago, the district experienced "white flight." Many Caucasian families transferred their children from the school district. These transfers were precipitated by a school desegregation court order. Some Caucasian families moved from the community, but many stayed and enrolled their children in private and parochial schools.

The drop-out rate for this school district is approximately 50%. Also, the school district is categorized by the State Department of Education as a low-achieving school district. One of the major goals for the TIC in this school district is to provide a positive and an appropriate school climate in order for the students to remain in school and to experience academic and social success. Only two schools are in the Focus 2000 Program. The teachers in these schools
have been in the Focus 2000 Program for two years.

Economic Conditions

All three school districts are experiencing financial woes. With the rising cost for salaries, materials and maintenance, all the school districts need more money. District A has 25.1 operating mills, District B has 27.7 operating mills and District C has 32.7 operating mills. (See Table 4.) The voters in School District A failed to pass a renewal millage. As a result, the school district had to suspend bus transportation half-way through the year. All the districts have not been able to pass much needed additional millages. Furthermore, School District C failed to override the Headley Amendment.

The Population and Sampling Design

The research population consisted of K-8 teachers who were in the Focus 2000 Program. The unit of analysis for this study was a group of K-8 teachers from the state of Michigan. Some of the teachers were in the Focus 2000 Program and some of the teachers were not in the Focus 2000 Program. The teachers who were in the Focus 2000 Program were identified through a list of 92 Focus 2000 teachers in grades K-8 from a county in the state of Michigan. All 92 teachers were used for the study.

A comparison group of 92 teachers who were not in the Focus 2000 Program was matched to the 92 Focus 2000 teachers by grade and by school district. However, the results of the questionnaires revealed that some teachers who were not in the Focus 2000 program were also using the TIC. As a result, three groups were used, instead of two, for comparison of the three outcomes.

Instrumentation

The researcher developed the questionnaire that was used to collect the
responses from the sample groups. The purpose of the instrument was to measure the extent by which the three outcomes were present in the TIC and non-TIC curriculums. The researcher constructed a Likert-like scale that consists of five criterions for each item. The criteria are (1) always, (2) most of the time, (3) sometimes, (4) seldom, and (5) never.

The Method for Developing the Instrument

The following method was used for developing the questions for the questionnaire:

1. A pool of questions for each of the three outcomes was developed from information collected from the research literature, classroom observations and teacher interviews. (See Appendices A, B and C for the pool of questions.)

2. A panel of seven judges was used to refine the instrument in order to make it practical for administering. The judges were requested to pick only ten questions from the pool of questions that they thought best defined each outcome. (See Appendices A, B and C for the pool of questions.) The judges were Focus 2000 teachers and an evaluator. Two judges represented early elementary teachers. Two judges represented intermediate elementary teachers. Two judges represented junior high school teachers and one judge was an evaluation person. The teachers selected the questions that were relevant to them as classroom teacher. The evaluation person used the definition of terms and the information from the literature section of the study to select questions. Only the questions that had 4 or more judges' votes were used.

All of the questions, except two, were close-ended. Two questions were open-ended. The close-ended questions facilitated the data-analysis process. The open-ended questions gave respondents a chance to contribute information about each outcome which was not solicited but was helpful in understanding the data. Responses from open-ended questions were also used to direct further research.
concerning the TIC. (See Appendix D for a list of the final selection of questions which were used to measure each of the three outcomes for the questionnaire.)

3. The instrument was edited by four people for clarity.

4. Finally, the instrument was pre-tested by eight teachers, four Focus 2000 teachers and four non-Focus 2000 teachers. More editing occurred after the pre-testing.

5. A cover letter was developed to accompany the instrument. A copy of the questionnaire has been placed in Appendix D.

Establishing Reliability for the Instrument

Procuring input from representatives of the sample groups assured that appropriate questions, for which respondents should know the answers, were used. This process established some reliability for the instrument. Babbie (1990), in his book entitled Survey Research Methods, wrote that a researcher can create a reliable instrument by asking "people only questions they are likely to know the answers to, ask about things relevant to them, and be clear in what you are asking" (p. 133).

Other methods for assuring reliability for the instrument were having the instrument proof-read and pre-tested for clarity. After the pre-testing process, confusing and ambiguous items were corrected or eliminated.

Establishing Validity for the Instrument

A panel of judges, who were expert in the TIC, was deployed to refine the instrument. This process assured content validity and face validity. The questions that were generated from the literature and used to develop the instrument established construct validity. The literature identified other theoretical constructs which are related to the three outcomes (Babbie, 1991, p. 132). (See Appendix D for a list of the final selection of constructs and
activities which were used to define each of the outcomes for the questionnaire.)

Method for Collecting Data

When a team of observers visited The Focus 2000 schools to generate additional questions for the questionnaire, they asked the teachers to complete a questionnaire about the TIC. All the teachers readily agreed. Once the research was approved by the Human Subject Institutional Review Board of Western Michigan University (see Appendix E), the questionnaires were delivered to the schools. The individual schools' secretaries distributed them.

The questionnaires were accompanied by a cover letter and a stamped addressed envelope in which the respondents returned their responses to the researcher. (See Appendix D.) The instruments were pre-coded to identify schools. All care was taken to assure the anonymity of the respondents. A week later, reminders were sent to teachers.

Analysis of Data

To facilitate the analysis process, the teachers' responses to the questions for each outcome were numerically coded according to the following codes: (1) 41 - Never, (2) 42 - Seldom, (3) 43 Sometimes, (4) 44 - Most of the time, and (5) 45 - Always. These codes were treated as interval scales of measurement and were manipulated to get a mean, percent and standard deviation for each item on the questionnaire. The mean was used to operationalize the three hypotheses. The following were the three operational hypotheses:

1. TIC teachers will have greater mean scores for activities that facilitate the instruction of critical thinking skills than non-TIC teachers.

2. TIC teachers will have greater mean scores for activities that facilitate students to be self-motivated than non-TIC teachers.

3. TIC teachers will have greater mean scores for activities that facilitate
teacher empowerment than non-TIC teacher.

The One-Way Anova statistical test was used to investigate the three independent samples (the two groups of teachers using various dimensions of the TIC and the one group of teachers not using the TIC) for differences between the mean scores. Following the One-Way Anova statistical test, the post hoc Scheffe method was used to show where the differences occurred between the groups. Three null hypotheses of "no differences" were tested at alpha level .05. The three null hypotheses for the study were:

1. There are no differences in mean scores between TIC teachers and non-TIC teachers for activities that facilitate the instruction of critical thinking skills.
2. There are no differences in mean scores between TIC teachers and non-TIC teachers for activities that facilitate students to be self-motivated.
3. There are no differences in mean scores between TIC teachers and non-TIC teachers for activities that facilitate teacher empowerment.

Summary

In summary, the purpose of the research was to compare the extent of the three outcomes that were present in a TIC teacher with the extent to which the three outcomes were present in a non-TIC teacher. Since the curriculum for the Focus 2000 Program is a thematic integrated curriculum (TIC), a questionnaire was distributed to 92 Focus 2000 teachers and 92 non-Focus 2000 teachers. The purpose of this questionnaire was to measure the extent of the three outcomes. The three outcomes were: (1) the instruction of critical thinking skills, (2) the motivation of students to be self-directed and assume responsibility for their own learning, and (3) the empowerment of teachers to become educational leaders. The conjecture was made that the three outcomes are present more in TIC teachers than in non-TIC teachers.
In Chapter IV, the descriptive data for each of the outcomes will be presented and the inferential data for each null hypothesis are analyzed. Also, the qualitative data from the two open-ended questions are discussed.
CHAPTER IV

DATA ANALYSIS

Overview of Chapter

In Chapter IV, the results of the data analysis are reported and explained for the three null hypotheses that were tested in comparing the extent of the three outcomes in a thematic integrated curriculum (TIC) with a non-thematic integrated curriculum (non-TIC). The organization of the chapter will be as follows: (a) a brief summary of the research design, (b) a demographic profile of the samples, (c) an explanation of the descriptive data, (d) an explanation of the hypotheses tests, and (e) a summary of the teachers' responses to the two-open ended questions.

Brief Summary of the Research Design

One purpose of the research was to investigate the extent to which a TIC facilitates the presence of three outcomes. These three outcomes are (1) the instruction of critical thinking skills, (2) student motivation to assume responsibility for their learning and be self-directed, and (3) the empowerment of teachers to be educational leaders in the classroom. Furthermore, the purpose of the research was to compare the extent of the three outcomes in a TIC with the extent of the three outcomes in a non-TIC. The absence or presence of the TIC was the independent variable of the research study and the three outcomes were the dependent variables of the research. The mean was used to operationalize the hypotheses.

Ninety-two Focus 2000 teachers and 92 non-Focus 2000 teachers received a questionnaire to complete. The 92 non-Focus 2000 teachers were a comparison
group who were matched to the Focus 2000 teachers by same school district and by the same grade. The questionnaire solicited information concerning the three outcomes of the TIC. The purpose of the questionnaire was to compare the extent of the three dependent variables being present in a TIC with the extent of the three dependent variables being present in a non-TIC from teachers' perspectives.

Of the 92 questionnaires distributed to Focus 2000 teachers and of the 92 questionnaires distributed to non-Focus 2000 teachers, 122 questionnaires were returned - 84 (91%) from Focus 2000 teachers and 38 (41%) from non-Focus 2000 teachers. (See Table 5.) Analysis of the questionnaires revealed that 27 (71%) of the non-Focus 2000 teachers had training in the TIC and 23 (85%) of these teachers were implementing some dimensions of the TIC in their classrooms. (See Table 6.)

The analysis of the total returned questionnaires also revealed that: (a) 66 (55%) teachers use the TIC most of the time, (b) 38 (31%) teachers use the TIC sometimes and (c) 18 (15%) teachers use the non-TIC. (See Table 5.) Therefore, the goal of the researcher to compare the Focus 2000 teachers with the non-Focus 2000 teachers concerning the TIC was altered. Hence, three groups were used to compare the TIC for the research. These groups were: (1) Group 1 - 66 teachers who use the TIC most of the time; (2) Group 2 - 38 teachers who use the TIC sometimes; and (3) Group 3 - 18 teachers who use a non-TIC. If teachers integrated the majority of the subjects for instructional purposes the majority of the school year, then they indicated using the TIC most of the time. If teachers integrated only two or three subjects for instructional purposes for part of the school year, then they indicated that they use the TIC sometimes.

Demographic Profile of the Samples

Of the 122 questionnaires that were returned, 104 (85%) teachers used
Table 5
Distribution of Teachers by Group

<table>
<thead>
<tr>
<th>Group</th>
<th>Focus N</th>
<th>%</th>
<th>Non-Focus N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Use TIC Most time</td>
<td>51</td>
<td>61</td>
<td>15</td>
<td>40</td>
</tr>
<tr>
<td>2 Use TIC Sometimes</td>
<td>28</td>
<td>33</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>3 Never use TIC</td>
<td>5</td>
<td>6</td>
<td>13</td>
<td>34</td>
</tr>
<tr>
<td>TOTAL</td>
<td>84</td>
<td>100</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 6
Distribution of Teachers by Group Who Have Received Training

<table>
<thead>
<tr>
<th>Group</th>
<th>Focus N</th>
<th>%</th>
<th>Non-Focus N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Use TIC Most time</td>
<td>47</td>
<td>63</td>
<td>15</td>
<td>56</td>
</tr>
<tr>
<td>2 Use TIC Sometimes</td>
<td>24</td>
<td>32</td>
<td>8</td>
<td>30</td>
</tr>
<tr>
<td>3 Never use TIC</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>TOTAL</td>
<td>75</td>
<td>100</td>
<td>27</td>
<td>100</td>
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</table>

some dimensions of the TIC and 18 (15%) teachers did not use the TIC. Table 9 shows that the majority of the teachers in Group 1 (51 or 61%) and the majority of the teachers in Group 2 (28 or 34%) taught in a Focus 2000 school. The other 15 (41%) teachers in Group 1 and 10 (26%) teachers in Group 2 taught in a non-Focus 2000 school. The reverse is depicted for Group 3. The majority (13 or 72%) of the teachers in Group 3 taught in a non-Focus 2000 school.
The majority (89 or 73%) of the total respondents taught in grades K-6. These grades are traditionally known as elementary. Thirty-three teachers of the total respondents taught in grades 7-8. These grades are traditionally known as junior high school. (See Appendix F.)

Table 6 shows that of the 102 teachers trained in the TIC, 94 (92%) of them were implementing some dimensions (Group 1 and Group 2) of the TIC in the classroom. Of the 66 teachers in Group 1, 62 (94%) teachers had received training. Of the 38 teachers in Group 2, 32 (84%) had received training. Although the teachers in Group 3 were not using the TIC, 8 (44%) had received training and 10 (56%) had not. Four of these teachers were in the Focus 2000 schools and 4 were in the non-Focus 2000 schools.

Table 7 shows the amount of teaching experience for each of the groups. Group 1 was comprised of: (a) 26 (39%) teachers who had taught in the 1-10 years category, (b) 16 (24%) teachers who had taught in the 11-20 years category and (c) 24 (36%) teachers who had taught in the over 20 years category. (See Table 7.) Group 2 was comprised of: (a) 11 (29%) teachers who had taught in the 1-10 years category, (b) 17 (45%) teachers who had taught in the 11-20 years category, and (c) 10 (26%) teachers who had taught in the over 20 years category. (See Table 7.) Group 3 was comprised of: (a) 4 (22%) teachers who had taught in the 1-10 years category, (b) 6 (33%) teachers who had taught in the 11-20 years category, and (c) 8 (44%) teachers who had taught in the over 20 years category. (See Table 7.)

The general profiles of the majority of teachers in Groups 1 and 2, were that they (a) worked in a Focus 2000 school, (b) taught in elementary schools, and (c) had received some training in the TIC. The general profile of the majority of teachers in Group 3 was that the teachers (a) worked in a non-Focus 2000 school, (b) taught in junior high schools, and (c) had not received training.
Table 7
Distribution of Teachers By Group on Teaching Experience

<table>
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<tr>
<th>Years of Teaching Experience</th>
<th>Focus</th>
<th>Non Focus</th>
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</thead>
<tbody>
<tr>
<td>1-10</td>
<td>21</td>
<td>11</td>
</tr>
<tr>
<td>11-20</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>&gt;20</td>
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</table>

1. Use TIC Most of the time
2. Use TIC Sometimes
3. Never use TIC

in the TIC. The teaching experience varied within each of the groups.

Analysis of the Descriptive Data for Critical Thinking Skills

Descriptive Summary for Total Respondents on Critical Thinking Skills, n=122

Table 8 depicts summary results of the descriptive data for the three groups concerning the critical thinking skills dependent variable. The table reveals that the "sometimes" criterion, with 35%, had the greatest average percent of respondents. The average mean score was 43.29.

Table 8, also, shows that the three items with the greatest mean scores were (1) #6 (involved in classroom discussion) with a mean score of 44.15, (2) #2 (involved in hands-on activities in the classroom) with a mean score of 43.83, and (3) #8 (working together to solve problems) with a mean score of 43.80. The items with the three lowest mean scores were (1) #1 (involved in games that require students to use strategy) with a mean score of 42.42, (2) #3 (involved in writing book reports) with a mean score of 42.48, and (3) #9 (involved in science experimentations) with a mean score of 42.75.
Table 8
Activities That Facilitate Critical Thinking Skills:
Descriptive Data for Total Respondents, n = 122

<table>
<thead>
<tr>
<th>Activities</th>
<th>Always (45)</th>
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<th>Sometimes (43)</th>
<th>Seldom (42)</th>
<th>Never (41)</th>
<th>% Freq</th>
<th>% Freq</th>
<th>% Freq</th>
<th>% Freq</th>
<th>% Freq</th>
<th>Freq % Freq</th>
<th>Mean</th>
<th>s.d.</th>
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<td>59</td>
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<td>.82</td>
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<td>8</td>
<td>12</td>
<td>15</td>
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<td>1.07</td>
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</table>

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Descriptive Summary for Group #1 on Critical Thinking Skills, n=66

For Group 1, Table 9 shows that the greatest average percent of 31% was in the "most of the time" criterion. The average mean was 43.46. Table 9 also shows that the three items with the greatest mean scores for Group 1 were (1) #6 with a mean score of 44.27, (2) #2 with a mean score of 44.11, and (3) #8 with a mean score of 44.07. The three items with the lowest mean scores for Group 1 were (1) #1 with a mean score of 42.38, (2) #3 with a mean score of 42.64, and (3) #12 (simulating real life activities) with a mean score of 43.43.

Descriptive Summary for Group #2 on Critical Thinking Skills, n=38

For Group 2, Table 10 depicts that the greatest average percent of 42% was in the "sometimes" criterion. The average mean score was 43.05. Table 10 also shows that the three items with the greatest mean scores for Group 2 were (1) #6 with a mean score of 44.08, (2) #2 with a mean score of 43.63, and (3) #8 with a mean score of 43.61. The three items with the lowest mean scores for Group 2 were (1) #3 with a mean score of 42.29, (2) #11 (evaluating each other's work) with a mean score of 42.63, and (3) #1 with a mean score of 42.61.

Descriptive Summary for Group #3 on Critical Thinking Skills, n=18

For Group 3, Table 11 shows that the greatest average percent of 42% was in the "sometimes" criterion. The average mean score was 42.75. Table 11 also shows that the three items with the greatest mean scores for Group 3 were (1) #6 with a mean score of 43.83, (2) #2 and #7 with the same mean score of 43.22, and (3) #8 with a mean score of 43.17. The three items with the lowest mean scores for Group 3 were for items (1) #9 (involved in science experimentations) with a mean score of 41.72, (2) #12 with a mean score of 42.17, and (3) #1 with a mean score of 42.22.
## Table 9
### Activities That Facilitate Critical Thinking Skills:
#### Descriptive Data for Group #1, n=66

<table>
<thead>
<tr>
<th>Activities</th>
<th>Always (45)</th>
<th>Most of the time (44)</th>
<th>Sometimes (43)</th>
<th>Seldom (42)</th>
<th>Never (41)</th>
<th>Mean</th>
<th>s.d.</th>
</tr>
</thead>
<tbody>
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<td>Games that i*ann i r o require</td>
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</table>
## Table 11

Activities That Facilitate Critical Thinking Skills: Descriptive Data for Group #3, n=18

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<th>Activities</th>
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<td><strong>17</strong></td>
<td><strong>42</strong></td>
<td><strong>15</strong></td>
<td><strong>19</strong></td>
<td><strong>42.75</strong></td>
<td>1</td>
</tr>
</tbody>
</table>

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Analysis of Inferential Data - Critical Thinking Skills:
Results of Hypothesis #1

One-Way Analysis of Variance was used to test for statistical differences between the three independent groups (teachers using various dimensions of the TIC and teachers not using the TIC). Table 12 depicts the F ratio and the F probability for the items measuring critical thinking skills. The results were considered significant when the F probability was less than or equal to .05.

The results of the One-Way Analysis of Variance Test for the first null hypothesis of no differences in mean scores between the three groups on critical thinking skills showed significant differences for items #2, #4, #5, #7, #8, #9, #10, #11, #12 and #13. (See Table 12.) Therefore, it was concluded, for the first null hypothesis of no differences in mean scores between the three groups on critical thinking skills, that there are differences whenever the alpha is equal or less than .05. As a result, it was also concluded that the TIC teachers use activities to facilitate critical thinking skills more times than the non-TIC teachers whenever the alpha is equal or less than .05.

The post hoc Scheffe method was used to show between which groups the significant differences occurred. Table 13 depicts between which groups the significant differences occurred for critical thinking skills.

Analysis of Descriptive Data for Students' Self-Motivation

Descriptive Summary for Total Respondents on Students' Self-Motivation, n=122

Table 14 depicts the summary results of the descriptive data for the three groups concerning students' self-motivation. The table reveals that the "most of the time" criterion, with 38%, had the greatest average percent of respondents. The average mean score was 43.75.
Table 12
One-Way Analysis of Variance Between the 3 Groups on Critical Thinking Skills

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>F Ratio</th>
<th>F Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>121</td>
<td></td>
</tr>
</tbody>
</table>

Activities

- Games that require strategy: 0.96, 0.38
- Hands-on activities: 11.49, 0.00*
- Book reports: 1.15, 0.32
- Creative writing: 5.76, 0.00*
- Creative problem solving: 9.75, 0.00*
- Classroom discussion: 2.16, 0.11
- Defending answers: 4.02, 0.02*
- Working together: 10.97, 0.00*
- Science experiments: 10.74, 0.00*
- Evaluating own work: 5.53, 0.00
- Evaluating other's work: 6.19, 0.00*
- Simulating real-life: 5.02, 0.00*
- Oral presentation: 7.42, 0.00*

*Significant at the .05 level

Group 1 - Use of TIC Most of the Time
Group 2 - Use of TIC Sometimes
Group 3 - Never use TIC

Table 14, also, shows that the three items with the greatest mean scores were (1) #2 (student aware of daily activities) with a mean score of 44.41, (2)#13 (teacher praise each student) with a mean score of 44.19, and (3) #5 (students exposed to their work on display) with a mean score of 44.11. The three items

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Table 13
Differences Between Groups Identified by the Scheffe Procedure on Critical Thinking Skills

<table>
<thead>
<tr>
<th>Activities</th>
<th>Group 1 with Group 2</th>
<th>Group 1 with Group 3</th>
<th>Group 2 with Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Hands on Activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Creative Writing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Creative Problem Solving</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Defending Answers</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>8. Working Together</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>9. Science Experiments</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>10 Evaluating own Work</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>11 Evaluating Other's Work</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>12 Simulating Real-life</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>13. Oral Presentations</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Group 1 - Use TIC Most of the time
Group 2 - Use TIC Sometimes
Group 3 - Never use TIC

with the lowest mean scores were (1) #10 (students involved in choosing the broad theme) with a mean score of 42.33, (2) #6 (students expressing when work is ready to be graded) with a mean score of 43.18, and (3) #11 (teachers plan fun
## Table 14

Activities That Facilitate Students' Self-Motivation: Descriptive Data for Total Respondents, $n=122$

<table>
<thead>
<tr>
<th>Activities</th>
<th>Always (45)</th>
<th>Most of the time (44)</th>
<th>Sometimes (43)</th>
<th>Seldom (42)</th>
<th>Never (41)</th>
<th>%</th>
<th>Freq</th>
<th>%</th>
<th>Freq</th>
<th>%</th>
<th>Freq</th>
<th>%</th>
<th>Freq</th>
<th>Mean</th>
<th>s.d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative learning groups</td>
<td>21</td>
<td>26</td>
<td>39</td>
<td>48</td>
<td></td>
<td>31</td>
<td>38</td>
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<td>.96</td>
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<tr>
<td>Daily activities</td>
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<td>7</td>
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<td>1</td>
<td>44.41</td>
<td>.75</td>
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<td></td>
</tr>
<tr>
<td>Aware of objectives</td>
<td>34</td>
<td>41</td>
<td>43</td>
<td>53</td>
<td></td>
<td>18</td>
<td>22</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>44.04</td>
<td>.87</td>
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<td></td>
</tr>
<tr>
<td>Hands-on projects</td>
<td>24</td>
<td>29</td>
<td>39</td>
<td>48</td>
<td></td>
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<td>1</td>
<td>2</td>
<td>2</td>
<td>43.83</td>
<td>.86</td>
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</tr>
<tr>
<td>Work on display</td>
<td>39</td>
<td>48</td>
<td>35</td>
<td>43</td>
<td></td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>44.11</td>
<td>.85</td>
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<td></td>
</tr>
<tr>
<td>Expressing completion of work</td>
<td>12</td>
<td>15</td>
<td>29</td>
<td>34</td>
<td></td>
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<td>18</td>
<td>10</td>
<td>12</td>
<td>43.18</td>
<td>1.14</td>
<td></td>
<td></td>
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<tr>
<td>Being creative</td>
<td>19</td>
<td>23</td>
<td>38</td>
<td>46</td>
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<td>36</td>
<td>44</td>
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<td>8</td>
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<td>1</td>
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<td>.89</td>
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<tr>
<td>Variety of instruction</td>
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<td>54</td>
<td>66</td>
<td></td>
<td>16</td>
<td>20</td>
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<td>1</td>
<td>2</td>
<td>2</td>
<td>44.04</td>
<td>.79</td>
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<td></td>
</tr>
<tr>
<td>Variety of assessments</td>
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<td>32</td>
<td>35</td>
<td>43</td>
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<td>Choosing theme</td>
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<td>42.33</td>
<td>1.11</td>
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<td></td>
</tr>
<tr>
<td>Plan fun &amp; learning</td>
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<td>12</td>
<td>38</td>
<td>46</td>
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<td>43</td>
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<td>43.46</td>
<td>.85</td>
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<tr>
<td>Special attention to students</td>
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<td>32</td>
<td>48</td>
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<td>23</td>
<td>28</td>
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<td>3</td>
<td>1</td>
<td>1</td>
<td>43.96</td>
<td>.07</td>
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<tr>
<td>Praise</td>
<td>39</td>
<td>48</td>
<td>48</td>
<td>58</td>
<td></td>
<td>9</td>
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<td>2</td>
<td>44.19</td>
<td>.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AVERAGE</strong></td>
<td>26</td>
<td>38</td>
<td>26</td>
<td>6</td>
<td></td>
<td>4</td>
<td>4</td>
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<td>4</td>
<td>43.75</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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with learning) with a mean score of 43.46.

Descriptive Summary for Group #1 on Students' Self-Motivation, n = 66

For Group 1, Table 15 shows that the greatest average percent of 41% was in the "most of the time" criterion. (See Table 15.) The average mean was 43.93. Table 19 shows also that the three items with the greatest mean scores for Group 1 were (1) #2 with a mean score of 44.53, (2) #5 with a mean score of 44.41, and (3) #7 (students allowed to be creative) with a mean score of 43.89. The three items with the lowest mean scores for Group 1 were (1) #10 with a mean score of 42.50, (2) #11 with a mean score of 43.66, and (3) #6 with a mean score of 43.35.

Descriptive Summary for Group #2 on Students' Self-Motivation, n = 38

For Group 2, Table 16 depicts that the greatest average percent of 36% was in the "most of the time" criterion. The average mean for Group 2 was 43.53. Table 16 also shows that the three items with the greatest mean scores were (1) #2 with a mean score of 44.34, (2) #13 with a mean score of 44.24 and (3) #5 with a mean score of 43.11. The items with the three lowest mean scores for Group 2 were (1) #9 (exposed to other assessments) with a mean score of 42.37, (2) #6 with a mean score of 43.11, and (3) #11 with a mean score of 43.37.

Descriptive Summary for Group #3 on Students' Self-Motivation, n = 18

For Group 3, Table 17 shows that the greatest average percent of 33% was in the "sometimes" criterion. The average mean score was 43.37. Table 17 also shows that the three items with the greatest mean scores for Group 3 were (1) #2 with a mean score of 44.16, (2) #12 (teacher provide special attention for each student) and #13 with a mean score of 44.11, and (3) #8 (exposed to a variety of
Table 15
Activities That Facilitate Students' Self-Motivation:
Descriptive Data for Group #1, n=66

<table>
<thead>
<tr>
<th>Activities</th>
<th>Always (45)</th>
<th>Most of the time (44)</th>
<th>Sometimes (43)</th>
<th>Seldom (42)</th>
<th>Never (41)</th>
<th>Mean</th>
<th>s.d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative learning groups</td>
<td>29 19</td>
<td>48 32</td>
<td>21 14</td>
<td>2 1</td>
<td>0 0</td>
<td>44.05</td>
<td>.75</td>
</tr>
<tr>
<td>Daily activities</td>
<td>59 39</td>
<td>36 24</td>
<td>3 2</td>
<td>2 1</td>
<td>0 0</td>
<td>44.53</td>
<td>.64</td>
</tr>
<tr>
<td>Aware of objectives</td>
<td>36 24</td>
<td>45 30</td>
<td>15 10</td>
<td>3 2</td>
<td>0 0</td>
<td>44.15</td>
<td>.78</td>
</tr>
<tr>
<td>Hands-on projects</td>
<td>32 21</td>
<td>44 29</td>
<td>24 16</td>
<td>0 0</td>
<td>0 0</td>
<td>44.08</td>
<td>.75</td>
</tr>
<tr>
<td>Work on display</td>
<td>53 35</td>
<td>35 23</td>
<td>12 8</td>
<td>0 0</td>
<td>0 0</td>
<td>44.41</td>
<td>.70</td>
</tr>
<tr>
<td>Expressing completion of work</td>
<td>17 11</td>
<td>29 19</td>
<td>35 23</td>
<td>12</td>
<td>8 5</td>
<td>43.35</td>
<td>1.13</td>
</tr>
<tr>
<td>Being creative</td>
<td>24 16</td>
<td>45 30</td>
<td>26 17</td>
<td>5 3</td>
<td>0 0</td>
<td>43.89</td>
<td>.83</td>
</tr>
<tr>
<td>Variety of instruction</td>
<td>33 22</td>
<td>56 37</td>
<td>9 6</td>
<td>0 0</td>
<td>2 1</td>
<td>44.20</td>
<td>.73</td>
</tr>
<tr>
<td>Variety of assessments</td>
<td>39 26</td>
<td>24 16</td>
<td>42 16</td>
<td>0 0</td>
<td>0 0</td>
<td>44.15</td>
<td>.78</td>
</tr>
<tr>
<td>Choosing theme</td>
<td>6 4</td>
<td>30 20</td>
<td>30 20</td>
<td>29</td>
<td>19 23</td>
<td>42.50</td>
<td>1.15</td>
</tr>
<tr>
<td>Plan fun &amp; learning</td>
<td>15 10</td>
<td>35 23</td>
<td>35 23</td>
<td>5 3</td>
<td>2 1</td>
<td>43.66</td>
<td>.84</td>
</tr>
<tr>
<td>Special attention to students</td>
<td>26 17</td>
<td>53 35</td>
<td>17 11</td>
<td>5 3</td>
<td>0 0</td>
<td>44.00</td>
<td>.78</td>
</tr>
<tr>
<td>Praise</td>
<td>42 28</td>
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<td>8 5</td>
<td>3 2</td>
<td>3 2</td>
<td>44.18</td>
<td>.96</td>
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<tr>
<td>AVERAGE</td>
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<td>21 4</td>
<td>3</td>
<td></td>
<td></td>
<td>43.93</td>
<td></td>
</tr>
</tbody>
</table>

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Table 16
Activities That Facilitate Students' Self-Motivation: Descriptive Data for Group #2, n=38

<table>
<thead>
<tr>
<th>Activities</th>
<th>Always (45)</th>
<th>Most of the time (44)</th>
<th>Sometimes (43)</th>
<th>Seldom (42)</th>
<th>Never (41)</th>
<th>% Freq</th>
<th>% Freq</th>
<th>% Freq</th>
<th>Mean</th>
<th>s.d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative learning groups</td>
<td>13 5</td>
<td>37 14</td>
<td>45 17 5</td>
<td>2 0 0</td>
<td>43.58</td>
<td>.79</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily activities</td>
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<td>45 17</td>
<td>11 4 0</td>
<td>0 0 0</td>
<td>44.34</td>
<td>.67</td>
<td></td>
<td></td>
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</tr>
<tr>
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<td>47 18</td>
<td>24 9 0</td>
<td>0 0 0</td>
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<td>.73</td>
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<tr>
<td>Hands-on projects</td>
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<td>34 13</td>
<td>47 18 3</td>
<td>1 0 0</td>
<td>43.63</td>
<td>.79</td>
<td></td>
<td></td>
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</tr>
<tr>
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<td>42 16</td>
<td>32 12 0</td>
<td>0 0 0</td>
<td>43.94</td>
<td>.77</td>
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<td>Expressing completion of work</td>
<td>11 4</td>
<td>34 13</td>
<td>24 9 18 7</td>
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<tr>
<td>Being creative</td>
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<td>29 11</td>
<td>47 18 11 4</td>
<td>0 0 0</td>
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<td>.86</td>
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<td>37 14</td>
<td>42 16 11 4</td>
<td>3 1</td>
<td>42.37</td>
<td>.88</td>
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</tr>
<tr>
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<td>5 2</td>
<td>26 10 34 13</td>
<td>32 12</td>
<td>42.13</td>
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<tr>
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<td>32 12 58 22</td>
<td>5 2</td>
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<tr>
<td>Special attention to students</td>
<td>21 8</td>
<td>39 15</td>
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<td>0 0 0</td>
<td>43.82</td>
<td>.77</td>
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<td>61 23</td>
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<td>0 0 0</td>
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<td>.59</td>
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<tr>
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<td>31 11</td>
<td>4</td>
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<td>43.53</td>
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Table 17
Activities That Facilitate Students' Self-Motivation:
Descriptive Data for Group #3, n=18

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<tr>
<th>Activities</th>
<th>Always (45)</th>
<th>Most of the time (44)</th>
<th>Sometimes (43)</th>
<th>Seldom (42)</th>
<th>Never (41)</th>
<th>Freq %</th>
<th>Freq</th>
<th>Mean</th>
<th>s.d.</th>
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<td>38</td>
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<td>Aware of objectives</td>
<td>33</td>
<td>6</td>
<td>17</td>
<td>3</td>
<td>17</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>43.67</td>
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<tr>
<td>Hands-on projects</td>
<td>11</td>
<td>2</td>
<td>44</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>2</td>
<td>43.33</td>
</tr>
<tr>
<td>Work on display</td>
<td>17</td>
<td>3</td>
<td>50</td>
<td>9</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>43.39</td>
</tr>
<tr>
<td>Expressing completion of work</td>
<td>0</td>
<td>0</td>
<td>61</td>
<td>11</td>
<td>17</td>
<td>3</td>
<td>11</td>
<td>2</td>
<td>42.72</td>
</tr>
<tr>
<td>Being creative</td>
<td>11</td>
<td>2</td>
<td>50</td>
<td>9</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>43.33</td>
</tr>
<tr>
<td>Variety of instruction</td>
<td>22</td>
<td>4</td>
<td>11</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>2</td>
<td>43.88</td>
</tr>
<tr>
<td>Variety of assessments</td>
<td>11</td>
<td>2</td>
<td>44</td>
<td>8</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>43.44</td>
</tr>
<tr>
<td>Choosing theme</td>
<td>5</td>
<td>1</td>
<td>28</td>
<td>5</td>
<td>33</td>
<td>6</td>
<td>33</td>
<td>6</td>
<td>42.11</td>
</tr>
<tr>
<td>Plan fun &amp; learning</td>
<td>0</td>
<td>0</td>
<td>44</td>
<td>8</td>
<td>17</td>
<td>3</td>
<td>11</td>
<td>2</td>
<td>42.89</td>
</tr>
<tr>
<td>Special attention to students</td>
<td>38</td>
<td>7</td>
<td>11</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>44.11</td>
</tr>
<tr>
<td>Praise</td>
<td>44</td>
<td>8</td>
<td>17</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>44.11</td>
</tr>
<tr>
<td>AVERAGE</td>
<td>20</td>
<td>26</td>
<td>33</td>
<td>9</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>43.37</td>
</tr>
</tbody>
</table>

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instructional methods) with a mean score of 43.88. The three items with the lowest scores for Group 3 were (1) #10 with a mean score of 42.11, (2) #1 and item #2 with a mean score 42.72, and (3) #8 with a mean score of 43.88.

Analysis of Inferential Data - Students' Self-Motivation:
Results of Hypothesis #2

One-Way Analysis of Variance was used to test for statistical differences between the three independent groups (teachers using various dimensions of the TIC and teachers not using the TIC). Table 18, depicts the F ratio and the F probability for the items measuring students' self-motivation. The results were considered significant when the F probability was less than or equal to .05.

The results of the One-Way Analysis of Variance Test for the second null hypothesis of no differences in mean scores between the three groups on students' self-motivation showed significant differences for items #1, #4, #5, #7, #8, #9, and #11. (See Table 18). Therefore, it was concluded, for the second null hypothesis of no differences in mean scores between the three groups on students' self-motivation, that there are differences whenever the alpha is equal or less than .05. As a result, it was concluded that the TIC teachers use activities to facilitate the students' self-motivation more times than the non-TIC teachers whenever the alpha is equal or less than .05.

The post hoc Scheffe method was used to show between which groups the significant differences occurred. Table 19 depicts between which groups the significant differences occurred for students' self-motivation.

Analysis of Descriptive Data for Teacher Empowerment

Descriptive Summary for the Total Respondents on Teacher Empowerment, n = 122

Table 20 depicts that the summary results of the descriptive data for the
Table 18

One-way Analysis of Variance Between the 3 Groups on Students' Self-Motivation

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>F Ratio</th>
<th>F Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>121</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activities</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative learning groups</td>
<td>17.39</td>
<td>.00*</td>
</tr>
<tr>
<td>Daily activities</td>
<td>1.93</td>
<td>.15</td>
</tr>
<tr>
<td>Aware of objectives</td>
<td>2.24</td>
<td>.11</td>
</tr>
<tr>
<td>Hands-on projects</td>
<td>7.43</td>
<td>.00*</td>
</tr>
<tr>
<td>Work on display</td>
<td>13.42</td>
<td>.00*</td>
</tr>
<tr>
<td>Expressing work is ready</td>
<td>2.32</td>
<td>.10</td>
</tr>
<tr>
<td>Allowed to be creative</td>
<td>4.91</td>
<td>.00*</td>
</tr>
<tr>
<td>Variety instruction</td>
<td>2.94</td>
<td>.05*</td>
</tr>
<tr>
<td>Variety of assessment</td>
<td>11.87</td>
<td>.00*</td>
</tr>
<tr>
<td>Choosing broad theme</td>
<td>1.75</td>
<td>.17</td>
</tr>
<tr>
<td>Plan fun &amp; learning</td>
<td>6.76</td>
<td>.00*</td>
</tr>
<tr>
<td>Special attention to students</td>
<td>.98</td>
<td>.38</td>
</tr>
<tr>
<td>Praise students</td>
<td>.13</td>
<td>.88</td>
</tr>
</tbody>
</table>

*Significant at the .05 level

Group 1 - Use of TIC Most of the time
Group 2 - Use of TIC Sometimes
Group 3 - Never use TIC

three groups concerning teacher empowerment. The table reveals that the greatest average percent of 35% was in the "always" criterion. The average mean was 43.61.
Table 19
Differences Between Groups Identified by the Scheffe Procedure on Students' Self-Motivation

<table>
<thead>
<tr>
<th>Activities</th>
<th>Group 1 with Group 2</th>
<th>Group 1 with Group 3</th>
<th>Group 2 with Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cooperative Learning Groups</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4. Hands-on Projects</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5. Work on Display</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>7. Allowed to be Creative</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Variety of Instruction</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>9. Variety of Assessments</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>11. Plan fun with Learning</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Group 1 - Use TIC Most of the time
Group 2 - Use TIC Sometimes
Group 3 - Never use TIC

Table 20, also, shows that the three items with the greatest mean scores were (1) #6 (involved in the school improvement) with a mean score of 44.16, (2) #10 (feel that you can be creative) with a mean score of 44.09, and (3) #9 (feel that you make an important contribution) and #2 (involved in selecting supplemental materials) with a mean score of 43.98. The items with the three lowest mean scores were (1) #1 (involved in the staffing process) with a mean score of 41.71, (2) #7 (involved in school governance) with a mean score of 43.22, and (3) #3 (consulted about the final discipline) with a mean score of
Table 20

Activities That Facilitate Teacher Empowerment:
Descriptive Data for Total Respondents, n=122

<table>
<thead>
<tr>
<th>Activities</th>
<th>Always (45)</th>
<th>Most of the time (44)</th>
<th>Sometimes (43)</th>
<th>Seldom (42)</th>
<th>Never (41)</th>
<th>Mean</th>
<th>s.d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffing process</td>
<td>7 (8)</td>
<td>7 (9)</td>
<td>7 (9)</td>
<td>11 (13)</td>
<td>68 (83)</td>
<td>41.71</td>
<td>1.20</td>
</tr>
<tr>
<td>Selecting supplemental activities</td>
<td>43 (52)</td>
<td>27 (35)</td>
<td>18 (22)</td>
<td>5 (6)</td>
<td>6 (7)</td>
<td>43.98</td>
<td>1.15</td>
</tr>
<tr>
<td>Consulted about discipline</td>
<td>12 (15)</td>
<td>32 (39)</td>
<td>33 (40)</td>
<td>13 (16)</td>
<td>10 (12)</td>
<td>43.24</td>
<td>1.14</td>
</tr>
<tr>
<td>Granted requests to Workshops</td>
<td>28 (34)</td>
<td>43 (52)</td>
<td>20 (24)</td>
<td>5 (6)</td>
<td>5 (6)</td>
<td>43.84</td>
<td>1.05</td>
</tr>
<tr>
<td>Textbook selection</td>
<td>35 (43)</td>
<td>26 (32)</td>
<td>22 (27)</td>
<td>6 (7)</td>
<td>11 (13)</td>
<td>43.70</td>
<td>1.30</td>
</tr>
<tr>
<td>School improvement plan</td>
<td>43 (52)</td>
<td>35 (43)</td>
<td>20 (24)</td>
<td>1 (1)</td>
<td>2 (2)</td>
<td>44.16</td>
<td>.88</td>
</tr>
<tr>
<td>School governance</td>
<td>16 (19)</td>
<td>30 (37)</td>
<td>25 (31)</td>
<td>18 (22)</td>
<td>11 (13)</td>
<td>43.22</td>
<td>1.22</td>
</tr>
<tr>
<td>Instruc-tional team</td>
<td>42 (51)</td>
<td>39 (47)</td>
<td>15 (18)</td>
<td>2 (3)</td>
<td>2 (3)</td>
<td>43.85</td>
<td>3.73</td>
</tr>
<tr>
<td>Important contribution</td>
<td>51 (62)</td>
<td>32 (39)</td>
<td>13 (16)</td>
<td>2 (2)</td>
<td>2 (3)</td>
<td>43.98</td>
<td>3.74</td>
</tr>
<tr>
<td>Can be creative</td>
<td>52 (64)</td>
<td>39 (47)</td>
<td>7 (8)</td>
<td>2 (2)</td>
<td>1 (1)</td>
<td>44.09</td>
<td>3.79</td>
</tr>
<tr>
<td>Share new ideas</td>
<td>57 (69)</td>
<td>24 (29)</td>
<td>10 (12)</td>
<td>5 (6)</td>
<td>5 (6)</td>
<td>43.95</td>
<td>3.78</td>
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<tr>
<td><strong>AVERAGE</strong></td>
<td><strong>35</strong></td>
<td><strong>30</strong></td>
<td><strong>17</strong></td>
<td><strong>6</strong></td>
<td><strong>11</strong></td>
<td><strong>43.61</strong></td>
<td></td>
</tr>
</tbody>
</table>
Descriptive Summary for Group #1 on Teacher Empowerment, n=66

For Group 1, Table 21 shows that the greatest average percent of 40% was in the "always" criterion. The average mean score was 43.63. Table 21 also shows that the items with the three greatest means for Group 1 are (1) #6 with a mean score of 44.36, (2) #10 with a mean score of 43.98, and (3) #4 (granted your request to attend workshops) with a mean score of 43.91. The three mean lowest scores were for (1) #1 with a mean score of 42.03, (2) #6 and #7 with a mean score of 43.36, and (3) #2 (involved in selecting supplemental materials) and #3 with a mean score of 43.44.

Descriptive Summary for Group #2 on Teacher Empowerment, n=38

For Group 2, Table 22 depicts that the greatest average percent of 32% was in the "most of the time" criterion. The average mean was 43.60. Table 22 also shows that the three items with the greatest mean scores for Group 2 were (1) #10 with a mean score of 44.29, (2) #9 with a mean score of 44.08, and (3) #11 (feel that you can share new ideas with the principal) with a mean score of 44.05. The three items with the lowest mean scores were (1) #1 with a mean score of 41.37, (2) #7 with a mean score of 43.24, and (c) #3 with a mean score of 43.34.

Descriptive Summary for Group #3 on Teacher Empowerment, n=18

For Group 3, Table 23 shows that the greatest average percent of 25% was tied in the "always" and "most of the time" criterions. The average mean was 43.27. Table 23 also shows that the three items with the greatest mean scores for Group 3 were (1) #11 with a mean score of 44.17, (2) #9 with a mean score of 44.11, and (3) #10 with a mean score of 44.11. The items with the three lowest
Table 21
Activities That Facilitate Teacher Empowerment:
Descriptive Data for Group #1, n=66

<table>
<thead>
<tr>
<th>Activities</th>
<th>Always (45)</th>
<th>Most of the time (44)</th>
<th>Sometimes (43)</th>
<th>Seldom (42)</th>
<th>Never (41)</th>
<th>Mean</th>
<th>s.d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffing process</td>
<td>6</td>
<td>4</td>
<td>14</td>
<td>9</td>
<td>55 36</td>
<td>42.03</td>
<td>1.34</td>
</tr>
<tr>
<td>Selecting supplemental activities</td>
<td>56</td>
<td>37</td>
<td>14</td>
<td>9</td>
<td>6 3 2</td>
<td>43.44</td>
<td>1.02</td>
</tr>
<tr>
<td>Consulted about discipline</td>
<td>14</td>
<td>9</td>
<td>41</td>
<td>27</td>
<td>27 18 12</td>
<td>43.44</td>
<td>1.07</td>
</tr>
<tr>
<td>Granted requests to Workshops</td>
<td>26</td>
<td>17</td>
<td>50</td>
<td>33</td>
<td>18 12 3 2 2</td>
<td>43.91</td>
<td>.96</td>
</tr>
<tr>
<td>Textbook selection</td>
<td>39</td>
<td>26</td>
<td>29</td>
<td>19</td>
<td>17 11 6 4 9</td>
<td>43.83</td>
<td>1.26</td>
</tr>
<tr>
<td>School improvement plan</td>
<td>50</td>
<td>33</td>
<td>36</td>
<td>24</td>
<td>14 9 0 0 0</td>
<td>44.36</td>
<td>.72</td>
</tr>
<tr>
<td>School governance</td>
<td>5</td>
<td>13</td>
<td>33</td>
<td>22</td>
<td>21 14 15 10</td>
<td>43.36</td>
<td>1.26</td>
</tr>
<tr>
<td>Instructional team</td>
<td>55</td>
<td>36</td>
<td>35</td>
<td>23</td>
<td>6 4 5 3 0 0</td>
<td>43.87</td>
<td>5.03</td>
</tr>
<tr>
<td>Important contribution</td>
<td>62</td>
<td>41</td>
<td>26</td>
<td>17</td>
<td>9 6 0 0 3 2</td>
<td>43.88</td>
<td>5.02</td>
</tr>
<tr>
<td>Can be creative</td>
<td>62</td>
<td>41</td>
<td>33</td>
<td>22</td>
<td>3 2 0 0 2 1</td>
<td>43.98</td>
<td>5.02</td>
</tr>
<tr>
<td>Share new ideas</td>
<td>65</td>
<td>43</td>
<td>18</td>
<td>12</td>
<td>9 6 8 5 0 0</td>
<td>43.83</td>
<td>5.06</td>
</tr>
<tr>
<td>AVERAGE</td>
<td>40</td>
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<td>13</td>
<td>6</td>
<td>8</td>
<td>43.63</td>
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</tr>
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</table>
Table 22
Activities That Facilitate Teacher Empowerment: Descriptive Data for Group #2, n=38

<table>
<thead>
<tr>
<th>Activities</th>
<th>Always</th>
<th>Most of the time</th>
<th>Sometimes</th>
<th>Seldom</th>
<th>Never</th>
<th>% Freq</th>
<th>% Freq</th>
<th>% Freq</th>
<th>% Freq</th>
<th>Mean</th>
<th>s.d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffing process</td>
<td>3 1</td>
<td>5 2</td>
<td>0 0</td>
<td>5 2</td>
<td>87 33</td>
<td>41.37</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selecting supplemental activities</td>
<td>29 11</td>
<td>29 11</td>
<td>37 14</td>
<td>0 0</td>
<td>5 2</td>
<td>43.82</td>
<td>.93</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consulted about discipline</td>
<td>16 6</td>
<td>26 10</td>
<td>39 15</td>
<td>13 5</td>
<td>5 2</td>
<td>43.34</td>
<td>1.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granted requests to workshops</td>
<td>29 11</td>
<td>39 15</td>
<td>21 8</td>
<td>5 2</td>
<td>5 2</td>
<td>43.82</td>
<td>1.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Textbook selection</td>
<td>29 11</td>
<td>32 12</td>
<td>32 12</td>
<td>0 0</td>
<td>8 3</td>
<td>43.74</td>
<td>1.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School improvement plan</td>
<td>39 15</td>
<td>29 11</td>
<td>26 10</td>
<td>3 1</td>
<td>3 1</td>
<td>44.00</td>
<td>1.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School governance</td>
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<td>32 12</td>
<td>37 14</td>
<td>13 5</td>
<td>8 3</td>
<td>43.24</td>
<td>1.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional team</td>
<td>26 10</td>
<td>45 17</td>
<td>24 9</td>
<td>3 1</td>
<td>3 1</td>
<td>43.89</td>
<td>.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Important contribution</td>
<td>37 14</td>
<td>39 15</td>
<td>18 7</td>
<td>5 2</td>
<td>0 0</td>
<td>44.08</td>
<td>.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can be creative</td>
<td>42 16</td>
<td>45 17</td>
<td>13 5</td>
<td>0 0</td>
<td>0 0</td>
<td>44.29</td>
<td>.69</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share new ideas</td>
<td>45 17</td>
<td>32 12</td>
<td>11 4</td>
<td>5 2</td>
<td>8 3</td>
<td>44.05</td>
<td>1.11</td>
<td></td>
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<td></td>
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<td>23 5</td>
<td>11 11</td>
<td></td>
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<td>43.60</td>
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</tbody>
</table>

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Table 23
Activities That Facilitate Teacher Empowerment:
Descriptive Data for Group #3, n=18

<table>
<thead>
<tr>
<th>Activities</th>
<th>Always (45)</th>
<th>Most of the time (44)</th>
<th>Sometimes (43)</th>
<th>Seldom (42)</th>
<th>Never (41)</th>
<th>Mean</th>
<th>s.d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffing process</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>2</td>
<td>11</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Selecting supplemental activities</td>
<td>22</td>
<td>4</td>
<td>27</td>
<td>5</td>
<td>11</td>
<td>2</td>
<td>43.11</td>
</tr>
<tr>
<td>Consulted about discipline</td>
<td>0</td>
<td>0</td>
<td>38</td>
<td>7</td>
<td>17</td>
<td>3</td>
<td>42.28</td>
</tr>
<tr>
<td>Granted requests to Workshops</td>
<td>33</td>
<td>6</td>
<td>22</td>
<td>4</td>
<td>22</td>
<td>4</td>
<td>43.61</td>
</tr>
<tr>
<td>Textbook selection</td>
<td>33</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>22</td>
<td>4</td>
<td>43.11</td>
</tr>
<tr>
<td>School improvement plan</td>
<td>22</td>
<td>4</td>
<td>27</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>43.78</td>
</tr>
<tr>
<td>School governance</td>
<td>11</td>
<td>2</td>
<td>17</td>
<td>3</td>
<td>38</td>
<td>7</td>
<td>42.67</td>
</tr>
<tr>
<td>Instructional team</td>
<td>27</td>
<td>5</td>
<td>27</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>43.89</td>
</tr>
<tr>
<td>Important contribution</td>
<td>38</td>
<td>7</td>
<td>17</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>44.11</td>
</tr>
<tr>
<td>Can be creative</td>
<td>38</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>44.06</td>
</tr>
<tr>
<td>Share new ideas</td>
<td>50</td>
<td>9</td>
<td>27</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>44.17</td>
</tr>
<tr>
<td>AVERAGE</td>
<td>25</td>
<td>25</td>
<td>19</td>
<td>13</td>
<td>17</td>
<td>17</td>
<td>43.27</td>
</tr>
</tbody>
</table>
mean scores were (1) #1 with a mean score of 41.28, (2) #3 with a mean score of 42.28, and (3) #7 with a mean score of 42.67.

Analysis of Inferential Data for Teacher Empowerment:
Results of Hypothesis #3

One-Way Analysis of Variance was used to test for statistical differences between the three independent groups (teachers using various dimensions of the TIC and teachers not using the TIC). Table 24 depicts the F ratio and the F probability for the items measuring teacher empowerment. The results were considered significant when the F probability was less than or equal to .05.

The results of the One-Way Analysis of Variance Test for the third null hypothesis of no differences in mean scores between the three groups on teacher empowerment showed significant differences for items #1, #2, #3, and #6. (See Table 24.) Therefore, it was concluded, for the third null hypothesis of no differences in mean scores between the three groups on teacher empowerment, that there are differences whenever the alpha is equal or less than .05. As a result, it was concluded that the TIC teachers experience activities that facilitate teacher empowerment more often than non-TIC teachers whenever the alpha is equal or less than .05.

The post hoc Scheffe method was used to show between which groups the significant differences occurred. Table 25 depicts between which groups the significant differences occurred for teacher empowerment.

A Summary of the Teachers' Responses to the First Open-Ended Question Concerning the Benefits of the TIC

The two open-ended questions were optional. In analyzing the open-ended questions, the responses were grouped into categories. A summary of the category is presented. Also, examples of some teachers' responses are quoted for each category.
Table 24
One-Way Analysis of Variance Between 3 Groups on Teacher Empowerment

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>F Ratio</th>
<th>F Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Within Groups</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>121</td>
<td></td>
</tr>
</tbody>
</table>

Activities

- Staffing process: 5.40, .00
- Selecting supplemental materials: 9.17, .00
- Consulted about discipline: 8.58, .00
- Granted request to attend workshops: .57, .56
- Textbook selection: 2.26, .10
- School improvement plan: 4.27, .02
- School governance: 2.35, .09
- Instructional materials: .00, .99
- Make important contribution: .04, .95
- Can be creative: .08, .92
- Feel you can share new ideas: .07, .93

*Significant at the .05 level

Group 1 - Use TIC Most of the time
Group 2 - Use TIC Sometimes
Group 3 - Never use TIC

The first question asked the respondents to "list at least three benefits of the TIC." Of the 122 responses that were returned, 75 (61%) teachers responded to the first question. (See Appendix G.)
Table 25
Differences Between Groups Identified by the Scheffe Procedure on Teacher Empowerment

<table>
<thead>
<tr>
<th>Activities</th>
<th>Group 1 with Group 2</th>
<th>Group 2 with Group 3</th>
<th>Group 2 with Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Staffing Process</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Selecting Supplemental Materials</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Consulted About Discipline</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4. School Improvement Plan</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Group 1 - Use TIC Most of the time
Group 2 - Use TIC Sometimes
Group 3 - Never use TIC

TIC Facilitates Students' Self-Motivation

Thirty-seven of the teachers indicated that the TIC helps students to be more self motivated. Students seemed motivated to learn because they had an input concerning the instructional materials and methods. The hands-on activities and the working together in groups seemed to make learning fun for students. Blending the arts, such as the visual arts, music, dance, and drama, into the academics also seemed to make learning fun. Adding enrichment to subjects seemed to heighten students' interest. Also, showing a relationship between what is learned in school to real-life seemed to help children be more interested in what they were learning. Examples of some teachers' responses indicating that students' self-motivation is a benefit of the TIC are listed below:
1. When TIC is done well, it excites students to learning. (004)
2. Students like hands-on. (007)
3. Foster students to take responsibility for themselves.
   Heightens self-esteem for students. (010)
   Creates an atmosphere of "we" as team - not traditional adversarial role
   of teacher student relationship. (010)
4. Student involvement in the instructional planning is more interesting. (025)
5. Students have a choice of activities that they enjoy. (032)
6. Some areas such as the arts can make other content areas more vital,
   exciting and interesting. (059)
7. Students are more positive about school. (069)

**TIC Facilitates Student Learning**

Fifty-eight comments indicated that the TIC seemed to facilitate the
learning process by helping students connect what they learned in school to
real-life situations. The learning process also seemed to be facilitated by teachers
varying their instructional methods to meet students' learning styles. The
different learning styles were not only addressed through varied instructional
methods, but also through different instructional resources. Teachers also
indicated that the technique of students working together seemed to facilitate the
learning process. Examples of some teachers' comments indicating that the TIC
facilitates student learning are as follows:

1. Students make connections between books and their own lives. (057)
2. Children are able to build effective connections in learning. (026)
3. All students can be more successful because of choices and inquiries
   written to suit various modalities and intelligences. Students see a connection
   between subjects. (042)
4. Better flow and continuity and connection of learning. (045)
5. Students have more communication with teachers. (085)
6. Students get a better picture of how math fits into the "big picture". (086)
7. Students use multi resources. (047)
8. Enable teachers to set up a brain compatible program to meet the needs of all students. (064)
9. Continued reinforcement of subjects being taught. (102)

**TIC Facilitates Critical Thinking Skills**

Twenty-four teachers indicated that the TIC facilitates the instruction of critical thinking skills by helping students see the connection of subjects. Also, students used critical thinking skills when they did hands-on projects and worked together in groups. As students applied what they had learned to simulated real-life situations, they were forced to use higher order thinking skills such as evaluation, synthesis, application, inductive and deductive reasoning. The TIC also fosters the imagination and helps students to be very creative. Examples of some teachers' responses indicating that the TIC facilitates the instruction of critical thinking skills are as follows:

1. Promotes higher level of thought. Learner sees how things interface. (011)
2. Students make connections between books and their own lives. (057)
3. Requires higher order thinking skills to overlap ideas in the curriculum. (063)
4. Helps in critical thinking. Helps analyze and story map. (081)
5. Students see relationships between one area and another. (059)
Thirty-six teachers indicated that the TIC facilitates activities which generate teacher empowerment and teacher motivation. Also, the TIC facilitates the instructional process by providing continuity of effort by providing opportunities for teachers to share and expand ideas through team planning.

Teachers also found that using the TIC made their job more fun and interesting as they used a variety of instructional styles and materials. As more students experienced success, teachers became more motivated to meet the different learning styles in their classrooms. With teachers and students collaborating on the instructional methods, the classroom was a pleasant place, not only for students, but also for the teachers.

However, the most important aspect of the TIC for teachers was the feeling of ownership in the curriculum. They felt free to make some decisions that seemed to facilitate the learning process. Examples of teachers' responses indicating that the TIC facilitates teacher empowerment are as follows:

1. Better organized. (003)
2. Teacher freedom to teach specialties. (008)
3. Empowerment of teachers. (009)
4. Creates an atmosphere of "we" as a team - not the traditional adversarial role of teacher and student. (010)
5. Less work when teaching because you become a manager. (019)
6. Exciting for teachers. Exciting for students. (035)
7. Better integration of subject matters. (045)

A Summary of the Teachers' Responses to the Second Open-Ended Question Concerning the Constraints of the TIC

Of the 122 responses that were returned, 80 (66%) teachers responded to the second question. The question asked the teachers to "list at least three
constraints of the TIC." (See Appendix H.)

Lack of Time

Thirty-nine teachers indicated that the time involved to successfully implement a TIC is enormous. The need for time seemed to be focused in the following areas: (a) time for planning - individual and team, (b) time to prepare instructional materials and arrange the classroom environment, (c) time to do research, (d) time to be creative and innovative, (e) time for reinforcing basic skills ideas, (f) there is not enough time to meet all the students' needs in the classroom, and (g) there is not enough time for teaching the basics. Below are examples of teachers' responses concerning lack of time:

1. It is difficult/time consuming to really discover and use the materials needed in depth. (004)
2. Requires a great deal of extra planning. (012)
3. Takes time to prepare material. (024)
4. Much planning (and hopefully release time is provided) is needed to implement a really (from scratch) curriculum that a TIC requires. Time is needed to do a good job. (046)
5. Teachers need to plan together quite a bit. Lots of planning time is needed. (051)
6. Timing the teaching of theme to maximize the learning potential. Time needed to change teaching style to adapt to the program. (052)
7. Not enough time to plan. It takes a lot of time to make it work as a team. (But I wouldn't have it any other way). (041)
8. Less individual planning time. (072)
9. It could take more research and time for teachers to develop it. (096)
10. Planning time to pull from many resources Spending too long on one theme and not finishing other curriculum. (058)
11. Lessons take longer but are remembered better. (063)

**TIC is Difficult to Implement and Takes Excessive Effort**

Twenty-eight responses indicated that trying to integrate all the subjects around a theme is, technically, a very difficult job. Some teachers felt that some themes were too broad. Other teachers felt that some themes were too narrow. Some teachers felt that to include a whole curriculum around a theme was simply impossible. Some themes were difficult to find materials for instruction.

When implementing a TIC, it is difficult to plan for teacher absenteeism and preparation of substitutes. Therefore, the continuity of instruction at times can be very fragile and difficult to maintain.

Some junior high teachers mentioned the difficulty of implementing a TIC within a rigid schedule, so often found at the junior high level. To implement a TIC successfully, flexibility is necessary. Also, some junior high teachers felt that much skill and effort are needed in order to implement a TIC with the various disciplines that must be taught at the junior high level. They expressed that it is extremely difficult to fulfill all the state and district curriculum requirements around a theme, while simultaneously integrating several subjects. Below are examples of teachers' responses concerning the difficulties implementing a TIC:

1. It gets confusing if you try to integrate everything. (014)
2. Lots of work. (025)
3. District sets all objectives. District makes timetables. District decides instructional materials. (026)
4. Hard to get started. (031)
5. Teachers need to be highly organized. (032)
6. Could be difficult for a sub who is not oriented to this approach. (034)
7. Everything must be developed by the teacher. (036)
8. Continuity between grades is difficult as skills are less tangibly measured. (046)

9. Absences hurt. (038)

10. Very difficult to cover all curriculum. (106)

11. Sometimes difficult to tie theme to all subject areas. (055)

12. Difficult to meet differences in learning style and learning speed. (061)

Lack of Money and Other Resources

Twenty-five teachers indicated that lack of money and other resources made implementing the TIC difficult. Accommodating the various students' learning styles and expanding the learning environment requires many various and unique resources. Some teachers felt that lack of money was the greatest barrier for the insufficient resources available. Some teachers felt that more people were needed to help in the classrooms. Some teachers felt that there did not seem to be enough money for field trips. For TIC to be successful, the school must have a variety of instructional materials. Below are examples of teachers' responses concerning lack of money and other resources:

1. Lack of money for materials. (013)

2. Materials hard to find unless theme is chosen carefully. (023)

3. Lack of materials to use. (027)

4. There is a need for plenty of support material. (035)

5. Not enough resources, particularly art. (040)

6. Not enough money for materials yet a big push to always make things. Many times we're expected to purchase things on our own. Not enough books/materials at early grades. (068)

7. Need more help in the classroom. (084)

8. Materials are sometime hard to find. (087)

9. Funding for field trips and speakers - little to none. (037)
Lack of Instruction of Basic Skills and an Assessment of Basic Skills

Twelve teachers were concerned about insufficient instruction of basic skills because of the effort to integrate all the subjects around a theme. Not having a curriculum guide for the integration process, teachers feared that they were leaving out necessary skills for each grade level. Some teachers indicated that an assessment instrument is needed that periodically measures whether the basic skills are being taught. Teachers also feared that students in a TIC will not be able to pass the district and state objective tests because the instruction is not aligned with these tests. Below are examples of teachers' responses to the lack of basic instruction:

1. Teachers must know what the curriculum says so that they won't lose sight of skills needed by students. (006)
2. Checks and balances insure skills are being taught. (008)
3. Some students really need to be "pulled out" and be worked with. This program makes that extremely difficult. However, it is worth it. (010)
4. Not as successful in a low track program as it would be in a heterogeneous classroom. (086)
5. Unless extra time is spent on standardized test preparation, students do not have the exposure to do well on some objectives (ex. isolated word sounds). (069)

Other Comments Concerning the Constraints of the Program

There were nine comments concerning the problems with interpersonal relationships in some teaming of teachers. There were nine comments concerning the lack of student motivation to do well because in the TIC, failing grades are not given. Also, teachers felt that some students do not do their full share of work in the cooperative groups. Five comments dealt with teachers' concerns about the negative perspectives that parents, other teachers, and community
people have of the program. Below are examples of teachers' responses to these miscellaneous comments:

1. Homeroom teachers chooses theme that other members may not like it. (005)

2. Teachers have to team with poor team members, unprofessional co-teachers, unprepared and unskilled. (011)

3. Cooperative learners my not always do their part in projects. (005)

4. Students tend to socialize in groups. Students do not budget and manage their time well. Students wait to the last minute to turn in assignments. (047)

5. The community has difficulty adjusting to a less ordered structured cut-and-dried learning scheme afraid something important is being missed. (004)

6. Parents still value paper and pencil test. (039)

Summary

In summary, the results of the descriptive data showed the extent to which the three outcomes are present in a TIC. The average mean scores for Groups 1 and 2 revealed, that from teachers' perspectives, activities that facilitate critical thinking skills are present sometimes in a TIC. The average mean scores for Groups 1 and 2 revealed, that from teachers' perspectives, activities that facilitate students' self-motivation are present in the TIC most of the time. The average mean scores for Groups 1 and 2 revealed, that from teachers' perspectives, activities that facilitate teacher empowerment are present most of the time.

The hypothesis testing for this research was for three independent samples for the mean at alpha level .05. The three null hypotheses of "no differences" in mean scores between the 3 groups were rejected. Therefore, the three conceptual hypotheses that the three outcomes are present more in a TIC than a non-TIC were accepted at .05 alpha level.
Summary of the teachers' comments revealed, that although the three outcomes seem to facilitate the students' learning process, there are several negative issues concerning the TIC that need to be addressed. Lack of planning time for teachers, lack of adequate resources for instruction, and lack of assistance for teachers are important issues that cannot be ignored.

In Chapter V, a summary of the purpose and problem of the study and a summary of the literature review are presented. Also, interpretations of the results of the data analysis are discussed. Furthermore, the limitations of the study and the significance of the study are discussed. Finally, recommendations for future research studies are suggested.
CHAPTER V

SUMMARY AND RECOMMENDATIONS

Overview of the Chapter

Chapter V is a summary of the research study. The problem and purpose of the study are reviewed. Also, the verifications of the literature section, the results of the hypotheses testings and a summary of the qualitative data are reviewed. The implications that the results may have for the educational process are discussed. The limitations of the research are delineated. Finally, recommendations for future study are suggested.

A Summary of the Problem and the Purpose of the Study

The research study was conducted to describe how a thematic integrated curriculum (TIC) can enhance the quality of the educational process. The problem inherent in the study was, does the TIC of the Focus 2000 Program improve the quality of education? Since the publication of a Nation At Risk (Commission on Excellence In Education, 1984), that documented the decline in the quality of the country's education, many educational institutions have instituted programs and plans that concentrate on improving the quality of education. One such program is the Focus 2000 Program, which is being implemented in some Michigan school districts. The Focus 2000 Program restructures the present educational system by changing the traditional roles of the student, teacher and curriculum. This study examined Focus 2000’s TIC.

The purpose of the study was to describe how a TIC enhances the quality of education by examining the three main outcomes of a TIC. The three main outcomes are: (1) the instruction of critical thinking skills, (2) the motivation of
students to be self-directed and assume responsibility for their own learning, and (3) the empowerment of teachers to become educational leaders. For this study, the process of enhancing the quality of education is defined by the extent to which the three outcomes facilitate the learning process. The underlying assumption of the study is that the more the three outcomes are used in the learning process, the better is the quality of education.

Educational literature and research were used to verify the fact that each of the outcomes did facilitate the learning process. Once it was proven that the three outcomes do facilitate the learning process, then descriptive data was generated to measure the extent that each outcome was present in a TIC and non-TIC. Inferential data was generated to compare the extent of each outcome in a TIC with a non-TIC.

A Summary of the Literature Review, the Results of the Data Analysis and a Summary of the Qualitative Data

Literature Review Concerning Critical Thinking Skills, Students' Self-Motivation and Teacher Empowerment

The literature section established a relationship between each of the three outcomes with facilitating the learning process. For this study, enhancing the quality of education is defined by the facilitation of the learning process; therefore, it was necessary to relate the three outcomes with facilitating the learning process.

When teachers are free to consider research, their students' needs and their learning styles in designing their classroom curriculum, they become empowered as educational leaders and the students experience success (Bloom, 1971; Anderson, 1973; Hunter, 1979; Kolb, 1984; McCarthy, 1990; Glasser, 1992). Once students experience success at learning, they become highly motivated to continue learning (Bloom, 1971 & Anderson, 1973).
Furthermore, the literature section on the function of the brain verified the fact, that people are driven to make sense of their environment (Caine & Caine, 1991). Searching for meaning is an innate function of the brain (Caine & Caine, 1991). Teachers can exploit this characteristic with the use of critical thinking skills. Critical thinking skills help students to appropriately apply their learning and to transfer their learning from the classroom to real life situations (Bloom, 1965). Critical thinking skills also help students to connect knowledge gained in one environment with knowledge gained in another environment (Lipman, 1988). The use of critical thinking skills makes learning more meaningful and relevant. When learning is relevant and purposeful, it is stored in the long-term memory system and can be readily recalled and applied when needed (O'Keefe & Nadel, 1978).

Results of the Hypotheses' Tests Concerning Critical Thinking Skills, Students' Self-Motivation and Teacher Empowerment

Analysis of the descriptive data revealed the extent to which each of the outcomes are present in a TIC (Groups 1 and 2) and a non-TIC (Group 3). Analysis of the inferential data revealed the significant differences between the three groups on the presence of the three outcomes in each group. The codes assigned to the criteria were: (1) 41 - Never, (2) 42 - Seldom, (3) 43 - Sometimes, (4) 44 - Most of the time, and (5) 45 - Always. The teachers were divided according to the following dimensions: (a) teachers in Group 1 used the TIC most of the time; (b) teachers in Group 2 used the TIC sometimes; and (c) teachers in Group 3 did not use the TIC.

The average mean scores for Group 1 and Group 2 revealed that activities facilitating critical thinking skills were present sometimes in the TIC. (See Tables 9 & 10.) The average mean score for Group 3 revealed that the activities facilitating critical thinking skills were seldom present in a non-TIC. (See Table 11.)
The results of the inferential data revealed that the hypothesis concerning TIC teachers used of activities that facilitated critical thinking skills more often than non-TIC teachers. (See Table 12.) Teachers in Group 1 use hands on activities and creative writing activities more often than teachers in Group 3. (See Table 13.) Teachers in Group 1 also involved students in creative problem solving, defending their answers, working together in groups, performing science experiments, evaluating their own work and evaluating each other's work more often than teachers in Group 3. (See Table 13.)

The average mean score for Group 1 revealed that activities which facilitated students' self-motivation were present approximately most of the time. (See Table 15.) The average mean scores for Group 2 and Group 3 revealed that activities which facilitated students' self-motivation were present sometimes. (See Tables 16 & 17.)

The results of the inferential data revealed that the TIC teachers in Group 1 used activities that facilitated students' self-motivation more often than the non-TIC teachers in Group 3. (See Table 18.) The TIC teachers in Group 1 involved their students in cooperative learning activities and hands-on projects more often than the non-TIC teachers in Group 3. (See Table 19.) The TIC teachers in Group 1 (a) displayed their students' work, (b) planned fun such as games and contests in the development of learning activities, (c) encouraged their students to be creative in completing their assignments, (d) used a variety of instructional methods to meet the various learning styles within the classroom, and (e) exposed their students to a variety of assessment methods more often than the non-TIC teachers. (See Table 19.)

The average mean scores for Group 1 and Group 2 revealed that activities empowering teachers to be educational leaders were present approximately most of the time (See Tables 21 & 22.) The average mean score for Group 3 revealed that activities empowering teachers to be educational leaders were present
sometimes. (See Table 23.)

The results of the inferential data revealed that the TIC teachers experienced activities that facilitated teacher empowerment more often than the non-TIC teachers. (See Table 24.) The TIC teachers in Group 1 were involved in selecting supplemental materials and selecting new instructional staff more often than the non-TIC teachers in Group 3. The TIC teachers in Group 1 were consulted about discipline measures for their students more often than the non-TIC teachers in Group 3. The TIC teachers in Group 1 were involved in developing school improvement plans more often than non-TIC teachers in Group 3. (See Table 25.)

Results of the Qualitative Data Collected From Teachers

Of the 122 total respondents, 75 teachers responded to the first open-ended question concerning the benefits of a TIC. Analysis of the teachers' responses to the first open-ended question revealed that the benefits of a TIC are that it: (a) facilitates students' self-motivation, (b) facilitates student learning, (c) facilitates the instruction of critical thinking skills, (d) facilitates teacher empowerment, (e) facilitates teacher motivation, and (f) facilitates instruction.

Of the 122 total respondents, 80 teachers responded to the second open-ended question concerning the constraints of a TIC. Analysis of the teachers' responses to the second open-ended question revealed that the constraints of a TIC are: (a) lack of time for planning and executing a successful TIC, (b) difficulty in the implementation process and the excessive effort needed for implementation, (c) lack of money and other resources for successful implementation of a TIC, (d) insufficient instruction of the basic skills and a lack of an assessment tool for measuring students on the basic skills, (e) problems with interpersonal relationships among teacher teams, (f) lack of students' self-motivation to accomplish tasks, and (g) negative perspectives of the program.
by parents and other stake-holders.

Limitations of the Study

One limitation of the study is that the research was confined to one county within Michigan. Therefore, when generalizing the results of the study beyond this county, special attention should be given to the description of the research environment and to the demographic profiles of the samples. A second limitation to be considered is that only the perspectives of teachers were considered in assessing the extent to which the three outcomes are present in the TIC. This limitation has impact on the objectivity of the results.

Implications for the Educational Process

Despite the serious constraints that the teachers delineated concerning the TIC, many of them continue to use the TIC because it seemed to (a) help students to be successful academically, (b) cause the classroom environment to be less structured and more pleasant for students and teacher, and (c) bring meaning to the teaching and learning processes. Teachers, who had been in Focus 2000 Program but opted to leave the program, still used dimensions of the TIC. The researcher was amazed at the number of teachers who were using the TIC and were not in a building where the Focus 2000 Program was being implemented.

The constraints which the teachers mentioned were many and serious. The lack of time, the lack of money and other resources, and the excessive effort that teachers expended to implement the TIC within their classrooms are vital issues which need to be addressed if the TIC is going to continue successfully. With so much teacher enthusiasm for the TIC, educational leaders and other stakeholders should work with their school staffs in order to facilitate a TIC or a similar curriculum.

The TIC or a similar curriculum changes the "face" of education.
completely. The traditional classroom, where the teacher is responsible for dispensing the knowledge for one subject at a time while maintaining a structured and passive class behind closed doors, seems to be slowly changing. Once, the most important goal for schools was the accumulation of knowledge. Little thought was given to whether the students would need to use the knowledge or whether the students enjoyed school. However, in our technological society, many things have changed. Society's expectations for schools have changed. Now, teachers are expected to teach students to think and be creative. School personnel are expected to feed hungry children, protect children from child abuse, instruct children on the prevention of serious diseases, instruct social skills and provide day care services.

While society's expectations for schools have changed and expanded, the "face" of the school has changed very little. A visit to your community 75 years ago would reflect that many changes have taken place. Cars have replaced the horses and buggies. Large industrial factories and technological businesses have replaced the small town shops. Super markets and shopping malls have replaced the small country stores. Although the school buildings are larger than the one-room school house, the "face" of what occurs inside the building is the same. Classrooms should change from containing inactive learners to classrooms of active learners. Teachers no longer should be responsible for telling students everything. They need to become guides to help students discover knowledge. Classrooms should be busy, active laboratories where children are simulating real life activities.

Therefore, it is not surprising that the Commission on Excellence in Education found a decline in the quality of education. The country's educational process has not kept in step with the changes in society. If some of the negative aspects of a TIC are eliminated, a TIC or a similar curriculum may help to bring the schools into the 21st century.
Today, it is impossible to accumulate all the necessary knowledge that one should have because knowledge develops rapidly. Not only is knowledge developing rapidly, but it is also changing rapidly. What was true today, might be proven inaccurate tomorrow. Also, the accumulation of knowledge is not more vital than students' enjoyment while accumulating the knowledge. If students are not enjoying school or if school does not seem relevant to them, they seem to get little from the "schooling" process. Therefore, if the quality of education is going to improve, enjoyment, satisfaction and relevancy must be included in the curriculum development (Glasser, 1992).

Recommendations for Further Study

In the continuing process of improving the quality of education, other studies can be done that examine the relationship between the (a) TIC and student self-esteem, (b) TIC and student achievement, (c) TIC and teacher self-efficacy, (d) TIC and job satisfaction, and (e) TIC and students' social behavior. Lezotte (1992), in his book on quality education, points out that research has shown that these variables are important to enhancing the quality of education. Also, the sample group can be expanded to include students, administrators, parents and other education stakeholders' perspectives.

Summary

In summary, the three conceptual hypotheses concerning the presence of the three outcomes being in TIC teachers more than in non-TIC teachers were accepted at alpha level .05. Therefore, the three outcomes of (1) the instruction of critical thinking skills, (2) the self-motivation of students, and (3) the empowerment of teachers are present more in Focus 2000's TIC than in a non-TIC. The literature verified that these three outcomes facilitate the learning process, therefore Focus 2000's TIC does enhance the quality of education.
Appendix A

Pool of Questions Generated From the Literature
Critical Thinking Skills

Research literature reveals that educational quality can be enhanced by students employing critical thinking skills to transfer the use of their knowledge from the classroom environment to solving real-life problems (Bloom, 1956; Glasser, 1991; Demming; Guskey, 1985; Lipman, 1988). In crossing the arbitrary boundary lines around the subject areas, teachers may have to contrive a classroom environment that provides meaningful learning experiences and/or immerse the learners in meaningful real-life experiences. Such learning activities would include more than just listening to the teacher, taking notes and memorizing facts for a test. In addition to these activities, students also would be involved in doing projects and experiments that demonstrate their understanding of information. They would be involved in activities such as dramatizing, creating solutions, questioning, interviewing, collaborating, debating, leading and other activities that simulate real-life experiences. Such activities require students to apply their learning, use deductive and inductive reasoning, analyze, synthesize, and evaluate.

With these activities in mind, the following are questions that can be used to assess the extent to which critical thinking skills are present in the thematic integrated curriculum (TIC) of Focus 2000 Program:

Questions Concerning Critical Thinking Skills

To what extent are students involved:

1. in hands-on activities?
2. in working together to solve problems?
3. in role-play
4. in dramatic presentations
5. in science experimentations
6. in debates
7. in preparing class presentations and demonstrations
8. in classical literature
9. in planning learning activities for the class
10. in interviewing
11. in with community help projects
12. in evaluating their own work
13. in evaluating each other's work
14. in simulating real-life activities such as voting, space survival, courtroom scenarios, etc.

Motivation of Students to be Self-Directed and Assume Responsibility for Their Learning

Research literature (O'Keefe and Nadel, 1978) concerning the function of the brain reveals that people are born learners. The brain continually searches for meaning to help people function within their environment. In fact, the brain is driven to find meaning for the complex and novelty (O'Keefe & Nadel, 1978; & Caine & Caine, 1991). Therefore, if students are acquiring information that has personal meaning for them, they will be intrinsically motivated to learn that information. Also, if students are involved in complex activities that are new and different, the desire to learn will be heightened.

Furthermore, when students are involved in meaningful activities, recall and transference of information occur naturally. Recall and transference of learning facilitate the learning process and cause students to experience success at learning. Bloom (1968) and Guskey (1985) observed, in the implementation of
the Mastery Learning Model, that once students begin to experience success in their learning, they become highly motivated to continue learning.

Also, research literature on learning styles reveal, that when teachers matched their instructional styles to students' learning styles, students have a better opportunity to be successful at learning. Research conducted by Jung (1926 & 1971), Meyers (1962), and Kolb (1976) purports, that because the brain is used in feeling, as well as thinking, the senses also have a part in the receiving and processing of information. Although there is an interaction in both the intellect and senses in processing information, McCarthy (1990) theorized that people tend to hover more at one end of the continuum than the other end.

McCarthy (1990) and Mamchur (1984) posited that learners, who receive and process information with their senses, need to learn in a classroom environment that is rich with experiential activities. Furthermore, in order to facilitate their learning process, these learners need to "do" and "apply" the information learned. In contrast, learners who receive and process information by thinking, need opportunities to watch, listen, read and reflect new information as they mentally filter information through their own experiences.

Therefore, the following are questions that can be used to assess the extent to which students are self-motivated and self-directed learners:

**Questions Dealing With Motivation of Students to Be Self-Directed and Assume Responsibility for Their Learning**

To what extent:

1. are students learning style assessed in developing learning activities?
2. are students involved in choosing the broad theme?
3. are students involved in choosing the sub-themes?
4. are students involved in hands-on activities?
5. are students involved in individual projects?
Empowerment of Teachers to Be Educational Leaders

When teachers develop learning activities to replicate meaningful real-life experiences and to accommodate the learning styles of students, they no longer depend on textbooks, state and district guides to dictate their instructional behavior. Instead, textbooks, state and district guides become resources, as they develop a curriculum appropriate for their classrooms.

Research literature (Hunter, 1979) further reveals that when teachers make instructional decisions based on a combination of research knowledge and knowledge about their various students, it is at this juxtaposition that education becomes an art. "This synthesis of science and sensitivity to a situation explains why we (researchers) can't supply pat answers to teachers" (Hunter, 1979, p. 63). However, Hunter (1979) posits that teachers can be provided with information that can improve students' decision-making process, influence students' motivation to learn and provide appropriate new situation for students to transfer their learning. It is at this point that teachers become educational leaders in their classroom.

Therefore, the following are questions that can be used to assess the extent
Questions Dealing With The Empowerment of Teachers

To what extent:

(1) are you involved in arranging the physical furniture in your classroom?

(2) do you influence physical aspects of your room such as light, heat, color, etc.?

(3) are you involved in deciding the budget to support your classroom curriculum?

(4) do you have in choosing textbooks and other instructional materials for your classroom?

(5) are you involved in school scheduling?

(6) do you feel time constrained because of an uniformed school schedule?

(7) do you feel that you can assess students' learning style?

(8) do you feel that you can design a curriculum from the results of student learning assessment?

(9) do you feel that the building administrators will support your classroom curriculum?

(10) do you feel that the district's support staff will support your classroom curriculum?

(11) do you feel that you are involved in the school governance?

(12) do you feel that you are involved in the school improvement plan?
Appendix B

Summary of Field Observations and Pool of Questions
Generated From Field Observations and Interviews

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SUMMARY OF CLASSROOM OBSERVATIONS AND POOL OF QUESTIONS GENERATED FROM THE FIELD OBSERVATIONS AND INTERVIEWS

Field observations and interviews were used to generate items for the teacher questionnaire. The purpose of the teacher questionnaire is to measure the extent to which (a) the instruction of critical thinking skills, (b) the motivation of students to assume responsibility for their learning and be self-directed, and (c) the empowerment of teachers to be educational leaders in their classroom are present in a TIC. The following five open-ended questions were used by the observers:

1. What were your goals and aspirations for using the thematic integrated curriculum (TIC)?
2. What are some constraints and hindrances that you have experienced while implementing the TIC?
3. How do teachers structure the learning environment and their instruction to motivate students to be self-motivated and self-directed?
4. What aspects of the thematic integrated curriculum empowers teachers to be instructional leaders?
5. How are critical thinking skills used to enhance instruction?

Two teachers and a principal spent approximately 60 hours observing the thematic integrated classrooms and interviewing teachers. Approximately 30 classrooms were observed and approximately 30 teachers were interviewed. The observations were focused on activities that explained and defined (1) the instruction of critical thinking skills, (2) self-motivation of students, and (3) empowerment of teachers to be instructional leaders. Although much informal discussion took place between observers, teachers and administrators, the interviews were focused on the five open-ended questions?
The three observers have been teachers for over twenty years. Each of the observers has used the traditional instructional method and the integrated instructional method. Traditional instructional method is defined as teachers instructing students one subject at a time. The integrated instructional method is defined as teachers combining the objectives of two or more subjects for instructional purposes (VanTassel-Baska, 1988).

The observers were involved in a training session before going into the field. The training session involved understanding and defining the activities that represented each of the three outcomes. Also, after each observation and interview period, the observers compared notes and discussed the activities that they observed.

Three elementary schools, one junior high school and one middle school in three school districts were the focus of the observations. All of these schools were implementing the Focus 2000 Program. Upon entering each of the Focus 2000 schools, the observers could hear much interaction and feel the "busyness" of the environment. The "busyness" impression came from the work displayed in the halls and the constant movement of children and adults.

The climate in each building was very warm and receptive. The observers were always welcomed with open arms and encouraged to ask questions. All the questions were answered thoroughly. Also, in each building the complete school was opened for observation. The children were also willing to answer questions, as well as ask questions.

The Goals for Using the Thematic Integrated Curriculum

The goals that each teacher and administrator had for implementing the thematic integrated curriculum (TIC) varied. One staff was looking for activities that would make school more interesting, as well as challenging, for students to enjoy learning. Another staff's goal was to eliminate the "pulling out" of special
education students from the regular classroom. Another staff's goal was to enhance learning for everyone by providing team teaching and longer periods of instruction. Another school hoped to improve student learning and students' motivation for learning.

For the past 11 years, two school districts have been cooperating with each other in a court-ordered desegregation program. Over the years, the school district with the majority of white students has been criticized for enlarging its special education classrooms with black students. The thematic integrated instruction was one strategy used by educators of that district to meet the needs of all the children within the regular classrooms.

Regular education teachers were teamed with special education teachers and consultants within the TIC classrooms to provide differentiated instruction for all the students. After three years of implementation of the TIC, the majority of the teachers find that including special education students in regular classrooms has been very beneficial for all the children. One administrator and two teachers voiced some negative aspects of the inclusion of special education students within the regular classrooms.

In another school district, the goal for the program was to help students experience a variety of instructional methods in order for them to be successful academically and socially. Since this is the first year of implementation of the TIC, the staff has not yet realized if the goal has been reached.

In another school district, the student population of the middle school is quite multi-cultured because of a private university located in the town. Therefore, the goal of the staff is to provide an appropriate curriculum for all the students to be successful. The TIC facilitates team teaching and longer class periods for students to have an appropriate amount of time to learn new concepts. Since this is the second year of implementation of the TIC, the staff has not realized the fulfillment of the goal.
Also, in two school districts, the staff discovered that the TIC facilitates the learning of migrant students. Migrant students are students who move from place to place in order to help their parents harvest crops. These children seldom spend a whole year in one school.

Constraints of Implementing the Thematic Integrated Curriculum

One common constraint voiced by everyone in the program was the lack of planning time for the various learning activities, especially activities that simulate life experiences. Teachers did not have time to work together in teams. The observers saw teachers stealing time from their lunchtime to meet together as teams.

Because of a lack of planning time, the instruction for one unit would be completed before another unit is planned. During those periods the teachers felt frustrated as they attempted to provide continuity to the instructional process.

Another common complaint voiced by teachers was the inadequate teacher training programs for the TIC. Teachers in one school felt that they needed more inservice concerning the use of cooperative learning. They did not want cooperative learning to be just a social time for students. Teachers in another school voiced the need for learning more methods utilizing Gardner's Multiple Intelligence Theory.

Another common complaint was the shortage of funds that are needed to purchase appropriate materials to provide a variety of instructional methods. Textbooks alone were not sufficient to provide a multi-sensory curriculum.

One school district felt that parents needed more inservice concerning the TIC in order to be supportive of the classroom curriculum. This school district evaluated parents' and students' attitudes concerning Focus 2000 Program. The majority of the parents were pleased with their children's progress; however, some parents thought the children were having too much fun in school and were
missing the basics. Some parents expressed that they did not know exactly what was going on. Some parents wanted their children out of Focus 2000 classrooms.

Activities That Define and Explain Critical Thinking Skills

Observations of the Focus 2000 classrooms revealed that teachers use the assignments of special projects for students to transfer knowledge to simulate real-life experiences. In order to transfer the knowledge, students had to analyze, synthesize, evaluate and apply the knowledge. In the junior high classroom, the observers saw students develop a hot house to grow vegetables. They used these vegetables to make salads to sell to the staff. The money that they earned financed a field trip to Chicago. In another classroom, the observers saw students create constellations and compose mythologies to accompany the constellations. This assignment culminated a unit on myths. The broad theme was families.

In another classroom, the observers saw students using the knowledge gained from the science class to prepare projects for a science fair. In developing the projects for the science fairs, students used the scientific investigation method which required them to draw conclusions from a hypothesis, experimentations and observation.

In a middle school classroom, the observers saw students working together in teams creating advertisements. The students were using several instructional media which included video cameras, poster boards, markers, paints, flash cameras, pencils and paper.

In a second grade classroom, the observers saw students using critical thinking skills as they played chess and checkers. The observers also heard these same second grade students orally present original book reports. The book reports showed evidence of students using inference, evaluation and analysis. In other classrooms, the observers read creative stories and expository reports that
students had prepared. Writing seemed to be a common mode that the teachers used to have students apply their learning.

Interviews with staff members revealed that as teachers integrated the subject areas around a theme, students used critical thinking skills to apply the knowledge from one subject to complete an activity in another subject. For example, teachers planned learning activities for the theme on families which included students planning for a family trip in social studies. Simultaneously, in science the students studied the climate of the place to know what type of clothes to pack. Also in math, the students calculated the mileage from city to city as they developed a route sheet. This assignment involved reading, language arts, social studies, science and math.

Also, the observers noticed the use of critical thinking skills in class discussions as students defended their answers. With critical thinking skills, less emphasis was put on right and wrong answers and more emphasis was placed on the rationale for students' answers.

With these activities in mind, the following are questions that can be used to assess the extent to which the instruction of critical thinking skills is present in a TIC:

Questions Dealing With Critical Thinking Skills

To what extent are students involved in:

1. games that require students to use strategy to outwit their opponents such as chess or checkers?
2. hands-on activities in the classroom?
3. hands-on activities for homework?
4. preparing projects for science fairs in the classroom?
5. science olympiads and preparing for skill competition for science olympiad in the classroom?
6. writing book reports?
7. creative writing activities?
8. expository writing activities?
9. emulating real-life experiences?
10. classroom discussions?
11. defending their answers?
12. doing questions that have no right and wrong answers?
13. learning basic skills?
14. drill and memorization?

Activities That Define and Explain Motivation of Students to Be Self-Directed and Assume Responsibility for Their Learning

One aspect that the observers noticed when visiting Focus 2000 classrooms is that the majority of the students seemed to be enjoying themselves. There seemed to be many activities occurring. There were a lot of interactions. The observers consistently saw students working together in groups as they studied or solved problems or worked on projects. Students seemed to enjoy this interaction with each other.

Students also seemed to enjoy the art, music and drama that were integrated into the academic areas. In the junior high school, the art and music teacher worked together as a team with the academic teachers in planning the learning activities. In one elementary school, at the conclusion of a thematic unit, the teachers planned a culminating activity which included a display of the students' projects and a dramatic presentation. (Incentives such as free time where students can enjoy fun activities of their choosing were also used to reward students.)

Also, in one elementary school the observers saw a good deal of parent involvement. The students seemed excited to have their parents working in the
classroom. It seemed that for young children the presence of their parents is highly motivating.

We also noticed in an elementary school that the schedule for the day was posted on the blackboard or somewhere in the room so that students knew what was to be accomplished for that day. This seemed to give students a direction and purpose for the day.

In almost every classroom that the observers visited, there seemed to be two adults. The teacher was always present with either a parent or another professional who was a special education teacher or a consultant. Having two people in the room seemed to help keep students geared in the right direction and help break students in smaller groups for teacher-directed activities.

The observers saw rooms where special education students were integrated with the regular students. However, the observers were not able to discern who were special education students and who were not.

In all the classrooms, junior high and elementary, students' work was posted on the classroom walls, as well as, in the hallways. Students seemed pleased by their papers being posted and some students directed us to their papers. The observers learned a lot about what was being taught in the classroom by just reading students' assignments that were on display.

In one junior high classroom, an English teacher directed us to student portfolios of certain writing assignments that she has compiled for each student. The students seemed to be very concerned about the type of work that went into their portfolios. Before articles enter the portfolios, the students must be satisfied that it is the best that they could do.

Interviews with staff members revealed that students are sometimes included in the planning of the learning activities and in the choosing of the theme. The more students are involved in the planning, the more involved they seemed to be in the activity. Also, interviews with staff revealed that teachers do
not seem to have much trouble in getting individual assignments completed. By rewarding the whole group for completed assignments, students work together in helping each other understand and complete assignments.

**Questions Dealing With Motivation of Students to Be Self-Directed and Assume Responsibility for Their Learning**

To what extent:

1. are students involved in cooperative learning groups?
2. are students aware of the schedule for the day?
3. are students involved in planning learning activities for the day?
4. are students involved in choosing their learning activities?
5. are students involved in working with parents, their own parents or another child's parent?
6. are students rewarded for completing daily activities?
7. are students rewarded in completing long-range activities?
8. are parents involved in the classroom?
9. do teachers work together as a team with another adult in the classroom?
10. is students' work displayed?
11. are students involved in expressing when they are ready for their work to be graded?
12. do students tell the teacher when they are ready for a test?
13. are students allowed to work together on projects?
14. do you, as the teacher, plan fun into the development of learning activities?
15. do you, as the teacher, use music in planning learning activities?
16. do you, as the teacher, use art in planning learning activities?
17. do you, as the teacher, use audio visuals for instruction?
18. do you, as the teacher, use the textbook?
19. do you, as the teacher, use drama and role playing for instruction?
20. do you as a teacher use other methods in assessing students?

Activities That Define and Explain Empowerment of Teachers to be Educational Leaders

In informal discussions with the teachers, the observers discovered some high enthusiasm concerning the Focus 2000 program. All the enthusiasm stemmed from teachers having more "say so" in what took place in the classroom. Also, teachers seemed to like working together. Teachers chose partners. Since in one district all the special education students were integrated into the regular classrooms, special education teachers were automatically assigned to work with regular classroom teachers. In both elementary and secondary schools, teachers were allowed to change the classroom arrangement to fit their needs. The observers saw some very unusual classroom arrangements. One classroom had a green house, a large aquarium, and a large boat that the students were refinishing.

Teachers expressed how they had been involved in actual construction work and painting of their classrooms. Teachers spent their own money for supplies and equipment. They creatively arranged their schedule and time so that they could plan together as teams. They spent parts of their summers in workshops. When talking with the teachers, the observers got a sense that teachers felt in control of their environment. Many teachers felt that by integrating the subjects, they had more time to teach. They did not feel so fragmented. One informal question that the observers asked each teacher was, if they had a chance would they return to the traditional teaching of one subject at a time. They all said no way. Even the teachers who were not very enthused about Focus 2000 still did not want to return to the traditional instructional mode.
Questions Concerned With Teacher Empowerment

To what extent:

1. are you involved in the staffing and hiring process for your grade or team?
2. are you involved in choosing supplemental materials for classroom?
3. are you given a certain amount of money to spend for your classroom?
4. are you consulted about the instructional budget?
5. are you expected to solve the discipline problems in your classroom?
6. are you consulted concerning discipline problems of your students who have been sent to the office?
7. do you feel that you have input into the final discipline measure that a principal might take for one of your students?
8. do you feel that the principal listens to you when you make a suggestion?
9. do you feel that central administrators listen to you when you make suggestions?
10. do you feel that other staff members listen to you when you make suggestions?
11. are you listened to when you have personal problems?
12. do you have requests granted to attend workshops and inservices?
13. do you feel like a team member?
14. do you feel important to the school?
15. do you feel trusted?
16. do you feel that you can be creative?
17. do you feel that you can share a new idea with your principal and not be criticized?
Appendix C

Letter to Judges and Complete Pool of Questions for the Development of the Questionnaire

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Thank you for agreeing to help me develop this questionnaire. Enclosed, please find a pool of questions for the questionnaire that I am developing to assess teachers' perspectives concerning the three variables: (1) the instruction of critical thinking skills, (2) teacher empowerment and (3) the self-motivation of students. As I explained, your job is to help me refine these pool of questions. Please look at the questions in the Critical Thinking Skills, Teacher Empowerment, and the Self-Motivation of Students Domain and pick the ten questions that you think best define each domain. As classroom teachers, I greatly value your expert opinion.

If you feel that we have omitted an essential question to be considered, please add that question. Also, with the questions that you choose, feel free to correct the question grammatically if necessary. Thank you very much for your time in this project.

If you have any questions, please feel free to call me at 925-2442 during the evening hours and 927-0653 during the day.
COMPLETE POOL OF QUESTIONS FOR THE DEVELOPMENT OF THE QUESTIONNAIRE

Facts Concerning The Respondents

1. I teach in an/a
   (a) elementary school  (b) middle school  (c) junior high

2. Have you received some training concerning Focus 2000 classrooms?
   (a) yes  (b) no

3. Are you working in a school that has some classrooms involved in the Focus 2000 program?
   (yes)  (no)

4. To what extent are you doing some thematic integrated instruction?
   (a) always  (b) sometimes  (c) sometimes  (d) seldom
   (e) never
Questions Dealing With Motivation of Students To Be Self-Directed and Assume Responsibility For Their Learning

To what extent:

1. are students involved in cooperative learning groups?
2. are students aware in knowing the schedule for the day?
3. are students involved in planning learning activities for the day?
4. are students involved in choosing their learning activities?
5. are students involved in working with their parents?
6. are students rewarded for completing daily activities?
7. are students rewarded in completing long-range activities?
8. are students involved in hands-on projects?
9. are parents involved in the classroom?
10. do teachers work together as a team with another adult in the classroom?
11. are students work displayed?
12. are students involved in expressing when they are ready for their work to be graded?
13. students tell the teacher when they are ready for a test?
14. are students allowed to work together on projects?
15. do you, as the teacher, plan fun into the development of learning activities?
16. do you, as the teacher, use music in planning learning activities?
17. do you, as the teacher, use art in planning learning activities?
18. do you, as the teacher, use audio visuals for instruction?
19. do you, as the teacher, use the textbook?
20. do you, as the teacher, use drama and role playing for instruction?
21. do you as a teacher use other methods then paper and pencil in assessing students?
22. are students learning style assessed in developing learning activities?
23. are students involved in choosing the broad theme?
24. are students involved in choosing the sub-themes?
25. are students involved in hands-on activities?
26. are students involved in individual projects?
27. are students involved in group projects?
28. are students allowed to be creative in completing assignments?
29. are students involved in selecting members for their cooperative learning group?
30. are students evaluated by a variety of methods?
31. are students exposed to a variety of instructional methods?
32. are students exposed to a variety of instructional materials?
33. are students affective behavior evaluated?
34. are results from the student affective evaluation used to develop learning activities?
35. do you, at the teacher, try to provide special attention to each of your students?
36. do you, as a teacher, praise your students?
37. do you, as a teacher, read to your students?
Questions Dealing With The Empowerment of Teachers

To what extent:
1. are you, the teacher, involved in the staffing and hiring process for your grade or team?
2. are you involved for choosing supplemental materials for classroom?
3. are you given a certain amount of money to spend for your classroom?
4. are you consulted about the instructional budget?
5. are you expected to solve the discipline problems in your classroom?
6. are you consulted concerning discipline problems of you students who have been sent to the office?
7. do you feel that you have input into the final discipline measure that a principal might take for one of your students?
8. do you feel that the principal listens to you when you make a suggestions?
9. do you feel that central administrators listen to you when you make suggestions?
10. do you feel that other staff members listen to you when you make suggestions?
11. are you listened to when you have personal problems?
12. do you have requests granted to attend workshops and inservices?
13. do you feel like a team member?
14. do you feel important to the school?
15. do you feel trusted?
16. do you feel that you can be creative?
17. do you feel that you can share a new idea with your principal and not be criticized?
18. are you involved in arranging the physical furniture in your classroom?
19. do you influence physical aspects of your room such as light, heat, color,
etc.?

20. are you involved in deciding the budget to support your classroom curriculum?

21. do you have in choosing textbooks and other instructional materials for your classroom?

22. are you involved in school scheduling?

23. do you feel time constraint because of an uniformed school schedule?

24. do you feel that you can assess students' learning style?

25. do you feel that you can design a curriculum from the results of student learning assessment?

26. do you feel that the building administrators will support your classroom curriculum?

27. do you feel that the district's support staff will support your classroom curriculum?

28. do you feel that you are involved in the school governance?

29. do you feel that you are involved in the school improvement plan?
Questions Dealing With Critical Thinking Skills

To what extent are students:

1. involved in games that require students to use strategy to outwit their opponents such as chess or checkers?
2. involved in hands-on activities in the classroom?
3. involved in hands-on activities for homework?
4. involved in preparing projects for science fairs in the classroom?
5. involved in science olympiads?
6. involved in preparing for skill competition for science olympiad in the classroom?
7. involved in the study of satellite reading materials that expose students to literature?
8. involved in writing book reports?
9. involved in creative writing activities?
10. involved in expository writing activities?
11. involved in simulating real-life experiences?
12. involved in classroom discussions?
13. involved in defending their answers?
14. involved in doing questions that have no right and wrong answers?
15. involved in learning basic skills?
16. involved in drill for memorization?
17. involved in hands-on activities?
18. working together to solve problems?
19. involved in role-play?
20. involved in dramatic presentations?
21. involved in science experimentations?
22. involved in debates?
23. involved preparing class presentations and demonstrations?
24. involved in classical literature?
25. planning learning activities for the class?
26. involved in interviewing?
27. involved with community help projects?
28. evaluating their own work?
29. evaluating each other's work?
30. simulating real-life activities such as voting, space survival, courtroom scenarios, etc?
Appendix D

Cover Letter and Teacher Questionnaire Assessing Aspects of the Thematic Integrated Curriculum
May 16, 1993

Dear Teachers,

Being an elementary principal for many years, I have come to realize and appreciate the importance of a teacher’s classroom behavior to the facilitation of the learning process. Therefore, out of my respect for teachers, my desire for a dissertation has been to make a contribution to educational research that would help classroom teachers.

This study attempts to describe the extent to which three outcomes of a curriculum add quality to the educational process. These outcomes are the (1) instruction of critical thinking skills, (2) the motivation of students and (3) the empowerment of teachers. The study is being conducted under the auspices of the Educational Leadership Department of Western University.

The attached questionnaire was developed from the input of many teachers who identified the activities that are used to define each outcome. Information gathered from the questionnaire should help teachers to understand better an expected student behavior that could possibly result from a specific teacher action. Also, information gathered from this questionnaire can be used to help educators in the decision-making process concerning the benefits about certain outcomes of a curriculum. Since the teacher is the most essential factor in what takes place in the classroom, your input is greatly needed for the success of this project. The average time required for teachers piloting the questionnaire was 10 minutes.

I would be very appreciative if you would complete the enclosed questionnaire and return it in the enclosed stamped envelope before June 30, 1993. Your responses will be made in anonymity and held in strictest confidence. Results of the questionnaire will be made available to each school participating in the study.

Respectfully yours,

Sherry Collins

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## TEACHER QUESTIONNAIRE ASSESSING ASPECTS OF THE THEMATIC/INTEGRATED CURRICULUM

### I. ACTIVITIES THAT FACILITATE CRITICAL THINKING SKILLS

**DIRECTIONS:** Please put an X in the one most appropriate response, from the five responses, listed beside each question that best describes the activities that occur in your classroom. (Please use Never if the question does not apply.)

<table>
<thead>
<tr>
<th>To what extent are students:</th>
<th>Always</th>
<th>Most Of The Time</th>
<th>Sometimes</th>
<th>Seldom</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. involved in games such as chess or checkers that require students to use strategy?</td>
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<tr>
<td>2. involved in hands-on activities in the classroom?</td>
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<td>3. involved in writing book reports?</td>
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<td>4. involved in creative writing activities?</td>
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<td>5. involved in creative problem solving?</td>
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<td>6. involved in classroom discussion?</td>
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<td>7. involved in defending their answers?</td>
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<tr>
<td>8. working together to solve problems?</td>
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<td>9. involved in science experiments?</td>
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<td>10. evaluating their own work?</td>
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<tr>
<td>11. evaluating each other's work?</td>
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</tbody>
</table>

PLEASE TURN OVER
12. simulating real-life activities such as voting, space survival, courtroom scenarios, etc?

13. making oral presentations before the class?

II. ACTIVITIES THAT FACILITATE STUDENTS TO BE SELF-MOTIVATED AND SELF-DIRECTED

DIRECTIONS: Please put an X in the one most appropriate response, from the five responses, listed beside each question that best describes the activities that occur in your classroom. (Please use Never if the question does not apply.)

<table>
<thead>
<tr>
<th>To what extent are students:</th>
<th>Always</th>
<th>Most of The Time</th>
<th>Sometimes</th>
<th>Seldom</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. involved in cooperative learning groups?</td>
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<tr>
<td>2. aware of the activities that will occur each day?</td>
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<td>3. aware of the objectives for each lesson?</td>
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<td>4. involved in hands-on projects?</td>
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<td>5. exposed to their work being on display in the classroom and hallway?</td>
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<td>6. expressing when they are ready for their work to be graded?</td>
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<tr>
<td>Question</td>
<td>Always</td>
<td>Most of the Time</td>
<td>Sometimes</td>
<td>Seldom</td>
<td>Never</td>
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<td><strong>7.</strong> allowed to be creative in completing assignments?</td>
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<tr>
<td><strong>8.</strong> exposed to a variety of instructional methods?</td>
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<td><strong>9.</strong> exposed to other methods than paper and pencil for assessment?</td>
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<tr>
<td><strong>10.</strong> involved in choosing the broad theme?</td>
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<tr>
<td><strong>11.</strong> plan fun, such as games and contests, into the development of learning activities?</td>
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<td><strong>12.</strong> provide special attention to each student?</td>
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<td><strong>13.</strong> praise each student?</td>
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</table>

**III. ACTIVITIES THAT FACILITATE THE EMPOWERMENT OF TEACHERS**

**DIRECTIONS:** Please put an X in the one most appropriate response, from the five responses, listed beside each question that best describes the activities that empower you to be an educational leader in your classroom.

<table>
<thead>
<tr>
<th>Question</th>
<th>Always</th>
<th>Most of the Time</th>
<th>Sometimes</th>
<th>Seldom</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> involved in the staffing and hiring process for your grade-level or instructional team?</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
2. involved in selecting supplemental materials for your classroom?

3. consulted about the final discipline measure that a principal might implement for your students?

4. granted your request to attend workshops and inservices?

5. consulted in the selection of textbooks and other instructional materials for your classroom?

6. involved in developing the school improvement plan?

7. involved in the school governance?

<table>
<thead>
<tr>
<th>To what extent do you:</th>
<th>Always</th>
<th>Most Of The Time</th>
<th>Sometimes</th>
<th>Seldom</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. feel a part of an instructional team?</td>
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<tr>
<td>9. feel that you make an important contribution to your school?</td>
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<td>10. feel that you can be creative?</td>
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<tr>
<td>11. feel that you can share new ideas with the principal?</td>
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</tbody>
</table>
IV. DATA CONCERNING THE RESPONDENTS

1. Circle the type of school in which you are employed?
   (a) elementary school  (b) middle school  (c) junior high

2a. ELEMENTARY TEACHERS: What grade do you teach?_______

2b. SECONDARY TEACHERS: What grades do you teach?_______,_______,_______
   What subjects? ______________,____________,____________

3. Circle the years of teaching experience:
   I-10 years of experience
   II-20 years of experience
   over 20 years of experience

4. Have you received Focus 2000 training?
   (a) yes   (b) no

5. Are you using Focus 2000 Program in your classroom?
   (a) yes   (b) no

6. Are you working in a building where at least some of the teachers are using
   The Focus 2000 Program?
   (a) yes   (b) no

7. Have you received some training in the thematic/integrated curriculum?
   (a) yes   (b) no

8. To what extent are you using the thematic/integrated instruction?
   ALWAYS  MOST OF THE TIME  SOMETIMES  SELDOM  NEVER

9. How long have you been using the thematic/integrated instruction?_______

V. OPTIONAL

1. Please list at least 3 benefits of the thematic/integrated curriculum:
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

2. Please list at least 3 constraints of the thematic/integrated curriculum:
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

Thank you for taking time to help with this effort.
Appendix E
Human Subjects Institutional Review Board Approval
Date: June 3, 1993
To: Sherry Collins
From: M. Michele Burnette, Chair
Re: HSIRB Project Number 93-06-06

This letter will serve as confirmation that your research project entitled "A study of the Thematic/Integrated Curriculum" has been approved under the exempt category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the approval application.

You must seek reapproval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: June 3, 1994

xc: Jenlink. EL
Appendix F

Breakdown of the Groups According to Schools and Grades
Breakdown of the Groups According to Schools and Grades

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Group 1 Using TIC Most of the Time</th>
<th>Group 2 Using TIC Sometimes</th>
<th>Group 3 Never Used TIC</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOCUS SCHOOLS</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Kdg.</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>1st</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>2nd</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>5</td>
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<tr>
<td>3rd</td>
<td>6</td>
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<td>9</td>
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<tr>
<td>4th</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>12</td>
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<tr>
<td>5th</td>
<td>11</td>
<td>1</td>
<td>0</td>
<td>12</td>
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<tr>
<td>6th</td>
<td>8</td>
<td>6</td>
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<td>14</td>
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<tr>
<td>7th</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>10</td>
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<tr>
<td>8th</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL TEACHERS</td>
<td>51</td>
<td>28</td>
<td>5</td>
<td>84</td>
</tr>
<tr>
<td>NON-FOCUS SCHOOLS</td>
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<tr>
<td>Kdg.</td>
<td>0</td>
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<td>1st</td>
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<td>3</td>
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<td>3rd</td>
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<td>3</td>
<td>10</td>
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<td>7th</td>
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<td>1</td>
<td>5</td>
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<tr>
<td>8th</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>8</td>
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<tr>
<td>TOTAL TEACHERS</td>
<td>15</td>
<td>10</td>
<td>13</td>
<td>38</td>
</tr>
</tbody>
</table>

GRAND TOTAL FOR FOCUS AND NON-FOCUS TEACHERS 66 38 18 122
Appendix G

Teachers' Responses to the First Open-Ended Question Concerning the Benefits of the TIC
TEACHERS' RESPONSES TO THE FIRST OPEN-ENDED QUESTION CONCERNING THE BENEFITS OF THE TIC

Group I - Use the Thematic Integrated Curriculum (TIC)
Most of the Time - 75 Teachers Responded

QUESTION: Please list at least 3 benefits of the TIC

**Working In A Focus 2000 Building**

001 1. Continuity of Effort -
2. More individualized
3. Opportunity for sharing & expanding ideas with other co-workers

003 1. Better organized, student interest

004 1. More holistic approach
2. Gives students a broader base of school experience
3. When done well excites students to learning

005 1. Cooperative groups
2. Variety of teaching styles
3. Team can achieve better teaching than one teacher alone

006 1. Saves time - don’t have to stop & say please open Math books
2. Meaningful subject matter
3. Foster imagination & creativity

007 1. Students like hands-on parents seemed please

008 1. Better flow between subjects
2. Improved recall especially with Sp. Ed.
3. Teacher freedom to teach specialty areas

009 1. Empowerment of teachers
2. Cooperative learning
3. Hands-on learning

010 1. Foster students to take responsibility for selves
2. Heighten self-esteem for students and teachers
3. Creates atmosphere of "we" as a team - not the traditional adversarial of teacher and student

011 1. Promotes higher level of thoughts
2. Learners sees how things interface
3. Students are less bored
012 1. Students receive a more holistic approach
   2. More teacher creativity
   3. More student creativity

013 1. Fun for teacher
   2. Students recall better
   3. I like to tie subjects together

014 1. Kids learn faster & retain more information

015 1. Students recall more information
   2. It is more realistic
   3. It is more fun

018 1. Students can see that all subjects are related
   2. You have more materials available
   3. Teachers work together

019 1. Less work when teaching because you become a manager
   2. More fun for everyone
   3. Kids learn more

020 1. More approach to content material
   2. Whole picture presented
   3. Enthusiasm among staff

021 1. Common planning & meeting time for teachers
   2. Creates a better focus for students

022 1. Students see connections
   2. You draw from numerous experiences
   3. Team works together

023 1. Variety of teaching styles which results in increased learning
   2. Students show more interest & it is better learning for students
   3. Involvement - more opportunity for hands-on in-depth study

024 1. Show relationship to subject matter
   2. Show practical aspects of school life
   3. Fun!

025 1. Student involvement in the instructional
   2. Planning is more interested
   3. Student enthusiasm

026 1. Objectives achieved throughout curriculum
   2. Skills applied to new situations
   3. Children able to build effective connection in their learning

027 1. Cooperative learning
   2. More Integration makes learning fun
   3. Team teaching allows for more things ideas etc.

031 1. Meaningful to students
   2. Developmentally appropriate
3. Make transitions much easier

032 1. Inquiries can be adapted to Chapter I & Sp Ed
2. Students have a choice of activities they enjoy
3. Advanced students can be challenged - become leaders

034 1. The day flows
2. Children love the centers that are built around themes
3. Children learn to work together in small groups

035 1. Exciting for students
2. Exciting for teachers

036 1. Students benefit from the integration of subjects
2. Inquiries address the higher levels of thinking
3. Students become involved in the instruction

037 1. Flexibility
2. Creative freedom to reach all learning styles

038 1. No boredom
2. Adaptable for all - high, low, average
3. More interesting for students & teachers
4. Freedom of choice for students
5. Resource skills increase

039 1. Teacher empowerment of them & materials
2. High student interest
3. Higher level thinking skills

040 1. Correlations between all subjects
2. Things can flow

041 1. Choices for students
2. Flexibility for students/teachers
3. Make the content more interesting & fun

042 1. All students can be more successful (suit various modalities & intelligences) because of choices & inquiries written
2. Students see a connection between subjects
3. Trusting environment
4. Team planning & teaching

043 1. More interest - in some areas

044 1. More interest in some areas

045 1. Better integration of subject materials better flow & continuity & connection of learning
2. Promote group success of active hands-on
3. Projects that might be passed on for the sake of time

046 1. Children's exposed to Bloom's level of thinking
2. The inquiries are purposeful, interesting, their choice
3. The carry-over skills learned are really "life skills" & very practical
047 1. More stimulating & students recognize
2. A blend in subject areas
3. Students use multi resources
4. Students learn how to work cooperatively

048 1. Empowers the students
2. Allows students to make choices
3. Students see the "whole picture"

049 1. Self-esteem
2. Cooperative groups
3. Promotes social skills

051 1. Students are empowered & enjoy their involvement
2. It makes a difference
3. Teachers work closer together

052 1. The climate of the classroom is not like a battlefield
2. There is a feeling of trust between students & teachers

053 1. Easier to achieve mastery of subjects
2. Expanded areas of learning
3. Help from other teachers as to what additional information might be needed

Not Working In A Focus 2000 Building

054 1. High student interest & enthusiasm
2. High retention of subjects
3. Respect for individual differences of ability within groups

055 1. Seeing how theme relates to many subjects
2. Continuity school-wide carry over values

057 1. Students make connection between books & their own lives
2. Everyone experiences success
3. Addresses the needs & learning styles of all
4. Can expose students to more subjects rather than teaching them as separate entities

058 1. Increase student interest & motivation
2. Varies the teaching/learning styles

059 1. Students see relationships between one area & another
2. Students can apply concepts to real-life situations
3. Some areas such as the Arts - can make other content areas more vital, exciting & interesting

061 1. Increased comprehension
2. Closer to real life
3. Higher interest level for kids

062 1. When a universal theme is used it saves time in planning
2. Students can see that each subject relates to the theme
3. retention of subject matter is increased
063 1. Makes curriculum cohesive
   2. Makes curriculum higher interest
   3. Requires higher order thinking skills to overlap ideas in the curriculum

064 1. Subject matter more meaningful & relevant to students
   2. Students get involved in learning
   3. Enable teachers to set up a brain compatible program to meet the needs of all students

065 1. Learning, motivation, relate learning to real world

Group 2 - Teachers who use the TIC Sometimes

Working in a Focus 2000 Building

067 1. Accent strong qualities of students
   2. Feel like a family
   3. Team-teaching-with 2 teachers teaching doesn't stop

068 1. Literature!
   2. Involves more methods of teaching can involve much more creativity

069 1. Students are more positive about school
   2. Teachers are able to share strengths
   3. Teaching of several subjects is combined

070 1. Keeps the teacher focused during day
   2. Ties curriculum together
   3. Excites children

072 1. Facilitates
   2. Team teaching
   3. Consistency of students
   4. More planning time with team

074 1. Able to integrate more than one subject

081 1. Helps in critical thinking
   2. Helps analyze & story map
   3. Gives focus

083 1. Students have a choice
   2. Easier to mainstream

084 1. Children enjoy it
   2. The kids are learning
   3. I enjoy it

085 1. Students can choose assignments
   2. Hands-on
   3. More communication with teacher

086 1. Focuses teacher planning around real life theme
2. Co-teaching
3. Students have a better picture how math fits the big picture

087 1. Children are more interested, motivated
2. I am more interested & motivated
3. I feel ownership of the curriculum

088 1. Able to work in math during other instruction time

Not Working in a Focus 2000 Building

100 1. You can cover many academic areas under one theme
2. Children can learn cooperative learning
3. Help tie things together when making lesson plans

102 1. Continued reinforcement of subjects being taught

104 1. Students can get a better ideas
2. Its fun
3. It is more interesting

Group 3 - Teachers who do not use TIC

Work in a Focus 2000 Building

106 1. Exciting
2. Meaningful education

107 1. Encourages higher level of thinking

Do Not Work in a Focus 2000 Building

117 1. Cross curriculum planning allowed
2. Fully developing of subject
3. Provide more time to work cooperatively in small groups

118 1. Student motivation
2. Student self-concept
3. Student pride in classmates
Appendix H

Teachers' Responses to the Second Open-Ended Question Concerning the Constraints of the TIC
TEACHERS' RESPONSES TO THE SECOND OPEN-ENDED QUESTION
CONCERNING THE CONSTRAINTS OF THE TIC

Group I - Use the Thematic Integrated Curriculum (TIC)
Most of the Time - 80 Teachers Responded

QUESTION: Please list at least 3 constraints of the TIC

Working In A Focus 2000 Building

001 1. Planning with other discipline is not sufficient

004 1. If teachers don't really try it - it fizzles
   2. It is difficult/time consuming to really discover & use the materials
      needed in depth
   3. The community has difficulty adjusting to a less ordered
      structured-cut-and-dried learning scheme afraid something important is
      being missed.

005 1. The team member is absent, the plans for the day is hurt
   2. Homeroom teacher chose theme - other members may not like it
   3. Cooperative learners may not always do their part in projects

006 1. Teachers need to be creative
   2. Teachers should be willing to do research & must know what the
      Curriculum says
   3. So that you won't lost sight of skills need by students

007 1. Time! Evaluation! are they really learning!
   2. Money!
   3. Parental support! For all this extra time, effort - is it really better?
      Prove it to me!

008 1. Time for planning
   2. Checks & balances insure skills are being taught
   3. Easy to talk-the talk but not walk the difficult walk of teaching

009 1. Time consuming
   2. Lack of planning time

010 1. Some students really need to "pulled out & be worked with. This
      program makes that extremely difficult. However, it is worth it.

011 1. Teachers have to team with poor team members, unprofessional
      co-teachers. Unprepared unskilled.
   2. Possibly, parents who are hooked on the traditional method of teaching.

012 1. Overlapping of themes through the grades
2. Limitations of the tradebooks assigned per grade
3. Requires a great deal of extra planning

013 1. I do not find any
2. Lack of money for materials

014 1. Very time consuming
2. Gets confusing if you try to integrate everything

015 1. Hard to get ideas if you’re the one doing something unless you speak up.
2. Cost at times

018 1. It is sometimes difficult to departmentalize system
2. Some activities are "sharing" to fit in with the theme.
3. Sometimes you may have to give up an equally important topic because of time limitations.

019 1. It’s more work to set up conditions.

021 1. Time needed
2. Need to change theme more frequently
3. Some teachers don’t work well with each other

022 1. Time for planning

023 1. Materials hard to find unless them is chosen carefully.
2. Some things are difficult to integrate into the curriculum.
3. Lack of teacher knowledge of them - more prep is required.

024 1. Take time to prepare material
2. Choosing theme must apply to all grade levels.

025 1. Lots of work
2. Themes don’t always apply
3. Tie in to 7-1-2 very difficult

026 1. District sets all objectives
2. District makes timetables
3. District decides instructional materials

027 1. Lack of planning time available
2. Lack of materials to use
3. Extra work involved

031 1. Hard to convince others of its advantages
2. Hard to get started
3. Must have others (parents, administrators support)

032 1. Teacher needs to be highly organized
2. Talking can get out of hand
3. Some students in groups rely on others too much & do not do their own work

034 1. Planning & preparation time
2. Storage of materials gathered
3. Could be difficult for a sub who is not orientated to this approach

035 1. Planning time
2. Plenty support material

036 1. Everything must be developed by the teacher
2. No textbook to pull from - all must be developed
3. Deviating from them for Holidays or Special Education

037 1. Assessment does not feel comfortable yet
2. Not enough materials
3. Funding for fieldtrips & speakers little to name

038 1. Absences hurt
2. Must have resource materials (lots)
3. It takes a lot of time to plan constantly improving changing

039 1. I hear other teachers complaining about lack of materials
2. I don't have that problem
3. It does take a lot of extra time to do
4. Parents still valued paper & pencil test

040 1. Not enough time to do all you want
2. Not enough resources - particularly Art

041 1. You must have a close knit team who support one another
2. You must have the same (very close) expectations - otherwise there can be problems
3. Not enough time to plan - it takes lot of time to make it work as a team.
   (But I wouldn't have it any other way)

042 1. Time (classroom & planning)
2. Resources (this is some better)
3. Some students ride on the shirt tails of others but this happens in all room. There are always students who won't work. At least in a coop group they may learn something by listening & interacting even if they don't work

043 1. Time element
2. All work should not be group work
3. Inquiries get "old hat" when done since 1st grade
4. Skills not taught adequately

044 1. Time Element
2. All work should not be group work
3. Inquires get "old hat" when done since 1st grade
4. Skills not taught adequately

045 1. Grouped students don't learn well, if at all, how to think & do for themselves as task doers & problem solvers. They become too reliant and dependent on the group to help them or do work for them.
2. There is also a problem with parents doing inquiry projects for their children so they look good & get better grades than they would on their own.

046 1. Not for the teacher who feels that he or she must be in total control

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2. Continuity between grades is difficult as skills are less tangibly measured
3. Much planning (hopefully release time is provided) is needed to implement a reality from scratch curriculum that a thematic unit required - time is needed to do a good job!

047 1. Students tend to socialize in groups
2. Students do not budget & manage their time well
3. Wait to the last minute to turn in assignments

048 1. None, I think its the best!

049 2. We don’t have aides
3. Or planning time to fully develop the concept

051 1. Teachers need to plan together quite a bit
2. Lots of planning time is needed

Not Working In A Focus 2000 Building

054 1. Plan time (consuming)
2. Assessment difficulty (traditional)
3. Is this mathematics or science? The famous student & parent question

055 1. Sometimes difficult to tie them to all subject areas
2. Finding suitable activities to tie in to theme

056 1. Time (lack of) to plan gather materials

058 1. Planning time to pull from many resources
2. Spending too long on one theme & not finishing other curriculum

059 1. Themes often have to be so broad they lose meaning
2. Efforts to stress relationships sometimes weaken area presentation
3. The Arts & Humanities component needs to be an integral part of any thematic instruction

061 1. Differences in learning styles
2. Differences in learning speed

063 1. Requirements in objectives limit use of them in some cases
2. Cost of materials prohibitive
3. Lesson take longer but are remembered better

064 1. Lack of resource material
2. Takes a lot of extra planning time
3. Lack of an appropriate assessment tool that would replace the out-dated "report card"

065 1. Planning time
2. Using curriculum (i.e. science) guides
3. Being sure all required concepts & skills are taught
Group 2 - Teachers who use the TIC Sometimes

**Working In A Focus 2000 Building**

067 1. You may not care for a specific thematic theme  
2. Teachers may expect you to be a theme expert on a specific subject

068 1. Not enough money for materials yet a big push to always make things. Many times we're expected to purchase things on our own. There is no one right way to teach not even cue.  
2. Not enough books/materials at early grades  
3. Unfairly compares teachers/styles in same building and different buildings

069 1. All team members must have same expectations  
2. Theme must be chosen carefully to cover curriculum  
3. Unless extra time is spent on standardized test preparation, students do not have the exposure to do well on same objectives (ex. isolated word sounds)

070 1. Time consuming  
2. Hard to integrate in all areas  
3. Lack of materials

072 1. Organizing with other team members and other staff  
2. Less individual planning time  
3. Its not easy blending all disciplines

077 1. I think one theme for an entire year is too long for kindergarten students

081 1. Limits materials  
2. Narrow focus

083 1. I need more skill building before application  
2. Time frame  
3. A theme for whole junior high to use

084 1. Lack of material  
2. Lack of planning time  
3. Need more help in the classroom

085 1. No F's - students procrastinate  
2. More paperwork  
3. Hard to keep up

086 1. Not as successful in a low track program as it would be in a heterogeneous classroom.  
2. Not as effective for only one hour a day - would be better in a school within a school setting at the secondary level when several subjects are taught around a common theme

087 1. It is difficult to "fit in" some desired K outcomes  
2. Materials are sometimes hard to find  
3. I worry that some skills might not be learned thoroughly
088 1. Materials available limit use
   2. Time factor - getting everything else in

093 1. Not enough time to do all the planning
   2. Not enough resources

Not Working In A Focus 2000 Building

096 1. You possibly wouldn't cover all areas directed to you for your grade level
   2. It could take more research & time for teacher to develop it
   3. Sometimes it can be costly

102 1. Limiting in spontaneity
   2. Extensive search for ideas
   3. Could be overdone

104 1. Some students are too loud to handle it

   Group 3 - Teachers who do not use the TIC

Working in a Focus 2000 Building

106. 1. Very difficult to cover all curriculum
    2. Lack of materials
    3. Takes enormous amount of teacher time

107. 1. Lack of time for team planning
    2. Lack of materials to implement theme

Not Working in a Focus 2000 Building

109. 1. Flexibility needed
    2. Trust in students
    3. Leaving instructions for subs
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