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# A survey of interdisciplinary teaming in Iowa middle level public schools

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# A survey of interdisciplinary teaming in Iowa middle level public schools

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University of Northern Iowa, 1988



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# A SURVEY OF INTERDISCIPLINARY TEAMING IN IOWA MIDDLE LEVEL PUBLIC SCHOOLS

A Dissertation

Submitted

In Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Approved:

Dr. Gregory P. Stefanich

Dr. Robert H. Decker

Dr. Susan G. Doody

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May 1988

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Without the support of family, friends, and classmates, this project would have been doomed from the onset. The love of my understanding wife, Janet, and children, Kent and Tiffany; and their willingness to share me with my work has provided the emotional bonding and strength needed to complete a project of this magnitude. Their sacrifices and patience have not only allowed me the opportunity to grow as an individual, but have also caused me to reflect and appreciate what a fortunate man I am.

Although my parents have not lived to see the completion of the doctorate, their love and encouragement were always with me. It is with sincere affection, that I extend a most grateful "thank you" to my mother-in-law, Peg Lee, who understood the importance of this experience to me and was able to provide wisdom and reassurance in their stead.

To all of the above and to the many others who assisted in so many special ways, this dissertation is dedicated.

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An Abstract of a Dissertation

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Approved:

Faculty Co-Advisor

Faculty Co-Advisor

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May 1988

ABSTRACT

The purpose of this study was to analyze the concept of interdisciplinary teaming in Iowa middle level public schools grades 6-8. Of importance to the study was a comparison of desirability, implementation, teacher and administrator attitudes, level of use and student self-concept in middle level schools using, and schools not using interdisciplinary teaming.

The study utilized five specific instruments for gathering data. The demographic survey and innovation configuration checklist ascertained the components of interdisciplinary teaming and determined whether a school was a user or nonuser of the concept. The Stages of Concern survey and Level of Use interview developed for Project CBAM by the Research and Development Center for Teacher Education at the University of Texas at Austin was used to analyze teacher and administrator attitudes, as well as, the level of implementation of the concept. The Piers-Harris Children's Self-Concept Scale analyzed the perceived self-esteem of students, grades 6-8, in user and nonuser Iowa middle level schools.

A sample of 116 middle level schools using middle level teaming and 116 nonuser schools was selected from the total 478 middle level public school population for analysis. From this sample, nine user schools and nine nonuser schools were selected for in-depth study using the Project CBAM instruments and the Piers-Harris Scale. A total of 157 teachers and 18 administrators responded to the Stages of Concern survey, and 149 teachers were

interviewed using the Level of Use instrument. Over 1949 students in grades 6-8 in user and nonuser schools were given the Piers-Harris Scale.

SPSS$^{x}$ was used for the compilation of the data. A chi-square test of significance was used on the frequency distributions from all of the instruments except the Piers-Harris Scale for which a t-test was used. The 0.05 level of confidence was established for the study, however, in cases where the 0.01 level of confidence was exceeded, the significance was noted at that level.

From the data, the researcher concluded that although there is a high degree of desirability for the components of interdisciplinary teaming in schools both using and not using the innovation, there is little actual implementation of the innovation in Iowa middle level public schools. Of those schools implementing the concept, the level of use of interdisciplinary teaming is at the mid range level. In comparing the students in user and nonuser schools, there is a higher level of student self-concept in schools using interdisciplinary teaming compared to students in schools not using interdisciplinary teaming.

# CHAPTER I

## STATEMENT OF PURPOSE

### Introductory Statements

Middle level education developed to meet the needs of the post elementary, pre high school student. Although the rationale for this development was well grounded in educational philosophy, history has shown the results to be less than favorable (Brimm, 1969). The first venture into middle level education--the junior high school--has been criticized by many for failing to identify and provide for the individual instructional needs of early adolescents. The unsuccessful adaptation of high school instructional strategies and methodologies, along with the changing social and educational climate of the 1960's, brought about a decline in the junior high school movement and an emergence of middle school advocates among professional educators. The middle school philosophy stressed the need to focus on individual differences and educational strategies designed to meet those needs.

Of particular concern to this dissertation was the development of a teaching-learning strategy known as interdisciplinary teaming. Although the concept of interdisciplinary teaming was formalized in the middle school movement, its use was not limited to middle schools. Interdisciplinary teaming could be found in both elementary and high schools, however, the concept seemed to reflect an organizational format most commonly found in middle level schools.

## Statement of the Problem

The problem of this study was to analyze interdisciplinary teaming as an educational innovation, to ascertain if there are generally agreed upon major components of the concept, to determine if those components are considered desirable by teachers and administrators and to determine the effect on student self-concept in user and non-user schools. The study was also designed to analyze student, teacher and administrator concerns and attitudes about interdisciplinary teaming and to determine the existing level of use of interdisciplinary teaming in Iowa middle level public schools.

## Definition of Terms

In order to provide uniformity of understanding and clarity to the terms that had special application for this study, the following definitions are provided.

### Middle Level Education

That body of educational philosophy, practices and procedures, curricular and non-curricular, that is applied to students in middle level schools.

### Junior High School

The first middle level school, developed for grades 7-9 as an outgrowth of the Committee of Ten in 1892, stressing better articulation between the elementary school and the high school. The curriculum stressed departmentalization, exploration, and individualization (Gruhn & Douglass, 1947).

Middle Level Schools

A general term for any organizational structure usually administered as a separate unit serving pre-adolescent and early adolescent students in those grades between the elementary school and the high school (Alexander, 1984).

Iowa Public Middle Level School

For the purpose of this study, any state tax supported middle level school which contains any configuration of grades 6, 7, and/or 8 listed in the 1985-86 Iowa Educational Directory.

Transescent Learner

The early adolescent student, usually between the ages of 10 to 14 years old, who is in the transitional period between elementary school and high school (Eichhorn, 1966).

Child Centered Curriculum

A curricular design model stressing the importance of the individual learner to the learning process (George, 1984).

Middle School

An organizational structure generally having three to five grades including the 6th and 7th grade, but excluding the 9th grade that is administered as a separate unit, utilizing a child centered curriculum and an educational philosophy designed to bridge the gap between the elementary and the secondary school (Alexander, 1984).

Interdisciplinary Team

A teaching team concept that utilizes common planning and the coordination of the curriculum and methods of instruction in such

a way that it transcends the boundaries of traditional subject area disciplines (Wiles & Bondi, 1986).

Interdisciplinary Units

Coordinated, curricular units of instruction designed by the interdisciplinary team that cross subject area disciplines (Wiles & Bondi, 1986).

Disciplinary Team

A teaching team concept organized on the basis of subject area disciplines (Wiles & Bondi, 1986).

Interdisciplinary Teaming User School

An Iowa middle level school, whose principal checked user status on the demographical survey and who obtained a raw score of 12 or above on the implementation components of the Innovation Configuration Checklist.

Interdisciplinary Teaming Nonuser School

An Iowa middle level school which did not meet the criteria for user status.

## Assumptions

The first assumption that was essential for the development of this study was that the general components of interdisciplinary teaming were sufficiently delineated and could be identified and measured by the instruments used. It must also be assumed that the respondents understood the intent of the survey instruments and responded accordingly. Third, it must be assumed that the data obtained by the use of the questionnaires and interview

procedures used in this study, provide a sound data base for the analysis of interdisciplinary teaming in Iowa public middle level schools.

## Limitations

The initial demographic survey for the study was sent to all public middle level schools in the State of Iowa listed in the 1985-86 Iowa Educational Directory. The focus of the study was limited to those middle level public schools in the State of Iowa that responded to the initial questionnaire as having implemented some form of interdisciplinary teaming in grades 6, 7, and 8. No attempt was made to extend this study to grades other than 6, 7, and 8, or to non-public schools.

The results of this study were based on the responses given by the participants--administrators, teachers and students in both "user" and "nonuser" schools. The restrictions of choice in questionnaires and that effect on the findings of a study are uncertain (Good, 1972; Hillway, 1969; Van Dalen, 1973). The reader is cautioned that any judgments made on this study should reflect this particular limitation.

## Conceptual Framework

Many reasons and combinations of manifestations contributed to widespread concern for middle level education in the early to mid 1960's and brought about the demise of the traditional junior high school (Alexander, 1984). Educators became increasingly aware of the unique nature of the learner in the middle level grades and

concerns grew as to the adequacy of the junior high school to meet those needs. Enrollment increases and government intervention also contributed to the general feeling in the educational community that something needed to be done (Alexander, 1984). To address the growing problems in middle level education caused by forty years of concern over the adequacy of the junior high school, the middle school movement was born. Brooks and Edwards (1978) stated that their research had established four major reasons for the growth and development of middle schools over junior high schools.

1. Middle schools could provide an individualized program of instruction specifically designed for the transescent learner.

2. Middle schools could be a more successful bridge between the elementary school and the high school.

3. Because of shifting school age populations and governmental interventions, middle schools offered greater flexibility in eliminating overcrowded and segregated conditions.

4. Many components of the middle school concept provided remedies for weaknesses in the junior high school.

Perhaps of greater importance than the establishment of the middle school was the rationale for the development of the concept itself. Unlike junior high schools, middle schools were not grade specific. They usually involve grades 6-7-8, however 5-6, 7-8 or any combination thereof can be classified as a middle school (Vars, 1976). Even the name "middle school" can be rather misleading.

Some middle level schools adopted the name middle school while others used the name junior high school, transitional school, or intermediate school (Kindred, 1968).

Rather than being a mere physical plant, the middle school was a philosophy of education that embodied a series of functions designed for the needs of the transescent learner (Vars, 1984). The functions served as guidelines for educational strategies to be used in middle level education. William M. Alexander and Paul S. George in The Exemplary Middle School (1981) stated that there are four major functions of middle schools: exploration, differentiation, guidance, and socialization.

The function of specific importance to this study was differentiation. Differentiation allowed teachers to focus on the unique individuality of the transescent learner. The concept of gradualism, which Gruhn and Douglass (1947) referred to as articulation, or the need to provide a gradual transition from pre-adolescent education to an educational program suited to the needs and interests of adolescents, was also a part of this function. The focus of the instructional program must be responsible to the special developmental characteristics of that age group (George, 1984). Alternative learning arrangements, materials, times, and approaches to management and control must be flexible to deal with the vast differences in middle level learners (Wiles & Bondi, 1986). The new thrust in middle level education needed to provide optimum

individualization of both curriculum and instruction (Alexander, 1978).

Probably the most overlooked area of middle level education was that of instruction. Because neither the self contained teaching pattern nor the subject specialist approach could provide the appropriate differentiation needed for middle level instruction, educators turned to a different teaching methodology--team teaching. Although team teaching was not a new concept to education, its particular development in middle level education was quite unique. Team teaching in middle level schools usually occured in a disciplinary or interdisciplinary pattern (Wiles & Bondi, 1986). While some teaching teams were organized on the disciplinary, subject area pattern, the most common and prevalent middle level team pattern was the interdisciplinary team. Although both patterns allow for team meeting time, decentralization of administrative control, student individualization, flexible scheduling, and more effective use of professional talents and interests, the interdisciplinary team pattern seemed more efficient (George, 1984).

An interdisciplinary team was a cluster of teachers sharing the same students, space, schedule, and, for the most part, teaching methodology (George, 1984). One teacher seldom teaches more than one subject, but could teach as many as five. The purpose of an interdisciplinary team was to allow the educator to break the artificial boundaries of subject disciplines and provide a smoother curricular flow. Wiles and Bondi (1986) stated that the aim of

interdisciplinary teaming in middle level education was to promote communication, coordination, and cooperation among subject area specialists.

The major benefit of interdisciplinary teaming was derived by the transescent learner. Students will gain more from instruction that was planned by subject area specialists yet coordinated and presented in such a way that it avoided the fragmentation that was characteristic of most departmentalized plans (Alexander, Williams, Compton, Hines, & Prescott, 1969). Because the interdisciplinary team met and planned on a regular basis, students also benefited from the consistency that follows from having expectations that were the same from teacher to teacher (George, 1984).

Teachers also benefited from interdisciplinary teaming in middle level schools through the collegiality of fellow staff members and the organizational structure provided by the teaming process (Eichhorn, 1980). Besides the noted curricular and instructional advantages derived from common planning, communication, and coordination, many additional teacher advantages were gained. A review of the literature showed that a significant improvement in student behavior follows the implementation of interdisciplinary teaming in middle level schools (George, 1984). It was also noted that home/school relationships improve considerably when parent contacts and conferences were arranged and carried out through the team structure. Both students and teachers benefited from the teams'

ability to carry out such managerial tasks as designing and changing student scheduling (George, 1984).

Interdisciplinary teams were also dynamic in nature. According to Jon Wiles (1976), middle level interdisciplinary teams tended to evolve through a series of developmental stages. Wiles maintains that this developmental process was affected by many variables including the degree of understanding and agreement of the concept, personality traits of the team members, and the desirability of results and expectations of the teaming process by the members. Although the developmental process of middle level interdisciplinary teams has not always been smooth, research has found that teacher attitudes were more positive in a middle school with interdisciplinary teaming than in a traditional junior high school (McGee & Krajewski, 1979). Baker and Beauchamp (1972) found the same to be true in their study of the effects of the transition from a junior high school to a middle school.

The popularity of middle level interdisciplinary teaming also seemed to be increasing. In a study by Alexander (1978), teaming of one form or another in the basic curricular areas in middle level schools was less than 10%. Brooks and Edwards in 1978 found that teaming of one form or another ranged from 15 to 21% but varied by grade. McEwin and Clay (1983) found that 37% of the middle schools and 24% of the junior high schools reported using team teaching by the 1981-82 school year.

Purpose of the Study

The purpose for this study was to provide base line data on the concept of interdisciplinary teaming in middle level public schools in the State of Iowa and draw some conclusions from that data. The study examined middle level interdisciplinary teaming as an educational innovation, assessing the desirability of the components of teaming viewed by both teachers and administrators who had adopted the innovation as a part of their school's curricular program. The study also analyzed the relationship of teachers and administrators statements of concern about the adoption of the innovation, as well as the level of use of interdisciplinary teaming in their schools. An analysis comparing student self-concept in Iowa public schools using middle level interdisciplinary teaming with schools not using the innovation was also made.

Research Questions

1. To what extent, if any, is interdisciplinary teaming being utilized in middle level public schools in the State of Iowa?

2. To what extent, if any, are the components of middle level interdisciplinary teaming perceived as being desirable by middle level school administrators and teachers in Iowa public schools utilizing interdisciplinary teaming in their curricular program?

3. To what extent, if any, are the components of middle level interdisciplinary teaming perceived as being implemented by middle level school administrators and teachers in Iowa public schools utilizing interdisciplinary teaming in their curricular program?

4. What are the similarities and differences, if any, between administrators' statements of concern and teachers' statements of concern in Iowa middle level public schools using interdisciplinary teaming as a part of their curricular program?

5. What are the similarities and differences, if any, of administrators' statements of concern and teachers' statements of concern in Iowa middle level public schools not using interdisciplinary teaming as a part of their curricular program?

6. What are the similarities and differences, if any, of teachers' level of use of interdisciplinary teaming in Iowa public middle level schools where it is a part of their curricular program and teachers' level of use in schools where interdisciplinary teaming is not a part of their curricular program?

7. What are the similarities and differences, if any, of student self-concept in Iowa middle level public schools using interdisciplinary teaming and student self-concept in Iowa middle level public schools not using interdisciplinary teaming?

Hypotheses

The following statistical hypotheses were advanced for this study:

Hypothesis A. $H_0$ There is no difference between the perceived desirability of interdisciplinary teaming between teachers and administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as a part of their curricular program.

$H_1$ There is a difference between the perceived desirability of interdisciplinary teaming between teachers and administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as a part of their curricular program.

Hypothesis B. $H_0$ There is no difference between the perceived implementation of interdisciplinary teaming between teachers and administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as a part of their curricular program.

$H_1$ There is a difference between the perceived implementation of interdisciplinary teaming between teachers and administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as a part of their curricular program.

Hypothesis C. $H_0$ There is no difference between the stages of concern of interdisciplinary teaming between teachers and administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as a part of their curricular program.

$H_1$ There is a difference between the stages of concern of interdisciplinary teaming between teachers and administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as a part of their curricular program.

Hypothesis D. $H_0$ There is no difference between teachers level of use of interdisciplinary teaming in schools using interdisciplinary teaming and teachers level of use of interdisciplinary teaming in schools not using interdisciplinary teaming.

$H_1$ There is a difference between teachers level of use of interdisciplinary teaming in schools using interdisciplinary teaming and teachers level of use of interdisciplinary teaming in schools not using interdisciplinary teaming.

Hypothesis E. $H_0$ There is no difference between students self-concept in schools using interdisciplinary teaming and in schools not using interdisciplinary teaming as a part of their curricular program.

$H_1$ There is a difference between students self-concept in schools using interdisciplinary teaming and in schools not using interdisciplinary teaming as a part of their curricular program.

## Population and Sample

This section will identify the universe, population, and sample used in this study.

Universe and Population. The universe for this study included all middle level schools in the United States. The findings of this study, however, were not generalized to all middle level schools in the United States. The population of this study included all 478 middle level public schools in the State of Iowa as listed in the 1985-86 Iowa Educational Directory.

Sample. All 478 middle level public schools in the State of Iowa listed in the 1985-86 Iowa Educational Directory were involved in the initial demographic survey. That sample was refined to 116 "user" schools and 116 "nonuser" schools of interdisciplinary teaming. Those 232 schools are identified in Appendix C. Responses from the teachers and administrators of these schools were again refined to include 9 interdisciplinary teaming user schools and 9 interdisciplinary teaming nonuser schools. Administrators, teachers, and students from those 18 selected schools were involved in further aspects of the study. The actual sample for this study consisted of those individuals who completed and returned the survey instruments by the stated deadline.

Instrumentation

Five specific instruments were used to obtain the data for this study.

1. Administrative Questionnaire on Middle Level Education: This thirteen question survey was designed to assess such demographical information as community size, school district size, middle level grade structure, school building enrollment, and the principal's reaction to the middle school philosophy and interdisciplinary teaming. The survey ascertained if middle level teaming was used, the length of time it had been used, and in what grades it was used.

2. Interdisciplinary Teaming Innovation Configuration Checklist: This instrument was developed by the author using the handbook for the Concerns-Based Adoption Model (CBAM) entitled, Measuring Innovation Configurations: Procedures and Applications by Heck, Stiegelbauer, Hall, and Loucks (1981). The checklist was designed to identify the desirability of the components of interdisciplinary teaming and the perceived implementation of those components using a forced choice Likert scale.

3. Interdisciplinary Teaming Stages of Concern Survey: Designed by the Research and Development Center for Teacher Education at the University of Texas at Austin as a part of CBAM, this instrument assessed user concerns about any educational innovation. The instrument identified seven stages of concern. For the purpose of this study, interdisciplinary teaming was used as the educational innovation of interest.

4. Interdisciplinary Teaming Level of Use Survey: Also designed by the Research and Development Center for Teacher Education at the University of Texas at Austin as a part of CBAM, this focused interview instrument identified eight discrete levels of use of an educational innovation. Interdisciplinary teaming was used as the educational innovation of interest.

5. Piers-Harris Children's Self-Concept Scale: Developed by Ellen V. Piers and Dale B. Harris in 1969 and revised in 1984, the Piers-Harris Self-Concept Scale was designed to aid in assessing the self-concept and self-esteem of children and adolescents between

the ages of eight to eighteen years. The instrument was a self-reporting form consisting of eighty items which can be reported in a raw score, percentile score, or stanine score.

Procedure

The design for the study was developed to accomplish the following:

1. Assess the usage of interdisciplinary teaming in all Iowa middle level public schools.

2. Identify the agreed upon components of interdisciplinary teaming, as well as the desirability and perceived implementation of those components in Iowa middle level public schools.

3. Assess the level of concern of teachers and administrators about interdisciplinary teaming as an educational innovation in Iowa middle level public schools.

4. Assess the level of use of teachers of interdisciplinary teaming as an education innovation in Iowa middle level public schools.

5. Assess the self-concept of students in Iowa middle level public schools using interdisciplinary teaming with students in schools that are not using the innovation.

6. Draw conclusions from the data about interdisciplinary teaming as an educational innovation in Iowa middle level public schools.

To accomplish these tasks, the principals of all 478 Iowa middle level public schools were surveyed. From this population,

116 schools responded as having some form of teaming in their curricular program. However, 342 schools responded that they did not. Twenty schools did not respond to the initial questionnaire producing an overall return of 95.8%. Since grades 6, 7, and 8 were the predominant grades listed by the 116 "user" schools, all future aspects of the study were limited to those grades. The principals and teachers of these same 116 "user" schools were again surveyed using the Interdisciplinary Teaming Innovation Configuration Checklist. A stratified random sample of 116 "nonuser" schools based on school district size was also selected, and the principals and teachers of these schools were also given the Innovation Configuration Checklist. The purpose of the checklist was to identify the major components of interdisciplinary teaming and to ascertain how many of the 116 "user" schools are actually interdisciplinary teaming user schools. From the responses to the checklist, 9 interdisciplinary teaming user schools (3 small, 3 medium, and 3 large) along with 9 interdisciplinary teaming nonuser schools of comparable size were selected for further study. Teachers and principals of the selected schools were given the Stages of Concern Survey (SOC) developed for Project CBAM. Teachers at the 18 schools were also given the Level of Use interview (LOU) also developed for Project CBAM. Student self-concept was also assessed using a random sample of 6th, 7th and 8th grade students from the 9 interdisciplinary teaming user schools and the 9 interdisciplinary teaming nonuser schools.

Data Analysis

The study design utilized an assessment and comparison of the demographic variables of Iowa middle level public schools for research question Number 1. The demographic data were gathered from the 95.8% response to the initial Administrative Questionnaire on Middle Level Education. In order to examine the distribution of each of the variables, frequency distributions and cross tabulations were used to generate the statistical data for this part of the study. SPSS x 2 was used for the compilation of the data. Research questions numbers 2-6 were analyzed using the chi-square statistical treatment. The 0.05 level of confidence was established for rejection of the null hypothesis in this study. In cases where the 0.01 level of confidence was exceeded, the significance was noted at the 0.01 level.

Research questions Number 2 and Number 3 involve a comparison of the categorical data obtained from the Interdisciplinary Teaming Innovation Configuration Checklist administered to 116 "user" schools and an equal, stratified random sample of 116 "nonuser" schools based on school district size. Since the variables were discrete, it was important to determine whether a systematic relationship exists between the two variables.

Research questions Number 4 and Number 5 involved the comparison of response patterns for teachers and administrators in both randomly selected "user" and "nonuser" schools. The data were obtained from the Interdisciplinary Teaming Statements of Concern Survey.

Research question Number 6 addressed the similarities and differences of teachers level of use of interdisciplinary teaming in user and nonuser schools as measured by the Interdisciplinary Teaming Level of Use Survey. The data provided by this focused interview were a comparison of specific discrete variables for the two groups.

Research question Number 7 involved a comparison of student self-concept in both user and nonuser schools through data obtained from the Piers-Harris Children's Self-Concept Scale. The discrete categorical data provided a raw self-concept score for each student. The data were analyzed for statistical significance by using a t-test.

The computational procedures used to analyze all of the data for this study were specific subprograms of the Statistical Package for the Social Sciences--SPSS x 2 (Nie et al., 1975).

## Organization of the Study

The remaining chapters of this study are organized as follows:

Chapter II provides a review of the literature related to the development of the philosophy and general practices of middle level education in general, and interdisciplinary teaming in particular. Included in the chapter is a general history of middle level education, as well as an integration of literature relevant to the stated problem of the study.

Chapter III describes the research methodology used in this study. The research design, instrumentation, sampling techniques and procedures of the study are enumerated in detail.

Chapter IV provides a report of the findings of the study and an analysis of the data collected from the survey instruments. Discussion of the data is also included.

Chapter V presents an interpretation of the data and conclusions drawn from the findings of the study. Recommendations for further research are also provided.

# CHAPTER II

# REVIEW OF LITERATURE

## The Functions of Middle Level Education

A study of the history of middle level education reveals a rich and controversial chapter of American education. From its early beginning with the development of the junior high school at the turn of the twentieth century to its present state twenty-five years after the founding of the middle school movement, middle level education was perhaps the most dynamic of all areas of American education (Howard & Stoumbis, 1970). Although the casual factors behind the establishment of the junior high and the middle school vary greatly, the basic functions of middle level education--integration, exploration, guidance, differentiation, socialization, and articulation--have remained constant (Arth, 1983b).

These six functions have been the goals of middle level education since they were developed and explained in The Modern Junior High School by Gruhn and Douglass (1947, 1971). Those functions encompass the following:

> Function I: Integration
>
> To provide learning experiences in which pupils may use the skills, attitudes, interests, ideals, and understandings previously acquired in such a way that they will become coordinated and integrated into effective and wholesome pupil behavior.
>
> To provide for all pupils a broad, general, and common education in the basic knowledge and skills which will lead to wholesome, well-integrated behavior, attitudes, interests, ideals and understandings.
>
> To provide for effective correlation among the studies, learning activities, and extra class activities of the total program of education.

Function II: Exploration

To lead pupils to discover and explore their specialized interests, aptitudes, and abilities as a basis for decisions regarding educational opportunities.

To lead pupils to discover and explore their specialized interests, aptitudes, and abilities as a basis for present and future vocational decisions.

To stimulate pupils and provide opportunities for them to develop a continually widening range of cultural, social, civic, avocational, and recreational interests.

To help pupils identify interests in school which will provide motivation for them to continue their formal education and to participate in educational activities that are appropriate for their individual growth and development.

Function III: Guidance

To assist pupils to make intelligent decisions regarding present educational activities and opportunities and to prepare them to make future educational decisions.

To assist pupils to make intelligent decisions regarding present vocational opportunities and to prepare them to make future vocational decisions.

To assist pupils to make satisfactory mental, emotional, and social adjustments in their growth toward wholesome, well-adjusted personalities.

To stimulate and prepare pupils to participate as effectively as possible in learning activities so that they may reach the fullest development of their individual interests and talents.

Function IV: Differentiation

To provide differentiated educational facilities and opportunities suited to the varying backgrounds, interests, aptitudes, abilities, personalities, and needs of pupils, in order that each pupil may realize most economically and completely the ultimate aims of education.

To provide learning activities in all areas of the educational program which will be challenging, satisfying, and at a level of achievement appropriate for pupils of different backgrounds, interests, abilities, and needs.

Function V: Socialization

To provide increasingly for learning experiences which will prepare pupils to participate in, and contribute to our present complex society, and help them adjust to future developments in that society.

To provide learning experiences which will prepare for effective and satisfying participation as responsible citizens in our democratic society, both at their present level of maturity and, later, as adult citizens.

To provide learning experiences which will prepare pupils for participation in an effective and mature manner in the

activities of young adolescents, and later, as older adolescents and adults.

Function VI: Articulation

To provide a gradual transition from preadolescent education to an educational program suited to the needs and interests of adolescent boys and girls.

To help pupils acquire backgrounds and skills which will prepare them to participate effectively in the educational activities and program at their present school level and, later, in the upper secondary school, post-secondary schools, and adult life. (Gruhn & Douglass, 1971, pp. 75-76)

The basic functions which were mentioned here were applied to all types of schools for young adolescents, whatever grades were included or by whatever names they were designated. The term "function" was defined by Sweat (1977) as, "the responsibility of the school for providing those conditions or elements in the program of the school which will lead most directly to the fullest realization of the ultimate aims of education" (p. 13). Ergo, one can say that the functions of middle level education were the means of achieving the educational goals through the program of the school (Sweat, 1977).

It was the purpose of this review to follow a historical theme in the development of the functions of middle level education. Perhaps of greater importance to this study, was the relationship and effect of the concept of interdisciplinary teaming in achieving the basic functions of middle level education.

## Development of the Junior High School

The late 1800's and the early 1900's gave rise to a number of commissions and national committees all organized to study the proliferation of secondary organizational structures that had grown

rapidly since the end of the Civil War (Howard & Stoumbis, 1970). The bulletin entitled Cardinal Principles of Secondary Education (1918) besides recommending a six year elementary school and a six year high school, also strongly suggested that the high school portion be designated as both junior and senior years. Although this study called for a "junior high school," it was pointed out by Sweat (1977) that this committee viewed this suggestion as a "junior high school" within the framework of the high school organizational structure. The advocacy for a separate junior high structure apart from the elementary school and the high school was still many years away.

Colleges and universities also had considerable influence on the numerous committees and commissions studying secondary organizational structures in the early 1900's. Perhaps the best known was the report of the Committee of Ten in 1893 (Munsell, 1984). The committee was formed by the National Education Association (N.E.A.) and was chaired by Charles W. Eliot, the then president of Harvard University (Sweat, 1977). The report of the Committee of Ten (N.E.A., 1893) called for the deletion of two years from the 1-8 elementary organizational structure and the addition of those two years to the secondary organizational structure making a six grade structure for both. It was from this humble beginning that the junior high school was born. It is important to note that although the report of the Committee of Ten did spawn the development of the junior high school, and did propose reorganization

of secondary education to effect better college preparation, the committee also made a deliberate point of stating that the secondary school's primary function was not the preparation of all secondary students for college (Munsell, 1984). The Committee of Fifteen of the Department of Superintendence of the N.E.A., in 1895, in accordance with the Committee of Ten, called for new studies to be introduced in grades 7 and 8 (Sweat, 1977). The Committee of Fifteen recommended exploratory opportunities for young adolescents and urged better subject area articulation between the elementary and secondary school (N.E.A., 1895). The Committee on College Entrance Requirements (N.E.A., 1899, p. 31) made an interesting recommendation by stating that "The seventh grade, rather than the ninth grade, was the natural turning-point in the pupil's life as the beginning age of adolescence, and demanded new methods and wiser direction." Munsell (1984) noted that the significance of the above remark was that the special needs of adolescent students were given recognition as a key factor effecting school organization.

The period from 1890 to 1910 also was one of increased attention by leading psychologists to the unique nature of adolescence. Of particular importance was the research on dropouts developed by G. Stanley Hall of Clark University (Sweat, 1977). Hall's two volume work in 1904 emphasized the area of individual differences in adolescent youth and stressed the importance of this phenomenon in planning educational programs. C. W. Woodward, whose work with sixth grade dropouts parallels Halls', provided

research to show the importance of broader programs for young adolescents particularly in the area of exploration and individualization (Munsell, 1984).

According to Lounsbury and Vars (1978), the first junior high school, consisting of grades 7-8-9, was introduced in the Columbus, Ohio School District in 1909. In January 1910, two new junior high schools were introduced in Berkely, California, by Superintendent Frank Bunker to relieve overcrowded conditions and to aid in reducing the dropout rate (Bunker, 1935). According to Wiles and Bondi (1986), by 1919 the North Central Association of Colleges and Secondary Schools had defined junior high schools as organizational structures consisting of grades 7-8-9 in a separate building with their own teaching and administrative staff and began to provide accreditation for such schools. From these humble beginnings the junior high school began.

Although the junior high school was certainly not without its critics, the movement flourished until the mid 1960's. Wiles and Bondi (1986) indicated that by 1921, there were over 400 junior high schools in existence in the United States with the number growing rapidly. Data gathered by the United States Office of Education and cited by Gruhn and Douglass (1971) indicate that the specific junior high school organizational structure grew from a mere 55 schools prior to 1920 to nearly 8,000 schools by 1966. Table 1 is illustrative of the establishment of the junior high school as a factor in adolescent education as well as an indicator

Table 1

Number and Percent of Public Secondary School, by Type of School: 1919-20 to 1965-66

| School Year | Total | Traditional | Junior | Senior | Junior-Senior |
|---|---|---|---|---|---|
| 1919-20: | | | | | |
| Number | 14,326 | 13,421 | 55 | 22 | 828 |
| Percent | 100.0 | 93.7 | 0.4 | 0.1 | 5.8 |
| 1929-30: | | | | | |
| Number | 22,237 | 16,640 | 1,842 | 648 | 3,287 |
| Percent | 100.0 | 74.0 | 8.3 | 2.9 | 14.8 |
| 1937-38: | | | | | |
| Number | 25,057 | 15,523 | 2,372 | 959 | 6,203 |
| Percent | 100.0 | 61.9 | 9.5 | 3.8 | 24.8 |
| 1951-52: | | | | | |
| Number | 23,746 | 10,168 | 3,227 | 1,760 | 8,591 |
| Percent | 100.0 | 42.8 | 13.6 | 7.4 | 36.2 |
| 1958-59: | | | | | |
| Number | 24,190 | 6,024 | 4,996 | 3,040 | 10,130 |
| Percent | 100.0 | 24.9 | 20.6 | 12.6 | 41.9 |
| 1963-64: | | | | | |
| Number | 25,926 | 7,173 | 7,143 | 5,568 | 6,042 |
| Percent | 100.0 | 27.7 | 27.6 | 21.5 | 23.2 |
| 1965-66: | | | | | |
| Number | 26,098 | 8,176 | 7,920 | 4,942 | 5,060 |
| Percent | 100.0 | 31.3 | 30.5 | 18.8 | 19.4 |

Note. Traditional includes regular 4-year high schools preceded by 8-year elementary schools.
Junior includes 2- and 3-year junior high schools.
Senior includes 3- and 4-year senior high schools preceded by junior high schools.
Junior-Senior includes 5- and 6-year high schools.
Data provided by the United States Office of Education and cited in The Modern Junior High School (p. 49) by W. Gruhn, and C. Douglass, 1971, New York: Ronald Press.

of the popularity and acceptance of the junior high organizational structure by the educational community (Gruhn & Douglass, 1971).

## Failure of the Junior High School

As Gruhn and Douglass stated in 1947 and again in 1971 in their revision of the Modern Junior High School, philosophically the junior high school movement was sound. Criticism, however, existed even at its earliest inception. Alexander Inglis in the introduction to The Junior High School by Thomas H. Briggs (1920, p. 1) wrote that:

> Every new movement in education, if it is to succeed at all, must pass through two critical stages of development before it can find its proper place. The first stage is the struggle for recognition by educators and the public, and the second stage is winning the approval of both groups.

Although the phenomenal growth of the junior high school movement can be construed as general approval, Inglis also wrote an observation that might have been taken as a word of caution. Briggs (1920, p. 74) stated that:

> It is a time when the form of reorganization is found in hundreds of school systems, but the real organization attempted in but few. It is a time when there is danger of numerous junior high schools in name, but few in fact.

In fact, although educators subscribed to the statement of function for junior high schools developed by Gruhn and Douglass (1947) there was great diversity of implementation of the philosophy. Many viewed the junior high school as a downward extension of the programs and activities already in use at the senior high level (Melton, 1984). Melton (1984) also cites the unfortunate choice

of the name "junior" high as being somewhat indicative that the school would be merely a smaller version of the "real thing." Others, including Briggs (1920), Hall (1904), and Bunker (1935), called for an entirely different program than that offered by either the existing elementary or secondary organizational structures. The uniqueness of the early adolescent student was their major concern. However, the educational community and the public paid little heed to these scholars and with the passage of time, the junior high school curriculum tended to parallel that of the high school through departmentalization, interscholastic athletics replacing intramurals, as well as an emphasis on academics at the expense of exploration (Wiles & Bondi, 1986). From 1909 to the middle and late 1960's the junior high school continued on its path to becoming nothing more than a "junior" high school (Munsell, 1984).

Although the junior high school was widely accepted as a part of the American educational system, the concerns continued to mount. Kindred (1968) directed the following criticisms:

1. The junior high school has tended, by and large, to pattern itself after the senior high school despite the excellent theory behind it. This is evident in the extension of departmentalization downward to include grade seven, in the extracurricular fanfare associated with interscholastic athletics and marching bands, in elaborate graduation exercises, in social events, and in class scheduling. In fact, it has become a high school for junior pupils.
2. Recent pressures on the junior high schools to place more emphasis upon academic subjects, such as science, mathematics, and foreign languages, have meant less time and energy for fine arts, industrial arts, dramatics, and homemaking--subjects which are equally important in a general education program.
3. Study assignments and homework loads have increased considerably due to the thrust downward of senior high

school subjects; the amounts given are detrimental to the physical and mental health of junior high school pupils.

4. The traditional contention that the junior high school should get pupils ready for the senior high has meant mastery of content and skills in limited areas at the expense of a broad, exploratory type of program.
5. The complexity of the junior high school with its departmentalization, interscholastic contests, multiple rules and regulations, large student bodies, detailed schedules, stress on command of subject matter, and outmoded psychology of learning have made it difficult for pupils to adjust and find the necessary satisfactions wanted in a school situation. In consequence, this condition has multiplied and intensified problems connected with normal growth and development.
6. Junior high school programs today are badly out of line, in many instances, with the needs of the preadolescent and early adolescent youngster.
7. Quite often junior high school teachers are dissatisfied with their assignment preferring instead to be on the senior high staff. They express this sense of dissatisfaction in their relationships with pupils and fail to exercise the patience and tact required for working successfully with them.
8. The junior high is often housed in a former high school building or an old elementary building. Neither of these buildings are suitable for meeting the requirements of a modern junior high school program. Actually, the needs, interests, and abilities of pupils are sacrificed because of forced conformity to existing facilities.
9. Since the ninth grade is closely tied to the senior high school with references to the subject offerings and units of credit for college admission, the fundamental purposes and functions of the junior high school are divided, as well as, is its program; it is in reality, two schools under one roof.
10. In six-year junior high schools [junior-senior high schools], it is common to administer the entire six years as a single unit. There is, however, some separating of activities for the junior and senior high schools. But even where this is done, the danger persists that proportionately more attention may be given to pupils in the upper three grades and that the pupils in the lower three grades may have more difficulty in acquiring the use of facilities. Instances are legion where the better facilities and teachers are the prior claim of the senior high school.

> 11. Two-year junior high schools leave much to be desired. They not only make it difficult for teachers to know pupils when half of the pupils are new each year but also require that pupils grow from the position of follower to that of leader in a brief period of time. (pp. 29-30)

Research studies developed during the 1930's to the present in reference to the junior high school as an educational entity seem to support the criticisms of Kindred. Landstille (1928) paired 371 university freshmen who had studied in a junior high school with 371 freshmen who had attended an 8-4 organizational structure and compared their academic records. The graduates of the four-year high school did significantly better in college math and science. Clem (1930) in a similar comparison examined tenth grade academic achievement over a two year period. His results indicated that students from a K-8 elementary pattern do somewhat better work in their tenth grade year of senior high than pupils from junior high schools.

Mills (1931) did a major study comparing the achievement of junior high school and non-junior high school students. Mills matched six communities on the basis of size and type in Massachusetts. Three of the communities had traditional schools and the other three had junior high schools. On the basis of 3,200 standardized achievement tests given to both seventh and ninth graders, Mills ascertained that in the seventh grade, the junior high school students had substantially the same proficiency as the traditional school students. Mills also found no significant

differences among ninth grade students except in spelling, which favored the non-junior high school students.

Beatley (1932) undertook the task of replicating the study done by Mills. Beatley's study also matched six schools and communities in Massachusetts. Standardized tests of achievement were administered in the seventh grade and two years later in the ninth grade. The results of the study concluded that neither type of school had demonstrated its superiority over the other in furthering the gains in achievement in the "fundamentals."

In general, research comparing the junior high school to the non-junior high school proved it to be, at best, equal to the traditional forms of school organization, but not superior to them. Rose (1959) in his study of seventh and eighth grade students in junior high and non-junior high schools in Indiana found this to be true--there was no clear evidence to indicate that one type of organizational structure involving the seventh and eighth grades is superior to the other in its ability to satisfy the needs of their students. Reece (1963) in comparing schools in Lincoln, Nebraska, found the same results in his study. It is interesting to note that Reece found in his research that the majority of students, parents, and teachers surveyed, regardless of the organizational pattern that they attended, had students in, or worked at, preferred the independent 7-8-9 junior high school even though the research did not support the superiority of this grade pattern (Reece, 1963).

Another comparative study was done by Spivak in 1956. Spivak studied the performance of ninth grade students who came from self-contained seventh and eighth grade classrooms compared with students who came from a departmentalized seventh and eighth grade educational environment. Spivak matched 41 students in each group in order to compare their ninth grade records. Academic achievement and school social adjustment, as measured by teacher interviews and counting referrals for guidance and discipline, were measured. Sociometrics were also used to determine assimilation into the ninth grade social environment. The results of Spivak's research indicated that students from the self-contained seventh and eighth grades did better academically and significantly better socially and the area of behavior adjustment. Spivak (1956) wrote: "These findings raised questions about the desirability of continuing to operate junior high schools with completely departmentalized seventh and eighth grade classrooms" (p. 391).

The junior high school movement was plagued with other problems as well. Although the junior high school organizational pattern was preferred by the public, as well as teachers, it failed to win the recognition of state departments of public instruction (Melton, 1984). Such recognition is important in order to gain legitimacy with colleges and universities. Melton (1984) indicated, that without state department recognition, those responsible for the development and preparation of teacher and administrator preparation programs have little need to provide such programs for

the junior high level. Of all the problems faced by the junior high school movement, perhaps the greatest disappointment was its failure to meet the needs of the early adolescent student (Melton, 1984). In many instances administrative purposes took precedence over educational purposes. Melton (1984) states:

> Where junior high school educators succumbed to the allure of the new movement and placed too high a value on its rapid growth and physical redistribution of the grades the institution failed. On the other hand, where junior high school educators created a new curriculum, new courses of study, new methods of teaching, and new social relationships to meet needs, interests, and abilities of early adolescents, the junior high school succeeded. (p. 13)

## Rationale for the Middle School

To say that the middle school developed because of the failure of the junior high school is somewhat of an over simplification. Alexander et al. (1969) indicated that the earlier maturation of girls and boys during the preadolescent and adolescent ages, as well as the needs of that age group, coupled with local district problems of building maintenance, increasing enrollments, and desegregation contributed to the rise of the middle school in the late 1950's and early 1960's. Alexander's survey in 1967-68 of a stratified random sample of 110 reorganized middle schools stated ten reasons for the establishment of middle schools from junior high school (see Figure 1). Brooks and Edwards (1978) used the same checklist developed by Alexander in 1967-68 and replicated that study. The data are displayed in Figure 1.

| Reason | Percent 1967 | 1978 |
|---|---|---|
| To move grade 9 into the high school | 24.5 | 29.2 |
| To provide more specialization in grades 5 and/or 6 | 30.0 | 20.1 |
| To bridge the elementary and high school better | 40.0 | 62.7 |
| To remedy the weakness of the junior high school | 24.5 | 36.0 |
| To aid desegregation | 6.5 | 14.2 |
| To eliminate crowded conditions in other schools | 58.2 | 47.7 |
| To provide a program specifically designed for children in this age group | 44.6 | 68.3 |
| To utilize a new school building | 20.9 | 18.7 |
| To try out a new school building | 23.6 | 22.9 |
| To use plans which have been successfully implemented in other school systems | 12.7 | 13.4 |

Note. From Perspectives: Middle School Education 1964-1984, (p. 15), J. Lounsbury (Ed.), 1984, Columbus, OH: National Middle School Association. Reprinted by permission. Data adapted from Brooks and Edwards, 1978, p. 5. The 1967 data are from the Alexander survey, 1967-68, and the 1977 data from the Brooks survey, 1977.

Figure 1. Reasons for establishing middle schools.

A more recent survey, addressing the reasons behind the establishment of middle schools, indicated the uniqueness of the middle level learner. A survey sponsored by the National Association of Secondary School Principals (NASSP) in 1981 by Valentine, Clark,

Nickerson, and Keefe polled 1,413 principals. Sixty-one percent of the respondents stated that the rational behind the adoption of their middle school was to provide a program suited to the middle level child (Valentine et al., 1981). Onofrio (1971) in surveying principals in Connecticut, as well as Brown (1981) who surveyed educators in South Carolina and other southern states, found the same--the major reason for the establishment of middle schools was to provide an educational program specifically designed for the early adolescent age group.

Although educational improvement for early adolescents seemed to be the major reason for the middle school movement, some researchers were convinced that other more economic and utilitarian reasons were not far behind. Carducci (1979) in his study of middle schools accredited by the Northwestern Association of Colleges and Schools found that the major rationale for the establishment of middle schools in this area was economic, namely relief from overcrowded secondary schools. The "bandwagon" effect also cannot be overlooked. Sinclair (1980) contends that in many instances junior high buildings and teachers became middle school buildings and teachers by merely changing the name over the door in an attempt to be in step.

Regardless of the rationale used for the decision to move from a junior high to a middle school, once that decision had been made and accepted the focus of the new organizational structure needed to be addressed. Gerson (1965) and Alexander et al. (1969)

felt that most emergent middle schools adopted the following general aims:

1. To provide a program especially adopted to the wide range of individual differences and special needs of the "in-between-agers."
2. To create a school ladder arrangement that promotes continuity of education from school entrance to exit.
3. To facilitate through a new organization, the introduction of needed innovations in curriculum and instruction. (Alexander et al., 1969, p. 69)

Such aims, it was felt, would also facilitate other needed changes. Eichhorn (1966), Alexander (1978), and Klingele (1979) all saw the need to shift the ninth grade back to the high school setting. Pumerantz (1969), George, McMillan, Malinka, and Pumerantz (1975), Clark (1971), and Arth (1983a) all strongly favor the development of middle school teacher education programs through colleges and universities leading to state certification. Alexander et al. (1969), McEwin and Clay (1983), and George (1984) indicated a great need for curriculum and instructional innovation including interdisciplinary teaming, a nongraded organization, block or flexible scheduling and teacher-student guidance programs.

Although the popularity of the junior high school was impressive, the popularity of the middle school was phenomenal. The criteria to determine a middle school developed by Alexander was that the school combines into one organization and facility certain grade configurations (usually 5-8 or 6-8) which have in the past been separated in elementary and secondary school patterns (Alexander et al., 1969). Cuff's survey of 1965-66 revealed 499

reported middle schools in the United States. Using the same criterion in 1966-67, Cuff reported 1,101 middle schools (Cuff, 1967). Kealy and Compton conducted follow-up surveys using Cuff and Alexander's grade criterion. Kealy (1971) identified 2,298 middle schools in 1967-1970. Compton (1976) reported 3,723 middle schools by 1974. Brooks and Edwards (1978) did a follow-up survey in 1977 reporting 4,060 middle schools. A survey by Brooks and Edwards (1978) also revealed that the 6-8 organizational pattern was the most popular. By 1984, the number of middle schools has grown to 8,523 as reported by the U.S. Department of Statistical Information Office (Munsell, 1984).

## Components of Middle Schools

The middle school was designed both in theory and practice to be distinct from the junior high schools of the time. This distinction was to include, not only the grade level organizational structure, but also the design and delivery of the entire educational program (Munsell, 1984). In her research on effective middle level schools, Joan Lipsitz (1983) stated that schools that meet the academic and developmental needs of early adolescents have a clear sense of purpose, a strong belief system, and saw their role as separate from that of the elementary or high school, as well as the existing junior high school. Eichhorn (1966) and Klingele (1979) also stressed the unique "client centeredness" of the middle school as being very distinct from either the existing elementary or secondary schools.

By definition, Compton (1973) described a middle school as an educational organizational structure which combines into one facility certain school grades (usually 5-8 or 6-8), which were previously separated into elementary and secondary schools, and having at least three grades and not more than five, and including grades six and seven. Alexander and George (1981) also saw the middle school as a school combining three to five grades from between the elementary school and senior high school, focusing on the educational needs of students in those grades, and designed to promote continuous educational progress for transescent students. Although the Alexander and George (1981) definition was more liberal in what grades are encompassed in the middle school, the National Middle School Association tended to favor the Compton (1973) definition.

Regardless of grade configuration, most proponents of middle schools generally seemed to agree on the major components or characteristics of middle schools. Bondi (1977), as well as Gatewood and Dilg (1975), representing the ASCD Working Group on the Emerging Adolescent Learner, felt that the following five components were especially important:

1. Focus on the individual. The school should provide opportunities for each individual to grow and develop according to his own unique capabilities and abilities. The general atmosphere relating to students should be one of recognizing that each student is in the process of becoming a better functioning, more mature human being. The middle school should foster responsibility by allowing the student to take part in decision-making by his peers. The school should also provide group guidance to assist the student in understanding the role of the individual in group action.

2. Non-gradedness. A learner-centered middle school necessitates replacing grade labels with a program of pupil-progress designed to accommodate differentiated rates of growth and allowing for exploration of subject matter to varied depth according to the interests and abilities of students.
3. Team teaching. Team teaching in the middle school implies (1) a spirit of cooperative planning, (2) constant collaboration, (3) close unity, (4) unrestrained communication, (5) sincere sharing, (6) a single unified team, (7) an invigorating spirit of freedom, and (8) an idea that the school exists as a service medium. Interdisciplinary team teaching adds another organizational dimension to the above definition. It incorporates into the structure two or more teachers representing two or more subject area disciplines responsible for all or a significant part of the instruction of the same group of pupils. The interdisciplinary team approach to teaching insures a focus on children and their needs by all teachers who work with them.
4. Flexible scheduling. Scheduling for instruction provides a structure by which the academic and social needs of students can be met.

   Flexibility becomes the key word in middle school scheduling. Team teachers should understand that schedules are flexible both in grouping and in time. A pupil's capabilities, needs, and interests determine the rate, breath, and depth of instruction. Each class size is set according to its objectives. Time is allotted to each subject discipline according to the time needed for its mastery. Particular competencies and limitations of teachers are recognized in assigning them pupils.
5. Independent study. Numerous studies indicate that students who are allowed independent study and who set their own standards for judgment are more original than those students allowed less freedom. Independent study puts the responsibility for learning on the student. The middle school teacher is needed to help the student set goals for independent study. the student must be competent in basic research skills so that the task of assembling information does not become so burdensome that it makes him feel defeated and ill equipped for the task. (Bondi, pp. 9-12)

A review of the literature on middle schools also revealed both direct and indirect correlations between the components and strategies of middle schools and the function of middle level education developed by Gruhn and Douglass in 1947 and revised in

1971. Donald Eichhorn's The Middle School (1966) cited the need for socialization programs to be both exploratory and guidance-related. The Emergent Middle School in summarizing the aims of middle schools referred directly to four of the Gruhn and Douglass functions--articulation, differentiation, exploration, and guidance (Alexander et al., 1969). Theodore Moss in his book Middle School (1969), as well as in his article for the NASSP Bulletin (1971) discussed all of the functions except exploration, which he felt should be totally separated from the academic curriculum. Although not cited in The Middle School We Need (Gatewood & Dilg, 1975) or The Middle School Curriculum: A Practioner's Handbook (Kindred, Wolotkiewicz, Mickelson, Coplein, & Dyson, 1976), the Gruhn and Douglass functions can easily be inferred in their list of characteristics of middle schools. Wiles and Bondi, The Essential Middle School (1986) reflected on all six of the functions in their analysis of the characteristics of emerging adolescents, while Alexander and George, The Exemplary Middle School (1981) emphasized guidance, exploration, and differentiation.

Although the Gruhn and Douglass functions have a great deal of philosophical importance to middle level education, few of the present authors treated all of them with equal depth. Some functions received a completely different emphasis and approach with middle school proponents. Gruhn and Douglass favored a core approach to integration whereas middle school advocates promoted the interdisciplinary team approach to curriculum integration (Vars,

1984). As stated in An Agenda for Excellence at the Middle Level by Arth, Johnston, Lounsbury, Toepfer, and Melton (1981), middle schools cannot teach students all they need to know. They must teach them how to learn and how to adjust their lives to the changes that will surround them. Middle schools must capitalize on being client centered (Arth et al., 1981).

It seemed evident from the lack of agreement on the grade structure, that middle schools were different things to different people. This has probably resulted from the fact that much of the information available on middle schools is theory rather than experimental practice (N.E.A., 1969). Wiles and Bondi (1986) maintained that the newness of the concept along with the idea that it was a client centered educational approach also contributed to the fact that middle schools were developing differently across the nation.

The name "middle school" itself was rather deceptive. One must not be lured into the trap of perceiving that junior high schools, intermediate schools, or middle schools were an "either-or" situation. According to Alexander and George (1981), California school districts in 1969 identified fourteen characteristics of the intermediate school (Figure 2). In a doctoral dissertation in 1971, John Riegle identified from the literature, eighteen basic early middle school principles (Figure 2). In 1982 the National Middle School Association submitted a descriptive list of ten elements that were implemented in true middle schools

| California Intermediate School: Characteristics (1969) | Riegle's Early Middle School Principles (1971) | National Middle School Association Elements of True Middle School (1982) |
|---|---|---|
| 1. Team teaching | 1. Continuous progress | 1. Knowledge about and committed to transescents |
| 2. Non gradeness | 2. Multi-material approach | 2. Balanced curricoulum based on transescents needs |
| 3. Flexible scheduling | 3. Flexible schedules | 3. Range of organizational arrangements |
| 4. Transitional pattern to interdisciplinary teaming | 4. Appropriate social experience | 4. Varied instructional strategies |
| 5. School structure (school within a school) | 5. Appropriate social experience | 5. Full exploratory program |
| 6. Measurable objectives | 6. Intramural activities | 6. Comprehensive advising and counseling |
| 7. Student instructional learning center | 7. Team teaching | 7. Continuous progress |
| 8. Teacher instructional | 8. Planned gradualism | 8. Evaluating compatible with nature of transescents |
| 9. Individualized instruction | 9. Exploration and enrichment | 9. Cooperative teacher planning |
| 10. Exploration | 10. Guidance services | 10. Positive school climate |
| 11. Pupil personnel services | 11. Independent Study | |
| 12. Innovation | 12. Basic skills | |
| 13. Administrative team | 13. Creative experiences | |
| 14. Auxiliary personnel | 14. Security factor | |
| | 15. Evaluation | |
| | 16. Community relations | |
| | 17. Student Services | |
| | 18. Auxiliary Staffing | |

Note. From A Study of the Extent to Which Identified Programmatic Characteristics of Middle Level Education are Implemented in Middle Schools, (pp. 34 & 35), by W. Munsell, 1984, Boulder, CO: The University of Colorado. Adapted with permission.

Figure 2. Characteristics of middle level education.

(Figure 2). An analysis of Figure 2 revealed the significant congruence between the list of characteristics. Because of this parallelism between the characteristics, it was reasonable to assume that those characteristics proposed by Riegle (1971) and subsequently referred to by Alexander and George (1981), as well as the National Middle School Association (1982), were important elements of middle level education (Munsell, 1984). It was also reasonable to assume that since team teaching is specifically mentioned in two of the lists and implied in the third, that it can also be stated as an important characteristics of middle level education.

## Team Teaching

The concept of team teaching was not new to education. Team teaching has been used in various forms in both the elementary and the secondary school. Gruhn and Douglass (1947, 1971) referred to team teaching in Function IV: Differentiation where they looked at ways to:

> provide differentiated educational facilities and opportunities suited to the varying backgrounds, interests, aptitudes, abilities, personalities, and needs of pupils in order that each pupil may realize most economically and completely the ultimate aims of education. (1971, p. 10)

Team teaching was also referred to in Function VI: Articulation as a way to, "provide a gradual transition from preadolescent education to an educational program suited to the needs and interests of adolescent boys and girls" (p. 10). Howard and Stoumbis (1970) stated that team teaching was designed to make the best use of particular knowledge and competencies of a teaching staff. They

also agreed with Gruhn and Douglass (1947, 1971), that team teaching when used with large and small group instruction and independent study was most comparable with the functions and characteristics of early adolescent learners. Wiles and Bondi (1986) identified six selected reasons why team teaching should be used in middle level education:

1. Demand for better staff utilization.
2. Demand for improvement in the quality of education.
3. Diversified student populations.
4. More sophisticated instructional media resulting from the impact of science and technology.
5. Need to provide a greater variety of educational experiences.
6. Need for greater individualization. (p. 129)

An all-inclusive definition of team teaching was difficult since the organizational and operational structures of teaching teams varied, even though the philosophical concept was similar. Certain common characteristics of the various types of teaching teams seemed to exist to allow us to formulate general working definitions. Shapin and Olds (1964) provided us with a basic definition of middle level team teaching:

> Team teaching is a type of instructional organization, involving teaching personnel and the students assigned to them in which two or more teachers are given the responsibility of working together for all, or a significant part of the instruction of the same groups of students. (p. 15)

Merenbloom (1982) and Wiles and Bondi (1986) saw three basic models of team teaching used in middle level education--interdisciplinary, disciplinary, and combination subject teams.

The interdisciplinary team usually consisted of three to five teachers responsible for teaching the core courses of English,

social studies, mathematics, science, and reading. The team was usually responsible for between 100 to 150 middle level students of either the same grade, or multi-grade level. The interdisciplinary team featured cooperative planning and instruction for a common group of students, as well as the flexibility to schedule large and small group instruction, and adjust student schedules (Merenbloom, 1982).

The disciplinary team was a single subject or discipline team consisting usually of two to six teachers with special subject area expertise. Since disciplinary teams can be re-grouped for various curricular and instructional purposes, ability grouping and remedial programs can be offered through disciplinary teaming (Merenbloom, 1982).

Combination subject teams were more similar to interdisciplinary teams than they were to disciplinary teams. Combination subject teams usually involved the teaching of two or more somewhat related subjects during a common block of time. For example, the subjects of English and social studies being taught over a two hour block of time by two or more teachers would represent a combination subject team. Merenbloom (1982) stated that combination subject teams were usually less structured than interdisciplinary teams.

## Middle Level Interdisciplinary Teaming

Although interdisciplinary teaming has been formalized as an integral part of the middle school concept, it was not exclusive to middle schools. Interdisciplinary teaming can also be found in

many high schools as well as elementary schools, but it's popularity seems to exist mainly in the various forms of middle level schools (McEwin & Clay, 1983). George (1984), Eichhorn (1980), and Wiles and Bondi (1986), felt strongly that interdisciplinary teaming was the only way to effectively organize students and teachers in middle level schools.

Interdisciplinary teams were usually comprised of four to seven teachers. The teachers represented the major subject disciplines (e.g., reading, mathematics, language arts, science, and social studies) and were usually responsible for between 100 to 150 students (Kutz, 1982). Usually ancillary personnel such as counselors, exploratory teachers, special education staff, teaching aids and other educational specialists were included in the team on an "as needed" basis.

Pumerantz and Galano (1972) saw interdisciplinary teaming as a practical way to organize a middle level school in terms of curriculum, instruction, and staffing which could enhance and stimulate the development of innovative arrangements in a school program. Interdisciplinary teaming was a teacher management system and not just a mode of instruction (Kutz, 1982). As a consequence, Pumerantz and Galano (1972) stated that it was compatible with team teaching, individualization, prescriptive learning, nongradedness, flexible scheduling and a host of other middle school components.

Wiles and Bondi (1986) stated that sometimes confusion existed in understanding team teaching and interdisciplinary teaming. It

should be understood that team teaching was an instructional method utilizing two or more teachers with a common group of students. Interdisciplinary teaming, on the other hand, was a management system governing teacher and student schedules, curriculum, instructional methods and evaluation (George, 1984; Kutz, 1982; Wiles & Bondi, 1986). Therefore, it was important to recognize that interdisciplinary teaming was a more inclusive organizational structure than team teaching. Unfortunately as one reviewed the literature, it became evident that the definitive subtleties of the two terms were not utilized by many authors. Consequently, team teaching and interdisciplinary teaming were usually referred to as congruent concepts in middle level schools (Kutz, 1982).

The key ingredient to interdisciplinary teaming was sharing. George (1984) stated that on an interdisciplinary team, teachers usually taught one subject but shared the same planning time, the same students, the same space, and the same schedule. On some teams they may share the responsibility for teaching the same basic subjects or core classes to their students. Consequently, the interdisciplinary team shares an interest in the total academic program in which students are involved (Whitford & Kyle, 1984). George (1984) stated that experienced interdisciplinary team members have identified four different shared areas of team life--organizational, community, instruction, and administration.

According to Divirgilio (1972), and Wiles and Bondi (1986, pp. 133-134), the rationale for interdisciplinary teaming was based on the following four premises:

1. That teachers in middle level schools need to be specialists in a single subject discipline. With the ever-increasing demands for competency it is not reasonable to expect a teacher to develop the background of content and method in more than one discipline to the level of effectiveness attainable when only one discipline is required.
2. That while paying attention to the need for teacher competency in a single discipline, it is well to keep in mind the child centered philosophy emphasized over the years in the elementary school. This allows the teacher to know relatively few students, and for them to know him/her well.
3. That the teacher team organizational pattern adds a new dimension, a stimulation resulting from the interaction of teachers who are planning together for the same students.
4. That the team organization, because of its format, allows many opportunities to progress in the direction of large and small-group instruction and independent study.

In order to be effective, it was imperative that interdisciplinary teams develop operational components. The purpose of these components was to establish an operational framework and authority guidelines in which the interdisciplinary team was to function. Kindred et al. (1976) suggest the following operational guidelines:

1. The team is able to set long-range and short-range goals and develop techniques for meeting these goals.
2. A climate exists that encourages the team to become involved in curriculum decision making.
3. Authority for rearrangement of instructional groups is given to the team.
4. Adequate time is scheduled for team planning.
5. Personalities, potentialities, and abilities of teachers are considered in organizing the team.
6. Leadership potential is placed in each team.
7. Various disciplines are represented on the team planning instructional process.
8. Communication channels with the administrative team are built into the structure. (p. 107)

In order to formulate goals and implement strategies to accomplish these guidelines it was important that a certain level of administrative authority and leadership existed within the interdisciplinary team. Wiles and Bondi (1986) and Klingele (1979) saw this aspect of team organization, as well as the importance of team planning time and the ability to control student and teacher schedules, as major criteria for successful interdisciplinary teaming.

Much of the administrative function of the team rested with the team leader. In order to operate effectively and coordinate the various management operations of the interdisciplinary team, some form of leadership was needed (Kindred et al., 1976). The role of the team leader was to assist the team as a communicative link with other teams, serve as a liaison with the administration of the school, and facilitate an effective group process (Kutz, 1982). Klingele (1979) saw the role of team leader as being synonymous with the qualifications expected of a master teacher. This teacher was usually a veteran staff member with excellent subject area expertise and leadership skills who was assigned a supervisory and evaluatory role and reimbursed accordingly. Currently, many interdisciplinary teams prefer to select their own leader, or use a rotating system to include each member (Wiles & Bondi, 1986). Regardless of the system used it is important that the team has effective leadership. The leader was responsible for

the team planning agenda and facilitated a two way flow of vertical and horizontal communication (Kutz, 1982).

Curricular Planning and Interdisciplinary Teaming

Curriculum planning was perhaps one of the most difficult components of interdisciplinary teaming. Although the teachers were subject area specialists, they were not organized departmentally and consequently the bond of subject area expertise was missing. Because of the absence of subject area kinship, George (1984) felt that it was important to develop a sense of community and identity within the team. Wiles and Bondi (1986) stressed the importance of flexibility, enthusiasm, sense of humor, compassion, and tolerance in the selection of interdisciplinary team members. Needless to say, the role of the principal in the selection of team members was critical, not only in the area of curriculum planning, but also in the over-all operational effectiveness of the team (Kindred et al., 1976).

The component of curriculum planning was also difficult because of the educational background and preparation of the various team members. George and McEwin (1978) and Budlong (1986) concluded that most states allowed either elementary certification or secondary certification to be acceptable for teacher preparation in the middle level grades. Consequently interdisciplinary teams could be comprised of teachers with an elementary education preparation, or a secondary education preparation, or a middle school preparation, or a combination thereof. Although studies conducted by Boyer

(1983) and Budlong (1986) showed the need for a preparation program specifically designed for middle level teachers, few at present exist. This general lack of preparation in the uniqueness of middle level education was, no doubt, an impediment in curriculum planning.

Some researchers felt that the strength of curriculum planning for interdisciplinary teams lies in their diversity (Whitford & Kyle, 1984). Wiles and Bondi (1986) stated that since interdisciplinary teachers cannot easily focus on content, they, as a result, focus on what they have in common--students and each other. Ideally, the interdisciplinary organization provides a structure within which teachers were able to use their shared perceptions of student needs and make curricular decisions accordingly (Whitford & Kyle, 1984). Teachers continued to make decisions within their own classrooms about their own content areas, but the interdisciplinary team organization also made it possible for the team to decide on general curricular goals based on the specific needs of the students that were taught in common (Whitford & Kyle, 1984).

Another key responsibility of interdisciplinary teams in the area of curriculum planning was the need to develop "interdisciplinary" relevance. Alexander et al. (1969) stated the need of middle level schools to avoid the fragmentation of the curriculum that was characteristic of departmentalized plans. Lounsbury and Vars (1978), as well as Eichhorn (1972, 1980), suggested that the curriculum of middle level schools should be

closely related to learner characteristics and not disciplinary lines. Their belief was that skills and concepts needed to be presented in a practical problem-solving context across disciplinary boundaries. Arth (1983b) concluded that curricular interdisciplinary units can be developed along thematic lines. Such units would be developed by the interdisciplinary team with a thematic thread running through each discipline. Worsham (1986) acknowledges the difficulty and frustration of going through long planning sessions with teachers of other disciplines trying to find and develop appropriate interdisciplinary themes and concepts. Worsham and Austin (1983) in a study of the effect of thinking skills instruction on verbal SAT scores formulated the "Inclusion Process Model" for developing interdisciplinary units in the areas of language arts, mathematics, social studies, and science. The common denominator for ascertaining the central interdisciplinary theme was the thinking process (Worsham, 1986). Analysis of Worsham's model and the techniques advocated by Arth (1983b) and Eichhorn (1980) for developing interdisciplinary units showed a certain similarity--learner characteristics.

Although interdisciplinary units were recommended for curricular planning in interdisciplinary teaming there were certain cautions. Wiles and Bondi (1986) stated that teams need to have worked their way through the group dynamics process and reached a level of effectiveness and personal comfort before they developed successful interdisciplinary units. Arth (1983b), Eichhorn (1980), and Worsham

(1986) implied that interdisciplinary units were not the entire fabric of the curriculum but merely threads that showed the interrelationship of the content with the subject area disciplines. Wiles and Bondi (1986) recognized that the middle school concept of gradualism also applied to interdisciplinary teaming, as well as to interdisciplinary curricular units. That was to say that the concepts were used more frequently in the lower middle level grades and less frequently at the upper middle level grades.

The Transescent Learner and Interdisciplinary Teaming

In 1966 Donald Eichhorn coined the phrase "transescent" in reference to the pre and early adolescent student who was caught in the middle years between childhood and adolescence. The literature was filled with accounts of the complexity and turbulence of life between the ages of ten to fourteen (Wiles & Bondi, 1986; Eichhorn, 1966; Alexander & George, 1981; Compton, 1973; Kerfut, 1977; Musholt, 1974). The same literature also stressed the extreme variability of the group. Margaret Mead (1965) called our attention to the fact that transescent children were more unlike each other than they have ever been before or ever will be again in their lives. With this in mind it was easy to see why a "one size fits all" educational program would not be successful for transescent students.

Transescents were characterized by vast differences in physical and emotional characteristics both between the sexes as well as within the same sex. Glandular imbalances usually produce

disproportionate physical growth and sexual development causing great concern and alarm (Wiles & Bondi, 1986). In The Middle School We Need (1975), Gatewood and Dilg discussed, at length, the erratic and inconsistent emotional behaviors ranging from anxiety, to fear, to bravado that are triggered by chemical and hormone imbalances. Tanner's study (1963) suggested that the age at which pubescence occurs has been gradually decreasing. Bondi (1977) has concluded that a new grade arrangement of 5-8 or 6-8 for middle level education would be more realistic. Regardless of the grade structure, coping with these physical and emotional changes causes great strain and stress on the transescent, as well as on the environment in which he/she functions. Such great changes have led Harvey (1970) to conclude that there is no such thing as "normal" behavior for these students. There is "typically transescent" behavior with a tremendous variation being normal.

Studies on intellectual development have played an important role in developing educational programs for transescent students. Piaget's work on the identification of developmental stages was the most noteworthy. According to Piaget's theory, most middle level students will either be in the early phases of the period of formal operations or at various subphases within that major period (Flavell, 1963). As Flavell indicated, this period was marked by the students' ability to deal with both the real and the possible. Epstein (1974, 1978), and Epstein and Toepfer (1978) suggested that the brain grows in a series of identifiable and predictable spurts. Epstein

and Toepfer (1978) also suggested that the period of eleven years to fourteen years of age is marked by relatively slow brain growth. Other brain related research conducted around the subject of cognitive study by Zelnicker and Jeffrey (1976) indicated that learning can be difficult when a mismatch is present between the learner's cognitive style and the organization of the curriculum.

Although the results of brain related research seem inconclusive at present, they have caused educators to look seriously at the principles of curriculum and instruction development for middle level students (Little & Shulman, 1984). Johnston (1984) stated that such diverse learning styles, differentiated brain development, and dominance in hemisphericity experienced by transescents mandated a varied approach. That approach should make use of as many different intellectual activities and information processing strategies as possible. Brown (1981) and Riegle (1971) state that instructional planning by teaching teams, continuous progress, individualized instruction and remedial reinforcement were key instructional strategies for transescent learners. Wiles and Bondi (1986) concluded that the flexibility of the interdisciplinary team approach to instructional planning and implementation possessed the key ingredients necessary for curriculum and instructional development for middle level students.

According to Lipsitz (1983), successful schools for transescents self-consciously, and deliberately choose to become environments that promote social development, as well as academic competence.

Johnston and Markle (1986) in a report on the trends and practices of effective middle level schools discussed the importance of a positive social-emotional climate for student success. They felt that effective middle level schools had a positive social-emotional climate, and were schools that were encouraging, welcoming, and supporting; and were places where student self-esteem was high. Many authors discussed the unstable and fragile nature of self-esteem during early adolescence due to the unstable, informal peer associations and peer group formation that occurs during that period of maturation (Simmons, 1973; Little & Bird, 1983; Lipsitz, 1983; Blyth, Simmons, & Carlton-Ford, 1983). According to Johnston and Markle (1986), there was a high correlation between self-esteem, peer acceptance, and academic achievement. Teachers were in a position to influence the formation of peer groups by the way they choose to organize their classrooms. Structured cooperative or team learning has favorable effects upon students' mutual concern, the relationship among students of different racial or ethnic background, students' self-esteem, and the general positive climate of the middle level school (Beasley, 1980).

Wiles and Bondi (1986) listed twenty-one advantages of interdisciplinary teaming. Ten of those advantages were directly related to the transescent learner and the interdisciplinary team approach to curriculum and instruction:

1. More than one teacher with the knowledge of scheduling, use of instructional materials, grouping and instructional methods benefits individual student learning.

2. Curriculum among subject areas can be coordinated so that students can relate one subject to another and gain greater breadth of understanding about subject relationship.
3. Teachers can better understand individual differences in students when more than one person is making observations and evaluations. Therefore, discipline problems are more easily handled and teachers can cope with student differences more effectively.
4. The interdisciplinary team approach enables teachers to contrast a student's behavior and ability from class to class enabling them to develop a systematic and consistent approach to helping the child.
5. Scheduling control allows teachers greater flexibility to meet student needs with large-small group instruction, remedial work and independent study.
6. Flexible time schedules can be made more conducive to students' developmental needs at this age level than can rigid departmentalized schedules.
7. Teachers are more aware of what their students are learning in other classes. They have a feel for what assignments, tests, and projects are making demands on their students' time.
8. Interdisciplinary team teaching leads to economy of learning time and transfer among students.
9. Student leadership is distributed among all the teams since each team's students are typical of the total school community.
10. Students are able to identify themselves with a smaller school within a school. With team representation on student council, the students are more closely related to the student government. (pp. 133-134)

The Middle Level Teacher and Interdisciplinary Teaming

Kutz (1982) in his study of teacher perceptions of team teaching organizations maintained that there are three concepts drawn from social system theory that were critical to the teachers' involvement in interdisciplinary teaming. Kutz (1982) identified these concepts as boundary maintenance, communication, and linkage. Loomis (1961, p. 63) defined those elements of the social system as follows:

Boundary maintenance--preservation of who or what belongs to the system

Communication--the process which transmits information and the way in which knowledge is formed by interaction

Systematic linkage--alliance between independent social systems for goal attainment

Loomis (1961) and Kutz (1982) also maintained that in teaming the three processes function together with a high degree of "interregulatedness."

Loomis (1961), Denzin (1978), and Kutz (1982) saw boundary maintenance as those aspects of group life, such as goals, norms, and sentiments, which strengthened the groups' ability to preserve itself from outside influence. Group cohesiveness was the end product of a group with a high degree of boundary maintenance. Kutz (1982) also stated that a groups' ability to control and monitor its own input and output was another way of strengthening boundary maintenance. Therefore, groups that controlled the ideas or concerns that they wished to address and those ideas and concerns that were passed on from one group to another also exhibited a high degree of boundary maintenance. Loomis (1961), Hall (1977), and Kutz (1982) stated that a high degree of boundary maintenance resulted in a high degree of group cohesion. Of importance to interdisciplinary teaming, these same authors concluded that as a group became more cohesive, it became less committed to other groups and to the organization as a whole. The groups' development seemed to move from cohesiveness to complacency. John Wiles (1976) acknowledged this development and cautioned team leaders and administrators about the continuous need for team challenge. Wiles (1976) stated

that interdisciplinary teams in middle level schools tended to evolve through at least five stages as they developed into fully functioning cohesive units:

> Stage 1. Teams are formed and exist in name only. Teachers are either still acting in a self contained manner or are closely aligned in a social network. Administrative arrangements to facilitate the team development, such released planning time, are nonexistent.
> Stage 2. With the function of teams, administrative support needs are recognized and built in. Teachers begin planning on a regular basis, but primarily for coordination of events. Subjects are still treated independently and usually follow one another in block time.
> Stage 3. Considerably greater cooperative arrangements begin to emerge among team members. Some work between subjects and some extracurricular activities shows initial signs of team imagination.
> Stage 4. The majority of teaching in the team is now along thematic lines. Old subject disciplines are barely visible. Planning and communication is improved with concern for cooperation rather than coordination. The team is still perceived as a group of teachers within a building.
> Stage 5. Team cohesion is very tight. Planning and communication feedback is on-going. Students and other support personnel are involved in planning and evaluation sessions. Activities and resource use spill out of the building and into the surrounding community and environment. (p. 73)

Kutz (1982) cautioned that team cohesion at Stage 5 could reach the danger zone of complacency without checks and balances on the social system. Wiles and Bondi (1986) also discussed the importance of a thorough understanding of the process of group dynamics when implementing interdisciplinary teaming. Hall, George, and Rutherford (1979), in their research on measuring stages of concern about educational innovations as part of Project/CBAM, stated that individuals or teams with a high degree of concern about an innovation (i.e., interdisciplinary teaming) will usually refocus

that concern by replacing or drastically altering the present form of the innovation. Loucks, Newlove, and Hall (1975), also a part of the Project/CBAM, stated that individual or group behavior resultant from a high degree of innovation usage will seek to integrate and renew different aspects of the innovation until the concept was so changed that a new innovation was formed. Regardless of which view of social system change one chooses to follow, the literature was clear that the responsibility for monitoring and controlling the direction and focus of interdisciplinary teams rests with the agency that created them--the principalship (Wiles & Bondi, 1986; Johnston, 1984; Merenbloom, 1984; Madden, 1979; McCann, 1980).

Another element of the social system important to teachers in interdisciplinary teams was communication. Kutz (1982) maintained that communication of intent, expectation, and feeling both within and between groups was necessary to establish a cohesive organizational structure. However, Loomis (1961) cautioned us that the more cohesive, unified and isolated the groups, the more limited and slower the communication would be transmitted from group to group. Kutz also maintained that information within the group or team would travel more efficiently if both the intent and feelings were open and understandable (1982). Too much information within the team may also slow the coordination. Kutz (1982) and Loomis (1961) stated that since cohesive interdisciplinary teams tended to be more isolated, mechanisms must be established to enable the transmitting of information from team to team.

Loomis (1961) and Hall (1977) concluded that some form of linkage was needed to assist cohesive groups to communicate with one another as well as with the organization as a whole. Linkage defined by Loomis (1961) was merely the joining together of separate groups or social systems for a common end. The exchange of resources such as students, materials, money, time, or information was one form of linkage for joining social systems (Kutz, 1982). In interdisciplinary teams, sometimes this linkage occurred through an agent who was assigned the task of integrating the communication of the separate social systems--the team leader. Kutz (1982) concluded that the role of this agent must be legitimized by some value or by some authority placed upon it by those who were represented and those with whom the agent interacts. Adequate resources and equal status must accompany linking agents in order to effectively interact with one another (Loomis, 1961). In examining education through the research of social systems, one can see the relationship of the teacher, team leaders and principal in the process of interdisciplinary teaming.

The Middle Level Principal and Interdisciplinary Teaming

Research showed that strong administrative leadership was needed in middle level schools. Edmonds (1979), Little (1981), Little and Bird (1983) and Lipsitz (1983) stated that successful middle level schools were led, not simply managed. Manasse (1984) stated that principals must develop a common belief system and shared understanding about the role and function of the institution.

According to Vaill (1982), the effective middle level administrator must reinforce the values and belief systems of the school through continual symbolic actions called purpose modeling. Vaill (1982) also pointed out that this continuous stream of actions by the principal clarifies and encourages consensus and commitment to the institution's basic purpose while communicating to the staff the administrator's vision of where the school should be going. Manasse (1984) referred to this as the act of putting theory into practice. Swain and Needham (1984), in a monograph prepared for the National Middle School Association on the implications of the A Nation At Risk Report of 1983, concluded that, "effective middle level leadership must possess three skills--human skills, management skills, and technical skills" (p. 57). In an indepth study on the middle level principalship, when principals were asked what they perceived to be their greatest strength in effective administration, almost all mentioned their human relations skills (Keefe, Clark, Nickerson, & Valentine, 1983). Research by Herriot and Gross (1979) along with Isherwood (1973) stated that these same skills required of effective principals exactly paralleled those needed by other professional managers.

Effective middle level administrators must strongly believe in the purposes and goals of the middle level school and have a vision of the needs that the school should be addressing. The middle level principal must not only be capable of managing the resources of the institution (time, space, personnel, content, and

methods) but must also be able to diagnose educational problems and initiate, encourage, and facilitate instructional improvements (DeBevoise, 1984). In a study of personal characteristics of effective school principals, Blumberg and Greenfield (1980, p. 12) cited the following traits:

1. A propensity for clear goals and to have these goals serve as a continuous source of motivation.
2. A high degree of self-confidence and openness to others.
3. A tolerance for ambiguity.
4. A tendency to test the limits of interpersonal and organizational systems.
5. A sensitivity to the dynamics of power.
6. An analytical perspective.
7. The ability to be in charge of their jobs.

Keefe et al. (1983) in their extensive study, The Middle Level Principalship, Volume I and II, concurred with Blumberg and Greenfield's findings.

Besides the ability to put theory into practice, middle level principals have many more responsibilities to the interdisciplinary team. Merenbloom (1984) maintained that the middle level principal was also responsible for staff or team selection and development, coordination and communication, the general educational climate, and evaluation of the interdisciplinary team.

Alexander et al. in The Emergent Middle School (1969) discussed three models of team organizational structures--the formal hierarchical structure, the emerging leadership structure, and the semihierarchical structure. Alexander et al. (1969) cautioned against the formal hierarchical structure because of the degree of absolution of responsibility for decisions on the part of the team

members. On the other hand, the emerging leadership structure seemed to suffer from a lack of organization since it has no formal leadership (Alexander et al., 1969). The semihierarchical organization structure joined the team members together in a close working relationship with each member obligated to assume the responsibility for team leadership in given areas. The leadership can rotate or a team member with leadership talents may, with the approval of the other members, serve as the administrative chair (Alexander et al., 1969). Alexander et al. (1969) concluded that the personnel selection for the team and the choice of the team organizational structure to be used with the interdisciplinary team were interdependent decisions. Since the personalities of one team may not lend itself to a particular organizational model, the principal may find it necessary to be flexible in these areas depending upon the resources available (Alexander et al., 1969).

Perhaps the greatest responsibility for the principal in interdisciplinary teaming was in the area of staff development. Since middle schools are expanding, Lipsitz (1980) stated that teachers have been recruited from the ranks of both elementary schools and high schools. Budlong (1986) argued that since the common practice was to accept either elementary or secondary training for middle level teachers in lieu of specialized middle level certification, the role of the administrator in staff development was greatly burdened. This was also complicated by the fact, according to Alexander and McEwin (1984), that middle level

principals themselves were usually lacking middle level certification or training. There was also evidence to suggest that teachers may not understand the rationale behind interdisciplinary teaming even though they were using the concept, according to Kerfut (1977). Lipka's study (1977) showed that confusion existed between the perceived roles of principals, interdisciplinary team members, and team leaders. Team leaders did not view instructional coordination and quality team planning as part of their responsibilities, while administrators did perceive these as team leader's roles. Lortie (1975) suggested that this resulted from teachers' desire to maintain their autonomy and sense of professional equality rather than engage in administrative tasks. Skoczylas' (1977) study on middle school decision making also supports the conclusion that interdisciplinary team members felt that they had not been totally informed on the focus and directions of the teaming concept and their expected role in that concept by administrators. These conclusions seem to give weight to the argument by Kindred et al. (1976) that principals can greatly improve middle level education through collaborative procedures between staff and administration. Lipka (1977) and Kindred et al. (1976) agreed that one of the major deficiencies in middle level education that had great impact on the school climate was the lack of clarity and staff development on such major concepts as interdisciplinary teaming. Kindred et al. (1976) goes on to say that:

> The middle level principal should be a communications expert. He needs to know what people in the organization think and

> feel, whether or not they are experiencing a sense of progress in their work, and if they have desires and frustrations with which he should be concerned. . . . He is fully aware that his method of operation in listening and communication is a vital factor in the success of the leadership-teacher team. (p. 166)

As Kutz (1982) maintained, little research had been done on the principal's role in interdisciplinary teaming, particularly in the area of evaluation. Consequently, the lack of substantive research makes generalizations very difficult. Evaluation of interdisciplinary teams was complicated by the fact that the principal must not only be able to factor out the strengths and weaknesses of the individual teacher, but also have a keen understanding of the interrelationship of the teaming process on those strengths and weaknesses (Merenbloom, 1984). Suggestions for the improvement of one factor may be offset by a loss in another area. Because of this sometimes delicate balance between the individual and the team's performance, Fuller (1977) and Merenbloom (1984) stated that administrators must spend a considerable amount of their time observing classes, conferring with teachers and evaluating the competencies of the staff as well as the general success of the team.

## The Process of Educational Change and Interdisciplinary Teaming

Research centering on the process of change in schools has recognized the complexity of the social organization. Educational change research also recognized that change involved altering more than attitudes or creating a willingness in individuals to engage

in new behaviors. Change involves organizational structures and patterns or interactions among individuals (Herriot & Gross, 1979). Loomis (1961) in his study on Modern Social Theories described school as a relational social system--a social system where the elements stand in some relation or pattern to one another and were dynamic with one another. Wiles (1976) and Bondi (1977) described curriculum and instruction as dynamic elements of middle level education. John Wiles (1976) also stated that middle level interdisciplinary teams were also dynamic and tended to evolve through a series of predictable stages. It, therefore, seemed reasonable to conclude that interdisciplinary teams were dynamic relational elements of the school social system.

A concern that appeared to be the resultant by-product of social system change was structural lag (Whitford & Kyle, 1984). Structural lag occurred when the substitution of one technique for another or the addition of new materials was not accompanied by other changes in the social or organizational structure (Sarason, 1971). For example, teachers may learn how to use a new innovation but continue to be evaluated by administrators not fully cognizant of the purpose and techniques of the new innovation. Whitford and Kyle (1984) saw structural lag as sabotaging the intended affects of educational innovations. Sarason (1971) and Schlechty (1976) stated that structural lag must be expected and discussed by all concerned parties when making innovational changes. They also stated that frequently structural lag occurred because of communication and

coordination difficulties between those with "expert" authority and those with "legal" authority. Whitford and Kyle (1984) concluded that at the building level, the principal was in a position to coordinate both the legal and the expert authority since such role separation should not exist at this level. This conclusion was also supported by research on effective schools, as well as, research on the role of the principal as a change agent (Whitford & Kyle, 1984).

Much of the early work on educational change and teacher concerns was done by Francis Fuller. Fuller (1969) discovered that teacher concerns about education occurred in a natural sequence and were not simply the direct consequence of a particular teacher education program. Fuller's (1969) "Concerns Model" proposed that teacher concerns exist in three phases or areas--self, task, and impact. The area of impact concerns was subdivided into several levels. Fuller's pioneering work along with Manning (1972) and Brown (1975) on teacher concerns served as the developmental basis for the Concerns-Based Adoption Model.

According to Hall et al. (1979), the Concerns-Based Adoption Model (CBAM) was developed from the research of Fuller, Manning, Watkins, and Brown by staff members at the Inter-Institutional Program of the Research and Development Center for Teacher Education at the University of Texas at Austin. These staff members noted that teachers and professors involved in the process of educational change appeared to express similar concerns

as those identified by Fuller, about educational innovations (Hall et al., 1979). The Inter-Institutional staff collected qualitative data through on-going field work from 1970 to 1973. The result of this research, according to Hall and Loucks (1977), was that there were definite categories of educational innovation adopter concerns and that those concerns changed in a logical progression as innovation users become more skilled in using the innovation. Fuller's three phases were developed into seven stages of concern (SOC) about an educational innovation or change. The Stages of Concern (SOC) concept makes up the first dimension of the Concerns-Based Adoption Model (CBAM).

According to Hall and Loucks (1977), the total representation of the thoughts, feelings, preoccupations, and considerations given to a particular issue or task was called a concern. Hall and Loucks (1977) also stated that each person perceives and mentally contends with a given innovation differently; thus there were different kinds of concerns. Therefore, responses to the demands of an innovation were highly individualistic. Hall et al. (1979) concluded that in response to the demand of an innovation, our minds explore ways, means, potential barriers, possible actions, risks, and rewards in relation to the demand. The mental activity composed of questioning, analyzing, and re-analyzing, considering alternative actions and reactions, and anticipating consequences was a concern. Hall and Loucks (1977) stated that it was the person's perceptions that stimulate concerns, not necessarily the reality of the situation.

Hall and Loucks (1977) also stated that the innovation or educational change and its use provides a frame of reference from which concerns can be viewed and described.

Hall et al. (1979) felt that one's closeness to, and involvement with, an educational change or innovation will alter the type and intensity of one's concern about that innovation. Hall and Loucks (1977) stated:

> Many types or levels of concerns can be experienced concurrently; however, there are normally differentiated degrees of arousal. With each person, certain demands of the innovation are perceived as being more important than others at a given time. Thus, the degree of arousal (intensity) of the different types of concern will vary. Concerns will vary depending on the amount of one's knowledge about and experience with the innovation. Use and nonuse make a difference; whether the innovation might be used sometime in the future, direct involvement with it has just begun, or the person is highly experienced with the innovation will likely mean that different types of concern are more intense. In addition, there appears to be a predictable pattern to the movement of intensity of concern across types. (p. 5)

As Fuller (1970) pointed out, concerns about educational innovations were developmental, in that earlier stages of concern must be resolved or lowered in intensity before later stages of concern can emerge or increase in intensity. Hall et al. (1979) cautioned that the resolution of earlier stages of concern and the emergence of later stages of concern were not simply accomplished by more knowledge, time, or experience with an innovation. Many other factors influenced this. The priority of the innovation, the capabilities of the user, and the general quality of the innovation have a great effect on how stages of concern were resolved. Hall and Loucks (1977) stated that usually a user's concern about an

innovation progresses from the early "unrelated stages," to the "self stages," to the "task stages," and finally to the "impact stages."

Hall, Wallace, and Dossett (1973) identify and define the following seven stages of concern:

> Awareness: Little concern about or involvement with the innovation is indicated.
> Informational: A general awareness of the innovation and interest in learning more detail about it is indicated. The person seems to be unworried about herself/himself in relation to the innovation. She/he is interested in substantive aspects of the innovation in a selfless manner such as general characteristics, effects, and requirements for use.
> Personal: The individual is uncertain about the demands of the innovation, her/her inadequacy to meet those demands, and her/his role in relation to the reward structure of the organization, decision making, and consideration of potential conflicts with existing structures or personal commitment. Financial or status implications of the program for self and colleagues may also be reflected.
> Management: Attention is focused on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, scheduling, and time demands are utmost.
> Consequence: Attention focuses on impact of the innovation on students in her/his immediate sphere of influence. The focus is on relevance of the innovation for students, evaluation of student outcomes, including performance and competencies, and changes needed to increase student outcomes.
> Collaboration: The focus is on coordination and cooperation with others regarding use of the innovation.
> Refocusing: The focus is on exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a powerful alternative. The individual has definite ideas about alternatives to the proposed or existing form of the innovation. (p. 7)

The second dimension of the Concerns-Based Adoption Model (CBAM) analyzing educational innovation or change was the level of use (LOU). The level of use concept described the behavior of

individuals as they became more familiar with, and more skilled in using, the educational innovation (Loucks et al., 1975). The LOU dimension to CBAM attempted to account for individual variation in the use of an innovation by examining eight discrete levels of usage that an individual user may demonstrate. The levels ranged from a lack of knowledge of the innovation to an active, sophisticated and highly effective use of it, to an active search for a superseding innovation (Loucks et al., 1975). Hall et al. (1973) maintained that, like stages of concern, levels of use were developmental and that effective usage of an educational innovation occurred usually after repeated usage. The level of use (LOU) dimension described the various behaviors of the innovation user through various stages or levels--from spending most efforts in orientation, to managing the innovation, and finally to integrating the use of the innovation (Hall et al., 1975). They maintained that before actual usage, the teacher must become familiar and knowledgeable about the educational innovation. Usually initial usage was rather disjointed with frequent management problems occurring with the innovation. Hall et al. (1975) stated that with continued use, management became more routine and the teacher was able to direct greater effort toward more effective usage. Integrating what he or she was doing with the innovation with what others were doing became easier.

Hall et al. (1975) further stated that the level of use dimension focused only on describing the behaviors exhibited by

innovation users and not on the attitudinal, motivational, or other affective aspects of the user. They also maintained the LOU does not attempt to explain causality, only to identify what the user is doing. The eight identified levels of use focused on behavior that was characteristic of the innovation user at that particular stage of development (Hall et al., 1975). In order to organize the various behaviors in a manageable way, a framework of indices and decision points had been developed to increase the probability that the specific level of use could be understood and measured validily and reliably (Loucks et al., 1975). Although the concept of LOU represented a developmental growth continuum, Loucks et al. (1975) stated that there were key points that distinguished each of the eight levels of use, and that by checking these decision points it was possible to quickly assign an overall LOU to a particular innovation user.

The focused interview was the procedure selected by Project CBAM to measure the innovation user's level of use. Merton, Fiske, and Kendall (1956) stated that the focused interview utilized a guide with a list of objectives and questions but also gave the interviewer latitude to probe farther within the framework of the interview guide. Maccoby and Maccoby (1954) noted that the ability of the interviewer in the focused interview to follow-up responses for clarity and meaning avoided meaningless and misleading questions and answers. Observation had also been discussed as an alternative to the focused interview. Dean, Eichhorn, and Dean (1967, p. 3) defended the advantages of the focused interview as follows:

1. Interviews can get past events, at events when the interviewer is alone, and at situations where outsiders would alter behavior;
2. Interviews can reveal behavior not occurring during times when observations are made;
3. Interviews can reveal relationships that cannot be observed;
4. Interviews are quick and efficient.

Maccoby and Maccoby (1954) also pointed out that if a number of questions were asked that differ in form and content but were related in a predicted meaningful and logical style through a focused interview, then a high correlation between responses to those questions indicated that they tap a common characteristic of the individual user.

Loucks et al. (1975, p. 8) defined the eight major levels in the LOU concept as follows:

Nonuse--The teacher does not know the innovative program exists and is doing nothing in relation to it.

Orientation--The teacher is finding out about the program by soliciting and/or reading general descriptions. After becoming familiar with it, a decision is made whether or not to use the program. (Note: In many cases use of the innovation is mandated, so this exploration activity is often not for purpose of making a decision.)

Preparation--The teacher is actively learning in detail about the role, the procedures and the materials required to use the innovation. This may include attendance at workshops and meetings and detailed examination of the materials.

Mechanical Use--The teacher's use of the innovation reflects lack of effective management and lack of anticipation of more than day-to-day needs, problems and events. Changes that are made are primarily to meet such teacher needs as order, quiet and less out-of-school preparation time.

Routine--At this level the logistics and organization required by the program have been established and problems are handled routinely. Few if any changes are made in how the innovation is used.

Refinement--The teacher is making changes in the use of the innovation based on its cognitive and affective effects on children. Materials and procedures are varied, either

as a whole or in reference to the individual child. Feedback may be solicited from the children about the program, and changes are made based on this information.

Integration--The teacher at this level is expanding use of the innovation by collaborating with one or more teachers for the purpose of achieving greater impact. This is typically done through regularly sharing resources, information and/or children in an effort to increase learning.

Renewal--At this level the teacher is actively looking for other innovation or ideas to supplement or replace the innovation altogether. Various combinations of these are explored and tried.

The purpose of the Concerns-Based Adoption Model (CBAM) developed at the University of Texas at Austin, was to establish a viable framework to understand, facilitate, and evaluate the extremely complex phenomenon of educational change (Heck et al., 1981). The underlying premises to Project CBAM were:

1. Change is a process, not an event;
2. The understanding of the change process in organizations requires an understanding of what happens to individuals as they are involved in change;
3. For the individual, change is a highly personal experience;
4. For the individual, change entails developmental growth in terms of feelings about and skills in using the innovation;
5. Information about the change process collected on an ongoing basis can be used to facilitate the management and implementation of the change process. (Heck, Stiegelbauer, Hall, & Loucks, 1981, p. 8)

They also maintained that the facilitating of educational change involves both continuous and systematic interactions. The stages of concerns, dimensions, and the levels of use dimension represented the key diagnostic variables that a change facilitator needed to monitor in order to understand when to intervene, and where to intervene to facilitate continued innovation effectiveness (Heck et al., 1981).

## Research on the Effectiveness of Middle Level Schools and Interdisciplinary Teaming

Although the impact of the junior high school had been felt since the turn of the century, the middle school, and middle school research was relatively new. In so far as interdisciplinary teaming was a major component of middle schools, research on this aspect of middle level education had been ongoing for approximately twenty-five years. Therefore, a tremendous volume of related research was not in existence. Johnston and Markle (1986) remarked that the newness of the concept as well as the complexity of the problem of middle level education, makes it extremely difficult for the researcher. Consequently, absolutely definite conclusions were few indeed. Johnston and Markle (1986) also stated that good research should reflect the context in which it was conducted, and because schooling goes on in many varied contexts, it was no surprise that research findings rarely presented a completely unified view on a given issue. The major areas of research examined in this part of the study included academic achievement, student self concept, school climate, teacher job satisfaction, and implementation.

Trauschke's study (1970) comparing junior high school students' achievement in grades seven and eight to middle school students' achievement in the same grades, found that the middle school students performed as well as their junior high counterparts. Trauschke (1970) also found that after two years in the middle school as

fifth and sixth graders, the seventh and eighth grade students' achievement was higher for the middle school students than for their junior high counterparts. Mooney's study (1970) of fifth, sixth, seventh, and eighth graders in Florida middle schools compared to Florida junior high schools, found no difference in student achievement. Evans' (1970) similar study of Fort Worth students supports this also, although Evans did find that middle school students scored higher in reading and study skills, but lower in math than junior high students. Eholich and Murray (1969) and Glissmeyer (1969), however, found no significant differences in achievement for middle schoolers when compared to equivalent students in other forms of middle level education. Sardone's (1976) study in New Jersey, however, found that middle school students outscored junior high students in the areas of basic skills, verbal creativity, and figurative creativity. This finding was also supported by Hunsaker (1978) and Case (1970). Yet interestingly, Gaskill's study in 1971 found that junior high schools outscored middle school students in the areas of language, and arithmetic skills. Wiles and Thomason (1975) concluded that many of the early studies on student achievement suffered from poor research procedures as well as a narrow and biased focus.

Later studies comparing junior high school and middle school achievement were equally inconclusive. Calhoun (1983), Draud (1979), Beasley (1980), Johnston and Markle (1986), and McEwin and Clay (1983) all concluded that there was little significant difference

between the academic achievement of junior high students compared to middle school students.

Research on the self concept of middle school students compared to other middle level education organizational structure were somewhat more conclusive. Case (1970), Eholich and Murray (1969), Elie (1970), and Trauschke (1970), however, found no significant difference between the self-concept of middle school students and the control students. Schoo's study (1970) found no difference in self-concept but did indicate that middle school students had more positive attitudes toward school than did junior high students. Kutz's study (1982) concluded that middle school teachers shared their sense of values and self-concepts more closely with their students than did junior high teachers. According to Kutz's findings, middle school students attained a more positive score on the Coopersmith Self-Esteem Inventory. The positive self-concept finding for middle school students over junior high school students was also supported by Armstrong (1975), Beane (1983), Baker and Beauchamp (1972), Gateman (1974), and Hartzell (1980). All of these authors concluded that although the difference in self-esteem was evident, it was not to any great degree.

Educational climate or attitudes about school seemed to fare somewhat better in the research on middle school. Baker and Beauchamp (1972), as well as McGee and Krajewski (1979), found that teachers' attitudes towards teaching and education as well as students' attitudes towards school and learning were more positive

under the middle school concept. They attributed these positive attitudes to interdisciplinary teaming since it enhanced communication among teachers. McBride (1972) and Highberger (1976) found that middle school teachers possessed a more humanistic attitude toward student control than did junior high teachers. Glissmeyer's study (1969) on middle school teachers' attitudes toward school compared with elementary teachers' attitudes found that the middle school teachers were more positive than their elementary counterparts. Bryan and Erickson (1970) found a significant difference in the positive attitudes of these groups relative to the middle school concept--teachers, students and parents. Flynn and Stone (1975) discovered that student adjustment to middle school was accomplished more quickly than student adjustment to junior high school. Manning (1980), and Soileau (1981), in more recent studies on student attitudes, found that middle school students had significantly more positive perceptions toward school when compared to junior high school students.

Middle school teachers as a group tended to rate their job satisfaction higher than junior high school teachers. Pook (1981) found a positive correlation between middle school teachers' job satisfaction when compared with junior high school teachers' job satisfaction. Glissmeyer's study (1969) found that middle school teachers were more satisfied with their job than elementary school teachers. In a 1981 study at Oaklea Middle School, Lewis concluded that teachers under the middle school concept expressed greater

job satisfaction than they experienced under the junior high plan. Kutz (1982) found that middle school teachers' planning time fostered collegial support that was not evident in junior high schools. Munsell's (1984) study on implemented characteristics of middle schools supports this.

Implementation of the middle school concept was the subject of much of the research on middle level education. Wiles and Thomason (1975) reviewed twenty-seven middle school studies. Because of poor design and unusable data in fourteen of these, Wiles and Thomason (1975) concluded:

> After nearly ten years of existence there is little evidence available by which to evaluate the merits of middle school education.... There is need for a systematic study of middle school education, emphasizing those qualities which are distinctive to middle school education. Particularly needed at this time, is a method of identifying middle schools which, in their practices, follow the guidelines of the middle school literature. (pp. 422-23)

Riegle (1971) identified eighteen essential characteristics of middle schools, and assessed the implementation of those characteristics in middle schools in Michigan, and in a selected national sample. Riegle (1971) found that the level of implementation of the eighteen middle school characteristics did not correspond to the increase in the number of middle schools. Beckman (1981), in replicating Riegle's study, found that schools with the titles of elementary school, middle school, and junior high school were more similar than different in terms of implementation of the eighteen basic middle school principles. Bohlinger (1981) in a similar study of Ohio middle schools reported

the same findings. Nesper (1981) and Holmes (1981), studying the disparity between theory and practice as it applied to the eighteen essential characteristics, concluded that twenty years of advocacy of the middle school concept failed to produce a high level of implementation. Munsell (1984) in his study of the implementation of identified programmatic characteristics of middle schools supported the same conclusion. Calhoun (1983, p. 178) after a review of the comparative studies on middle schools stated the following:

1. There is little difference in academic achievement between middle and junior high school pupils.
2. The quality of the school program is more important than the grade level organization.
3. Junior high schools and middle schools appear to be more alike than different, and from an empirical perspective they seem to differ, systematically, in name only.

An examination of the research on interdisciplinary teaming as it relates to the middle school concept found similar results in the areas of academic achievement, student self-concept, school climate, teacher job satisfaction, and implementation.

Whitford and Kyle (1984) had stated that interdisciplinary teaming was an asset to student achievement because teaming increased communication about students between teachers, administrators and parents. Such communication also seemed to enhance the likelihood that perceived student needs will be addressed more quickly. Earlier research studies on interdisciplinary teaming indicated that no significant difference has been found between student achievement and interdisciplinary teaming in comparison to other middle level

school instructional-curricular strategies (Armstrong, 1975; Mooney, 1970; Calhoun, 1983). Some researchers have noted slight student achievement increases when interdisciplinary teaming was used along with other middle school concepts. Baker and Beauchamp (1972) found that following a conversion from a junior high school to a middle school, student achievement increased for seventh and eighth grade students. Brantley (1982) found that reading and math achievement was higher in middle schools using interdisciplinary teaming when compared with traditional junior high schools. Cohen (1976), however, reviewed sixty-six studies on team teaching, including interdisciplinary teaming, carried out in the United States and Europe. Thirty-six of the studies found no significant differences between the achievement of team-taught and traditionally-taught students, while nineteen studies favored team teaching and eleven favored the traditional approach.

As with middle school research, student self-concept seemed to increase in those schools using interdisciplinary teaming compared to those that were not (Cohen, 1976; McGee & Krajewski, 1979; Flynn & Stone, 1975; Armstrong, 1975). McGee and Krajewski (1979), in their longitudinal study of Brown Middle School, found that student self-concept as well as attitudes toward school by students and teachers alike were more positive. The two researchers attributed these improvements to interdisciplinary teaming since it increased teacher-student communication.

Research also favored the effect of interdisciplinary teaming on school climate. Baker and Beauchamp (1972) found that teachers and students attitudes were changed in a positive way as a result of the transition from a traditional junior high school to a middle school incorporating interdisciplinary teaming. Evans (1975) found that the climate of junior high schools and middle schools were more similar than different as perceived by school staffs. Fischer's study (1980) in California found that non-departmentalized junior high schools and middle schools using teaming, were more open and positive, as viewed by teachers and students, than departmentalized junior high schools and middle schools not using a teaming concept. This position is also supported by Beane (1983), Lewis (1981), and Brown (1978, 1981).

Middle level schools utilizing interdisciplinary teaming were also rated high in the area of teacher job satisfaction. A study by Ashton, Doda, Webb, Olejnik, and McAuliffe (1981) found that middle school teachers experienced greater job stress than junior high school teachers, yet middle school teachers considered teaching to be more important to them than did junior high teachers. Ashton et al. (1981) also concluded that middle school teachers reported being more satisfied with teaching than their junior high school counterparts, and were more likely to choose teaching as a career, if they had a chance to do it again. Studies have indicated that collegiality was a difficult area for interdisciplinary teams. Draud (1979), Bredo (1975), and Cohen (1976), stated that the way

teams work together influenced job satisfaction. They also stated that while job satisfaction was high in most cases, it was not true for all teams. The differences they attributed to the group dynamics of team teacher personalities and the quality of teacher interactions on the team. Pook (1981), in a study of teacher job satisfaction compared to the level of implementation of recommended middle schools' practices, found that teacher satisfaction with the curriculum in middle schools increased as the degree of implementation of middle school practices increased. She also found that although teachers who preferred teaching at the middle level were more satisfied in their work than teachers who preferred teaching at other levels, teachers in high implementation middle schools were more dissatisfied with their teaching load than low implementation schools. Pook (1981) concluded that the implementation of practices such as interdisciplinary teaming and continuous progress plans required much more time and effort from the teacher.

Like the middle school concept, interdisciplinary teaming has suffered from a serious implementation problem. Munsell (1984), in his study on the implementation of identified programmatic middle school characteristics, in which interdisciplinary teaming was one of those characteristics, stated that middle schools have not implemented the identified characteristics of middle level education to an extent that would suggest that they offer a program that is distinct from the program offered by junior high schools. Munsell

(1984) also stated that middle school responses to implementing interdisciplinary teaming was "moderate" implementation, while junior high school responses to the same questions suggests "minimal" implementation. Other research studies suggest that the implementation of interdisciplinary teaming was lagging far behind the growth of the middle school concept. Holmes (1981) study in California middle schools, found that a considerable gap exists between theory and practice as it is applied to the implementation of interdisciplinary teaming and other basic middle school principles. Brown's (1978) research on the implementation of Riegle's (1971) eighteen characteristics of middle schools found that interdisciplinary teaming was one of the five characteristics that generally was not implemented. Similar research from Gatewood (1970), Cave (1975), and Wiles (1978) supports this conclusion.

McGee and Eaker (1978), in a study of supervision practices of middle level administrators, concluded that one reason for the generally acknowledged lack of implementation of interdisciplinary teaming and other middle school characteristics is due to the lack of instructional support provided for teachers. McGee and Eaker's study (1978) states that although 93% of the administrators surveyed reported giving instructional support, 49% of the teachers surveyed responded that they did not receive such support and 73% of the teachers complained that new ideas for instruction were usually not provided by their superiors. Fuller (1977) in studying the important factors necessary for team teaching, found that educators

differ greatly on the most important features of interdisciplinary teaming. Other research suggests that a lack of understanding and clarity of interdisciplinary teaming was responsible for the low level of implementation. Kerfut's study (1977) indicated that teachers may not understand the rationale behind interdisciplinary teaming even if they were teaming. Kerfut's study (1977) compared teachers' responses to administrators' responses regarding their perceptions of interdisciplinary team teaching. The results showed that principals perceived that teachers had a much higher understanding of the concept and underlying rationale for the implementation of interdisciplinary teaming than was indicated by teachers' responses (Kerfut, 1977). Caul (1976) concluded that the level of interdisciplinary team implementation was directly related to the school's administrative and organizational structure. Caul (1976) stated that there was a need for better communication and clarity of middle school concepts between principals and teachers. This conclusion was also supported by Evans (1970), Fuller (1977), and Kutz (1982).

# CHAPTER III

# METHODOLOGY

This research study was designed to investigate and analyze the acceptability of interdisciplinary teaming in grades six, seven, and eight in Iowa middle level public schools. The study also investigated and compared attitudes and concerns of teachers and administrators, as well as the level of implementation of interdisciplinary teaming in a stratified random sample of user and nonuser middle level public schools. An assessment and comparison of student self-concept in grades six, seven, and eight between the same selected user and nonuser schools was also conducted.

## Hypotheses to be Tested

The study addressed the following five hypotheses:

1. There is no difference between the perceived desirability of interdisciplinary teaming between teachers and administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as a part of their curricular program.

2. There is no difference between the perceived implementation of interdisciplinary teaming between teachers and administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as a part of their curricular program.

3. There is no difference between the stages of concern of interdisciplinary teaming between teachers and administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as a part of their curricular program.

4. There is no difference between teachers level of use of interdisciplinary teaming in schools using interdisciplinary teaming and teachers level of use of interdisciplinary teaming in schools not using interdisciplinary teaming.

5. There is no difference between student self-concept in schools using interdisciplinary teaming and in schools not using interdisciplinary teaming as a part of their curricular program.

## The Population and Sample

The population for this study consisted of all Iowa middle level public schools as listed in the Iowa Educational Directory 1985-86 School Year. Any school building housing two or more consecutive grades from grade levels 6-8, recognized by the Iowa Department of Education as a part of a public school district were considered in this study. According to the Iowa Educational Directory 1985-86 School Year, there were 478 such public school buildings.

The sample for this study consisted of the 116 schools from the 478 school population that responded positively to having middle level teaming as a part of their curricular program on the Administrative Questionnaire on Middle Level Education. These

116 "user" schools were matched for further comparison with a stratified random sample of 116 "nonuser" schools based on school district size.

In order to account for possible differences based on school district resources, the 116 "user" schools were subdivided by school district size. According to the Iowa Department of Education, a small school district has a student population below 600 students, a medium school district has a population between 600 to 2,500 students, and a large school district has a student population exceeding 2,500. Using this criterion, the responding 116 "user" schools consisted of 33 small size schools, 45 medium size schools, and 38 large size schools. The 116 stratified random sample of "nonuser" schools consisted of the same numbers by school district size and were selected from the 342 schools that responded that they did not have interdisciplinary teaming as a part of their curricular program.

Eighteen schools were randomly selected for further study from the 116 "user" and 116 "nonuser" schools who responded to the Innovation Configuration Checklist. Nine actual user schools were selected--three small, three medium, and three large size school districts; and nine actual nonuser schools were selected--three small, three medium, and three large size school districts.

## Procedure

Since it was important to the research study to be able to make valid general demographic assessments of interdisciplinary

teaming in Iowa middle level public schools, the development and the percent of return of the initial Administrative Questionnaire on Middle Level Education was critical. Such factors as timing, length of the instrument, instrument design, ease of return, and cover letter design were all critical. It was felt that the ideal time for distribution of the initial survey during the school year was in October and November. The initial survey was a single page, short checklist form, stamped and return addressed for easy mail return. A short cover letter on school letterhead accompanied the survey (See Appendix B). Because of the researcher's position, it was decided that all cover letters and follow-up correspondence to the principals would be on school letterhead.

The Administrative Questionnaire on Middle Level Education was sent to the principals of the 478 public middle level schools housing two or more consecutive grades from grade levels 6-8 as recognized in the Iowa Educational Directory 1985-86 School Year (See Appendix A). Although the initial response to the demographic survey was most gratifying (84%), it was decided that a higher percentage of return could be achieved. A follow-up letter and instrument was sent to those principals who had not responded (See Appendix B). Phone calls were also made to non-responding principals. When the initial survey was concluded by mid November, 1986, a 95.8% return was received. Of the 458 responding schools, only 116 indicated that they had some form of middle level teaming in their building.

The next step was to identify and define interdisciplinary teaming in such a way that the researcher, administrators, and teachers were viewing the same innovation from the same perspective. It was equally important to establish an instrument with a criterion to separate actual usage from reported usage. The Innovation Configuration Checklist was designed to meet these needs using the review of the literature and expert testimony for validity. The checklist was designed using the Project CBAM handbook, Measuring Innovation Configurations: Procedures and Applications by Heck et al. (1981) as a guide (See Appendix A).

Because a concern existed over the possible effect of school district size on interdisciplinary teaming, an analysis was made of the 116 responding "user" schools using the working definitions of school district size developed by the Iowa Department of Education. It was noted that of the 116 responding "user" schools, 33 were small size school districts below 600 students, 45 were medium size school districts between 600 to 2,500 students, and 38 were large size school districts above 2,500 students. The checklist was sent in January, 1987, to these 116 schools and to a stratified random sample by school district size of 116 "nonuser" schools who responded to the initial survey.

The checklist was sent to the principals of the 116 "user" and 116 "nonuser" schools with instructions in the cover letter that they were to fill out the administrator's form and give the teachers' form to the appropriate staff members. The administrators were

asked to distribute the checklist to their sixth, seventh, or eighth grade teams in "user" schools; or to sixth, seventh, and eighth grade teachers in "nonuser" schools. To facilitate the return tabulation, the checklist forms were color coded and numerically identified. For "user" schools, the administrators' checklists were white and the teaching teams were pink. In "nonuser" schools, the administrators' forms were blue and the teachers' forms were yellow. Appendix B has a copy of the cover letter sent to the principals of "user" and "nonuser" schools. Follow-up letters and checklists were sent to those schools not responding by January 31, 1987. By mid February 1987, the Innovation Configuration Checklist response was concluded.

The design of the checklist was similar to the initial questionnaire on middle level education in that the instrument was one page, stamped and self-addressed for easy return mail. The instructions for completion of the checklist were on the back of the page with a notation on the front indicating their location. A copy of the instrument can be found in Appendix A.

In order to further analyze interdisciplinary teaming and the process of innovation adoption and change, it was decided that the Concerns-Based Adoption Model (CBAM) developed by the University of Texas at Austin would be used. The two major phases of CBAM involved identifying concerns and levels of use of an educational innovation. The instruments used in the process are the Stages of Concern (SOC) and the Level of Use (LOU). Both instruments required

a high degree of skill and training for effective usage and interpretation. In order to maintain the high degree of validity and reliability utilized in Project CBAM, the researcher was trained to criterion as an SOC evaluator and an LOU interviewer and rater. The steps for certification and the procedure for training to criterion can be found in Appendix A. A copy of the certification and accompanying letter from the Southwest Educational Development Laboratory responsible for Project CBAM training can be found in Appendix B.

Eighteen schools were selected from the respondents to the Innovation Configuration Checklist for further study using the instruments from Project CBAM. Nine of the schools were considered user schools by scoring 12 or better on implementation on the checklist, and nine schools were considered nonuser schools having scored below 12 on implementation on the checklist. Since the 116 initial respondent "user" schools (33 small, 45 medium, and 38 large) represented nearly a third of the user population by school district size, it was decided to select the eighteen schools for further study on district size as well. The concern about a possible inequitable distribution of resources based on school district size contributed to that decision. Therefore, the nine user and nine nonuser schools selected for investigation through Project CBAM consisted of three small user and three small nonuser schools, three medium user and three medium nonuser, as well as three large user and three large nonuser school districts.

Administrators, teachers, and students in the eighteen selected schools were investigated using the SOC instrument, the LOU interview and the Piers-Harris Self-Concept Scale. To facilitate acceptance, a personal phone call was made to the principal of each of the eighteen schools stating the nature of the research and the needs of the researcher in gathering the data for the study. If the principal verbally agreed then formal permission to gather the research data from the administrators, teachers, and students of the school was sought through a letter to the superintendent of each of the eighteen school districts. A copy of the letter is in Appendix B. Once permission had been granted by the superintendent, the building level principal was again contacted and a time arranged to visit the school.

Each school visit consisted of the following routine. Upon arrival, the principal was again informed of the purpose of the research and the instruments to be used. Any questions or concerns were answered at this time. Since the LOU was an individual focused interview, a separate room was requested for the interview and taping. Each interviewee was informed of the purpose of the research prior to the interview. To eliminate interview bias, respondents were infomred that questions regarding the nature and definition of interdisciplinary teaming could not be answered by the interviewer, nor were the respondents informed that they had been selected as a user or nonuser school. All members of a sixth, seventh, and eighth grade team were interviewed in all user schools.

If the school had more than one team per grade level, only one team was interviewed. In small schools, teachers served on more than one team, but were interviewed only once. In nonuser schools three teachers for each grade 6-8 were interviewed. In some smaller schools only two teachers per grade were available. Following the interview, each teacher was given a copy of the SOC instrument and asked to complete and return it to the building principal within one week. After all teacher interviews were completed and taped, the researcher visited the guidance counselor and explained the procedure for using the Piers-Harris Self-Concept Scale. Small schools received 25 copies of the student scale per grade 6-8, and medium and large schools received 50 copies of the student scale per grade 6-8. For ease of administration, the counselor was instructed to select a class that by the nature of the course was a rather random selection. An English class or a social studies class at each grade level 6-8 was recommended. The small schools needed only one class per each grade while the middle and large schools used two classes per grade. The counselor and the teacher were asked to explain and proctor the student scale. The completed forms were to be returned to the principal within one week. The principal was also asked to complete the SOC instrument and return mail the completed SOC forms from the teachers and the Piers-Harris Scales from the students to the researcher. The principal was informed that a personal check to the school to cover postage would be sent when the mailed data were received (See letter

in Appendix B). Gratitude was expressed to the teaching staff and the administration of each district for their professional courtesy and hospitality.

Although there seemed to be a general concern for the need for this research, and a true willingness to cooperate in allowing the collection of the data, school administrators also expressed equal concern over the utilization of comparisons made from that data. To alleviate these legitimate concerns, school officials and teachers were informed that the various instruments and taped interviews were considered privileged communications for the purpose of this dissertation and as such will not be shared with any other agency. It was also explained that individual teacher, student, or administrator names will not be used in the compilation of the data and that individual school districts will not be used for purposes of comparison. School district names will be limited to the 116 "user" and 116 "nonuser" school districts that were involved with the Innovation Configuration Checklist. Those school districts are identified in Appendix C.

## Instrumentation

The data for the study were collected through the use of five specific instruments. Four of the instruments were questionnaires and one was a focused interview. The instruments included the following:

1. Administrative Questionnaire on Middle Level Education: This thirteen question survey was designed by the researcher to

assess the needed demographic information necessary to the focus of the remainder of the study. The survey asked respondent administrators to identify community population size, school district enrollment, middle level grade organizational structure, middle level building enrollment, and the administrators' middle level philosophy, as well as the number of years as a middle level administrator. Of importance for the continuation of the study, the survey ascertained if middle level teaming was used in the school, as well as the number of years it had been used, and the grades in which it was being used. A copy of the survey is in Appendix A, and the cover and follow-up letters are in Appendix B.

2. Innovation Configuration Checklist: The concept of an Innovation-Configuration emerged out of research on the change process as a part of the Concerns-Based Adoption Model (CBAM) conducted at The Research and Development Center for Teacher Education at the University of Texas at Austin. As pointed out by Heck, Stiegelbauer, Hall, and Loucks in Measuring Innovation Configurations: Procedures and Applications (1981), writings about innovations involved in the process of change tend to lack concrete descriptions of what users do when implementing them. The purpose of the innovation configuration checklist was to focus on the behavioral characteristics of an innovation by breaking the innovation into discrete parts that can be operationally defined. The objective of an innovation configuration checklist was to define

the minimum-use criteria of an innovation that was being used (Heck et al., 1981).

In order to design the Innovation Configuration Checklist, the literature was reviewed and five generally agreed upon components of middle level interdisciplinary teaming were extracted. The list of components was subsequently submitted to a panel of eight recognized experts in the field of middle level education and interdisciplinary teaming for review. Panel members were asked for suggestions, additions and deletions. A copy of the checklist sent to the panel is found in Appendix A, while the accompanying letter is in Appendix B. Panel members included the following:

Dr. Alfred Arth
Department of Curriculum and Instruction
University of Wyoming
Laramie, Wyoming 82070

Dr. Donald H. Eichhorn
Superintendent of Schools
Lewisburg Community School District
Lewisburg, Pennsylvania 17837

Dr. Jon Wiles
213 Park Ridge
Tampa, Florida 33617

Dr. Joseph Bondi
213 Park Ridge
Tampa, Florida 33617

Dr. Greg Stefanich
Department of Curriculum and Instruction
University of Northern Iowa
Cedar Falls, Iowa 50614

Dr. Robert Schockley
Department of Education
University of Wisconsin
Platteville, Wisconsin 53818

Dr. Robert Malinka
Director: National Middle School Association
P.O. Box 14882
Columbus, Ohio 43214

Dr. Larry Putbrese
Department of Curriculum and Instruction
St. Cloud State University
St. Cloud, Minnesota 56301

All panel members agreed on the five components with minor semantic changes recommended by a few. Following the incorporation of these minor changes, the components for the checklist were developed.

The purpose of the Innovation Configuration Checklist was to ascertain the degree of desirability, and the degree of implementation of the five components of middle level interdisciplinary teaming. The checklist was also used to separate reported "users" and "nonusers" from actual users and nonusers. To accomplish this a four point Likert scale was used with each component. On the left side, each respondent answered the degree of desirability for each component ranging from one (undesirable) to four (highly desirable). On the right side, each respondent answered the degree of implementation for each component ranging from one (unimplemented) to four (always implemented). A copy of the completed Innovation Configuration Checklist can be found in Appendix A, and the accompanying cover letter is in Appendix B.

3. Interdisciplinary Teaming Stages of Concern Survey: The Stages of Concerns Survey was the first phase of the Concerns-Based Adoption Model (CBAM). The Concerns-Based Adoption Model was an evaluatory model that allowed a change agent to analyze and diagnose the development and implementation of an educational innovation at a particular point in time. Developed by the Research and Development Center for Teacher Education at The University of Texas at Austin through a National Institute of Education contract, CBAM sought to identify the status of an educational innovation in a user system. This identification was done through the use of two instruments--the Stages of Concern Survey (SOC) and the Level of Use Interview (LOU). The data collected through CBAM allow a change agent to view the adoption of an innovation as a point on the growth continuum, diagnose the situation, and prescribe appropriate treatment to facilitate an effective innovation adoption if necessary (Hall et al., 1973).

The Stages of Concern instrument was based on research by Phillips (1932), Travers, Rabinowitz, and Nemovicher (1952), Gabriel (1957), Fuller (1969), and Hall et al. (1979). The research showed that innovation users go through a series of aroused personal feelings, and attitudes about the adoption of an innovation. These feelings or concerns tended to be developmental and ranged from unrelated concerns, to concerns about self, to concerns about task, and finally to impact concerns (Hall et al., 1979). The research also stated that a user's concerns about an innovation developed

toward the later stages (impact concerns) with time, successful experience, and greater knowledge and skill in the use of the innovation.

The SOC instrument developed in 1974, consisted of 35 items using a seven point Likert scale ranging from irrelevant, not true of me now, somewhat true of me now, to, very true of me now. A copy of the instrument can be found in Appendix A.

In order to have high internal reliability, it was a necessary condition that items correlate more highly with responses to other items measuring the same stage than with responses to items on other scales. Table 2 shows the alpha coefficients of internal consistency for each of the seven Stages of Concern scales. These coefficients reflect the degree of reliability among items on a scale in terms of overlapping variance.

Test-retest correlations were computed using the Pearson-r as shown in Table 3 (Hall et al., 1979). A sample of 171 individuals was selected from the initial 830 respondents and asked to complete the SOC Questionnaire a second time, two weeks after their initial completion of the instrument. One hundred thirty-two completed and returned the "retest" data.

Because there was no other instrument that measured concerns with which the SOC Questionnaire could be compared, the strategy outlined by Cronbach and Meehl (1955) was used for validity. The research and development center attempted to show that the scores on the SOC related to each other and to other variables as stated

Table 2

Coefficients of Internal Reliability for the Stages of Concern Questionnaire, N = 830

| Stage | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| Alphas | .64 | .78 | .83 | .75 | .76 | .82 | .71 |

Note. From Measuring Stages of Concern about the Innovation: A Manual for Use of the SOC Questionnaire, (p. 11) by G. Hall, A. George, and W. Rutherford, 1979, Austin, TX: The University of Texas at Austin. Reprinted by permission.

Table 3

Test-Retest Correlations on the Stages of Concern Questionnaire, N = 132

| Stage | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| Pearson-r | .65 | .86 | .82 | .81 | .76 | .84 | .71 |

Note. From Measuring Stages of Concern about the Innovation: A Manual for Use of the SOC Questionnaire, (p. 11) by G. Hall, A. George, and W. Rutherford, 1979, Austin, TX: The University of Texas at Austin. Reprinted by permission.

by concerns theory. Therefore, inter-correlation matrices, judgments of concerns through interview data, confirmation of expected group differences, and changes over time have been used to investigate SOC validity (Hall et al., 1979).

Table 4 is a summary correlation matrix of how the scales, each measuring one stage, intercorrelate. According to Table 4, a simplex pattern is evident. The simplex pattern corresponds to a set of objects having degrees of similarity and dissimilarity with one another in such a way that they can be arranged on a line. Ergo, the scales on the pilot checklist indicated an order consistent with the hypothesized order of the SOC.

Table 4

Intercorrelation of 195-Item Stages of Concern Questionnaire Scales

| | | Stages | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| Stages | 1 | 1.0 | .68 | .47 | .21 | .21 | .19 |
| | 2 | | 1.0 | .78 | .43 | .37 | .43 |
| | 3 | | | 1.0 | .60 | .51 | .59 |
| | 4 | | | | 1.0 | .82 | .80 |
| | 5 | | | | | 1.0 | .77 |
| | 6 | | | | | | 1.0 |

Note. From Measuring Stages of Concern About the Innovation: A Manual for Use of the SOC Questionnaire, (p. 13) by G. Hall, A. George, and W. Rutherford, 1979, Austin, TX: The University of Texas at Austin. Reprinted by permission.

Convincing demonstrations of the validity of the Stages of Concern Questionnaire have come through its use over a two and one-half year longitudinal study. During this time the thirty-five item SOC Questionnaire was developed. In a one week test-retest study, stage score correlations ranged from .65 to .86

with four of the seven correlations being above .80. Estimates of internal consistency through alpha coefficients range from .64 to .83 with six of the seven coefficients being above .70 (Hall et al., 1979).

4. Interdisciplinary Teaming Level of Use Survey: The Level of Use Survey was the second phase of the Concerns-Based Adoption Model--CBAM. The model hypothesizes two phases along which individuals grow as they become more familiar with, and sophisticated in using an educational innovation--the Stages of Concern about the innovation (SOC) and the Levels of Use of the Innovation (LOU). The LOU instrument uses an interview process that was designed to describe the behavior of individuals as they became more effective and skilled in using the innovation. Each of the eight identified levels of use was stratified to focus on behavior that was characteristic of the user at a particular stage of development (Loucks et al., 1975). At each of the eight levels of use, the researchers have identified specific behaviors that describe characteristics of the innovation user. The LOU phase focused on describing behaviors of innovation users and does not reflect the attitudinal, motivational, or other affective aspects of the user (See Figure 3).

To assist with level of use identification, each of the levels was further defined in terms of seven subparts or categories. The categories represented the key functions that users carry out when they use a particular educational innovation. At each different

| Level of Use | | Behavioral Indices of Level |
|---|---|---|
| VI | Renewal | The user is seeking more effective alternatives to the established use of the innovation. |
| V | Integration | The user is making deliberate efforts to coordinate with others in using the innovation. |
| IVB | Refinement | The user is making changes to increase outcomes. |
| IVA | Routine | The user is making few or no changes and has an established pattern of use. |
| III | Mechanical Use | The user is using the innovation in a poorly coordinated manner and is making user-oriented changes. |
| II | Preparation | The user is preparing to use the innovation. |
| I | Orientation | The user is seeking out information about the innovation. |
| 0 | Nonuse | No action is being taken with respect to the innovation. |

Note: From "Levels of Use of the Innovation: A Framework for Analyzing Innovation Adoption" by G. Hall, S. Loucks, W. Rutherford, and B. Newlove, 1975, The Journal of Teacher Education, 26(1), p. 52. Copyright 1982 by Quincy Press. Reprinted by permission. See Appendix B.

Figure 3. Levels of use of the innovation: Behavioral Indicators

level, the category descriptions represented the typical behaviors that were in use at that level by innovation users. See the LOU Chart in Appendix A for a description of the categories at each level of use. Innovation users however, were not on the same

level of use in all seven categories. It was the tabulation of use levels for each category that determined the overall level of use.

The method used to measure a person's LOU of an innovation was the focused interview. According to Merton et al. (1956), the focused interview employed an interview guide with a list of objectives and questions, but gave the interviewer latitude within the framework of the interview guide to probe farther. Maccoby and Maccoby (1954) in the Handbook of Social Psychology, as well as Merton et al. (1956) in The Focused Interview: A Manual of Problems and Procedures, stated that the focused interview with thorough interviewer training had many advantages over observation in determining and measuring user behavior. Dean et al. (1967, p. 3) noted the following advantages of the focused interview over observation:

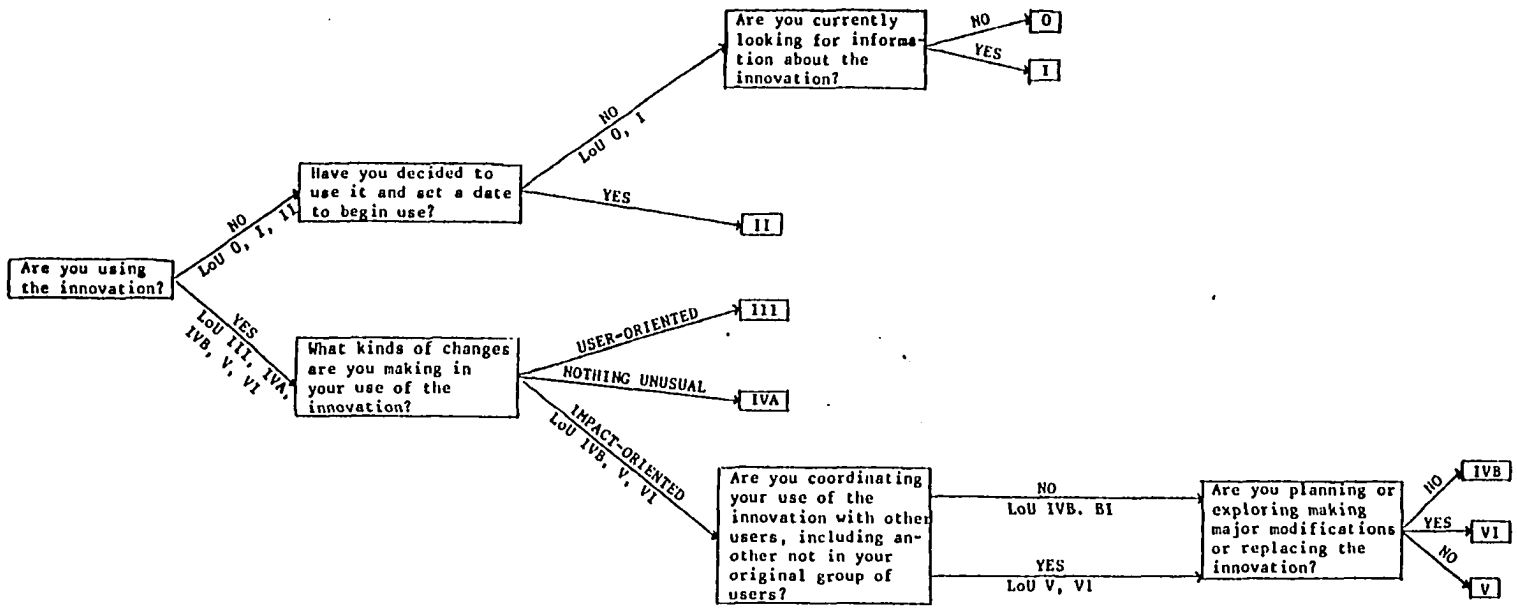
1. Interviews can get at past events, at events when the interviewer is alone, and at situations where outsiders would alter behavior;
2. Interviews can reveal behavior not occurring during times when observations are made;
3. Interviews can reveal relationships that cannot be observed;
4. Interviews are quick and efficient.

Gathering enough information from an individual about his/her use of an educational innovation was done through two methods using the LOU interview. One method was questioning the interviewee about overall use by using the Decision Points. The Decision Points represented key behavioral decisions on the growth continuum that distinguish each of the eight levels of use. In Appendix A, the LOU Chart shows the eight levels of use and the Decision Point that

separates each level. By posing questions about the Decision Point, the interviewer can quickly assign a general overall level of use to an individual. Questions about the Decision Point allowed the interviewer to narrow down the possible levels of use of an individual so that the interviewer could use the "branching" format to further isolate the specific level of use. Figure 4 shows an overview of the Branching Format of the LOU Interview.

The second method to gather evidence about the level of use was by probing each of the categories. Such questions asked the individual to explain his/her position with regard to each of the seven categories. The focused interview procedure designed for the LOU Interview Format takes both of these questioning methods and combines them into an easy to use questioning format to ascertain the specific LOU of each individual. A copy of the LOU Interview Format listing the questions and the order in which they are asked can be found in Appendix A. The interview should follow the flow of ideas reported by the interviewee, thus making the interview conversational yet, ascertaining sufficient information to place the individual at a specific level of use.

Information on the level of use of an innovation was obtained from interviewers trained to criterion using a tape-recorded process so that the information of the "use" could be analyzed at a later point in time by level of use raters who were also trained to criterion. Steps in certification for Level of Use Interviewing and Rating can be found in Appendix A. It was not necessary that




Note. From Measuring Levels of Use of the Innovation: A Manual for Trainers, Interviewers, and Raters, (p. 22), by S. Loucks, B. Newlove, and G. Hall, 1976, Austin, TX: The University of Texas at Austin. Reprinted by permission. See Appendix B.

Figure 4. Overview of branching format of the LOU interview.

the interviewer and rater be two separate individuals for reliability, however, it was extremely important that the interviewer and rater were highly knowledgeable regarding the educational innovation (Loucks et al., 1975).

Taped interviews are approximately twenty minutes in length and are rated as to the individual's overall LOU, as well as the LOU in each of the seven categories. A rating sheet developed for the task by the Research and Development Center for Teacher Education at the University of Texas at Austin is illustrated in Figure 5.

In order to determine the validity of the LOU Interview, the project directors felt it was necessary to determine an appropriate strategy for validation. Since much time was spent out of class on planning, discussing, and organizing, innovation use could not be solely assessed by observing classroom behavior. The search for an alternative validation methodology resulted in the use of ethnography. According to Rist (1973), ethnography was an approach developed from social anthropology which gathers qualitative data by direct observation of activity and interactions in an ongoing and natural manner. Such qualitative data could be gathered on an individual user to give that individual a Level of Use rating. This rating could be correlated with another Level of Use rating assigned as a result of a Level of Use Interview.

Such a study was undertaken involving junior high school science teachers in Kansas and Texas with the innovation being the Intermediate Science Curriculum Study (ISCS). Forty-five teachers

UTR&D/CBAM, 1976

LEVEL OF USE RATING SHEET

Tape #: Site: Interviewer:
Date: / / I.D. #: Rater:

| Level | Knowledge | Acquiring Information | Sharing | Assessing | Planning | Status Reporting | Performing | Overall LOU |
|---|---|---|---|---|---|---|---|---|
| Non-Use D.P. A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Orientation D.P. B | I | I | I | I | I | I | I | I |
| Preparation D.P. C | II | II | II | II | II | II | II | II |
| Mechanical Use D.P. D-1 | III | III | III | III | III | III | III | III |
| Routine D.P. D-2 | IVA | IVA | IVA | IVA | IVA | IVA | IVA | IVA |
| Refinement D.P. E | IVB | IVB | IVB | IVB | IVB | IVB | IVB | IVB |
| Integration D.P. F | V | V | V | V | V | V | V | V |
| Renewal | VI | VI | VI | VI | VI | VI | VI | VI |
| User is not doing: | ND | ND | ND | ND | ND | ND | ND | ND |
| No information in interview: | NI | NI | NI | NI | NI | NI | NI | NI |

Past User ____ Estimated past LoU ____

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| The amount of information in the interview was: | insufficient for rating | 1 | 2 | 3 | 4 | 5 | 6 | 7 | very adequate for rating |
| The interviewee: | does not fit on the chart | 1 | 2 | 3 | 4 | 5 | 6 | 7 | fits well on the chart |
| The interviewee: | was very difficult to interview | 1 | 2 | 3 | 4 | 5 | 6 | 7 | was no problem to interview |

Figure 5. The LOU rating sheet.

were selected and shadowed for an entire day by ethnographers. The ethnographers developed an ethnographic protocol to examine teacher behaviors, student behaviors; and teacher and student interactions and activities. The ethnographers were not informed of the teachers Level of Use Interview rating.

Independent Levels of Use ratings were made by the ethnographer, by two readers of the ethnographic protocols, by the interviewer, and by a second rater of the interview tape. Two comparisons were made to determine validity: "(1) between the ethnographer's rating and the consensus interview rating (when disagreement occurs, a final rating decision is made by consensus); and (2) between the consensus reader rating and the consensus interview rating" (Loucks, 1977, p. 12).

The correlation coefficient determined for the first comparison was .98, indicating that the LOU Interview validly represented what was learned by the ethnographer in a full day of observation. The coefficient for the second comparison was .65, which lent support to the validity of the interview, although at the same time revealing the difficulty involved in conveying sufficient information second hand through rough written ethnographic protocols (Loucks, 1977).

Studies at the Research and Development Center for Teacher Education at the University of Texas at Austin, and at the Southwest Educational Development Laboratory at Austin, Texas were focusing on the relationship between the LOU and the SOC. Preliminary studies showed that such a relationship existed since both instruments were

measuring certain, yet different, aspects of the same developmental process (Loucks, 1977). The researchers maintained, that optimally, stages of concern about an innovation should run somewhat ahead of levels of use. This was particularly true in dynamic situations. If the reverse was true, this should be a signal to the change agent to intervene and raise the users' concerns to a more mature level.

5. Piers-Harris Children's Self-Concept Scale: Developed by Ellen V. Piers, Ph.D. and Dale B. Harris, Ph.D. in 1969 and revised in 1984, the Piers-Harris Children's Self-Concept Scale was designed to aid in assessing the self-concept or self-esteem of children and adolescents between the ages of eight to eighteen years. The instrument was a self-reporting format consisting of eighty items to which the respondent answers "yes" or "no." The scale can be hand or computer scored to evaluate both general and specific dimensions of self-concept. The overall assessment of self-concept was reflected in three summary scores: a total raw score, a percentile score, and an overall stanine score. Conversions to normalized t-scores were also provided. A copy of the Piers-Harris Self-Concept Scale is in Appendix A.

A number of studies have been used to investigate test-retest reliability of the Piers-Harris Scale. The reliability coefficients ranged from .42 (with an interval of eight months) to .96 (with an interval of three to four weeks) with .73 being the median test-retest reliability.

Internal consistency was also measured for the Piers-Harris using the Kuder-Richardson Formula 20 (Piers, 1984). The results of this study on grade six and grade ten male and female students ranged from $\underline{r}$ = .88 to .93 (Piers, 1984).

Estimates of content, criterion-related, and construct validity of the Piers-Harris Scale have been obtained from a number of empirical studies using item analysis, intercorrelation among the scales and items, and comparisons of the responses of various criterion groups. Table 5 shows the Correlations Between the Piers-Harris Total Score and Other Measures of Self-Concept.

## Utilization of the Instruments

The Administrative Questionnaire on Middle Level Education was designed by the researcher to obtain base-line demographic data and answer Research Question Number 1: To what extent, if any, is interdisciplinary teaming being utilized in middle level public schools in the State of Iowa? In order to accomplish this it was important that a high response percentage be received from all 478 middle level public school principals who were sent the survey. Consideration was given to administrators' schedules in timing the delivery and completion of the initial questionnaire.

The initial survey instrument and cover letter were sent to the principals of all 478 Iowa middle level public schools on October 6, 1986 to be returned on or before October 20, 1986. Although the initial response was good (84%), the researcher was

Table 5

**Correlations Between the Piers-Harris Total Score and Other Measures of Self-Concept**

| Study | Sample | Age or Grade | Sex | n | Measure | r |
|---|---|---|---|---|---|---|
| Bolea, Felker, & Barnes (1971) | Normal | Grades K-4 | Both | 63 | Pictorial Self-Concept Scale | .42 |
| Yonker, Blixt, & Dinero (1974) | Normal | Grade 10 | Male | 100 | Tennessee Self-Concept Scale | .51 |
| | | | Female | 108 | Tennessee Self-Concept Scale | .61 |
| | | | Male | 100 | Bills Index of Adjustment & Values | .42 |
| | | | Female | 108 | Bills Index of Adjustment & Values | .40 |
| Mettes (1974) | Normal | Grade 5 | Both | 25 | Inferred Self-Concept Scale (completed by teachers) | .55 |
| Schauer (1975) | Normal | Grades 5-6 | Both | 215 | Coopersmith | .85 |
| Karnes & Wherry (1982) | Normal | Grades 4-6 | | 96 | Children's Personality Questionnaire | .34-.73 |
| Parish & Taylor (1978a) | Normal | Grades 3, 6 | Both | 75 | Personal Attribute Inventory for Children | .67 |
| Parish & Taylor (1978b) | Normal | Grades 3-8 | Both | 390 | Personal Attribute Inventory for Children | .32 |
| | Normal | Grades 5-8 | Both | 297 | Nonsexist Personal Attribute Inventory for Children | .49 |
| Mayer (1965) | Special Education | Ages 12-16 yrs. | | 98 | Lipsett's Children's Self-Concept Scale | .68 |

Note. From Piers-Harris Children's Self-Concept Scale: Revised Manual 1984, (p. 54), by E. Piers, 1984, Los Angeles, CA: Western Psychological Services. Reprinted by permission. See Appendix B.

interested in a higher response. A follow-up letter was sent to the administrators of the schools who had not responded on October 31, 1986. In addition, some schools were contacted by phone. Responses were closed on November 14, 1986 with 458 schools responding out of 478 for a response percentage of 95.8%. See Appendix A for a copy of the instrument.

The Innovation Configuration Checklist was designed by the researcher as a vehicle to identify the major components of interdisciplinary teaming from the literature and present them in a survey form in such a way that responding schools would be reacting to the concept on middle level interdisciplinary teaming through the same operational patterns and terminology. The checklist was also designed to assess if reported "users" were actual users of the innovation. The developmental guide for designing the checklist, was Measuring Innovation Configurations: Procedures and Applications by Heck, Stiegelbauer, Hall, and Loucks (1981) from Project CBAM. The checklist was to serve as a common reference point for further study for "user" schools, therefore, it was important that a common understanding of the concept of middle level interdisciplinary teaming be established with user administrators and teachers.

The Innovation Configuration Checklist was also designed to investigate the perceived degree of desirability and the perceived degree of implementation of the five identified components of middle level interdisciplinary teaming, and to answer Research Questions Number 2 and Number 3: (2) To what extent, if any, are the

components of middle level interdisciplinary teaming perceived as being desirable by middle level school administrators and teachers in Iowa public schools utilizing interdisciplinary teaming in their curricular program? (3) To what extent, if any, are the components of middle level interdisciplinary teaming perceived as being implemented by middle level school administrators and teachers in Iowa public schools utilizing interdisciplinary teaming in their curricular program?

The Innovation Configuration Checklist was sent to the principals and teachers of the 116 schools who stated on the Administrative Questionnaire on Middle Level Education that some form of middle level teaming existed in their schools. The checklist was also sent to a stratified random sample by school district size of 116 "nonuser" principals and teachers in order to ascertain if a high degree of desirability and implementation of the components might exist even though those schools stated that interdisciplinary teaming was not in use on the earlier questionnaire. Of the 116 responding "user" schools as identified from the initial demographic survey, 33 were small size schools (under 600 students), 45 were middle size schools (between 600 to 2,500), and 38 were large size schools (above 2,500). The 116 "nonuser" schools to receive the checklist were randomly selected using the same school district size constraint. This was done so that any advantages that might be had by school district size would not be a factor in the comparison.

The checklist with the attached cover letter was sent to the principals to be distributed to the teachers on January 9, 1987 for a return on or before January 31, 1987. Follow-up checklists were sent on February 16, 1987 to be returned on or before March 9, 1987. After follow-up phone calls were made to some schools to assist with the return of the checklist, the survey was considered completed by March 20, 1987.

Although the Innovation Configuration Checklist used a four point Likert scale on both issues--desirability and implementation--the scoring and tabulation for both was done separately. The criterion used to determine the cut-off point between desirability and undesirability, as well as implementation and unimplementation, was the sum of the hypothetical means of each question. Since the value of the numerical terms for each question was ten (1 + 2 + 3 + 4 = 10), and since there were four numerical terms in each question, the hypothetical mean value for each question was 2.5. Since there were five questions, the sum of the hypothetical means was 12.5. Since respondents could not score a 12.5, and to account for possible underestimation by respondents, it was decided by the researcher to use the cut-off figure of 12 as the criterion for desirability and implementation. Therefore, any respondent whose total score for the degree of desirability was 12 or greater, was deemed as considering the five components of interdisciplinary teaming as desirable. Likewise, any respondent whose total score, for the degree of implementation was 12 or greater

was deemed as considering the components of interdisciplinary teaming as implemented.

The Interdisciplinary Teaming Stages of Concern Survey designed and developed by the Research and Development Center for Teacher Education at the University of Texas at Austin, as a part of Project CBAM, assessed user concerns about educational innovations. The instrument was used with interdisciplinary teaming being the educational innovation of interest to the study to answer Research Questions Number 4 and 5: (4) What are the similarities and differences, if any, between administrators' stages of concern and teachers' stages of concern in Iowa middle level public schools using interdisciplinary teaming as a part of their curricular program? (5) What are the similarities and differences, if any, of administrators' stages of concern and teachers' stages of concern in Iowa middle level public schools not using interdisciplinary teaming as a part of their curricular program?

The Stages of Concern Survey (SOC) was given to the teachers and administrators of nine school districts using interdisciplinary teaming and nine school districts not using interdisciplinary teaming. The nine user districts were selected from a stratified random sample by school district size from the list of respondents to the Innovation Configuration Checklist where the majority of respondents from a school (a minimum of three) scored a 12 or above on implementation of the components of interdisciplinary teaming. A tabulation of responses showed that 22 such user schools existed.

Of the nine user schools, three were small size school districts, three were medium size school districts, and three were large size school districts.

The nine nonuser schools were selected in the same manner. The majority of respondents (a minimum of three) from a school scored below 12 on implementation of the components of interdisciplinary teaming on the Innovation Configuration Checklist. Of the nine nonuser schools, three were also small size school districts, three were medium size school districts, and three were large size school districts.

The returned instruments were hand scored. A raw score was obtained for each of the seven stages of concern and converted to a percentile score for interpretation. The percentiles are based on the validity studies of 1975 (Hall et al., 1975). A detailed set of instructions and materials for hand scoring the SOC and plotting the profiles, along with a copy of the Quick Scoring Device Profile Form, can be found in Appendix A.

The procedure for analyzing the SOC data based upon peak scores was nearly the same for individual and group data. Each stage percentile score was listed on the profile chart and from this listing, the highest stage score or peak score for each individual or group could be identified. The stage scores were directly related to the stage definitions with the relative intensity of concern being indicated by the percentile score. Figure 6, Stages of Concern About the Innovation, defines the seven stages. The higher the

| | | |
|---|---|---|
| 0 | AWARENESS | Little concern about or involvement with the innovation is indicated. |
| 1 | INFORMATIONAL | A general awareness of the innovation and interest in learning more detail about it is indicated. The person seems to be unworried about herself/himself in relation to the innovation. She/he is interested in substantive aspects of the innovation in a selfless manner such as general characteristics, effects, and requirements for use. |
| 2 | PERSONAL | Individual is uncertain about the demands of the innovation, her/his inadequacy to meet those demands, and her/his role with the innovation. This includes analysis of his/her role in relation to the reward structure of the organization, decision making, and consideration of potential conflicts with existing structures or personal commitment. Financial or status implications of the program for self and colleagues may also be reflected. |
| 3 | MANAGEMENT | Attention is focused on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, scheduling, and time demands are utmost. |
| 4 | CONSEQUENCE | Attention focuses on impact of the innovation on students in her/his immediate sphere of influence. The focus is on relevance of the innovation for students, evaluation of student outcomes, including performance and competencies, and changes needed to increase student outcomes. |
| 5 | COLLABORATION | The focus is on coordination and cooperation with others regarding use of the innovation. |
| 6 | REFOCUSING | The focus is on exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative. Individual has definite ideas about alternatives to the proposed or existing form of the innovation. |

Note: From Measuring Stages of Concern About the Innovation: A Manual for Use of the SOC Questionnaire, (p. 7) by G. Hall, A. George, and W. Rutherford, 1979, Austin, TX: The University of Texas at Austin. Reprinted by permission.

Figure 6. Stages of concern about the innovation.

score, the more intense the concerns at that stage and the lower the score the less intense the concerns at that stage. Peak scores and frequency distributions of teachers and administrators at the seven stages were used for a comparison.

The Level of Use Interview (LOU) was given to the same sixth, seventh, and eighth grade teachers who received the Stages of Concern Survey in the nine user and nine nonuser middle level schools. The LOU instrument was a focused interview designed by the Research and Development Center for Teacher Education at the University of Texas at Austin, as a part of Project CBAM--the Concerns-Based Adoption Model. The LOU instrument was developed to ascertain the actual level of use of an educational innovation. Interdisciplinary teaming was the specific educational innovation of concern to the study. The LOU interview was utilized to answer Research Question Number 6: What are the similarities and differences, if any, of teachers' actual level of use of interdisciplinary teaming in Iowa public middle level schools where it is a part of their curricular program and teachers' actual level of use in schools where interdisciplinary teaming is not a part of their curricular program?

For consistency of procedure, all LOU interviews used the LOU Interview Format found in Appendix A. The interviews were individual and were taped with the permission of the interviewees and rated from the tape by the interviewer at a later time. Both the LOU and the SOC instruments were given in April and May of 1987.

Rating the LOU interviews from the tapes was completed in June of 1987. Appendix A has the format of General LOU Rating Rules. The objective of rating the tapes was to arrive at an overall level of use by assessing stated behavior within the seven categories for each of the eight levels on the Level of Use Rating Scale (See Figure 5). The overall level of use was directly related to the definition for that level found in the LOU Chart in Appendix A. The relative intensity of operational behavior of an innovation was indicated by the overall LOU. The 1 through 8 LOU score from the rating sheet was the datum used for the comparison of teachers in user and nonuser schools.

The Piers-Harris Children's Self-Concept Scale was utilized to measure students' self-evaluating attitudes and behaviors which have a bearing on self-concept. The instrument, developed by Dr. Ellen V. Piers and Dr. Dale B. Harris in 1969 and revised in 1984, consisted of eighty "yes," "no" questions. In the research study, the Piers-Harris Scale was used to answer Research Question Number 7: What are the similarities and differences, if any, of student self-concept in Iowa middle level public schools using interdisciplinary teaming and student self-concept in Iowa middle level public schools not using interdisciplinary teaming?

The sixth, seventh, and eighth grade students from the nine user schools and nine nonuser schools made up the population for the sample. In the six small size school districts (three user and three nonuser), twenty-five students were selected from each

grade (six, seven, and eight) from each school and given the Piers-Harris Scale. In the six medium size school districts (three user and three nonuser) and the six large size school districts (three user and three nonuser) fifty students were selected from each grade (six, seven, and eight) from each school and given the Piers-Harris Scale. A copy of the letter of instruction to the counselor and teacher who jointly administered the Piers-Harris can be found in Appendix B.

The self-concept scale was hand scored with the total raw score, percentile score, stanine and t-score calculated for each respondent. Raw scores from respondent sixth, seventh and eighth grade user and nonuser schools were used to compute the comparisons. A copy of the conversion table from the total score to percentile, stanine, and t-scores appears in Appendix A.

# CHAPTER IV

# RESULTS

The purpose of this study was to analyze the degree of implementation of interdisciplinary teaming and attitudinal factors affecting that implementation in Iowa middle level public schools. The researcher utilized five specific instruments to address the five hypotheses. The data that address each of the five hypotheses have been tabulated by SPSS$^{X}$ and included within the body of this chapter. Ancillary data have been tabulated and can be found in Appendix D.

## Demographic Description

The demographic description of Iowa middle level public schools obtained from the Administrative Questionnaire on Middle Level Education is presented in Table 6. This information was tabulated from 458 returned responses. The population included 478 middle level schools for a 95.8% response return on the demographic instrument. A copy of the demographic questionnaire can be found in Appendix A.

The first four questions on the instrument address the size of the community, district enrollment, grade structure, and building enrollment, respectively. Approximately two-thirds (68.7%) of the responding schools were located in communities of under 4,000 people. The school district enrollment varied greatly. Districts of under 600 students were the largest respondent group with 227 districts (49.6%). Districts with 600-2,500 students were the next largest

Table 6

Demographic Characteristics of Iowa Middle Level Schools

| Variable | Number | Percentage |
|---|---|---|
| **Community Population** | | |
| Under 4,000 | 312 | 68.7 |
| 4,000-12,000 | 72 | 15.9 |
| Over 12,000 | 70 | 15.4 |
| N = 454 | | |
| **District Student Enrollment** | | |
| Under 600 | 227 | 49.6 |
| 600-2,500 | 162 | 35.4 |
| Over 2,500 | 68 | 15.0 |
| N = 458 | | |
| **Grade Structure** | | |
| 5-6 | 10 | 2.3 |
| 6-7 | 1 | .3 |
| 7-8 | 223 | 50.9 |
| 5-6-7 | 0 | 0.0 |
| 6-7-8 | 113 | 25.8 |
| 7-8-9 | 35 | 8.0 |
| 5-6-7-8 | 49 | 11.2 |
| 6-7-8-9 | 7 | 1.5 |
| N = 438 | | |
| **Building Enrollment** | | |
| Under 250 | 223 | 49.2 |
| 250-500 | 169 | 37.3 |
| Over 500 | 61 | 13.5 |
| N = 453 | | |
| **Years as Middle Level Principal** | | |
| Under 2 | 76 | 17.0 |
| 3-5 | 76 | 17.0 |
| 6-10 | 102 | 22.8 |
| 11-15 | 75 | 16.7 |
| Over 15 | 119 | 26.5 |
| N = 448 | | |

(table continues)

| Variable | Number | Percentage |
|---|---|---|
| **Principal's Belief in Middle School Philosophy** | | |
| Totally | 141 | 31.3 |
| Somewhat | 265 | 58.8 |
| Undecided | 30 | 6.6 |
| No | 15 | 3.3 |
| N = 451 | | |
| **Principal's Belief in Middle Level Teaming** | | |
| Totally | 39 | 8.6 |
| Somewhat | 264 | 58.4 |
| Undecided | 90 | 20.0 |
| No | 59 | 13.0 |
| N = 452 | | |
| **School Uses Middle Level Teaming** | | |
| Yes | 116 | 25.3 |
| No | 334 | 74.7 |
| N = 450 | | |
| **Implementation of Teaming in Near Future** | | |
| Yes | 30 | 8.1 |
| No | 223 | 60.3 |
| Unknown | 117 | 31.6 |
| N = 370 | | |
| **Grades That Use Middle Level Teaming** | | |
| 5 | 23 | 19.8 |
| 6 | 82 | 70.6 |
| 7 | 81 | 69.8 |
| 8 | 71 | 61.2 |
| 9 | 3 | 2.5 |
| Other | 7 | 6.0 |
| N = 116 (% based on N = 116 for each grade) | | |

(table continues)

| Variable | Number | Percentage |
|---|---|---|
| | Time Using Middle Level Teaming | |
| 2 years or less | 44 | 37.9 |
| 3-5 Years | 44 | 37.9 |
| 6-10 Years | 25 | 21.6 |
| Over 10 Years | 3 | 2.6 |
| N = 116 | | |
| | Positive Impact on Staff | |
| Very rarely | 4 | 3.2 |
| Sometimes | 50 | 40.7 |
| Usually | 44 | 35.8 |
| Almost Always | 25 | 20.3 |
| N = 123 | | |
| | Positive Impact on Students | |
| Very rarely | 4 | 3.1 |
| Sometimes | 50 | 39.7 |
| Usually | 43 | 34.2 |
| Almost Always | 29 | 23.0 |
| N = 126 | | |

Note. N's may vary due to omissions in entry data and due to category (user or nonuser).

group with 162 districts (35.4%) while only 68 districts (15.0%) had over 2,500 students. Analysis of the grade organizational structure revealed that 223 schools (50.9%) operated a 7-8 grade structure and 113 schools (25.8%) operated a 6-7-8 organizational pattern. Of the responding schools, 223 (49.2%) had under 250 students in the building while only 61 schools (13.5%) had over 500 students.

Questions 5, 6, and 7 were directed to the building level administrator. The data show that 119 principals (26.5%) have been middle level administrators for over 15 years. Further analysis of the data revealed that 296 principals (66.0%) have 6 or more years of experience as a middle level principal. The data also revealed that most principals believe in the middle school philosophy. Of the respondent principals 141 (31.3%) totally believe in the philosophy while another 265 (58.8%) somewhat believe in the middle school philosophy. Similar results were shown for the principal's belief in middle level teaming. Of the respondents, 303 principals (67.0%) either totally or somewhat believed in the concept of middle level teaming.

Questions 8 and 9 related to the usage, or possible future usage of middle level teaming and were critical to the development of the rest of the study. The data show that of the 458 schools responding to the survey, only 116 schools (25.8%) have some form of middle level teaming in operation. The survey also showed that only 30 schools (8.1%) are considering middle level teaming within the next three years while 223 schools (60.3%) were not. The data showed that 117 schools (31.6%) reported as being undecided about the future use of middle level teaming.

The data revealed that in "user" schools teaming was used more frequently in grades 6, 7, and 8. Table 8 illustrates that of the 116 responding user schools, 82 schools (70.6%) have teaming in grade 6; 81 schools (69.8%) have teaming in grade 7; and 71 schools (61%)

have teaming in grade 8. The percentage used in the table is reflective of N = 116 "user" schools and is based on that percentage for all grades.

Table 6 also shows that most "user" schools have used middle level teaming for five years or less. According to the data, 44 schools (37.9%) have used some form of middle level teaming for two years or less, and 44 schools (37.9%) have used it for three to five years while only 28 schools (24.2%) have used it six or more years.

The last two questions on the demographic survey related to the positive impact of middle level teaming on staff and students of "user" schools. Although the total number of responses vary for both questions, the results were very similar. Table 6 shows that the principals of 50 schools (44.7%) reported that teaming "sometimes" had a positive impact on staff and 44 principals (35.8%) reported that teaming "usually" had a positive impact on staff. Similarly, 50 school principals (39.7%) reported that teaming "sometimes" had a positive impact on students and 43 principals (34.2%) reported that teaming "usually" had a positive impact on students.

Data Collection: Hypothesis A and Hypothesis B

The data used to analyze Hypothesis A and Hypothesis B were gathered from the Innovation Configuration Checklist. The data in Tables 7 through 11 reflect the frequency and percentage of responses to the desirability of the five components as viewed by the

respondent teachers and administrators in both "user" and "nonuser" schools. The chi-square tests were performed on pooled data on teachers and administrators although they are indicated separately in each table.

Perceived Desirability of Interdisciplinary Teaming

Hypothesis A states, there is no difference between the perceived desirability of interdisciplinary teaming between teachers and administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as a part of their curricular program.

An analysis of the data of the first component, the desirability of common teacher planning time during the school day, revealed that 95.5% of the "user" school teachers ranked the desirability of this component in category number 3 or number 4 and 96.8% of the "user" school administrators ranked the component in the same two categories. Table 7 shows that 92.3% of the "nonuser" school teachers and 87.4% of the "nonuser" school administrators ranked the desirability of this component in category number 3 or number 4, indicating a high desirability rating by "user" and "nonuser" teachers and administrators. Table 7 illustrates the frequency distribution on the desirability of the first component. A numerical breakdown of Table 7 citing the ranking of "user" and "nonuser" teachers by grade level can be found in Appendix D (see Table A7).

The data were analyzed using chi-square as a statistical treatment. Total "users," (teachers and administrators) and total

Table 7

Desirability of Common Teacher Planning Time During the School Day Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | 3 (1%) | 7 (3.5%) | 50 (22.5%) | 162 (73%) | 222 |
| Administrators | 0 (0%) | 3 (3.2%) | 24 (25.8%) | 66 (71%) | 93 |
| Nonuser Schools | | | | | |
| Teachers | 4 (2%) | 11 (5.7%) | 64 (33.2%) | 114 (59.1%) | 193 |
| Administrators | 3 (3.4%) | 8 (9.2%) | 24 (27.6%) | 52 (59.8%) | 87 |

Note. N's may vary due to omissions in entry data and due to category (user or nonuser).
Chi-square = 13.52 df = 3
$p$ = .0036
Significant at the 0.01 level

"nonusers," (teachers and administrators) were compared using component one, the desirability of common teacher planning time during the school day. The chi-square value was 13.52. The chi-square was significant at the 0.01 level of confidence, therefore the null hypothesis was rejected. Teachers and administrators in "user" schools perceived common teacher planning time during the school day as more desirable than teachers and administrators in "nonuser" schools.

Analysis of the data of the second component, the desirability of team control of student schedules, revealed that 92.8% of the "user" school teachers ranked the desirability of this component in category number 3 or number 4 and 93.5% of the "user" school administrators ranked the desirability in the same two categories. Table 8 shows that 90.6% of the "nonuser" teachers and 77.3% of the "nonuser" administrators ranked the desirability of this component in category number 3 or number 4. Table 8 illustrates the frequency distribution on the desirability of the second component. A numerical breakdown of Table 8 citing the ranking of "user" and "nonuser" teachers by grade level can be found in Appendix D (see Table A8).

A chi-square test of significance was performed on the data. The 2 x 4 chi-square compared total "users" (teachers and administrators) and total "nonusers" (teachers and administrators) with the four levels of scores from the four point Likert scale. The chi-square value was 13.72. The chi-square was significant at

Table 8

Desirability of Team Control of Student Schedules Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools Teachers: | 4 (1.8%) | 12 (5.4%) | 85 (38.1%) | 122 (54.7%) | 223 |
| Administrators | 0 (0%) | 6 (6.5%) | 44 (47.3%) | 43 (46.2%) | 93 |
| Nonuser Schools Teachers | 5 (2.7%) | 13 (6.7%) | 90 (46.6%) | 85 (44%) | 193 |
| Administrators | 3 (3.4%) | 17 (19.3%) | 44 (50%) | 24 (27.3%) | 88 |

Note. N's may vary due to omissions in entry data and due to category (user or nonuser).
Chi-square = 13.72 df = 3
$p$ = .0033
Significant at the 0.01 level

the 0.01 level of confidence, therefore the null hypothesis was rejected. Teachers and administrators in "user" schools perceived team control of large and small group instruction as more desirable than teachers and administrators in "nonuser" schools.

Analysis of the third component, the desirability of team control of large and small group instruction, revealed that 90.5% of the "user" school teachers ranked the desirability of this component in category number 3 or number 4, and 89.1% of the "user" school administrators ranked the component in the same two catagories. Table 9 shows that 89.1% of the "nonuser" teachers and 76.1% of the "nonuser" administrators ranked the desirability of this component in category number 3 or number 4, indicating a high desirability rating between "user" and "nonuser" teachers and "user" administrators. Table 9 illustrates the frequency distribution of the desirability of the third component. A numerical breakdown of Table 9 citing the ranking of "user" and "nonuser" teachers by grade level can be found in Appendix D (see Table A9).

The data were analyzed using chi-square as a statistical treatment. "Users" (teachers and administrators) were compared to "nonusers" (teachers and administrators) in selected schools. The chi-square value was 11.70. The chi-square was significant at the 0.01 level of confidence, therefore the null hypothesis was rejected. Teachers and administrators in "user" schools perceived team control of large and small group instruction

Table 9

Desirability of Team Control of Large and Small Group Instruction Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | 1 (.5%) | 20 (9%) | 89 (40.5%) | 110 (50%) | 220 |
| Administrators | 0 (0%) | 10 (10.9%) | 31 (33.7%) | 51 (55.4%) | 92 |
| Nonuser Schools | | | | | |
| Teachers | 6 (3.1%) | 15 (7.8%) | 87 (45.3%) | 84 (43.8%) | 192 |
| Administrators | 3 (3.4%) | 18 (20.5%) | 34 (38.6%) | 33 (37.5%) | 88 |

Note. N's may vary due to omissions in entry data and due to category (user or nonuser).
Chi-square = 11.70 df = 3
$p$ = .0085
Significant at the 0.01 level

as more desirable than teachers and administrators in "nonuser" schools.

Analysis of the fourth component, the desirability of a child centered curriculum with interdisciplinary units, revealed that 86% of the "user" school teachers ranked the desirability of this component in category number 3 or number 4, and that 90.2% of the "user" school administrators ranked the component in the same two categories. Table 10 shows that 88% of the "nonuser" teachers and 76.4% of the "nonuser" school administrators ranked the desirability of this component in category number 3 or number 4, thus indicating a high desirability rating between "user" and "nonuser" teachers and administrators. Table 10 illustrates the frequency distribution on the desirability of the fourth component. A numerical breakdown of Table 10 citing the ranking of "user" and "nonuser" teachers by grade level can be found in Appendix D (see Table A10).

The data were analyzed using chi-square as a statistical treatment. Total "users" (teachers and administrators) and total "nonusers," (teachers and administrators) were compared. The chi-square value was 7.90. The association was significant at the 0.05 level of confidence. The null hypothesis was rejected. Teachers and administrators in "user" schools perceived a child centered curriculum with interdisciplinary units as more desirable than teachers and administrators in "nonuser" schools.

Analysis of the fifth component, the desirability of a decentralized administrative authority, revealed that 82.2% of the

Table 10

Desirability of Child Centered Curriculum With Interdisciplinary Units Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | 2 (.9%) | 29 (13.1%) | 83 (37.8%) | 106 (48.2%) | 220 |
| Administrators | 1 (1.1%) | 8 (8.7%) | 37 (40.2%) | 46 (50%) | 92 |
| Nonuser Schools | | | | | |
| Teachers | 5 (2.6%) | 18 (9.4%) | 84 (43.7%) | 85 (44.3%) | 192 |
| Administrators | 4 (4.5%) | 17 (19.1%) | 41 (46.1%) | 27 (30.3%) | 89 |

Note. N's may vary due to omissions in entry data and due to category (user or nonuser).
Chi-square = *7.90 df = 3
p = .0481
Significant at the 0.05 level

"user" school teachers ranked the desirability of this component in category number 3 or number 4, and that 80.5% of the "user" school administrators ranked the component in the same two categories. Table 11 shows that 69.4% of the "nonuser" teachers and 54.1% of the "nonuser" school administrators ranked the desirability of this component in category number 3 or number 4. Although this component is ranked lower in desirability than any of the other four, over 50% of either "user" or "nonuser" teachers and administrators ranked it in category number 3 or number 4. Table 11 illustrates the frequency distribution on the desirability of the fifth component. A numerical breakdown of Table 11 citing the ranking of "user" and "nonuser" teachers by grade level can be found in Appendix D (see Table A11).

The data were analyzed using chi-square as a statistical treatment. Total "users" (teachers and administrators) and total "nonusers," (teachers and administrators) were compared. The chi-square value was 24.22. The chi-square was significant at the 0.01 level of confidence. Therefore, the null hypothesis was rejected. Teachers and administrators in "user" schools perceived a decentralized administrative authority as more desirable than teachers and administrators in "nonuser" schools.

A final analysis of the data on desirability showed that 219 user teachers (97.8%) and 91 user administrators (96.8%) had a raw score of 12 or greater. In comparison, 178 nonuser teachers (92.2%) and 74 nonuser administrators (83.2%) also had a raw score of 12

Table 11

Desirability of Decentralized Administrative Authority Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | 5 (2.3%) | 34 (15.5%) | 119 (54.3%) | 61 (27.9%) | 219 |
| Administrators | 2 (2.2%) | 16 (17.3%) | 50 (53.8%) | 25 (26.7%) | 93 |
| Nonuser Schools | | | | | |
| Teachers | 14 (7.3%) | 45 (23.3%) | 95 (49.2%) | 39 (20.2%) | 193 |
| Administrators | 4 (4.7%) | 17 (41.2%) | 36 (42.3%) | 10 (11.8%) | 85 |

Note. N's may vary due to omissions in entry data and due to category (user or nonuser).
Chi-square = 24.22 df = 3
$p$ = <.0001
Significant at the 0.01 level

or greater. Although the percentage favoring desirability was high for both "users" and "nonusers," there was a significant difference between the perceived desirability of interdisciplinary teaming between teachers and administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as a part of their curricular program.

Perceived Implementation of Interdisciplinary Teaming

Hypothesis B states there is no difference between the perceived implementation of interdisciplinary teaming between teachers and administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as a part of their curricular program. The data in Tables 12 through 17 represent the frequency and percentage of responses to implementation of the five components.

An analysis of the data of the first component, the implementation of common teacher planning time during the school day revealed that only 51.3% of the "user" school teachers ranked the implementation of this component in category number 1 or number 2, unimplemented. The data also reveal that only 48.7% ranked it in category number 3 or number 4, implemented. Table 12 shows the comparable results for "user" school administrators. The table shows that 52.2% of "user" school administrators ranked the implementation of this component in category number 1 or number 2, and 47.8% ranked it in category number 3 or number 4.

Table 12

Implementation of Common Teacher Planning Time During the School Day Between Reported User and Nonuser Schools

| Degree of Implementation | Unimplemented 1 | 2 | 3 | Highly Implemented 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | 59 (26.8%) | 54 (24.5%) | 53 (24.2%) | 54 (24.5%) | 220 |
| Administrators | 22 (23.9%) | 26 (28.3%) | 24 (26.1%) | 20 (21.7%) | 92 |
| Nonuser Schools | | | | | |
| Teachers | 114 (60%) | 52 (27.4%) | 17 (8.9%) | 7 (3.7%) | 190 |
| Administrators | 45 (50.6%) | 35 (39.3%) | 6 (6.7%) | 3 (3.4%) | 89 |

Note. N's may vary due to omissions in entry data and due to category (user or nonuser).
Chi-square = 101.19 df = 3
$p$ = <.0001
Significant at the 0.01 level

In comparison, 87.4% of "nonuser" teachers ranked the component in category number 1 or number 2, unimplemented, and 89.9% of the "nonuser" school administrators ranked the component in the same two categories. Table 12 shows that 12.6% of the "nonuser" teachers and 10.1% of the "nonuser" school administrators ranked this component as being implemented. Although a majority of "user" school teachers and administrators ranked this component as unimplemented, the percentage ranking it as implemented was greater than that in "nonuser" schools. Table 12 illustrates the frequency distribution of the scores on the implementation of the first component--common teacher planning time during the school day. A numerical breakdown of Table 12 citing the ranking of "user" and "nonuser" teachers by grade level can be found in Appendix D (see Table A12).

The data were analyzed using chi-square as a statistical treatment. Total "users" (teachers and administrators) and total "nonusers," (teachers and administrators) were compared using component one, the implementation of common teacher planning time during the school day. The chi-square value was 101.19. The chi-square was significant at the 0.01 level of confidence. Therefore, the null hypothesis was rejected. Teachers and administrators in "user" schools perceived a higher degree of implementation of common teacher planning time during the school day than teachers and administrators in "nonuser" schools.

Analysis of the second component, the implementation of team control of student schedules, revealed that 51.1% of the "user" school teachers ranked the implementation of this component in category number 3 or number 4, implemented, and 47.9% of the "user" school administrators ranked the component in the same two categories. The data reveal that 48.9% of the "user" teachers, and 52.1% of the "user" administrators ranked the component as unimplemented. Table 13 shows that in comparison, 17.4% of the "nonuser" school teachers and 14.6% of the "nonuser" school administrators ranked the implementation of this component in category number 3 or number 4, implemented. Table 13 shows that 82.6% of "nonuser" teachers and 85.4% of the "nonuser" administrators ranked the component as being unimplemented. Table 13 illustrates the frequency distribution of the scores on the implementation of the second component--team control of student schedules. A numerical breakdown of Table 13 citing the ranking of "user" and "nonuser" teachers by grade level can be found in Appendix D (see Table A13).

The data were analyzed using chi-square as a statistical treatment. Total "users" and total "nonusers" were compared. The chi-square value was 96.34. The chi-square was significant at the 0.01 level of confidence. Therefore, the null hypothesis was rejected. Teachers and administrators in "user" schools perceived team control of student schedules as being implemented more than teachers and administrators in "nonuser" schools.

Table 13

Implementation of Team Control of Student Schedules Between Reported User and Nonuser Schools

| Degree of Implementation | Unimplemented 1 | 2 | 3 | Highly Implemented 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | 45 (20.4%) | 63 (28.5%) | 81 (36.6%) | 32 (14.5%) | 221 |
| Administrators | 21 (22.8%) | 27 (29.3%) | 34 (37%) | 10 (10.9%) | 92 |
| Nonuser Schools | | | | | |
| Teachers | 102 (53.7%) | 55 (28.9%) | 30 (15.8%) | 3 (1.6%) | 190 |
| Administrators | 49 (55.1%) | 27 (30.3%) | 12 (13.5%) | 1 (1.1%) | 89 |

Note. N's may vary due to omissions in entry data and due to category (user or nonuser).
Chi-square = 96.34 df = 3
$p$ = <.0001
Significant at the 0.01 level

An analysis of the third component, the implementation of team control of large and small group instruction, revealed that only 36.3% of the "user" school teachers ranked the implementation of this component in category number 3 or number 4, implemented, and that 33.4% of the "user" school administrators ranked the component in the same two categories. Table 14 shows that 88.0% of the "nonuser" school teachers and 86.4% of the "nonuser" school administrators ranked the component in category number 1 or number 2, unimplemented. Table 14 shows that 12.0% of the "nonuser" teachers and 13.6% of the "nonuser" administrators ranked the component as being implemented. Table 14 illustrates the frequency distribution of the scores on the implementation of the third component--team control of large and small group instruction. A numerical breakdown of Table 14 citing the ranking of "user" and "nonuser" teachers by grade level can be found in Appendix D (see Table A14).

The data were analyzed using chi-square as a statistical treatment. Total "users" and total "nonusers" were compared. The chi-square value was 65.48. The chi-square was significant at the .001 level of confidence. Therefore, the null hypothesis was rejected. Teachers and administrators in "user" schools perceived team control of large and small group instruction as being implemented more than teachers and administrators in "nonuser" schools.

Table 14

Implementation of Team Control of Large and Small Group Instruction Between Reported User and Nonuser Schools

| Degree of Implementation | Unimplemented 1 | 2 | 3 | Highly Implemented 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | 58 (26.4%) | 82 (37.3%) | 59 (26.8%) | 21 (9.5%) | 220 |
| Administrators | 26 (28%) | 36 (28.7%) | 21 (22.6%) | 10 (10.8%) | 93 |
| Nonuser Schools | | | | | |
| Teachers | 102 (53.1%) | 67 (34.9%) | 22 (11.5%) | 1 (.5%) | 192 |
| Administrators | 52 (60%) | 23 (26.4%) | 10 (11.4%) | 2 (2.2%) | 87 |

Note. N's may vary due to omissions in entry data and due to category (user or nonuser).
Chi-square = 65.48 df = 3
$p$ = <.0001
Significant at the 0.01 level

Analysis of the data of the fourth component, the implementation of a child centered curriculum with interdisciplinary units revealed that 39.1% of the "user" school teachers ranked the implementation of this component in category number 3 or number 4, implemented, and 38.5% of the "user" school administrators ranked the component in the same two catagories. The data reveal that 60.9% of the "user" teachers, and 61.5% of the "user" administrators ranked this component as being unimplemented. Table 15 shows that 76.9% of the "nonuser" teachers and 84.1% of the "nonuser" administrators ranked the component in category number 1 or number 2, unimplemented, while 23.1% of the "nonuser" teachers and 15.9% of the "nonuser" administrators ranked the component as implemented. Table 15 shows that the majority of both "user" teachers and administrators as well as "nonuser" teachers and administrators rated this component as unimplemented, however, the percentage of implementation of "user" teachers and administrators was greater. Frequency distributions of the scores on the implementation of the fourth component--a child centered curriculum with interdisciplinary units--are illustrated in Table 15. A numerical breakdown of Table 15 citing the ranking of "user" and "nonuser" teachers by grade level can be found in Appendix D (see Table A15).

The data were analyzed using chi-square as a statistical treatment. Total "users" and total "nonusers" were compared. The chi-square value was 33.59. The chi-square was significant at the 0.01 level. Therefore, the null hypothesis was rejected. Teachers

Table 15

Implementation of Child Centered Curriculum With Interdisciplinary Units Between Reported User and Nonuser Schools

| Degree of Implementation | Unimplemented 1 | 2 | 3 | Highly Implemented 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | 56 (26%) | 75 (34.9%) | 72 (33.5%) | 12 (5.6%) | 215 |
| Administrators | 26 (28.5%) | 30 (33%) | 31 (34.1%) | 4 (4.4%) | 91 |
| Nonuser Schools | | | | | |
| Teachers | 91 (47.6%) | 56 (29.3%) | 41 (21.5%) | 1 (1.6%) | 191 |
| Administrators | 42 (47.7%) | 32 (36.4%) | 12 (13.6%) | 2 (2.3%) | 88 |

Note. N's may vary due to omissions in entry data and due to category (user or nonuser).
Chi-square = 33.59 df = 3
$p$ = <.0001
Significant at the 0.01 level

and administrators in "user" schools perceived a child centered curriculum with interdisciplinary units as being implemented more than teachers and administrators in "nonuser" schools.

Analysis of the fifth component, the implementation of a decentralized administrative authority, revealed that 43.4% of the "user" school teachers ranked the implementation of this component in category number 3 or number 4, implemented, and that 41.9% of the "user" school administrators ranked the component in the same two categories. The data reveal that 56.6% of the "user" teachers, and 58.1% of the "user" administrators rated this component as unimplemented. Table 16 shows that 83.3% of the "nonuser" teachers and 86.2% of the "nonuser" administrators ranked the implementation of this component in category number 1 or number 2, unimplemented. Table 16 shows that 16.7% of the "nonuser" teachers and 13.8% of the "nonuser" administrators ranked this component as implemented. Table 16 reveals that the majority of both "user" teachers and administrators as well as "nonuser" teachers and administrators rated this component as unimplemented, however, the percentage of implementation for "user" teachers and administrators was greater. Table 16 illustrates the frequency distribution of the scores on the implementation of the fifth component--a decentralized administrative authority. A numerical breakdown of Table 16 citing the ranking of "user" and "nonuser" teachers by grade level can be found in Appendix D (see Table A16).

Table 16

Implementation of Decentralized Administrative Authority Between Reported User and Nonuser Schools

| Degree of Implementation | Unimplemented 1 | 2 | 3 | Highly Implemented 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | 53 (24.2%) | 71 (32.4%) | 77 (35.2%) | 18 (8.2%) | 219 |
| Administrators | 26 (28%) | 28 (30.1%) | 31 (33.3%) | 8 (8.6%) | 93 |
| Nonuser Schools | | | | | |
| Teachers | 105 (55%) | 54 (28.3%) | 30 (15.7%) | 2 (1%) | 191 |
| Administrators | 46 (52.9%) | 29 (33.3%) | 10 (11.5%) | 2 (2.3%) | 87 |

Note. N's may vary due to omissions in entry data and due to category (user or nonuser).
Chi-square = 68.77 df = 3
$p$ = <.0001
Significant at the 0.01 level

The data were analyzed using chi-square as a statistical treatment. Total "users" and "nonusers" were compared. The chi-square value was 68.77. The chi-square was significant at the 0.01 level. Therefore, the null hypothesis was rejected. Teachers and administrators in "user" schools perceived a decentralized administrative authority as being implemented more than teachers and administrators in "nonuser" schools.

Table 17 reflects the scores of "user" and "nonuser" teachers and administrators to the criterion score. A criterion score of 12 was used to determine implementation on the Innovation Configuration Checklist. Therefore, any respondent who scored a 12 or higher was considered to have perceived the components as implemented. A review of Table 17 shows that only 119 "user" teachers (53.1%) and 46 "user" administrators (48.9%) scored at the criterion of 12 or above. Table 17 also shows that over 16% of the "nonuser" teachers and over 10% of the "nonuser" administrators also achieved the criterion score of 12 or above on the implementation of the five components of middle level interdisciplinary teaming.

The data in Table 17 appear to indicate that although there are differences in the perceived level of implementation of interdisciplinary teaming between "user" teachers and administrators and "nonuser" teachers and administrators, a moderate to high level of implementation was perceived by approximately half of the "user" teachers and administrators. There was also a perceived

Table 17

Criterion Scores of User and Nonuser Teachers and Administrators on Implementation

| | 12 and Above | Below 12 | Total |
|---|---|---|---|
| User Teachers | 119 (53.1%) | 105 (46.9%) | 224 |
| Nonuser Teachers | 31 (16.1%) | 162 (83.9%) | 193 |
| User Administrators | 46 (48.9%) | 48 (51.1%) | 94 |
| Nonuser Administrators | 9 (10.1%) | 80 (89.9%) | 89 |

Note. Total scores above 12 are considered Implemented while total scores below 12 are considered unimplemented.

implementation of the components of interdisciplinary teaming by 16% of the teachers and 10% of the administrators in "nonuser" schools.

## Data Collection: Hypotheses C, D, and E

The data in Tables 7-16 were analyzed to determine if reported "user" and "nonuser" teachers and administrators were actual users or nonusers. Teachers and administrators completed the Stages of Concern Survey, and the Level of Use Interview. The Piers-Harris Children's Self-Concept Scale was administered to students. Tables 18 and 19 reflect the frequency distribution of the data used for hypotheses C, D, and E.

## Comparisons Indicating Stages of Concern

Hypothesis C states, there is no difference between the stages of concern of interdisciplinary teaming between teachers and

administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as part of their curricular program.

The data were collected using the Stages of Concern Questionnaire (SOC) from Project CBAM--the Concerns-Based Adoption Model--developed by the Research and Development Center for Teacher Education of the University of Texas at Austin. The responses were from the teachers and principals of nine user schools and nine nonuser schools.

A total of 80 user teachers and nine user administrators, along with 59 nonuser teachers and nine nonuser administrators, responded to the SOC questionnaire. The raw scores for each stage were converted to percentile scores using the SOCQ Quick Scoring Device. The simplest examination of the data or Peak Stage Score Interpretation was utilized in this study.

Table 18 shows the frequency of peak scores of the highest score attained by user and nonuser teachers and administrators on the seven stages of concern. Since the seven stages of concern were developmental, the peak score was important in determining the user's or nonuser's attitudes about interdisciplinary teaming. Although score intensity was important for analysis and interpretation within a specific population, higher and lower scores were not absolute, but relative to the other stage scores for that individual. Consequently score intensity across a large mixed population had little meaning because of the many independent variables.

Table 18

Frequency of Peak SOC Scores

| Highest Stage | Awareness 0 | Informational 1 | Personal 2 | Management 3 | Consequence 4 | Collaboration 5 | Refocusing 6 | Total |
|---|---|---|---|---|---|---|---|---|
| User Teachers | 40 (50%) | 12 (15%) | 6 (7.5%) | 8 (10%) | 1 (1.25%) | 11 (13.75%) | 2 (2.5%) | 80 |
| User Administrators | 5 (55.56%) | 0 (0%) | 1 (11.11%) | 0 (0%) | 0 (0%) | 3 (33.33%) | 0 (0%) | 9 |
| Nonuser Teachers | 43 (72.88%) | 14 (23.74%) | 1 (1.69%) | 1 (1.69%) | 0 (0%) | 0 (0%) | 0 (0%) | 59 |
| Nonuser Administrators | 8 (88.89%) | 1 (11.11%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 9 |

User N = 89
Nonuser N = 68

Chi-square = 25.29 df = 6
p = .0003

Table 18 shows that over half of the user teachers and administrators are on stage 0--awareness. The table also shows that over 72% of the nonuser teachers and over 88% of the nonuser administrators are at the same stage. Hall et al. (1979) pointed out that the peak score was a reflection of the discomfort level of an innovation. Consequently early users of an innovation will usually have a peak score in the first three stages, while veteran users will tend to score higher in the last four stages. An overview of Figure 7 shows that 72.5% of the user teachers scored in the first three stages and 66.67% of the user administrators scored in the first three stages. This implies that many user teachers and administrators in Iowa middle level public schools are in the early stages of usage. The fact that nonuser teachers and administrators had a peak score above stage 0 would reflect that many have a considerable knowledge of interdisciplinary teaming or are minimal or past users of the innovation.

Table 18 also shows a high percentage of users at stage 5--collaboration. Since stage 5 concerns reflected coordination and cooperation with others regarding the use of the innovation, it was understandable why 33.33% of the user school administrators peaked at this stage of concern. It would be expected that many team leaders would also peak at this stage. Table 18 shows that no nonuser teacher peaked beyond stage 3 and no nonuser administrator peaked beyond stage 1. Although Table 18 reflects only the peak

scores for user and nonuser teachers and administrators, a breakdown of user and nonuser teacher peak scores by grade level can be found in Appendix D (see Table A18).

A chi-square test of independence was also performed on the scores obtained from the SOC instrument. The peak scores of the seven SOC stages of users and nonusers of the innovation were compared. Since there were only nine user administrators and nine nonuser administrators, a chi-square comparison between those two groups would be of little value because of the small sample size. Therefore, the administrators' peak scores were pooled with the appropriate user and nonuser teacher scores, and a chi-square comparison was made of users and nonusers of the innovation as a whole.

The chi-square was 25.29. The chi-square was significant at the 0.01 level of confidence. Therefore, the null hypothesis was rejected. There are significant differences between the stages of concern of interdisciplinary teaming between teachers and administrators in schools using interdisciplinary teaming and teachers and administrators in schools not using interdisciplinary teaming as a part of their curricular program. In user schools, teachers and administrators peak at higher stages of concern than teachers and administrators in nonuser schools.

Figure 7 shows the percent of user and nonuser peak scores for teachers and administrators in graphic form. As the figure shows, there is greater similarity between the SOC for nonuser

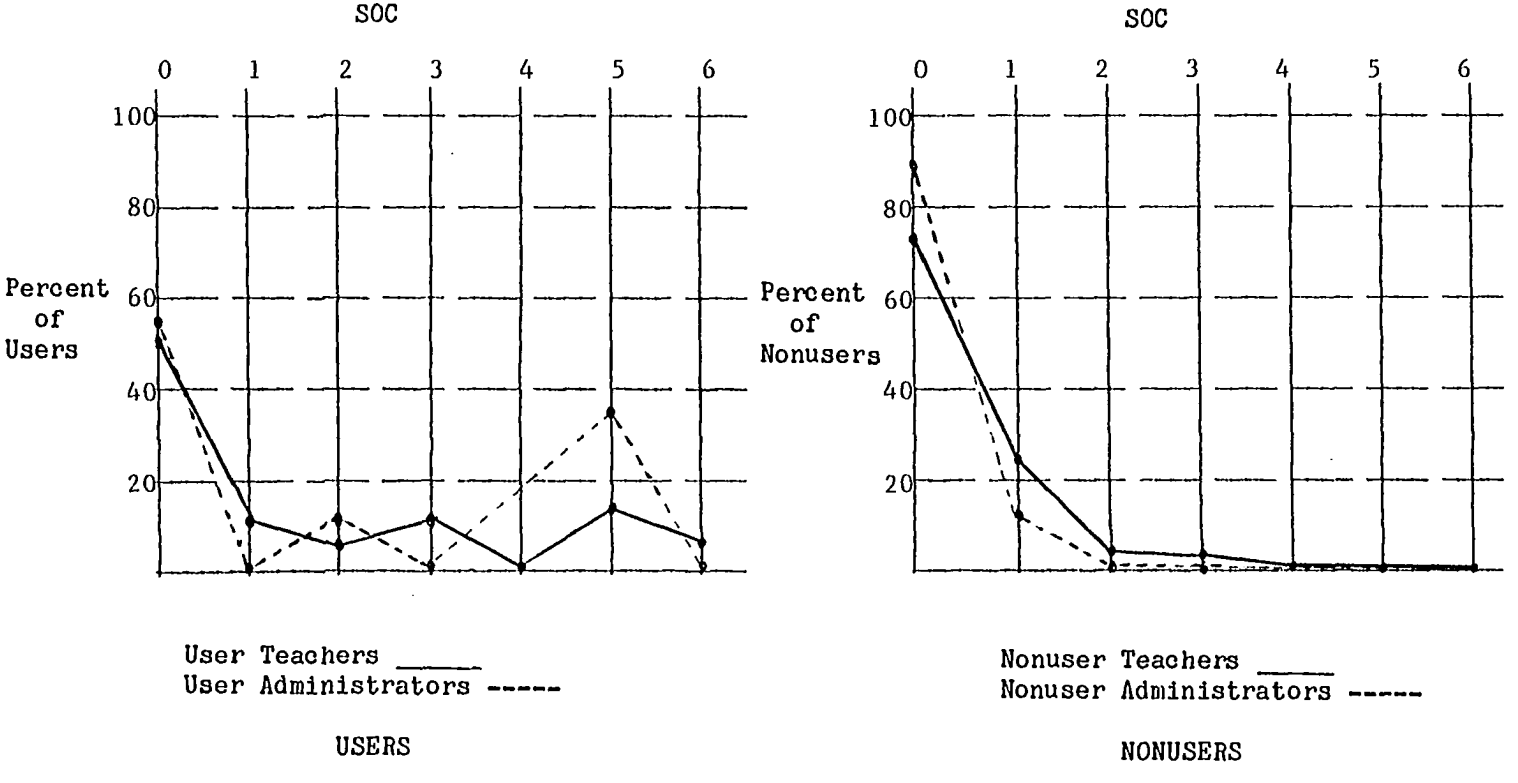



Figure 7. User and Nonuser SOC Profile

teachers and administrators than user teachers and administrators. Hall et al. (1979) explain that this difference is the function of the different roles served by each group within the user organization. As Figure 7 shows, the difference between users and nonusers are more apparent in the later stages of concern.

Comparisons Indicating Level of Use

Hypothesis D states, there is no difference between teachers level of use of interdisciplinary teaming in schools using interdisciplinary teaming and teachers level of use of interdisciplinary teaming in schools not using interdisciplinary teaming.

The data collected using the Level of Use (LOU) Interview from Project CBAM--the Concerns-Based Adoption Model--was developed by the Research and Development Center for Teacher Education of the University of Texas at Austin. Since the interview was designed for actual users or nonusers of the innovation in the classroom and not passive users or nonusers, the interview was used solely with classroom teachers.

The responses of 86 teachers from the nine user schools and 63 teachers from the nine nonuser schools were taped using the focused interview process developed by Project CBAM. The information from the tapes was converted to a Level of Use Rating Sheet (see Figure 5) within one month by the researcher who was trained to criterion as an interviewer and rater. Based on the interview, each teacher was assigned a level of use rating (scale = 1-7) on

each of seven categories of usage. A composite overall LOU rating was compiled from the LOU ratings of each category for all respondents. Further information about definitions for each of the categories and the various levels of use can be found in the LOU Categories Chart in Appendix A.

The data from the LOU Rating Sheets are reflected in Table 19. Table 19 shows the LOU rating for user and nonuser teachers in each of the seven categories and the overall LOU. The first three LOU's--nonuse, orientation, and preparation--are considered nonusage levels in each category. The other five LOU's represent a range from early mechanical usage to renewal where the innovation has become so modified and altered that it resembles a new innovation.

An overview of Table 19 shows that for each of the seven categories, no user school teachers were rated in the first two levels and that between 5.8% to 8.1% of these teachers were rated in the third level--preparation. On the other hand, most of the teachers in nonuser schools were rated in the first three levels of each category. The highest category for nonusers rated in the first three levels is Acquiring Information, where 87.4% of the teachers in nonuser schools were rated in level 0, 1 or 2.

The levels where the majority of teachers in user schools were rated in each category is Level 3 (Mechanical use) and Level 4 (Routine use). The table shows that between 79.1% (acquiring information), and 89.4% (performing) of the user school teachers were rated in levels 3 and 4. This indicates a high percentage of

user school teachers rated in the early levels of use of the innovation.

A review of Table 19 shows that with the exception of the category of knowledge (1.1%) user school teachers were not rated in the highest two levels--integration and renewal. Table 19 shows that no nonuser school teachers were rated in any of the highest three levels (5, 6, and 7).

Analysis of the Overall LOU in Table 19 reveals that 94.2% of the user school teachers were rated in levels 3, 4, and 5, with the majority rated in level 4--routine usage. The overall LOU also shows that 20.6% of the nonuser school teachers were rated at usage levels 3 and 4. This indicates that although the majority of teachers in nonuser schools are not using interdisciplinary teaming approximately one-fifth of the nonuser school teachers are using the innovation at the early usage levels.

The data were analyzed using chi-square as a statistical treatment. The overall LOU ratings of user school teachers were compared with the overall LOU ratings of nonuser teachers. The chi-square value was 89.80. The chi-square was significant at the 0.01 level of confidence. Therefore, the null hypothesis was rejected. There was a significant difference between teachers level of use of interdisciplinary teaming in schools using interdisciplinary teaming and teachers level of use in schools not using interdisciplinary teaming as a part of their curricular program. As the data show, the majority of user teachers were at

Table 19

Teachers LOU Rating

| LOU | User Teachers | Nonuser Teachers |
|---|---|---|
| | Knowledge | |
| 0 Nonuse | 0 (0.0%) | 15 (23.8%) |
| 1 Orientation | 0 (0.0%) | 11 (17.5%) |
| 2 Preparation | 5 (5.8%) | 17 (27.0%) |
| 3 Mechanical Use | 17 (19.8%) | 8 (12.7%) |
| 4 Routine | 57 (66.3%) | 12 (19.0%) |
| 5 Refinement | 6 (7.0%) | 0 (0.0%) |
| 6 Integration | 1 (1.1%) | 0 (0.0%) |
| 7 Renewal | 0 (0.0%) | 0 (0.0%) |
| User Teachers N = 86 | Nonuser Teachers N = 63 | |
| | Acquiring Information | |
| 0 Nonuse | 0 (0.0%) | 35 (55.6%) |
| 1 Orientation | 0 (0.0%) | 9 (14.3%) |
| 2 Preparation | 7 (8.1%) | 11 (17.5%) |
| 3 Mechanical Use | 23 (26.7%) | 7 (11.1%) |
| 4 Routine | 45 (52.4%) | 1 (1.5%) |
| 5 Refinement | 11 (12.8%) | 0 (0.0%) |
| 6 Integration | 0 (0.0%) | 0 (0.0%) |
| 7 Renewal | 0 (0.0%) | 0 (0.0%) |
| User Teachers N = 86 | Nonuser Teachers N = 63 | |
| | Sharing | |
| 0 Nonuse | 0 (0.0%) | 36 (58.1%) |
| 1 Orientation | 0 (0.0%) | 5 (8.1%) |
| 2 Preparation | 5 (5.8%) | 9 (14.5%) |
| 3 Mechanical Use | 24 (27.9%) | 7 (11.2%) |
| 4 Routine | 51 (59.3%) | 5 (8.1%) |
| 5 Refinement | 6 (7.0%) | 0 (0.0%) |
| 6 Integration | 0 (0.0%) | 0 (0.0%) |
| 7 Renewal | 0 (0.0%) | 0 (0.0%) |
| User Teachers N = 86 | Nonuser Teachers N = 62 (1 missing case) | |

(table continues)

| LOU | User Teachers | Nonuser Teachers |
|---|---|---|
| | **Assessing** | |
| 0 Nonuse | 0 (0.0%) | 34 (54.0%) |
| 1 Orientation | 0 (0.0%) | 5 (7.9%) |
| 2 Preparation | 5 (5.9%) | 10 (15.9%) |
| 3 Mechanical Use | 25 (29.4%) | 10 (15.9%) |
| 4 Routine | 48 (56.5%) | 4 (6.3%) |
| 5 Refinement | 7 (8.2%) | 0 (0.0%) |
| 6 Integration | 0 (0.0%) | 0 (0.0%) |
| 7 Renewal | 0 (0.0%) | 0 (0.0%) |
| User Teachers N = 85 (1 missing case) | | Nonuser Teachers N = 63 |
| | **Planning** | |
| 0 Nonuse | 0 (0.0%) | 35 (55.6%) |
| 1 Orientation | 0 (0.0%) | 5 (7.9%) |
| 2 Preparation | 5 (5.8%) | 10 (15.9%) |
| 3 Mechanical Use | 23 (26.7%) | 7 (11.1%) |
| 4 Routine | 50 (58.2%) | 6 (9.5%) |
| 5 Refinement | 8 (9.3%) | 0 (0.0%) |
| 6 Integration | 0 (0.0%) | 0 (0.0%) |
| 7 Renewal | 0 (0.0%) | 0 (0.0%) |
| User Teachers N = 86 | | Nonuser Teachers N = 63 |
| | **Status Reporting** | |
| 0 Nonuse | 0 (0.0%) | 36 (57.2%) |
| 1 Orientation | 0 (0.0%) | 5 (7.9%) |
| 2 Preparation | 5 (5.8%) | 9 (14.3%) |
| 3 Mechanical Use | 27 (31.4%) | 8 (12.7%) |
| 4 Routine | 49 (57.0%) | 5 (7.9%) |
| 5 Refinement | 5 (5.8%) | 0 (0.0%) |
| 6 Integration | 0 (0.0%) | 0 (0.0%) |
| 7 Renewal | 0 (0.0%) | 0 (0.0%) |
| User Teachers N = 86 | | Nonuser Teachers N = 63 |

(table continues)

| LOU | User Teachers | Nonuser Teachers |
|---|---|---|
| | Performing | |
| 0 Nonuse | 0 (0.0%) | 37 (58.8%) |
| 1 Orientation | 0 (0.0%) | 6 (9.5%) |
| 2 Preparation | 5 (5.8%) | 7 (11.1%) |
| 3 Mechanical Use | 26 (30.2%) | 8 (12.7%) |
| 4 Routine | 51 (59.3%) | 5 (7.9%) |
| 5 Refinement | 4 (4.7%) | 0 (0.0%) |
| 6 Integration | 0 (0.0%) | 0 (0.0%) |
| 7 Renewal | 0 (0.0%) | 0 (0.0%) |
| User Teachers N = 86 | Nonuser Teachers N = 63 | |
| | Overall LOU | |
| 0 Nonuse | 0 (0.0%) | 35 (55.6%) |
| 1 Orientation | 0 (0.0%) | 5 (7.9%) |
| 2 Preparation | 5 (5.8%) | 10 (15.9%) |
| 3 Mechanical Use | 26 (30.2%) | 8 (12.7%) |
| 4 Routine | 51 (59.3%) | 5 (7.9%) |
| 5 Refinement | 4 (4.7%) | 0 (0.0%) |
| 6 Integration | 0 (0.0%) | 0 (0.0%) |
| 7 Renewal | 0 (0.0%) | 0 (0.0%) |
| User Teachers N = 86 | Nonuser Teachers N = 63 | |

the early usage levels of mechanical use and routine use with no user teachers scoring in the extremes--the first two nonusage levels, or the last two advanced usage levels. Although the majority (55%) of nonuser teachers were at the nonusage level, many (45%) were beyond this level, with nearly one-third of the nonuser teachers at the preparation and early mechanical usage levels.

## Comparisons of Student Self-Concept

Hypothesis E states, there is no difference between students self-concept in schools using interdisciplinary teaming and in

schools not using interdisciplinary teaming as a part of their curricular program.

The data were collected from the students of the nine innovation user schools and the nine innovation nonuser schools using the Piers-Harris Children's Self-Concept Scale. The 80 question instrument was hand scored with the student's raw scores used for comparison between user schools and nonuser schools. Responses were received from 1,949 students in the nine user and nine nonuser schools. The responses were from 1,044 students in 6th, 7th, and 8th grade in user schools and from 905 students in 6th, 7th, and 8th grade in nonuser schools. The raw scores of students in user and nonuser schools by grade level and by gender, can be found in Appendix D in Table A20.

The mean self-concept scores for 6th, 7th, and 8th grade students in user schools on the Piers-Harris Scale is 58.0 (sd. = 14.1). The mean for 6th, 7th, and 8th grade students in nonuser schools is 53.2 (sd. = 16.1). A t-test was performed comparing students' scores in user schools with students' scores in nonuser schools. The t-test yielded a t-value of 6.94 with 1,947 degrees of freedom. The differences were significant at the 0.01 level. Therefore, the null hypothesis that there is no difference between students' self-concept in schools using interdisciplinary teaming and in schools not using interdisciplinary teaming as a part of their curricular program was rejected. Students in schools using interdisciplinary teaming possessed a higher self-concept than

students in schools not using interdisciplinary teaming as measured by the Piers-Harris Children's Self-Concept Scale.

# CHAPTER V

# SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

## Summary of the Study

The middle school movement developed through the failure of the junior high school (Wiles & Bondi, 1986). One reason for that failure was the lack of identity of the uniqueness of early adolescents and the failure in developing individual instructional programs to meet those unique needs. Interdisciplinary teaming, as one of the many components of middle level education, allowed teachers the flexibility to meet those needs (Wiles & Bondi, 1986).

The purpose of this study was to determine how interdisciplinary teaming was used in grades 6, 7, and 8 in Iowa middle level public schools. In order to accomplish this, it was necessary to first establish the agreed upon components of interdisciplinary teaming as expressed through the literature and validated by expert testimony.

Once the components were identified, a comparison was made of the perceived desirability, and the perceived implementation of the components of interdisciplinary teaming of those schools who indicated on a demographic survey that they "used" some form of teaming to an equal number of schools who stated no usage. An analysis was then made of the differences in concerns and levels of implementation between interdisciplinary teaming user schools and interdisciplinary teaming nonuser schools.

Since the true test of any educational innovation was the effect it had on the student population for which it was designed, a comparison of student self-concept was made between students in user schools and students in nonuser schools using the Piers-Harris Children's Self-Concept Scale. Although a quasi-experimental test of differences between intact groups cannot begin to establish causality, the identification of existing differences is a first step in understanding the relationship between educational innovation and student characteristics.

Five hypotheses were formulated along with seven research questions to analyze interdisciplinary teaming in Iowa public middle level schools. The data to test the hypotheses and research questions were obtained from five specific instruments administered at various stages to the population and sample. The data were tabulated and statistically analyzed for significance through the subprograms of SPSS$^{x}$.

A review of the literature of middle level education from its early beginnings in the junior high school movement at the turn of the century, to the middle school movement of the early 1960's to the present, revealed a strong and continuous acceptance of the basic functions of middle level education developed by Gruhn and Douglass in 1947. Although the junior high school movement failed to meet the specific educational needs of early adolescents, the functions of middle level education have survived and are embodied as an integral part of the middle school movement today.

Other problems also plagued the junior high school. Perhaps the greatest failure of the movement was the lack of educational identity. Because the curriculum was governed by the high school philosophy and because the teaching staff was certified in secondary education, the junior high school in time merely became an extension of the high school movement.

A review of the literature points out many similarities and differences between the junior high movement and the middle school movement. The research shows that the junior high school was not true to the philosophical tenets of middle level education on which it was founded. This same growing concern was expressed in the literature about the middle school. Many research studies had shown that the major components of middle level education were either poorly implemented or unimplemented in current middle level schools.

Although interdisciplinary teaming was merely one component of the middle school philosophy, the literature shows that it was one of the most difficult components to implement. Perhaps the greatest difficulty for implementing interdisciplinary teaming was the lack of understanding of the concept by teachers and administrators alike. The research shows that a variance exists between staff and administration regarding the perceived roles and responsibilities of each in the implementation process and in the maintenance of the concept. Because interdisciplinary teaming involved the socialization of professionals, personality differences were critical to both the implementation and continuation of teaming. The

literature also showed that poor staff development programs, as well as a general unfamiliarity with the process of facilitating educational change, was causing the implementation of interdisciplinary teaming to lag far behind the implementation of the other major components of middle school education.

The research on the effectiveness of interdisciplinary teaming is unclear at present. Although many of the studies were faulted for their design problems and population and sample size, generally the research showed that interdisciplinary teaming does not produce any significant difference in students' academic achievement. The later studies do indicate that a slight difference in students' self-esteem was evident in schools using interdisciplinary teaming. The area which fared the best in the research was the educational climate. In general, the research showed teachers' attitudes towards teaching and education, as well as students' attitudes towards school and learning, were more positive under a middle school concept with interdisciplinary teaming than found in junior high schools or elementary schools.

At present, the middle school movement and the utilization of interdisciplinary teaming is relatively new. Many studies exist which provide conflicting evidence as to the effectiveness of both. Although most authorities on middle level education seem to favor interdisciplinary teaming as a method for instructional and curricular improvement for teachers and students alike, the evidence of empirical research of this improvement is at best inconclusive.

In this study, the results of the initial demographic questionnaire sent to all Iowa middle level public schools indicated that 116 of the 458 responding schools used some form of teaming in grades six, seven, and eight. In order to determine the extent and nature of interdisciplinary teaming in those schools, four additional instruments were used to test the hypotheses of the study.

To clarify and define the components of interdisciplinary teaming, an Innovation Configuration Checklist was developed from a review of the literature and through the assistance of experts in the field of middle level education. The checklist followed the design model developed through Project CBAM by the Research and Development Center for Teacher Education at the University of Texas at Austin.

The checklist was used to identify and determine the desirability and implementation of five major components of interdisciplinary teaming. It was sent to the principals and teachers of "user" schools identified by the demographic questionnaire, and to an equal number of principals and teachers in "nonuser" schools selected through a stratified random sample based on school district size. The responding surveys were analyzed in two categories--desirability of the components of interdisciplinary teaming and implementation of the same components. The criterion score of desirability and implementation was 12. Therefore, any principal or teacher with a total score of 12 or better on desirability or implementation was deemed to have rated

the components of interdisciplinary teaming as desirable and/or implemented by them in their school or grade level.

From the responses to the Innovation Configuration Checklist, 18 schools were selected for further study. Of the 18 schools, nine were interdisciplinary teaming user schools--three small size, three medium size and three large size. The working definitions of the Iowa Department of Education were used as the criterion for school district size. The other nine schools selected were interdisciplinary teaming nonuser schools with the same size constraints as the user schools. The user and nonuser schools were a stratified random sample based on school district size.

Through approval from the superintendent of each district and the principal of each school, the eighteen schools were visited. In user schools the principal and a teaching team from grades six, seven, and eight were given the Stages of Concern Survey from Project CBAM. In nonuser schools, the principal and selected teachers from grades six, seven, and eight were given the same survey. All of the teachers in the user and nonuser schools who were given the Stages of Concern Survey were interviewed using the focused interview procedure of the Levels of Use Survey developed by the Research and Development Center for Teacher Education at the University of Texas at Austin for Project CBAM. The Stages of Concern Survey (SOC) was designed to measure the attitudes and feelings of principals and teachers to interdisciplinary teaming, while the Levels of Use Interview (LOU) was designed to measure the actual level of implementation of the same innovation.

While at each of the schools, instructions were given to the guidance counselor on the procedure for giving the students in grade six, seven, and eight, the Piers-Harris Children's Self-Concept Scale. In the user and nonuser small size schools, 25 students in each grade, six, seven, and eight, were given the self-concept scale. In user and nonuser medium and large size schools, 50 students in each grade were given the Piers-Harris test. The purpose of the test was to ascertain if any appreciable differences in student self-concept exist between schools using interdisciplinary teaming and schools who were not.

In order to prevent statistical bias, a routine was developed and used when visiting each school. All eighteen schools were visited, teachers interviewed, surveyed, and students surveyed within a six week period of time. The school visitations were completed during April and May of 1987.

Since three of the five instruments used in the study were developed for Project CBAM--the Concerns Based Adoption Model for analyzing educational innovation--it was imperative that credibility in the use of the instruments and analysis of results of this model be established. To this end, the researcher was trained to criterion as a user, interviewer, and rater of the three instruments from Project CBAM. The training was conducted by the Southwest Educational Development Laboratory, the agency responsible for CBAM training and development. (See Appendix B for letter of recognition and certification.)

It should be noted that although the staff and administration of both the user and nonuser school districts were extremely cooperative in assisting with this research, a guarded level of caution was expressed by many administrators as to the utilization of the data. To alleviate those concerns, it was explained that the purpose of the research was to analyze interdisciplinary teaming in middle level education and to compare similarities and differences between user and nonuser schools as a generic class. It was agreed that the data collected were privileged information and as such would not be used for school district to school district comparison nor made available to any other agency.

## Conclusions

The demographic data show that approximately 25% of the Iowa middle level public schools reported using some form of middle level teaming. However, the actual number of schools implementing the five components of interdisciplinary teaming was considerably less--4.6%. Of the 116 schools reported to be using some form of teaming, approximately one-third were small size, one-third were medium size, and one-third were large size school districts. The organizational structure most commonly used by schools utilizing some form of teaming was a 6-8 grade configuration. Approximately 76% of the middle level schools using some form of teaming have been doing so for between one to five years. Therefore, usage of middle level teaming in Iowa public middle level schools was relatively new and not very widespread.

Five components of interdisciplinary had been established and validated through a review of the literature and expert testimony. The data gathered on each of these five components as measured by the Innovation Configuration Checklist indicate that:

1. "User" teachers and administrators perceive common teacher planning during the school day by team members as being more desirable than "nonuser" teachers and administrators.

2. "User" teachers and administrators perceive team control of student schedules as being more desirable than "nonuser" teachers and administrators.

3. "User" teachers and administrators perceive the team's ability to control for large and small group instruction as being more desirable than "nonuser" teachers and administrators.

4. "User" teachers and administrators perceive the development of a child centered curriculum with interdisciplinary units as being more desirable than "nonuser" teachers and administrators.

5. "User" teachers and administrators perceive a decentralization of administrative authority as being more desirable than "nonuser" teachers and administrators.

Although "user" teachers and administrators perceived the components on the checklist as being more desirable than "nonusers," a high desirability rating was given to the components by "nonuser" teachers and administrators.

As addressed by the same teachers and administrators in the 116 "user" schools and 116 "nonuser" schools who completed the

Innovation Configuration Checklist, the following results on the five components were obtained:

1. "User" teachers and administrators perceive common teacher planning time during the school day by team members as being implemented more than "nonuser" teachers and administrators.

2. "User" teachers and administrators perceive team control of student schedules as being implemented more than "nonuser" teachers and administrators.

3. "User" teachers and administrators perceive the team's ability to control for large and small group instruction as being implemented more than "nonuser" teachers and administrators.

4. "User" teachers and administrators perceive the development of a child centered curriculum with interdisciplinary units as being implemented more than "nonuser" teachers and administrators.

5. "User" teachers and administrators perceive a decentralization of administrative authority as being implemented more than "nonuser" teachers and administrators.

Although "user" teachers and administrators perceived the components of interdisciplinary teaming as being implemented more than "nonusers," approximately one-half of the "user" teachers and administrators did not achieve the minimum criterion score for implementation while 16% of the "nonuser" teachers and 10% of the "nonuser" administrators did achieve the minimum criterion score or higher. Therefore, although "user" teachers and administrators perceived the components as being implemented more than "nonusers,"

that implementation was achieved by only half of the user group while 10 to 16% of the "nonusers" were implementing the components of interdisciplinary teaming.

The responses from the 80 teachers from grades 6-8 and the nine administrators in the nine user schools indicate that user school teachers and administrators have higher stages of concern than nonuser school teachers and administrators as measured by the peak scores on the SOC instrument.

Although the data show that user school teachers and administrators had higher stages of concern than their nonuser school counterparts, over half of both groups had scored in the first three stages. Since the seven Stages of Concern were developmental in nature this would indicate that the feelings and attitudes of both user school teachers and administrators as well as nonuser school teachers and administrators were in the early developmental stage of concern about interdisciplinary teaming. This seems consistent with the information from the initial demographic survey which states that teaming was relatively new in "user" schools in Iowa.

The data collected from the focused interview conducted by a Project CBAM criterion trained interviewer and rater indicate that although some nonuser teachers have shown a moderate level of use, user school teachers have statistically significant higher levels of use of interdisciplinary teaming. The data also indicate that of the eight levels of use, over 89% of the user school teachers

were on the mid range usage levels number 3 and number 4, and that no user school teachers were on the highest two levels or the lowest two levels of usage. This too seems consistent with the information provided by the other instruments used in the research, indicating that interdisciplinary teaming was relatively new and not wide spread in Iowa, as well as, the evidence that the majority of user school teachers stages of concern were in the first three developmental stages.

Although the majority of user school teachers scored higher on the LOU than their nonuser school counterparts, approximately 20% of the nonuser school teachers scored in the mid range of usage levels number 3 and number 4. This indicates that although the majority of teachers in nonuser schools were not using interdisciplinary teaming, some teaming was being done in these schools and at a relatively high level of usage.

The data reflect that students in schools where interdisciplinary teaming was used as a part of the curricular program have a significantly higher self-concept than students in schools where interdisciplinary teaming was not used, as measured by the Piers-Harris Children's Self-Concept Scale. While differences in self-concept were noted, the current research does not allow any attribution of cause of those differences.

Based upon an analysis of the data provided by the five research instruments used in the study, it was reasonable to assume that the following salient conclusions represent the heart of the findings:

1. Middle level teaming in Iowa middle level public schools is a relatively new concept that does not have wide spread usage throughout the state.

2. Grades 6, 7, and 8 are the grade levels where middle level teaming is most commonly used in Iowa public middle level schools.

3. Of those schools that utilize some form of middle level teaming, school district size does not appear to be a factor in its usage.

4. Of those schools that indicated that they utilize some form of middle level teaming, only a small portion of them actually utilize interdisciplinary teaming.

5. Although the five components of interdisciplinary teaming are perceived as being highly desirable by teachers and administrators in schools who reported that they utilize interdisciplinary teaming, the components are also perceived as being desirable by teachers and administrators in schools that reported not using the concept.

6. Although the components of interdisciplinary teaming are perceived as being highly desirable by teachers and administrators in reported user schools, the perceived implementation level by the same teachers and administrators is considerably lower than the desirability level.

7. Although the perceived implementation level of the components of interdisciplinary teaming is higher for reported

user schools, a moderate amount of utilization is perceived in use in reported nonuser schools.

8. The stages of concern about interdisciplinary teaming for user teachers and administrators tend to peak in the first three stages, indicative of the feelings and attitudes of early users of an educational innovation.

9. Although the stages of concern about interdisciplinary teaming were higher for user teachers and administrators, a moderate amount of concern was indicated by nonuser teachers and administrators.

10. A consistency seems to exist between the perceived level of use of interdisciplinary teaming as measured by the Innovation Configuration Checklist and the actual level of use as measured by the LOU interview of teachers in user schools.

11. The majority of Iowa middle level public school teachers using interdisciplinary teaming are at the mid range level of usage indicative of early usage of the educational innovation.

12. Although the actual level of usage of interdisciplinary teaming was higher for user school teachers, a moderate level of use was shown by teachers in nonuser schools.

13. Although causality cannot be inferred, Iowa middle level public school students in grades 6-8 in interdisciplinary teaming user schools had a higher self-concept score than students in grades 6-8 in interdisciplinary teaming nonuser schools in Iowa.

## Recommendations for Further Study

Based upon the findings of this study and the experience and insight gained by the researcher in the process, the following issues are presented as being worthy of further research:

1. The study addresses the present state of interdisciplinary teaming in Iowa middle level public schools. Since one of the conclusions of the study is that interdisciplinary teaming is in its early stages of development and utilization, it seems reasonable that a replication of the study should be undertaken in approximately five to seven years to validate the focus and direction of the concept in Iowa middle level public schools.

2. One of the limitations of the study was that only Iowa public middle level schools were included in the research. Greater insight could be obtained on interdisciplinary teaming through the inclusion of private and parochial middle level schools within the state.

3. Although the findings are reflective of the State of Iowa, it is difficult to generalize them for the rest of the nation; or even the geographical region of the midwest. Further comparison on the status of interdisciplinary teaming in other states and regions would provide useful information on the focus and dimension of this concept within the middle school movement.

4. The literature has implied that of the many components that make up the middle school movement, interdisciplinary teaming is the most difficult to understand and implement. Since the

literature also implies the fundamental importance of interdisciplinary teaming to effective middle level education, more research into the cause and effect relationship of this phenomenon is warranted.

5. Although school district size was not shown to be a factor to the usage of interdisciplinary teaming in this study, that is not to say that this will always be the case. More research is needed in the area of optimal school district size and the cost effectiveness of interdisciplinary teaming over other middle level education programs.

6. Although the study addressed teachers' attitudes, feelings, and usage of interdisciplinary teaming, no attempt was made to assess teacher preparation. Therefore, the preparatory elements essential for producing effective users of interdisciplinary teaming is truly worthy of further investigation considering both college teacher education preparation and on-the-job in-service training.

7. While student self-concept was of key concern to the study, teacher and administration morale was not of issue to the findings. Since it seems reasonable to assume that teacher morale would have an effect on the teaching-learning process, further investigation into a comparison of staff morale between schools using interdisciplinary teaming and nonuser schools is necessary.

8. The literature states that few longitudinal studies have been done on the effects of the middle school philosophy on students, yet alone the effects of one component of that philosophy. If

interdisciplinary teaming is to be considered as a viable educational approach for middle level students, then long range studies are needed to validate the strengths and weaknesses of the process.

9. At this point in time, the literature is, at best, inconclusive on the effects of interdisciplinary teaming on student achievement. Perhaps this is because of the breadth and scope of the study of factors influencing student achievement. It may be essential to examine and compare a specific subject area and specific instructional programs within that subject area between schools using interdisciplinary teaming and nonuser schools to find empirical results on achievement.

10. This study included a comparison of self-concept between students in user and nonuser schools. Follow-up studies investigating changes in student self-concept in schools using interdisciplinary teaming as compared to schools not using interdisciplinary teaming are needed.

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# APPENDICES

# APPENDIX A

## Instruments

ADMINISTRATIVE QUESTIONNAIRE
ON MIDDLE LEVEL EDUCATION

1. What is the approximate community population in which your school district is located?
   A. Under 4,000
   B. 4,000-12,000
   C. Over 12,000

2. What is the approximate student enrollment in your school district?
   A. Under 600
   B. 600-2,500
   C. Over 2,500

3. What is the middle level grade structure of your particular school?
   A. 5-6
   B. 6-7
   C. 7-8
   D. 5-6-7
   E. 6-7-8
   F. 7-8-9
   G. 5-6-7-8
   H. 6-7-8-9
   I. Other (specify) _____

4. What is the approximate student enrollment of your particular school building?
   A. Under 250
   B. 250-500
   C. Over 500

5. What is the total number of years that you have been a middle level administrator?
   A. Under 2
   B. 3-5
   C. 6-10
   D. 11-15
   E. Over 15

6. As an administrator, do you professionally subscribe to the middle school philosophy and concepts?
   A. Totally
   B. Somewhat
   C. Undecided
   D. No

7. As an administrator, do you professionally subscribe to the middle school concept of team teaching?
   A. Totally
   B. Somewhat
   C. Undecided
   D. No

8. Does your school use middle level teaming in any of the middle level grades?
   A. Yes
   B. No
   (If your answer to question #8 was "No" please answer question #9 and return the answer form.)

9. Does your school or school district plan to implement the concept of middle level teaming within the next three years?
   A. Yes
   B. No
   C. Unknown

10. What grades in your school use middle level teaming?
   A. 5
   B. 6
   C. 7
   D. 8
   E. 9
   F. Other (specify) _____

11. How long has your school used middle level teaming?
   A. 2 years or less
   B. 3-5 years
   C. 6-10 years
   D. Over 10 years

12. Do you feel that middle level teaming has made a positive impact on your staff?
   A. Very rarely
   B. Sometimes
   C. Usually
   D. Almost always

13. Do you feel that middle level teaming has made a positive impact on your students?
   A. Very rarely
   B. Sometimes
   C. Usually
   D. Almost always

INNOVATION - CONFIGURATION CHECKLIST

Interdisciplinary Teaming

The following checklist contains generally agreed upon components of the concept of middle level interdisciplinary teaming.

1. The interdisciplinary team will have common teacher planning time during the school day to do curriculum planning and handle team business.
( ) Agree ( ) Disagree
Suggested change: _____
_____
_____
_____

2. The interdisciplinary team will have reasonable control in its ability to schedule students in order to meet the specific needs of those students.
( ) Agree ( ) Disagree
Suggested change: _____
_____
_____
_____

3. The interdisciplinary team will have the ability to reasonably control the flexibility of the schedule to allow for large and small group instruction, group guidance sessions, and the use of specialists and auxiliary personnel.
( ) Agree ( ) Disagree
Suggested change: _____
_____
_____
_____

4. In curriculum development the interdisciplinary team will utilize the philosophy of a child centered curriculum and develop interdisciplinary units that will transcend the trasditional subject area boundaries.
( ) Agree ( ) Disagree
Suggested change: _____
_____
_____
_____

5. In order to function as a cohesive unit, there is a general decentralization of routine administrative authority with that authority vested in the interdisciplinary team and team leadership.
( ) Agree ( ) Disasgree
Suggested change: _____
_____
_____
_____
Other major components that should be considered:
_____
_____

(Directions and statement of purpose are on the back)

INNOVATION - CONFIGURATION CHECKLIST

Interdisciplinary Teaming

The following checklist contains generally agreed upon components of the concept of middle level interdisciplinary teaming. Please respond to each question by circling the degree of desirablility and the degree of implementation.

1. The interdisciplinary team will have common teacher planning time during the school day to do curriculum planning and handle team business.

| degree of desirability | | | | degree of present implementation | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| (undesirable) | | | (highly desirable) | (unimplemented) | | | (always implemented) |

2. The interdisciplinary team will have reasonable control in its ability to schedule students in order to meet the specific needs of those students.

| degree of desirability | | | | degree of present implementation | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| (undesirable) | | (highly desirable) | | (unimplemented) | | | (always implemented) |

3. The interdisciplinary team will have the ability to reasonably control the flexibility of the schedule to allow for large and small group instruction, group guidance sessions, and the use of specialists and auxiliary personnel.

| degree of desirability | | | | degree of present implementation | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| (undesirable) | | | (highly desirable) | (unimplemented) | | | (always implemented) |

4. In curriculum development the interdisciplinary team will utilize the philosophy of a child centered curriculum and develop interdisciplinary units that will transcend the traditional subject area boundaries.

| degree of desirability | | | | degree of present implementation | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| (undesirable) | | | (highly desirable) | (unimplemented) | | | (always implemented) |

5. In order to function as a cohesive unit, there is a general decentralization of routine administrative authority with that authority vested in the interdisciplinary team and team leadership.

| degree of desirability | | | | degree of present implementation | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| (undesirable) | | | (highly desirable) | (unimplemented) | | | (always implemented) |

(Directions and statement of purpose)

Dear Administrator:

The following checklist contains five generally agreed upon components of the concept of middle level interdisciplinary teaming. You are asked to respond to each question twice. The first response (at left) asks you to rate the statement on the degree of desirability of the statement as an optimum condition for interdisciplinary teaming. The second response (at right) asks you to respond to the degree that you feel the statement is implemented in your school. Respondents are asked to circle their choice on the 1 to 4 scale. ("1' is the least desirable or least implemented and progresses to "4" which is the most desirable or most implemented). It is not necessary that your school uses interdisciplinary teaming to complete this questionnaire.

Thank you for your assistance. Please return mail by January 31, 1987.

Fred A. Wills
Principal
Anson Junior High School
South Third Avenue
Marshalltown, Ia 50158

(Directions and statement of purpose)

Dear Teacher: Please indicate grade _____

The following checklist contains five generally agreed upon components of the concept of middle level interdisciplinary teaming. You are asked to respond to each question twice. The first response (at left) asks you to rate the statement on the degree of desirability of the statement as an optimum condition for interdisciplinary teaming. The second response (at right) asks you to respond to the degree that you feel the statement is implemented in your school. Respondents are asked to circle their choice on the 1 to 4 scale. ("1' is the least desirable or least implemented and progresses to "4" which is the most desirable or most implemented). It is not necessary that your school uses interdisciplinary teaming to complete this questionnaire.

Thank you for your assistance. Please return mail by January 31, 1987.

Fred A. Wills
Principal
Anson Junior High School
South Third Avenue
Marshalltown, Ia 50158

4120-D50641-5/80 SoCC 54
OER

Concerns Questionnaire

Name_____

The purpose of this questionnaire is to determine what people who are using or thinking about using various programs are concerned about at various times during the innovation adoption process. The items were developed from typical responses of school and college teachers who ranged from no knowledge at all about various programs to many years experience in using them. Therefore, a good part of the items on this questionnaire may appear to be of little relevance or irrelevant to you at this time. For the completely irrelevant items, please circle "0" on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale.

For example:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| This statement is very true of me at this time. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| This statement is somewhat true of me now. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| This statment is not at all true of me at this time. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| This statement seems irrelevant to me. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Please respond to the items in terms of your present concerns, or how you feel about your involvement or potential involvement with interdisciplinary teaming. We do not hold to any one definition of this program, so please think of it in terms of your own perceptions of what it involves. Remember to respond to each item in terms of your present concerns about your involvement or potential involvement with the above named innovation.

Thank you for taking time to complete this task.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 0 Irrelevant | 1 Not true of me now | 2 | 3 Somewhat true of me now | 4 | 5 | 6 Very true of me now | | 7 |
| 1. | I am concerned about students' attitudes toward interdisciplinary teaming. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | I now know of some other approaches that might better. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | I don't even know what interdisciplinary action is. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | I am concerned about not having enough time to organize myself each day. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | I would like to help other faculty in their use interdisciplinary action. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | I have a very limited knowledge about interdisciplinary teaming. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. | I would like to know the effect of reoraganization on my professional status. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. | I am concerned about conflict between my interests and my responsibility. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. | I am concerned about revising my use of interdisciplinary teaming. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. | I would like to develop working relationships with both our faculty and outside faculty using interdisciplinary action. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. | I am concerned about how interdisciplinary teaming affects students. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. | I am not concerned about interdisciplinary teaming. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. | I would like to know who will make the decisions in the new system. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. | I would like to discuss the possibility of of using interdisciplinary teaming. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. | I would like to know what resources are available if we decide to adopt interdisciplinary teaming. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. | I am concerned about my inability to manage all that interdisciplinary teaming requires. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. | I would like to know how my teaching or administration is supposed to change. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. | I would like to familiarize other departments or persons with the progress of this new approach. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

0 Irrelevant 1 Not true of me now 2 3 4 Somewhat true of me now 5 6 7 Very true of me now

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 19. | I am concerned about evaluating my impact on students. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20. | I would like to revise interdisciplinary teaming's instructional approach. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21. | I am completely occupied with other things. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22. | I would like to modify our use of interdisciplinary teaming based on the experience of our students. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23. | Although I don't know about interdisciplinary teaming, I am concerned about things in the area. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. | I would like to excite my students about their part in this approach. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25. | I am concerned about time spent working with nonacademic problems related to interdisciplinary teaming. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26. | I would like to know what the use of interdisciplinary teaming will require in the immediate future. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27. | I would like to coordinate my effort with others to maximaze the effects of interdisciplinary teaming. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28. | I would like to have more information on time and energy commitments required by interdisciplinary teaming. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 29. | I would like to know what other faculty are doing in this area. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30. | At this time, I am not interested in learning about interdisciplinary teaming. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 31. | I would like to determine how to supplement, enhance, or replace interdisciplinary teaming. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 32. | I would like to use feedback from students to change the program. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 33. | I would like to know how my roll will change when I am using interdisciplinary teaming. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 34. | Coordination of tasks and people is taking too much of my time. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 35. | I would like to know how interdisciplinary teaming is better than what we have now. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

PLEASE COMPLETE THE FOLLOWING:

1. Male _____ Female _____

2. What agency or institution do you represent?

3. Teacher: Grade 6 7 8 (Please circle)

4. Administrator

## LEVELS OF USE

### SCALE POINT DEFINITIONS OF THE LEVELS OF USE OF THE INNOVATION

Levels of Use are distinct states that represent observably different types of behavior and patterns of innovation use as exhibited by individuals and groups. These levels characterize a user's development in acquiring new skills and varying use of the innovation. Each level encompasses a range of behaviors, but is limited by a set of Identifiable Decision Points. For descriptive purposes, each level is defined by seven categories.

LOU Categories Chart

| | KNOWLEDGE | ACQUIRING INFORMATION | SHARING |
|---|---|---|---|
| | That which the user knows about characteristics of the innovation, how to use it, and consequences of its use. This is cognitive knowledge related to using the innovation, not feelings or attitudes. | Solicits information about the innovation in a variety of ways, including questioning resource persons, corresponding with resource agencies, reviewing printed materials, and making visits. | Discusses the innovation with others. Shares plans, ideas, resources, outcomes, and problems related to use of the innovation. |
| **LEVEL 0** NON-USE State in which the user has little or no knowledge of the innovation, no involvement with the innovation, and is doing nothing toward becoming involved. | Knows nothing about this or similar innovations or has only very limited general knowledge of efforts to develop innovations in the area. | Takes little or no action to solicit information beyond reviewing descriptive information about this or similar innovations when it happens to come to personal attention. | Is not communicating with others about the innovation beyond possibly acknowledging that the innovation exists |
| DECISION POINT A | *Takes action to learn more detailed information about the innovation.* | | |
| **LEVEL I** ORIENTATION State in which the user has acquired or is acquiring information about the innovation and/or has explored or is exploring its value orientation and its demands upon user and user system | Knows general information about the innovation such as origin, characteristics, and implementation requirements. | Seeks descriptive material about the innovation. Seeks opinions and knowledge of others through discussions, visits, or workshops. | Discusses the innovation in general terms and/or exchanges descriptive information, materials, or ideas about the innovation and possible implications of its use. |
| DECISION POINT B | *Makes a decision to use the innovation by establishing a time to begin.* | | |
| **LEVEL II** PREPARATION. State in which the user is preparing for first use of the innovation | Knows logistical requirements, necessary resources and timing for initial use of the innovation, and details of initial experiences for clients. | Seeks information and resources specifically related to preparation for use of the innovation in own setting. | Discusses resources needed for initial use of the innovation. Joins others in pre-use training, and in planning for resources, logistics, schedules, etc., in preparation for first use. |
| DECISION POINT C | *Begins first use of the innovation.* | | |
| **LEVEL III** MECHANICAL USE State in which the user focuses most effort on the short-term day-to-day use of the innovation with little time for reflection. Changes in use are made more to meet user needs than client needs. The user is primarily engaged in a stepwise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use | Knows on a day-to-day basis the requirements for using the innovation, is more knowledgeable on short-term activities and effects than long-range activities and effects of use of the innovation. | Solicits management information about such things as logistics, scheduling techniques, and ideas for reducing amount of time and work required of user. | Discusses management and logistical issues related to use of the innovation. Resources and materials are shared for purposes of reducing management, flow and logistical problems related to use of the innovation. |

| | | | |
|---|---|---|---|
| DECISION POINT D-1 | *A routine pattern of use is established.* | | |
| **LEVEL IV A**<br>ROUTINE: Use of the innovation is stabilized. Few if any changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences | Knows both short- and long-term requirements for use and how to use the innovation with minimum effort or stress. | Makes no special efforts to seek information as a part of ongoing use of the innovation. | Describes current use of the innovation with little or no reference to ways of changing use. . |
| DECISION POINT D-2 | *Changes use of the innovation based on formal or informal evaluation in order to increase client outcomes.* | | |
| **LEVEL IV B**<br>REFINEMENT: State in which the user varies the use of the innovation to increase the impact on clients within immediate sphere of influence. Variations are based on knowledge of both short- and long-term consequences for clients. | Knows cognitive and affective effects of the innovation on clients and ways for increasing impact on clients. | Solicits information and materials that focus specifically on changing use of the innovation to affect client outcomes. | Discusses own methods of modifying use of the innovation to change client outcomes. |
| DECISION POINT E | *Initiates changes in use of innovation based on input of and in coordination with what colleagues are doing.* | | |
| **LEVEL V**<br>INTEGRATION: State in which the user is combining own efforts to use the innovation with related activities of colleagues to achieve a collective impact on clients within their common sphere of influence | Knows how to coordinate own use of the innovation with colleagues to provide a collective impact on clients. | Solicits information and opinions for the purpose of collaborating with others in use of the innovation. | Discusses efforts to increase client impact through collaboration with others on personal use of the innovation. |
| DECISION POINT F | *Begins exploring alternatives to or major modifications of the innovation presently in use.* | | |
| **LEVEL VI**<br>RENEWAL: State in which the user re-evaluates the quality of use of the innovation, seeks major modifications of or alternatives to present innovation to achieve increased impact on clients, examines new developments in the field, and explores new goals for self and the system | Knows of alternatives that could be used to change or replace the present innovation that would improve the quality of outcomes of its use | Seeks information and materials about other innovations as alternatives to the present innovation or for making major adaptations in the innovation. | Focuses discussions on identification of major alternatives or replacements for the current innovation. |

*Procedures for Adopting Educational Innovations Project, Research and Development Center for Teacher Education, University of Texas at Austin, 1975, N.I.E. Contract No. NIE-C-74-0087.*

From: Hall, G. E., Loucks, S. F., Rutherford, W. L., & Newlove, B. W. Levels of Use of the Innovation: A framework for analyzing innovation adoption. The Journal of Teacher Education, 1975, 26(1), 52-56.

| ASSESSING | PLANNING | STATUS REPORTING | PERFORMING |
|---|---|---|---|
| Examines the potential or actual use of the innovation or some aspect of it. This can be a mental assessment or can involve actual collection and analysis of data. | Designs and outlines short- and/or long-range steps to be taken during process of innovation adoption, i.e., aligns resources, schedules activities, meets with others to organize and/or coordinate use of the innovation. | Describes personal stand at the present time in relation to use of the innovation. | Carries out the actions and activities entailed in operationalizing the innovation. |
| Takes no action to analyze the innovation, its characteristics, possible use, or consequences of use. | Schedules no time and specifies no steps for the study or use of the innovation. | Reports little or no personal involvement with the innovation. | Takes no discernible action toward learning about or using the innovation. The innovation and/or its accouterments are not present or in use. |
| Analyzes and compares materials, content, requirements for use, evaluation reports, potential outcomes, strengths and weaknesses for purpose of making a decision about use of the innovation. | Plans to gather necessary information and resources as needed to make a decision for or against use of the innovation. | Reports presently orienting self to what the innovation is and is not. | Explores the innovation and requirements for its use by talking to others about it, reviewing descriptive information and sample materials, attending orientation sessions, and observing others using it. |
| Analyzes detailed requirements and available resources for initial use of the innovation. | Identifies steps and procedures entailed in obtaining resources and organizing activities and events for initial use of the innovation. | Reports preparing self for initial use of the innovation. | Studies reference materials in depth, organizes resources and logistics, schedules and receives skill training in preparation for initial use. |
| Examines own use of the innovation with respect to problems of logistics, management, time, schedules, resources, and general reactions of clients. | Plans for organizing and managing resources, activities, and events related primarily to immediate ongoing use of the innovation. Planned-for changes address managerial or logistical issues with a short-term perspective. | Reports that logistics, time, management, resource organization, etc., are the focus of most personal efforts to use the innovation. | Manages innovation with varying degrees of efficiency. Often lacks anticipation of immediate consequences. The flow of actions in the user and clients is often disjointed, uneven and uncertain. When changes are made, they are primarily in response to logistical and organizational problems. |

| | | | |
|---|---|---|---|
| Limits evaluation activities to those administratively required, with little attention paid to findings for the purpose of changing use. | Plans intermediate and long-range actions with little projected variation in how the innovation will be used. Planning focuses on routine use of resources, personnel, etc. | Reports that personal use of the innovation is going along satisfactorily with few if any problems. | Uses the innovation smoothly with minimal management problems; over time, there is little variation in pattern of use. |
| Assesses use of the innovation for the purpose of changing current practices to improve client outcomes. | Develops intermediate and long-range plans that anticipate possible and needed steps, resources, and events designed to enhance client outcomes. | Reports varying use of the innovation in order to change client outcomes. | Explores and experiments with alternative combinations of the innovation with existing practices to maximize client involvement and to optimize client outcomes. |
| Appraises collaborative use of the innovation in terms of client outcomes and strengths and weaknesses of the integrated effort. | Plans specific actions to coordinate own use of the innovation with others to achieve increased impact on clients. | Reports spending time and energy collaborating with others about integrating own use of the innovation. | Collaborates with others in use of the innovation as a means for expanding the innovation's impact on clients. Changes in use are made in coordination with others. |
| Analyzes advantages and disadvantages of major modifications or alternatives to the present innovation. | Plans activities that involve pursuit of alternatives to enhance or replace the innovation. | Reports considering major modifications of or alternatives to present use of the innovation. | Explores other innovations that could be used in combination with or in place of the present innovation in an attempt to develop more effective means of achieving client outcomes. |

# LOU Interview Format

| | |
|---|---|
| 0-II/III-VI | Are you currently using _____? |

If yes, turn page. If no, continue.

NO

Have you ever used it in the past? If so, when? Why did you stop?

If yes, go to PAST USERS (Below)

If no, continue.

| | |
|---|---|
| 0/I-II | Have you made a decision to use _____ in the future? |
| I/II | If so, when will you begin use? |
| Knowledge | Can you describe _____ for me as you see it? |
| Acquiring Information | Are you currently looking for any information about _____? What kinds? For what purposes? |
| Knowledge | What do you see as the strengths and weaknesses of _____ in your situation? |
| Assessing | At this point in time, what kinds of questions are you asking about _____? Give examples if necessary. |
| Sharing | Do you ever talk with others and share information about _____? What do you share? |
| Planning | What are you planning with respect to _____? Can you tell me about any preparation or plans you have been making for the use of _____? |
| Final Question (Optional) | Can you summarize for me where you see yourself right now in relation to the use of _____? |

PAST USERS

Can you describe for me how you organized your use of _____, what problems you found, what its effects appeared to be on students?

When you assess _____ at this point in time, what do you see as the strengths and weaknesses?

NOW, GO TO ABOVE SECTION, STARTING WITH QUESTION MARKED 0/I-II.

YES

| | |
|---|---|
| Open-ended | Please describe for me how you use _____. (Ask sufficient questions to cover minimal criteria for use.) |
| Assessing/ Knowledge | What do you see as the strengths and weaknesses of _____ in your situation? (Have you made any attempt to do anything about weaknesses? Probe those they mentioned specifically.) |
| Acquiring Information | Are you currently looking for any information about _____? What kind? For what purposes? |
| LoU V | Do you work with others in your use of _____? Do you meet on a regular basis? Have you made any changes in your use of _____ based on this coordination? |
| | If yes, go to LoU V Probes (Below) ← |
| → Sharing | Do you ever talk with others about _____? What do you tell them? |
| Assessing | (Have you considered any alternatives or different ways of doing things with the program?) Are you doing any evaluating, either formally or informally, that would affect your use of _____? Have you received any feedback from students that would affect the way you're using _____? What have you done with the information you got? |
| III/IVA/IVB | Have you made any changes recently in how you use _____? What? Why? How recently? Are you considering making any changes? |
| Planning/Status Reporting | As you look ahead to later this year, what plans do you have in relation to your use of _____? |
| → III-V/VI | Are you considering or planning to make major modifications or replace _____ at this time? |

LoU V Probes ←

1. Please describe for me how you work together. (What things do you share with each other?)
2. What do you see as the effects of this collaboration?
3. Are you looking for any particular kind of information in relation to this collaboration?
4. Do you talk with others about your collaboration? If so, what do you share with them?
5. Have you done any formal or informal evaluation of how your collaboration is working?
6. What plans do you have for this effort in the future?

If you have enough evidence to place the person at an LoU V, go to Question III-V/VI.

If you do not think the person is an LoU V, go to Question Sharing.

Steps in Certification for Level of Use Interviewing and Rating

Certification for Level of Use interviewing requires meeting Project criteria for both carrying out and rating interviews. Steps for certification include:

1. Training in Level of Use interviewing. We recommend attendance at a regularly scheduled 3-day training workshop conducted by a member of the CBAM staff. Self instruction in use of Project training materials is acceptable if the trainee follows through on other requirements;

2. During the training workshop, rating of 3 of 7 tapes selected by Project staff as part of a 7 tape set of "reliability" tapes. The remaining 4 will be rated after interviewing skills have been established;

3. Conducting and rating two interviews (one for a user and one for a nonuser) after training and submitting them to Project staff for critiquing and feedback (include minimum criteria for "use" and attach LOU rating sheet). The purpose of these two interview tapes is to demonstrate interviewing capability: establishing rapport (comfort) with interviewee, and utilizing the LOU interview questions and probes in order to gain sufficient information for rating the tapes;

4. Submitting additional tapes if required by Project staff to improve either interviewing or rating skills;

5. Rating the last 4 "reliability" tapes, which together with the rating of the first 3 tapes are used to establish a reliability score. To establish adequate interrater reliability, the rater must agree with the Project staff's ratings of the same tapes 57% of the time.

# "THE WAY I FEEL ABOUT MYSELF"

## The Piers-Harris Children's Self-Concept Scale

Ellen V. Piers, Ph.D. and Dale B. Harris, Ph.D.

*Published by*

WPS WESTERN PSYCHOLOGICAL SERVICES
Publishers and Distributors
12031 Wilshire Boulevard
Los Angeles, California 90025

Name: _____ Today's Date: _____

Age: _____ Sex (circle one): Girl Boy Grade: _____

School: _____ Teacher's Name (optional): _____

**Directions:** Here are a set of statements that tell how some people feel about themselves. Read each statement and decide whether or not it describes the way you feel about yourself. If it is *true or mostly true* for you, circle the word "yes" next to the statement. If it is *false or mostly false* for you, circle the word "no." Answer every question, even if some are hard to decide. Do not circle both "yes" and "no" for the same statement.

Remember that there are no right or wrong answers. Only you can tell us how you feel about yourself, so we hope you will mark the way you really feel inside.

TOTAL SCORE: Raw Score_____ Percentile_____ Stanine_____

CLUSTERS: I_____ II_____ III_____ IV_____ V_____ VI_____



W-180A

1. My classmates make fun of me ..... yes no
2. I am a happy person ..... yes no
3. It is hard for me to make friends ..... yes no
4. I am often sad ..... yes no
5. I am smart ..... yes no
6. I am shy ..... yes no
7. I get nervous when the teacher calls on me ..... yes no
8. My looks bother me ..... yes no
9. When I grow up, I will be an important person ..... yes no
10. I get worried when we have tests in school ..... yes no
11. I am unpopular ..... yes no
12. I am well behaved in school ..... yes no
13. It is usually my fault when something goes wrong ..... yes no
14. I cause trouble to my family ..... yes no
15. I am strong ..... yes no
16. I have good ideas ..... yes no
17. I am an important member of my family ..... yes no
18. I usually want my own way ..... yes no
19. I am good at making things with my hands ..... yes no
20. I give up easily ..... yes no
21. I am good in my school work ..... yes no
22. I do many bad things ..... yes no
23. I can draw well ..... yes no
24. I am good in music ..... yes no
25. I behave badly at home ..... yes no
26. I am slow in finishing my school work ..... yes no
27. I am an important member of my class ..... yes no
28. I am nervous ..... yes no
29. I have pretty eyes ..... yes no
30. I can give a good report in front of the class ..... yes no
31. In school I am a dreamer ..... yes no
32. I pick on my brother(s) and sister(s) ..... yes no
33. My friends like my ideas ..... yes no
34. I often get into trouble ..... yes no
35. I am obedient at home ..... yes no
36. I am lucky ..... yes no
37. I worry a lot ..... yes no
38. My parents expect too much of me ..... yes no
39. I like being the way I am ..... yes no
40. I feel left out of things ..... yes no

41. I have nice hair ..... yes no
42. I often volunteer in school ..... yes no
43. I wish I were different ..... yes no
44. I sleep well at night ..... yes no
45. I hate school ..... yes no
46. I am among the last to be chosen for games ..... yes no
47. I am sick a lot ..... yes no
48. I am often mean to other people ..... yes no
49. My classmates in school think I have good ideas ..... yes no
50. I am unhappy ..... yes no
51. I have many friends ..... yes no
52. I am cheerful ..... yes no
53. I am dumb about most things ..... yes no
54. I am good-looking ..... yes no
55. I have lots of pep ..... yes no
56. I get into a lot of fights ..... yes no
57. I am popular with boys ..... yes no
58. People pick on me ..... yes no
59. My family is disappointed in me ..... yes no
60. I have a pleasant face ..... yes no
61. When I try to make something, everything seems to go wrong ..... yes no
62. I am picked on at home ..... yes no
63. I am a leader in games and sports ..... yes no
64. I am clumsy ..... yes no
65. In games and sports, I watch instead of play ..... yes no
66. I forget what I learn ..... yes no
67. I am easy to get along with ..... yes no
68. I lose my temper easily ..... yes no
69. I am popular with girls ..... yes no
70. I am a good reader ..... yes no
71. I would rather work alone than with a group ..... yes no
72. I like my brother (sister) ..... yes no
73. I have a good figure ..... yes no
74. I am often afraid ..... yes no
75. I am always dropping or breaking things ..... yes no
76. I can be trusted ..... yes no
77. I am different from other people ..... yes no
78. I think bad thoughts ..... yes no
79. I cry easily ..... yes no
80. I am a good person ..... yes no

## How to Use the SOCQ Quick Scoring Device

The Stages of Concern Questionnaire (SOCQ) contains 35 items. The scoring of the SOCQ requires a series of operations which result in an SOC profile.

## Instructions

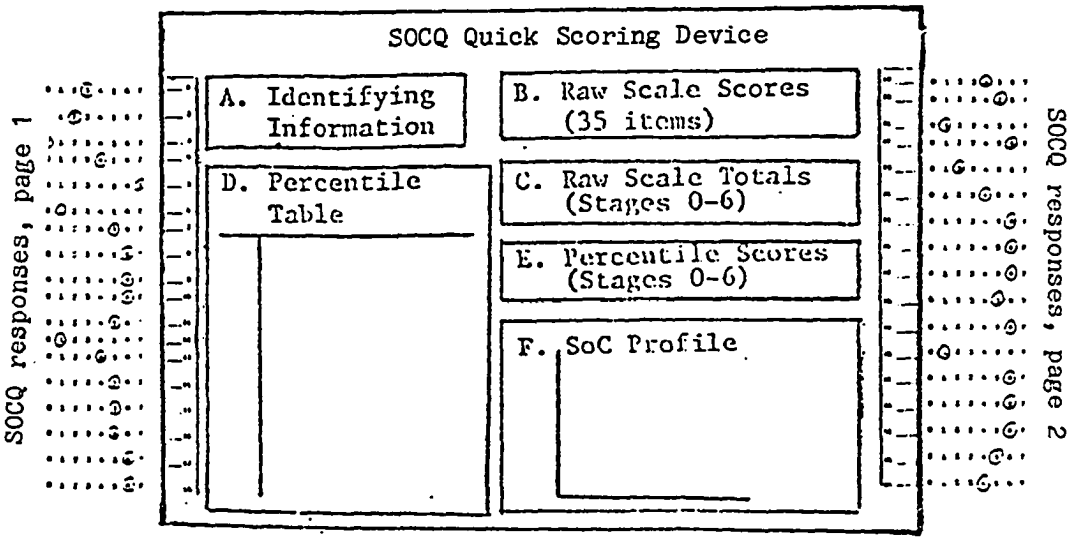
The following steps have been carried out on the attached Quick Scoring Device, for subject number 0001, using the SOCQ responses which are also provided.

Step 1: In the box labeled A, fill in the identifying information taken from the cover sheet of the SOC Questionnaire.

Step 2: Line up the left margin of the Scoring Device with the responses on the right of the first page of the SOCQ. Note that the lines on the margin of the Scoring Device will correspond with the SOCQ items on that page. Copy the numerical values of the circled responses to statements 1 through 18 in the numbered blanks on the margin of the Device. Then hold the right margin of the Scoring Device next to the second page's responses and write in responses 19 through 35 in the numbered spaces.

Step 3: Next, in the table labeled B on the Scoring Device, transcribe each of the 35 SOCQ responses entered in the margins to the corresponding numbered blank. Note that the numbered blanks in Table B are not in consecutive order.

Step 4: Box C contains the Raw Scale Score Total for each stage (0-6). Take each of the seven columns (0-6) in Table B, add the numbers within each column, and enter the sum for each column (0-6) in the appropriate blank in Box C. Each of these seven Raw Scale Score totals is a number between 0 and 35.



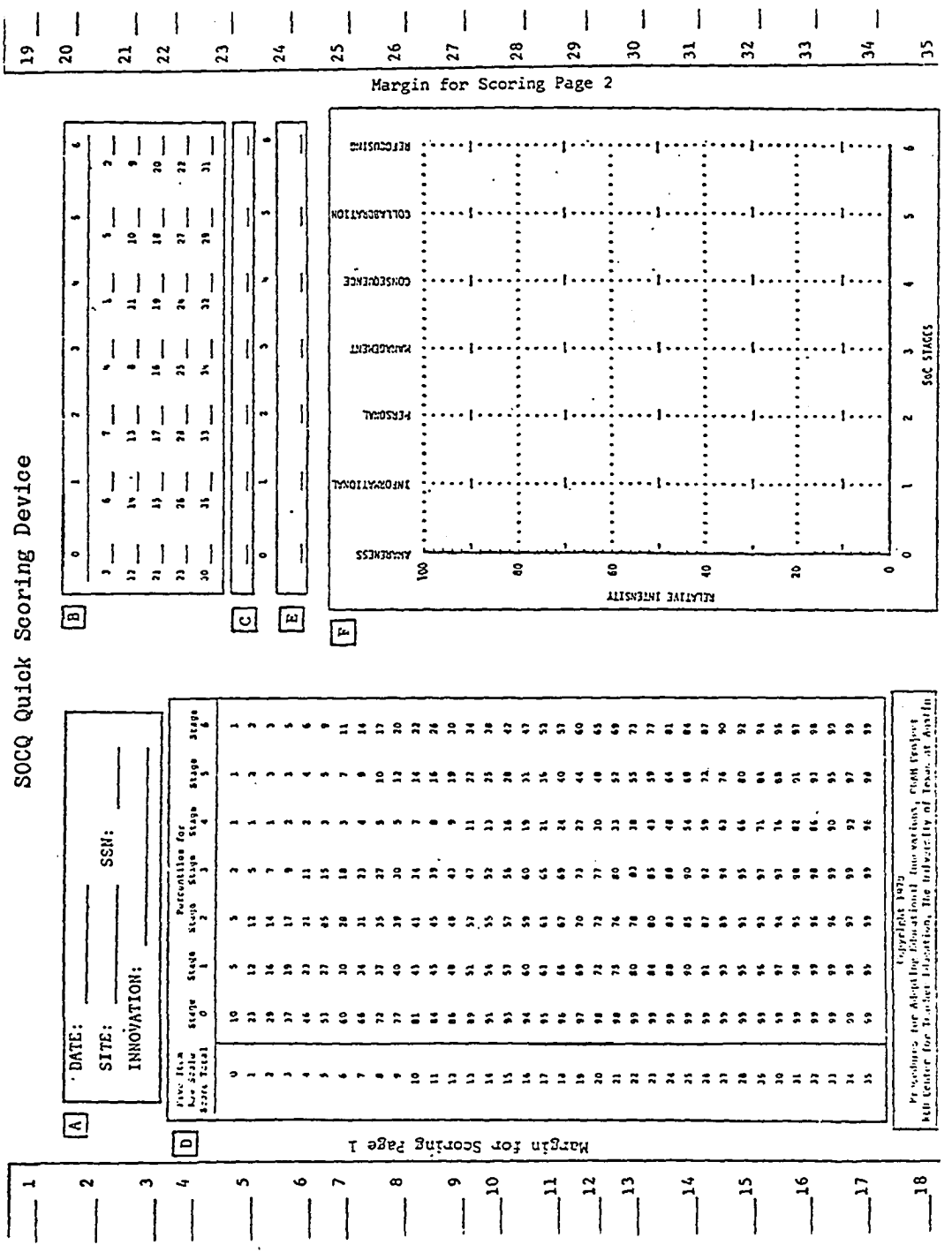

Step 5: Table D contains the percentile scores for each Stage of Concern. Find the Raw Scale Score Total for Stage 0 from Box C ("5" in the example); locate this number ('5") in the left-hand column in Table D, then look in the Stage 0 column to the right in Table D and circle that percentile ranking ("53" in the example). Do the same for Stages 1 through 6.

Step 6: Transcribe the circled percentile scores for each stage (0-6) from Table D to Box E. Box E now contains seven numbers between 0 and 99.

Step 7: Box F contains the SOC graph. From Box E, take the percentile score for Stage ) ("53" in the example) and mark that point with a dot on the Stage 0 vertical line on the SOC graph. Do the same for Stages 1 through 6. Connect the points to form the SOC profile.

Step 8: Practice Steps 1 though 7, using the blank SOCQ Quick Scoring Device and the SOC Questionnaire with responses filled in by subject number 0002.

For interpretation of the SOC profile, refer to the SOCQ manual.



## General LOU Rating Rules

### ND and NI Rating

1. ND can only be used for users. If a nonuser is "not doing" in any category, he/she should be rated "0."
2. A user is a IVA in Acquiring Information if he/she "makes no special effort" to solicit information, but reads about the innovation when information is given to him/her or attends a required workshop. There is no active looking for information. An ND in Acquiring Information is not looking for information and is not currently acquiring any from any source.
3. An NI rating is given if either the interviewer failed to ask for the information, or if enough information was not present in the interview to give a rating in the particular category.
4. ND or NI cannot be assigned as the overall LOU rating.

### The Three Month Rule

1. Changes occurring within a three month period are considered as changed. For example, if a student-oriented change was made two months ago, an LOU IVB rating is warranted. If a student-oriented change is planned for within the next three months and substantive planning or evaluation for the change is currently occurring, LOU IVB is indicated.
2. Information acquired within a three month period can be used as evidence for overall LOU I and also a rate a user in the Acquiring Information category (e.g., a workshop attended within three months, one signed up for that will take place next month).

### Changes Useful to Rate LOU

1. If a user is changing to increase his/her comfort, to make things go more smoothly, LOU III is indicated.
2. If a user is making no new changes, or only a few insignificant ones, LOU IVA is indicated. He/she can also be making routine changes and still be a IVA. For example, a teacher who changes grouping regularly because the reading program dictates it can be a IVA; changing minor aspects of the innovation each year as a result of slightly difference students may still be a IVA. To be other than IVA, the change has to be recent, new and more than regular and routine.
3. If changes are being made for student benefit, have been made or plan to be made within 3 months, LOU IVB is indicated.
4. If changes in use of the innovation are being made as the result of ongoing collaboration with others for the benefit of students, LOU V is indicated.

5. If major changes in use or replacement of the innovation are being explored for student benefit, there is evidence for LOU VI. If many minor (LOU IVB type) changes are being considered or are being implemented currently, there is also evidence for LOU VI (popularly refereed to as an LOU VI-G).

Decision Point Subtleties

1. D.P. A: An individual can only be at LOU I if he/she is active in looking for information, has been looking or plans to look within three months, not if he/she is waiting around for information to be delivered.
2. D.P. B: As soon as a time to begin is specified ("next week," "Next fall," "January") LOU II is reached. If beginning use is contingent upon events beyond the individual's control ("next fall if I get the same grade assignment") LOU II is still indicated. If the system decrees use in September and the individual knows that, LOU II is indicated. If the individual vacillates about a time to begin he/she is not LOU II.
3. D.P. E: An individual is not an LOU V just because he/she works with another person. Something must have changed in use of the innovation in the last three months or be changing currently because of this collaboration that affects students in order for an LOU V to be indicated.
4. D.P. F: Once a major change or replacement has been implemented and the change is institutionalized, LOU VI is no longer indicated. The individual is then a past user or some other level of Use. LOU VI involves exploration and initial implementation of such a change before ever making it.

LoU IVB vs. VI Changes

The distribution here is between magnitude of changes. It should be determined ahead of time for each innovation what constitutes a minor change and what constitutes a major change. Remember, though, that a lot of minor (LOU IVB) changes can add up to major change, or indication of an LOU VI-G.

Interrupted Use

When an individual is not currently using an innovation, but use is simply interrupted (e.g., used the program last semester and will do so again in the fall), he/she is considered a user. Half a year (one semester) of interrupted use still qualifies a person as a user.

Past User

If an individual is not currently using an innovation, has used it in the past, and does not meet the criteria for "interrupted use," he/she is a past user. Estimate an overall LOU for the last time used (see rating sheet) and assess current nonuse LOU across categories and overall.

# APPENDIX B

## Letters

# ANSON
## JUNIOR HIGH SCHOOL

SOUTH THIRD AVENUE MARSHALLTOWN, IOWA 50158 (515) 752-3641

*Fred A. Wills*
Principal

*Ralph Wahl*
Associate Principal


October 6, 1986

Dear Fellow Administrator,

I am doing data base research on middle level education to be used in an Ed.D. dissertation. This initial questionnaire is being sent to all middle level schools in the State of Iowa. Follow-up research will be done from this survey. Needless to say, the greater the response, the more valid the results. Your assistance is greatly needed and appreciated. Please take about five minutes to complete the informational survey, fold it in half, staple it, and send it by return mail before October 20, 1986.

Again, my sincere appreciation for your assistance in this matter.

Respectfully,

Fred A. Wills
Principal

# ANSON
## JUNIOR HIGH SCHOOL

SOUTH THIRD AVENUE MARSHALLTOWN, IOWA 50158 (515) 752-3641

*Fred A. Wills*
Principal

*Ralph Wahl*
Associate Principal


October 31, 1986

Dear Fellow Administrator,

I am doing data base research on middle level education to be used in an Ed.D. dissertation. This initial questionnaire has been sent to all middle level schools in the State of Iowa. My records shows that I have not received your survey. Perhaps it has been lost in the mail or that you did not receive the initial survey. Needless to say, the greater the response, the more valid the results. Your assistance is greatly needed and appreciated. Please take about five minutes to complete the informational survey, fold it in half, staple it, and send it by return mail before November 10, 1986.

Again, my sincere appreciation for your assistance in this matter.

Respectfully,

Fred A. Wills
Principal

# ANSON
## JUNIOR HIGH SCHOOL

SOUTH THIRD AVENUE MARSHALLTOWN, IOWA 50158 (515) 752-3641

*Fred A. Wills*
Principal

*Ralph Wahl*
Associate Principal


Dear

I am doing doctoral research on the degree of implementation of interdisciplinary teaming in middle level schools. I am using the C.B.A.M. (Concerns-Based Adoption Model) material developed by the University of Texas at Austin to study interdisciplinary teaming as an educational innovation and the change process that occurs with implementation.

One of my first major tasks is to develop an innovation configuration checklist of generally agreed upon components that make up the concept of interdisciplinary teaming. Although this checklist may not contain every possible component of interdisciplinary teaming, it is hoped that the major aspects of the concept are included, and that the sampled teams would generally agree upon the same.

Since this checklist is to be used, in my research it is imperative that the contents be validated by expert testimony in the field. I ask you to review the general components of interdisciplinary teaming that I have designed for my checklist and acknowledge your choice as to their validity.

Enclosed please find my humble but sincere token of my appreciation for your time in assisting me with this task.

Respectfully,

Fred A. Wills
Principal

# ANSON
## JUNIOR HIGH SCHOOL

SOUTH THIRD AVENUE MARSHALLTOWN, IOWA 50158 (515) 752-3641

*Fred A. Wills*
Principal

*Ralph Wahl*
Associate Principal


Dear Fellow Administrator:

The following short questionnaire is designed to assist me in completing my doctoral dissertation on interdisciplinary teaming in Iowa. Your school was selected as being representative of the many middle level schools in the State of Iowa. The questionnaire is designed to determine the degree of desirability and the degree of implementation of five major components of interdisciplinary teaming. It is not necessary that your school teachers use interdisciplinary teaming in the curricular program. The questionnaire is designed for responses from administrators and from middle level teachers grades 6, 7, and 8. The administrators form is blue and the teachers form is yellow. I would greatly appreciate it if you would fill out the administrators form and have a teacher from each grade (6, 7, & 8) fill out the teachers form. Please fold the return - mail forms and send them to me by January 31, 1987.

Again, my sincere appreciation for your assistance in this project.

Respectfully,

Fred A. Wills
Principal

# ANSON
## JUNIOR HIGH SCHOOL

SOUTH THIRD AVENUE MARSHALLTOWN, IOWA 50158 (515) 752-3641

*Fred A. Wills*
Principal

*Ralph Wahl*
Associate Principal


Dear Fellow Administrator:

The following short questionnaire is designed to assist me in completing my doctoral dissertation on interdisciplinary teaming in Iowa. Your school was representative of the 116 schools in Iowa who on an earlier questionnaire stated that some form of interdisciplinary teaming existed in your middle school curriculum. This questionnaire is designed to determine the degree of desirability and the degree of implementation of five major components of interdisciplinary teaming. The questionnaire is designed for responses from administrators and the teaching team. The administrators form is white and the teaching team's form is pink. I would greatly appreciate it if you would fill out the administrators form and have each teaching team using interdisciplinary teaming fill out the team form. Please fold the return - mail forms and send them to me by January 31, 1987.

Again my sincere appreciation for your assistance in this project.

Respectfully,

Fred A. Wills
Principal

# ANSON
## JUNIOR HIGH SCHOOL

SOUTH THIRD AVENUE MARSHALLTOWN, IOWA 50158 (515) 752-3641

Fred A. Wills
Principal

Ralph Wahl
Associate Principal


August 18, 1987

Shirley M. Hord
Southeast Educational Development Laboratory
211 East Seventh St.
Austin, Texas 78701

Dear Shirley,

Thank you for your supportive letter of May 22, 1987 and for the certification for LOU. I have one other favor to ask. I am using the following figures or tables from the SOC, and LOU training manuals in my doctoral dissertation:

| | |
|---|---|
| Figure 11.1 | Coefficients of Internal Reliability for SOC.<br>SOC Manual p. 11 |
| Figure 11.2 | Test-Retest Correlations on SOC.<br>SOC Manual p. 11 |
| Figure 11.3 | Intercorrelation of 195 Item SOC.<br>SOC Manual p. 13 |
| Figure 1 | LOU Chart<br>LOU Manual p. 8 & 9 |
| Figure 3 | Branching Format<br>LOU Manual p. 22 |
| Appendix E | Interrater Reliability Calculations<br>LOU Manual p. 259 & 260 |
| Figure 1.2 | Stages of Concern about the Innovation<br>SOC Manual p. 7 |

These tables and figures are used for support of the reliability and validity of the SOC and LOU instruments. According to the A.P.A. style guide, I need permission from the organization controlling the usage of the instruments in order to print those figures and tables in my dissertation.

Since time is very critical to me, your speed in expediting this matter is important.

Respectfully,

Fred A. Wills

SOUTHWEST EDUCATIONAL DEVELOPMENT LABORATORY
211 East Seventh Street Austin, Texas 78701 512/476-6861

August 25, 1987

Fred A. Wills
Anson Junior High School
South Third Avenue
Marshalltown, Iowa 50158

Dear Mr. Wills:

This letter provides permission for you to use, and reproduce in your doctoral dissertation, the following figures/tables from Stages of Concern and Levels of Use manuals.

| | |
|---|---|
| Figure 11.1 | Coefficients of Internal Reliability for SOC. SOC Manual p.11 |
| Figure 11.2 | Test-Retest Correlations on SOC. SOC Manual p.11. |
| Figure 11.3 | Intercorrelation of 195 Item SOC. SOC Manual p.13. |
| Figure 1 | LOU Chart. LOU Manual p. 8 & 9. |
| Figure 3 | Branching Format. LOU Manual p. 22. |
| Appendix E | Interrater Reliability Calculations. LOU Manual p. 259 & 260. |
| Figure 1.2 | Stages of Concern about the Innovation. SOC Manual p.7. |

I am happy that your work has proceeded productively, and I'd be pleased to receive an executive summary of your study.

Let me know if I can be of additional assistance.

Sincerely,

Shirley M. Hord
Senior Development Associate

smh/dn

# ANSON
## JUNIOR HIGH SCHOOL

SOUTH THIRD AVENUE MARSHALLTOWN, IOWA 50158 (515) 752-3641

Fred A. Wills
Principal

Ralph Wahl
Associate Principal


August 18, 1987

Western Psychological Services
12031 Wilshire Blvd.
Los Angeles, Calif. 90025

Dear Sir:

In January of 1987, I purchased 2300 copies of the Piers-Harris Children's Self-Concept Scale along with supportive material. In accordance with the A.P.A. style guide, I need written permission from the publisher to reprint the following tables used in my doctoral dissertation:

| | |
|---|---|
| Table 12 | Test-Retest Reliabilities Revised Manual, 1984, p. 54 |
| Table 16 | Correlations between Piers-Harris and others Revised Manual, 1984, p. 59 |
| Table A | Total Score Conversion Revised Manual, 1984, Appendix, p. 103 & 104 |

These tables are used in the dissertation for support of the reliability and validity of the Piers-Harris Scale.

Since time is very critical to me, your speed in expediting this matter is important.

Respectfully,

Fred A. Wills

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August 21, 1987

Fred A. Wills
Principal
Anson Junior High School
South Third Avenue
Marshalltown, Iowa 50158

Dear Mr. Wills:

Thank you for your letter of August 18, in which you request permission to reproduce Tables 12 (p.54), 16 (p.59), and A (p. 103 & 104) from our copyrighted work, Piers-Harris Children's Self-Concept Scale (PHCSCS), in the appendix of your doctoral dissertation.

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Your interest in the PHCSCS is appreciated, and we wish you success with your dissertation. Should you have additional inquiries, please feel free to contact me.

Sincerely,

Susan Dunn Weinberg
Assistant to the President

SDW:se

# ANSON
## JUNIOR HIGH SCHOOL

SOUTH THIRD AVENUE MARSHALLTOWN, IOWA 50158 (515) 752-3641

Fred A. Wills
Principal

Ralph Wahl
Associate Principal


August 18, 1987

National Middle School Association
P. O. Box 15882
Columbus, Ohio 43214

Dear Sir,

I am completing my doctoral dissertation on interdisciplinary teaming at the University of Northern Iowa. In accordance with the A.P.A. style guide, I need written permission from the publisher to reprint the following table:

Reasons for Establishing Middle Schools Perspectives Middle School Education 1964-1984 John Lounsbury, editor p. 15

"The Middle School Emerges and Flourishes" by William Alexander.

Since time is very critical to me, your speed in expediting this matter is important.

Respectfully,

Fred A. Wills

NATIONAL
middle
school
ASSOCIATION

DENIS D. SMITH
ASSOCIATE EXECUTIVE DIRECTOR

December 3, 1987

Mr. Fred Will
Anson Junior High School
South 3rd Avenue
Marshalltown, Iowa 50158

Dear Mr. Will:

Pursuant to your earlier request, National Middle School Association hereby gives you permission to quote or otherwise use graphic information from our publication Perspectives: Middle School Education 1964-1984. Authorization to quote or use this material is granted with the understanding that attribution and identification of the National Middle School Association as publisher will be given with all references.

We trust that this information will be suitable for your purposes.

Sincerely yours,

Denis D. Smith

P.O. Box 14882 Columbus, Ohio 43214 (614) 263-5407

# ANSON
## JUNIOR HIGH SCHOOL

SOUTH THIRD AVENUE MARSHALLTOWN, IOWA 50158 (515) 752-3641

*Fred A. Wills*
Principal

*Ralph Wahl*
Associate Principal


August 18, 1987

Dr. Myrle Hemenway
Department of Education
University of Colorado
Boulder, Colorado 80309

Dear Sir,

I am completing my doctoral dissertation on interdisciplinary teaming at the University of Northern Iowa. In accordance with the A.P.A. Style Guide, I need written permission to publish in adaption form material from a dissertation. Such permission must be acquired from the publisher. I wish to adapt into table form characteristics identified on p. 34 and 35 of A Study of the Extent to Which Identified Programmatic Characteristics of Middle Level Education are Implemented in Middle Schools by William R. Munsell (1984).

Since time is very critical to me, your speed in expediting this matter is important.

Respectfully,

Fred A. Wills

NORTHGLENN JUNIOR HIGH SCHOOL
1123 Muriel Drive
Northglenn, CO 80233
(303) 452-2921
Wm. R. Munsell, Ph.D., *Principal*

School District No. 12, Adams County
James E. Mitchell, Ed.D. • Superintendent of Schools

November 19, 1987

Fred Wills
c/o Anson JHS
South Third Ave.
Marshalltown, Iowa 50158

Dear Fred,

Yesterday, I received your letter requesting permission to adapt a portion of my dissertation. I apologize for the delay; however, my chairperson at the University has retired and therefore only receives mail on an irregular basis.

Please accept the following as my permission to adapt any original and copyrighted material of my authorship on pp. 34-35 into table form in accordance with your request. I must express my puzzlement as to why you need my permission to adapt what is, in fact, direct quotes from the referenced authors? It would seem more appropriate/necessary that you request the permission of the actual authors of the lists, that is Bill Alexander, Paul George, J. D. Riegle and the NMSA.

At the conclusion of your study, I would very much appreciate a copy of an abstract (or even a copy of the dissertation, if feasible) for my files. Of course, I would expect that any work of mine included in your work be properly referenced.

My best wishes as you pursue your research. Feel free to contact me at any time.

Sincerely,

Wm. R. ~~Munsell, Ph.D.~~
Principal

cc: file

# ANSON
## JUNIOR HIGH SCHOOL

SOUTH THIRD AVENUE MARSHALLTOWN, IOWA 50158 (515) 752-3641

*Fred A. Wills*
Principal

*Ralph Wahl*
Associate Principal


Dear Teacher or Counselor,

The following self-concept scale is to be given to (25) (50) randomly selected students in each of the following grades 6, 7, and 8. Classroom groups can be used so that the numbers may vary between 25 or 50 depending on your class sizes.

Only the following information should be on the answer sheet please. This is very important.

Sex (Girl) (Boy)
Grade 6, 7, or 8
School

No other information should be on the answer sheet.

The self-concept scale should last five to eight minutes. Please read the directions to the group and begin.

I wish to express my sincere appreciation to you and your students for assisting me in this project.

Respectfully,

Fred A. Wills
Principal
Anson Junior High

SEDL SOUTHWEST EDUCATIONAL DEVELOPMENT LABORATORY
211 East Seventh Street Austin, Texas 78701 512/476-6861

May 22, 1987

Fred A. Wills
Anson Jr. High School
South Third Avenue
Marshalltown, Iowa 50158

Dear Fred:

I congratulate you on meeting the demanding requirements for becoming a Levels of Use interviewer. The accompanying document will attest to your gaining certification as an LoU interviewer through meeting our established reliability criteria. We feel confident that you are competent to collect data that are robust, and that you will bring a high level of quality to rating your data for purposes of research and evaluation studies.

In addition, your training in Stages of Concern provides you the acceptable and appropriate background for administering the SoC instruments and techniques, and in interpreting the data that result.

I look forward to your sharing the summary of your study. If I can be of continuing assistance, please let me know.

Sincerely,

Shirley M. Hord
Senior Development Associate

smh/dn

Enclosure: LoU Certificate

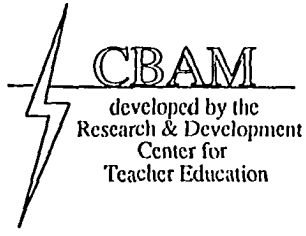
# CBAM PROJECT

## Fred A. Wills

*has completed the requirements for certification as a*

## Levels of Use Interviewer

*Presented by*
*Southwest Educational Development Laboratory*




for SEDL

5/22/87

date

# ANSON
## JUNIOR HIGH SCHOOL

SOUTH THIRD AVENUE MARSHALLTOWN, IOWA 50158 (515) 752-3641

*Fred A. Wills*
Principal

*Ralph Wahl*
Associate Principal


April 2, 1987

Dear

I am completing my doctoral dissertation on the implementation of interdisciplinary teaming in Iowa middle level schools at the University of Northern Iowa. In order to finalize my research, it is important that I survey and interview teachers and students in randomly selected middle level schools who are using the teaming concept, as well as, those who are not. School has been so selected in my sample population.

Since I wish to minimize any inconvenience to the students and the staff, I have taken the liberty of contacting the principal of the building to explain what I will be doing and to address any concerns or problems before contacting you for approval. I also wish to point out that student names and staff names will not be used in the research. The school district name will merely be identified in a list of the 232 districts who have been involved with the research. A finalized copy of the results would be forwarded to the district.

If your school district could assist me in my research by granting approval to survey and interview selected students and teachers in School, I would be very grateful. I would appreciate it if you would contact me on your decision at my school address.

Respectfully,

Fred A. Wills
Principal
Anson Junior High School

# ANSON
## JUNIOR HIGH SCHOOL

SOUTH THIRD AVENUE · MARSHALLTOWN, IOWA 50158 (515) 752-3641

*Fred A. Wills*
Principal

*Ralph Wahl*
Associate Principal


Dear

I wish to personally thank you again for your assistance in allowing me to complete my doctoral research using your staff and students. Enclosed please find a personal check covering the cost of postage in mailing the data.

Again, my sincere appreciation and wishing you a successful 1987-88 school year.

Respectfully,

Fred A. Wills

# APPENDIX C

## Schools Participating in the Study

ADEL-DESOTO MIDDLE SCHOOL
215 N. 11TH
ADEL, IA 50003

CARDINAL MIDDLE SCHOOL
AGENCY, IA 52530

AKRON WESTFIELD MIDDLE SCHOOL
KERR DRIVE
AKRON, IA 51001

ALDEN COMMUNITY HIGH
ALDEN, IA 50006

OTTO B LAING MIDDLE SCHOOL
NEBRASKA & HARLEN
ALGONA, IA 50511

AMES MIDDLE SCHOOL
321 STATE STREET
AMES, IA 50010

ANAMOSA MIDDLE SCHOOL
S. GARNAVILLO ST
ANAMOSA, IA 52205

ANTHON-OTO JR-SR SCHOOL
ANTHON, IA 51004

CENTRAL JR. HIGH
ARGYLE, IA 52619

ODEBOLT-ARTHUR MIDDLE SCHOOL
ARTHUR, IA 51431

AVOHA JR-SR HIGH SCHOOL
AVOCA, IA 51521

NORTHWEST WEBSTER JR-SR
BARNUM, IA 50518

BATTLE CREEK MIDDLE SCHOOL
BATTLE CREEK, IA 51006

BAXTER HIGH SCHOOL
BAXTER, IA 50028

BELMOND COMM MIDDLE SCHOOL
611 4TH ST. NE
BELMOND, IA 50421

BETTENDORF MIDDLE SCHOOL
2030 MIDDLE ROAD
BETTENDORF, IA 52722

NORTHEAST HAMILTON MIDDLE
BLAIRSBURG, IA 50034

UNITED JR-SR HIGH
RR 1
BOONE, IA 50036

BRITT ELEMENTARY SCHOOL
BOX 278
BRITT, IA 50423

JAMES MADISON MIDDLE SCHOOL
2132 MADISON AVE
BURLINGTON, IA 52601

OAK STREET MIDDLE SCHOOL
903 OAK ST
BURLINGTON, IA 52601

BURT HIGH SCHOOL
BURT, IA 50522

TWIN CEDARS JR HIGH
BUSSEY, IA 50044

CAMANCHE JR HIGH
1400 9TH ST.
CAMANCHE, IA 52730

CARROLL MIDDLE SCHOOL
1026 N ADAMS
CARROLL, IA 51401

CASCADE JR-SR HIGH
505 JOHNSON ST NW
CASCADE, IA 52033

PEET JR. HIGH SCHOOL
525 E. SEERLEY BLVD
CEDAR FALL, IA 50613

HOLMES JR HIGH SCHOOL
505 HOLMES DRIVE
CEDAR FALLS, IA 50613

METRO HIGH SCHOOL
12TH AVE & 8TH ST SE
CEDAR RAPIDS, IA 52404

FRANKLIN JR. HIGH SCHOOL
300 10TH ST. NE
CEDAR RAPIDS, IA 52402

HARDING JUNIOR HIGH
4801 GOLF ST. NE
CEDAR RAPIDS, IA 52402

MCKINLEY JR HIGH SCHOOL
620 10TH ST SE
CEDAR RAPIDS, IA 52403

ROOSEVELT JR HIGH
300 13TH ST NW
CEDAR RAPIDS, IA 52405

TAFT JR HIGH
5200 E AVENUE NW
CEDAR RAPIDS, IA 52405

WILSON JUNIOR HIGH
2301 J ST. SW
CEDAR RAPIDS, IA 52404

PRAIRIE JR HIGH SCHOOL
401 76TH AVE SW
CEDAR RAPIDS, IA 52401

PRAIRIE INTERMEDIATE SCHOOL
401 76TH AVE SW
CEDAR RAPIDS, IA 52401

CENTER POINT JR-SR HIGH
613 SUMMITT
CENTER POINT, IA 52213

HOWAR JR HIGH SCHOOL
11TH & TERRY
CENTERVILLE, IA 52544

CENTRAL CITY MIDDLE SCHOOL
BOX 340
CENTRAL CITY, IA 52214

CRESTWOOD JR. HIGH
320 THIRD AVE. E
CERESCO, IA 52136

WILSON MIDDLE SCHOOL
100 E. WILLOW
CHEROKEE, IA 51012

WEST MIDDLE SCHOOL
1212 W. FIFTH STREET
CIOUX CITY, IA 51103

CLEAR LAKE JUNIOR HIGH
1601 3RD AVE. NORTH
CLEAR LAKE, IA 50428

CLEARFIELD HIGH SCHOOL
CLEARFIELD, IA 50840

LYONS MIDDLE SCHOOL
2810 N. 4TH ST.
CLINTON, IA 52732

WASHINGTON MIDDLE SCHOOL
751 2ND AVE S
CLINTON, IA 52732

COLLEGE SPRINGS ELEM.
COLLEGE SPRINGS, IA 51637

COLLINS-MAXWELL MIDDLE SCHOOL
COLLINS, IA 50055

COLO JR-SR HIGH
BOX 136
COLO, IA 50056

COLUMBUS JUNCTION JR HIGH
1004 COLTON ST.
COLUMBUS JUNCTION, IA 52738

B-C-L JR-SR HIGH
CONRAD, IA 50621

NORTHWEST JR. HIGH SCHOOL
1507 8TH STREET
CORALVILLE, IA 52241

WOODROW WILSON JR. HIGH SCHOOL
715 N. 21st STREET
COUNCIL BLUFFS, IA 51501

LEWIS CENTRAL MIDDLE SCHOOL
2000 HIGHWAY 275
COUNCIL BLUFFS, IA 51501

BURTON H. JONES JR HIGH
801 NORTH ELM
CRESTON, IA 50801

FRANK L SMART JR HIGH SCHOOL
1934 WEST FIFTH ST.
DAVENPORT, IA 52802

SUDLOW JR HIGH SCHOOL
1414 EAST LOCUST ST.
DAVENPORT, IA 52803

WILLIAMS JR. HIGH SCHOOL
3040 N. DIVISION
DAVENPORT, IA 52804

J.B.YOUNG JR. HIGH SCHOOL
1709 HARRISON ST.
DAVENPORT, IA 52803

CENTRAL JR HIGH SCHOOL
9TH AVE & 9TH ST.
DE WITT, IA 52742

DECORAH JR. HIGH SCHOOL
210 VERNON STREET
DECORAH, IA 52101

NORTH WINNESHIEK JR-SR
RR 3
DECORAH, IA 52101

DELHI ELEM. SCHOOL
DEHLI, IA 52223

DENISON MIDDLE SCHOOL
1515 E. BROADWAY
DENISON, IA 51442

DENVER MIDDLE SCHOOL
541 LINCOLN
DENVER, IA 50622

GOODRELL JR. HIGH SCHOOL
3300 E. 29TH ST.
DES MOINES, IA 50317

HARDING JR HIGH
203 E. EUCLID AVE.
DES MOINES, IA 50313

AMOS HIATT JR HIGH
1214 E. 15TH STREET
DES MOINES, IA 50316

HOYT MIDDLE SCHOOL
2700 E. 42ND ST.
DES MOINES, IA 50316

MCCOMBS JR HIGH
201 SW COUNTY LINE RD
DES MOINES, IA 50315

MEREDITH JR. HIGH SCHOOL
4827 MADISON AVENUE
DES MOINES, IA 50310

MERRILL JR HIGH
5301 GRAND AVE
DES MOINES, IA 50312

WEEKS JR HIGH
901 SOUTHEST PARK AVE.
DES MOINES, IA 50315

WOODSIDE MIDDLE SCHOOL
5810 NE 14TH ST.
DES MOINES, IA 50313

INDIAN HILLS JR HIGH
9401 INDIAN HILLS DR.
DES MOINES, IA 50322

JEFFERSON JUNIOR HIGH
1105 ALTHAUSER AVENUE
DUBUQUE, IA 52001

JONES JR HIGH SCHOOL
1090 ALTA VISTA
DUBUQUE, IA 52001

WASHINGTON JR. HIGH
51 N. GRANDVIEW AVE.
DUBUQUE, IA 52001

DYSART-GENESEO HIGH SCHOOL
505 WEST
DYSART, IA 52224

EAGLE GROVE MIDDLE SCHOOL
N W SECOND & FORT
EAGLE GROVE, IA 50533

EDDYVILLE SENIOR HIGH
EDDYVILLE, IA 52553

NORTH SCOTT JR HIGH
502 S. 5TH STREET
ELDRIDGE, IA 52748

CENTRAL COMM JR-SR HIGH
ELKADER, IA 52043

ESSEX JR-SR HIGH
BOX 299
ESSEX, IA 51638

ESTHERVILLE MIDDLE SCHOOL
321 N 6TH
ESTHERVILLE, IA 51334

BUNGER INTERMEDIATE
157 S. ROOSEVELT
EVANSDALE, IA 50707

FAIRFIELD JR HIGH SCHOOL
404 WEST FILLMORE
FAIRFIELD, IA 52556

CEDAR VALLEY MIDDLE
RR 1
FARNHAMVILLE, IA 50538

FARRAGUT SR. HIGH
FARRAGUT, IA 51639

SENTRAL MIDDLE SCHOOL
FENTON, IA 50539

FOREST CITY MIDDLE
236 W. SCHOOL ST.
FOREST CITY, IA 50436

PHILLIPS MIDDLE SCHOOL
1015 5TH AVE N
FORT DODGE, IA 50501

FAIR OAKS MIDDLE SCHOOL
416 S. 10TH ST
FORT DODGE, IA 50501

FORT MADISON JR. HIGH
AVE. G & 16TH ST.
FORT MADISON, IA 52627

GARNER-HAYFIELD JR HIGH
630 BUSH
GARNER, IA 50438

GLADBROOK HIGH SCHOOL
GLADBROOK, IA 50635

GLENWOOD JR. HIGH
707 SHARP ST.
GLENWOOD, IA 51534

GLIDDEN-RALSTON JR-SR HIGH
GLIDDEN, IA 51443

GRAND JUNCTION HIGH
405 12TH ST. SOUTH
GRAND JUNCTION, IA 50107

GRIMES JUNIOR HIGH SCHOOL
410 SOUTH MAIN
GRIMES, IA 50111

GRINNELL MIDDLE SCHOOL
SOUTH EAST ST.
GRINNELL, IA 50112

GRISWOLD MIDDLE SCHOOL
GRISWOLD, IA 51535

GRUNDY CENTER JR HIGH
1006 M AVENUE
GRUNDY CENTER, IA 50638

HARLAN MIDDLE SCHOOL
7TH & BALDWIN
HARLAN, IA 51537

WEST SIOUX MIDDLE SCHOOL
1130 CENTRAL AVE
HAWARDEN, IA 51023

HINTON MIDDLE SCHOOL
HINTON, IA 51024

FLOYD VALLEY JR HIGH
HOSPERS, IA 51238

HUDSON HIGH SCHOOL
136 SOUTH WASHINGTON
HUDSON, IA 50643

BOYDEN-HULL HIGH SCHOOL
801 FIRST ST.
HULL, IA 51239

HUMBOLDT JR HIGH
210 TAFT STREET
HUMBOLDT, IA 50548

BALLARD COMMUNITY JR HIGH
509 N. MAIN STREET
HUXLEY, IA 50124

INDEPENDENCE MIDDLE SCHOOL
1301 FIRST ST. W
INDEPENDENCE, IA 50644

INDIANOLA JR HIGH
1304 EAST FIRST
INDIANOLA, IA 50125

INDIANOLA MIDDLE SCHOOL
301 NORTH BUXTON
INDIANOLA, IA 50125

SOUTHEAST JR. HIGH
2501 BRADFORD DRIVE
IOWA CITY, IA 52240

RIVERBEND MIDDLE SCHOOL
RIVER ROAD
IOWA FALLS, IA 50126

232-YALE-JAMAICA-BAILEY HIGH
JAMAICA, IA 50128

JEFFERSON MIDDLE SCHOOL
HARRISON & ELM
JEFFERSON, IA 50129

JESUP HIGH SCHO
531 PROSPECT
JESUP, IA 50648

SOUTH HAMILTON MIDDLE AND
HIGH SCHOOL
JEWELL, IA 50130

JOHNSTON MIDDLE SCHOOL
P.O. BOX 10
JOHNSTON, IA 50131

MID PRAIRIE JR HIGH
713 F AVENUE
KALONA, IA 52237

MID-PRAIRIE JR HIGH
713 F AVENUE
KALONA, IA 52247

KANAWAHA JR-SR HIGH
KANAWHA, IA 50447

KEOKUK MIDDLE SCHOOL
14TH & MAIN ST.
KEOKUK, IA 52632

VAN BUREN JR-SR HIGH
P.O. BOX 250
KEOSAUQUA, IA 52565

KEOTA HIGH SCHOOL
NORTH ELLIS AVENUE
KEOTA, IA 52248

NELL MCGOWEN JR HIGH
308 WEST MARION ST
KNOXVILLE, IA 50138

LAKE MILES JR HIGH
102 S. 4TH AVE. E
LAKE MILLS, IA 50450

LAMONI JR-SR HIGH
202 N. WALNUT ST.
LAMONI, IA 50140

LANSING ELEM.& MIDDLE SCHOOL
LANSING, IA 52151

CAL COMM. HIGH SCHOOL
LATIMER, IA 50452

LE MARS JR HIGH
977 THIRD AVE SW
LE MARS, IA 51051

LOUISA MUSCATINE ELEM.
RR 2
LETTS, IA 52754

SOUTHEAST WARREN JR-SR
LIBERTY CENTER, IA 50145

A-C-L JR-SR HIGH SCHOOL
LINEVILLE, IA 50147

LISBON MIDDLE SCHOOL
P.O. BOX 217
LISBON, IA 52253

LYTTON JR-SR HIGH
LYTTON, IA 50561

WEST DELAWARE MIDDLE SCHOOL
1101 DOCTOR ST.
MANCHESTER, IA 52057

MAQUOKETA JR HIGH
200 EAST LOCUST
MAQUOKETA, IA 52060

MARCUS MIDDLE SCHOOL
305 NORTH OAK
MARCUS, IA 51039

LINN-MARR JR HIGH
3333 N. 10TH ST.
MARION, IA 52302

VERNON MIDDLE SCHOOL
1301 5TH AVE.
MARION, IA 52302

LENIHAN JR. HIGH
212 W. INGLEDUE ST.
MARSHALLTOWN, IA 50158

ANSON JR. HIGH
SOUTH THIRD AVENUE
MARSHALLTOWN, IA 50158

B R MILLER JR. HIGH
SOUTH 11TH STREET
MARSHALLTOWN, IA 50158

JOHN ADAMS MIDDLE SCHOOL
29 S. ILLINOIS AVE.
MASON CITY, IA 50401

ROOSEVELT MIDDLE SCHOOL
303 FIFTEENTH SE
MASON CITY, IA 50401

MEDIAPOLIS JR HIGH
MEDIAPOLIS, IA 52637

AMANA MIDDLE SCHOOL
MIDDLE, IA 52307

MILFORD ELEMENTARY SCHOOL
BOX 147
MILFORD, IA 51351

DEEP RIVER-MILLERSBURG JR. HIGH
127 WASHINGTON ST.
MILLERSBURG, IA 52308

CENTRAL DALLAS JR-SR HIGH
MINBURN, IA 50167

MINDEN MIDDLE SCHOOL
MINDEN, IA 51553

MISSOURI VALLEY MIDDLE SCHOOL
711 E. SUPERIOR
MISSOURI VALLEY, IA 51555

M-F-L JR HIGH SCHOOL
MONONA, IA 52159

MONROE JR-SR HIGH
HIGHWAY 163
MONROE, IA 50170

MONTICELLO JR-SR HIGH
217 S. MAPLE
MONTICELLO, IA 52310

MOULTON-UDELL HIGH
BOX 84
MOULTON, IA 52572

MOUNT AYR HIGH SCHOOL
1001 E. COLUMBUS
MOUNT AYR, IA 50854

MOUNT PLEASANT JR HIGH
400 NORTH ADAMS
MOUNT PLEASANT, IA 52641

CENTRAL MIDDLE SCHOOL
901 CEDAR
MUSCATINE, IA 52761

WEST MIDDLE SCHOOL
600 KINDLER AVE.
MUSCATINE, IA 52761

NEW HAMPTON MIDDLE SCHOOL
206 WEST MAIN
NEW HAMPTON, IA 50659

NEW LONDON JR-SR HIGH
WILSON STREET
NEW LONDON, IA 50645

NEWELL-PROVIDENCE JR-SR HIGH
NEWELL, IA 50568

BERG JUNIOR HIGH SCHOOL
1900 NORTH 5TH AVE. EAST
NEWTON, IA 50208

NORTHWOOD-KENSETT JR HIGH
103 ELEVENTH ST. NORTH
NORTHWOOD, IA 50459

OELWEIN JR HIGH
300 12TH AVENUE SE
OELWEIN, IA 50662

NORTH ELEMENTARY SCHOOL
OGDEN, IA 50212

MAURICE-ORANGE CITY JR-SR HIGH
615 EIGHTH ST SE
ORANGE CITY, IA 51041

ORIENT ELEM. SCHOOL
ORIENT, IA 50858

OSAGE JR HIGH SCHOOL
7TH & SAWYER DRIVE
OSAGE, IA 50461

OSKALOOSA JR HIGH
N. FIRST & B AVE EAST
OSKALOOSA, IA 52577

SOUTH WINNESHIEK MIDDLE
OSSIAN, IA 52161

EVANS JR HIGH SCHOOL
812 CHESTER
OTTUMWA, IA 52501

CLEAR CREEK MIDDLE SCHOOL
RR #1
OXFORD, IA 52322

PELLA MIDDLE SCHOOL
612 E. THIRTEENTH
PELLA, IA 50219

PLAINFIELD JR-SR HIGH
BOX 38
PLAINFIELD, IA 50666

BLACK HAWK JR HIGH
WISCONSIN STREET
PLEASANT VALLEY, IA 52767

POMEROY ELEMENTARY SCHOOL
202 EAST HARRISON ST.
POMEROY, IA 50575

RADCLIFFE HIGH SCHOOL
RADCLIFFE, IA 50230

RED OAK JR HIGH
308-A CORNING ST.
RED OAK, IA 51566

RICEVILLE INTERMEDIATE
RICEVILLE, IA 50466

CENTRAL LYON MIDDLE SCHOOL
1105 SOUTH STORY
ROCK RAPIDS, IA 51246

SOUTHEAST POLK JR. HIGH
8325 NE UNIVERSITY
RUNNELLS, IA 50237

RUSSELL HIGH SCHOOL
BOX 536
RUSSELL, IA 50238

SABULA MIDDLE SCHOOL
SABULA, IA 52070

SAC JR-SR HIGH SCHOOL
SOUTH 11TH STREET
SAC CITY, IA 50583

SCHALLER HIGH SCHOOL
300 S. BERWICK
SCHALLER, IA 51053

SCHLESWIG MIDDLE-SR HIGH
P.O. BOX 378
SCHLESWIG, IA 51461

SCRANTON JR-SR HIGH
SCRANTON, IA 51462

SERGEANT BLUFF-LUTEN MIDDLE
401 C STREET
SERGEANT BLUFF, IA 51054

SHEFFILED-CHAPIN COMM.HIGH
SHEFFIELD, IA 50475

SHELDON MIDDLE SCHOOL
727 SIXTH AVENUE
SHELDON, IA 51201

SHELLSBURG HIGH SCHOOL
203 COTTAGE ST.
SHELLSBURG, IA 52332

SHENANDOAH MIDDLE SCHOOL
CENTER & UNIVERSITY
SHENANDOAH, IA 51601

SIDNEY ELEM SCHOOL
SIDNEY, IA 51652

SIGOURNEY MIDDLE SCHOOL
408 E. WASHINGTON
SIGOURNEY, IA 52591

SIOUX CENTER JR HIGH
550 9TH ST NE
SIOUX CENTER, IA 51250

EAST MIDDLE HIGH SCHOOL
1720 MORININGSIDE AVENUE
SIOUX CITY, IA 51106

HERBERT HOOVER MIDDLE SCHOOL
3601 COUNTRY CLUB BLVD
SIOUX CITY, IA 51104

WOODROW WILSON MIDDLE SCHOOL
1010 IOWA ST.
SIOUX CITY, IA 51105

SPENCER MIDDLE SCHOOL
104 EAST 4TH ST.
SPENCER, IA 51301

SPIRIT LAKE JR HIGH
800 20TH
SPIRIT LAKE, IA 51360

WEST MARSHALL MIDDLE SCHOOL
STATE CENTER, IA 50247

STEAMBOAT ROCK ELEM SCHOOL
STEAMBOAT ROCK, IA 50672

STUART-MENLO MIDDLE SCHOOL
STUART, IA 50164

TITONKA JR-SR HIGH
BOX 287
TITONKA, IA 50480

SOUTH TAMA COUNTY MIDDLE
201 SOUTH GRENN
TOLEDO, IA 52342

URBANA JR-SR HIGH
BOX 246
URBANA, IA 52345

URBANDALE MIDDLE SCHOOL
7701 AURORA AVE.
URBANDALE, IA 50322

H L V MIDDLE-SR HIGH
VICTOR, IA 52347

TILFORD JR HIGH
S. 13TH STREET
VINTON, IA 52349

WALCOTT JR. HIGH SCHOOL
545 EAST JAMES ST.
WALCOTT, IA 52773

WAPELLO JR HIGH SCHOOL
CEDAR STREET
WAPELLO, IA 52653

WASHINGTON JR HIGH SCHOOL
1111 SOUTH AVENUE B
WASHINGTON, IA 52353

EDISON INTERMEDIATE SCHOOL
800 ROCK ISLAND AVE.
WATERLOO, IA 50701

HOOVER INTERMEDIATE SCHOOL
630 HILLCREST
WATERLOO, IA 50701

JACK M. LOGAN INTERMEDIATE
1515 LOGAN AVENUE
WATERLOO, IA 50703

WEST INTERMEDIATE SCHOOL
1115 W. FIFTH ST.
WATERLOO, IA 50702

WAUKON JR HIGH SCHOOL
107 5TH SST NW
WAUKON, IA 52172

WEBSTER CITY JR HIGH
740 BANK STREET
WEBSTER CITY, IA 50595

WEST BRANCH MIDDLE SCHOOL
BOX 637
WEST BRANCH, IA 52358

WEST BURLINGTON MIDDLE SCHOOL
211 RAMSEY STREET
WEST BURLINGTON, IA 52655

STILWELL JR HIGH
16TH & VINE
WEST DES MOINES, IA 50265

NORTH JR HIGH SCHOOL
105 EAST MAIN
WEST UNION, IA 52175

WILLIAMSBURG JR-SR HIGH
810 W. WALNUT
WILLIAMSBURG, IA 52361

WINTERSET MIDDLE SCHOOL
110 W. WASHINGTON ST
WINTERSET, IA 50273

WODBINE ELEM. SCHOOL
5TH & WEARE
WOODBINE, IA 51579

WYOMING ELEMENTARY SCHOOL
WYOMING, IA 52362

# APPENDIX D

## Additional Data

# APPENDIX

**Table A**

**Percentile, Stanine, and *T*-Score Conversions for Cluster and Total Scores**

| Raw Score | Percentile | Stanine | *T*-Score |
|---|---|---|---|
| **I. BEHAVIOR (BEH)** | | | |
| 16 | 95 | 8 | 66 |
| 15 | 81 | 7 | 59 |
| 14 | 65 | 6 | 54 |
| 13 | 51 | 5 | 50 |
| 12 | 40 | 4 | 47 |
| 11 | 32 | 4 | 45 |
| 10 | 25 | 4 | 43 |
| 9 | 18 | 3 | 41 |
| 8 | 13 | 3 | 39 |
| 7 | 9 | 2 | 36 |
| 6 | 6 | 2 | 35 |
| 5 | 5 | 2 | 33 |
| 4 | 3 | 1 | 31 |
| 3 | 1 | 1 | 27 |
| 2 | 1 | 1 | 23 |
| 1 | 1 | 1 | 13 |
| 0 | 1 | 1 | 13 |
| **II. INTELLECTUAL AND SCHOOL STATUS (INT)** | | | |
| 17 | 98 | 9 | 70 |
| 16 | 90 | 8 | 63 |
| 15 | 81 | 7 | 59 |
| 14 | 70 | 6 | 55 |
| 13 | 60 | 5 | 52 |
| 12 | 49 | 5 | 50 |
| 11 | 38 | 4 | 47 |
| 10 | 30 | 4 | 45 |
| 9 | 24 | 4 | 43 |
| 8 | 17 | 3 | 41 |
| 7 | 12 | 3 | 38 |
| 6 | 10 | 2 | 37 |
| 5 | 6 | 2 | 34 |
| 4 | 2 | 1 | 30 |
| 3 | 1 | 1 | 27 |
| 2 | 1 | 1 | 24 |
| 1 | 1 | 1 | 19 |
| 0 | 1 | 1 | 13 |
| **III. PHYSICAL APPEARANCE AND ATTRIBUTES (PHY)** | | | |
| 13 | 97 | 9 | 69 |
| 12 | 91 | 8 | 64 |
| 11 | 84 | 7 | 60 |
| 10 | 73 | 6 | 56 |
| 9 | 60 | 5 | 53 |
| 8 | 48 | 5 | 49 |
| 7 | 36 | 4 | 46 |
| 6 | 25 | 4 | 43 |
| 5 | 17 | 3 | 40 |
| 4 | 11 | 2 | 37 |
| 3 | 5 | 2 | 34 |
| 2 | 2 | 1 | 29 |
| 1 | 1 | 1 | 26 |
| 0 | 1 | 1 | 23 |

**Table A (Continued)**

**Percentile, Stanine, and *T*-Score Conversions for Cluster and Total Scores**

| Raw Score | Percentile | Stanine | *T*-Score |
|---|---|---|---|
| **IV. ANXIETY (ANX)** | | | |
| 14 | 97 | 9 | 69 |
| 13 | 90 | 8 | 63 |
| 12 | 81 | 7 | 59 |
| 11 | 70 | 6 | 55 |
| 10 | 58 | 5 | 52 |
| 9 | 48 | 5 | 49 |
| 8 | 37 | 4 | 47 |
| 7 | 26 | 4 | 44 |
| 6 | 18 | 3 | 41 |
| 5 | 11 | 2 | 38 |
| 4 | 6 | 2 | 34 |
| 3 | 3 | 1 | 31 |
| 2 | 1 | 1 | 26 |
| 1 | 1 | 1 | 24 |
| 0 | 1 | 1 | 21 |
| **V. POPULARITY (POP)** | | | |
| 12 | 97 | 9 | 69 |
| 11 | 86 | 7 | 61 |
| 10 | 69 | 6 | 55 |
| 9 | 52 | 5 | 51 |
| 8 | 38 | 4 | 47 |
| 7 | 27 | 4 | 44 |
| 6 | 20 | 3 | 41 |
| 5 | 13 | 3 | 39 |
| 4 | 9 | 2 | 36 |
| 3 | 5 | 2 | 34 |
| 2 | 4 | 1 | 32 |
| 1 | 2 | 1 | 29 |
| 0 | 1 | 1 | 23 |
| **VI. HAPPINESS AND SATISFACTION (HAP)** | | | |
| 10 | 90 | 8 | 63 |
| 9 | 72 | 6 | 56 |
| 8 | 56 | 5 | 52 |
| 7 | 39 | 4 | 47 |
| 6 | 20 | 3 | 42 |
| 5 | 9 | 2 | 36 |
| 4 | 4 | 1 | 32 |
| 3 | 2 | 1 | 30 |
| 2 | 1 | 1 | 28 |
| 1 | 1 | 1 | 24 |
| 0 | 1 | 1 | 19 |
| **TOTAL SCORE** | | | |
| 80 | 99 | 9 | 81 |
| 79 | 99 | 9 | 79 |
| 78 | 99 | 9 | 79 |
| 77 | 99 | 9 | 77 |
| 76 | 99 | 9 | 74 |
| 75 | 98 | 9 | 70 |
| 74 | 97 | 9 | 69 |
| 73 | 96 | 8 | 68 |
| 72 | 95 | 8 | 67 |
| 71 | 94 | 8 | 66 |
| 70 | 93 | 8 | 65 |

*Table continued on next page...*

Table A (Continued)
Percentile, Stanine, and *T*-Score Conversions for Cluster and Total Scores

| Raw Score | Percentile | Stanine | *T*-Score |
|---|---|---|---|
| 69 | 91 | 8 | 63 |
| 68 | 89 | 7 | 62 |
| 67 | 87 | 7 | 61 |
| 66 | 85 | 7 | 60 |
| 65 | 82 | 7 | 59 |
| 64 | 79 | 7 | 58 |
| 63 | 77 | 6 | 57 |
| 62 | 74 | 6 | 56 |
| 61 | 71 | 6 | 56 |
| 60 | 69 | 6 | 55 |
| 59 | 66 | 6 | 54 |
| 58 | 63 | 6 | 53 |
| 57 | 60 | 5 | 53 |
| 56 | 57 | 5 | 52 |
| 55 | 55 | 5 | 51 |
| 54 | 52 | 5 | 51 |
| 53 | 49 | 5 | 50 |
| 52 | 46 | 5 | 49 |
| 51 | 44 | 5 | 48 |
| 50 | 41 | 5 | 48 |
| 49 | 38 | 4 | 47 |
| 48 | 36 | 4 | 46 |
| 47 | 33 | 4 | 46 |
| 46 | 31 | 4 | 45 |
| 45 | 29 | 4 | 45 |
| 44 | 27 | 4 | 44 |
| 43 | 24 | 4 | 43 |
| 42 | 23 | 3 | 43 |
| 41 | 21 | 3 | 42 |
| 40 | 20 | 3 | 42 |
| 39 | 18 | 3 | 41 |
| 38 | 17 | 3 | 40 |
| 37 | 15 | 3 | 40 |
| 36 | 14 | 3 | 39 |
| 35 | 13 | 3 | 39 |
| 34 | 12 | 3 | 38 |
| 33 | 11 | 2 | 38 |
| 32 | 10 | 2 | 37 |
| 31 | 9 | 2 | 37 |
| 30 | 8 | 2 | 36 |
| 29 | 7 | 2 | 35 |
| 28 | 6 | 2 | 35 |
| 27 | 6 | 2 | 34 |
| 26 | 5 | 2 | 34 |
| 25 | 5 | 2 | 33 |
| 24 | 4 | 1 | 33 |
| 23 | 3 | 1 | 32 |
| 22 | 3 | 1 | 31 |
| 21 | 2 | 1 | 31 |
| 20 | 2 | 1 | 30 |
| 19 | 2 | 1 | 29 |
| 18 | 1 | 1 | 27 |
| 17 or less | 1 | 1 | 25 |

Table A7

Desirability of Common Teacher Planning Time During the School Day Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 2 | 2 | 16 | 57 | 77 |
| 7 | 0 | 4 | 15 | 53 | 72 |
| 8 | 1 | 1 | 19 | 52 | 73 |
| Administrators | 0 | 3 | 24 | 66 | 93 |
| Nonuser Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 0 | 3 | 11 | 26 | 40 |
| 7 | 3 | 5 | 29 | 44 | 81 |
| 8 | 1 | 3 | 24 | 44 | 72 |
| Administrators | 3 | 8 | 24 | 52 | 87 |

Table A8

Desirability of Team Control of Student Schedules Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 1 | 3 | 24 | 50 | 78 |
| 7 | 2 | 5 | 31 | 34 | 72 |
| 8 | 1 | 4 | 30 | 38 | 73 |
| Administrators | 0 | 6 | 44 | 43 | 93 |
| Nonuser Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 1 | 2 | 15 | 22 | 40 |
| 7 | 3 | 5 | 42 | 31 | 81 |
| 8 | 1 | 6 | 33 | 32 | 72 |
| Administrators | 3 | 17 | 44 | 24 | 88 |

Table A9

Desirability of Team Control of Large and Small Group Instruction Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 1 | 4 | 26 | 46 | 77 |
| 7 | 0 | 8 | 32 | 31 | 71 |
| 8 | 0 | 8 | 31 | 33 | 72 |
| Administrators | 0 | 10 | 31 | 51 | 92 |
| Nonuser Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 1 | 4 | 15 | 20 | 40 |
| 7 | 3 | 4 | 41 | 33 | 81 |
| 8 | 2 | 7 | 31 | 31 | 71 |
| Administrators | 3 | 18 | 34 | 33 | 88 |

Table A10

Desirability of Child Centered Curriculum With Interdisciplinary Units Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 1 | 6 | 23 | 47 | 77 |
| 7 | 0 | 9 | 30 | 32 | 71 |
| 8 | 1 | 14 | 30 | 27 | 72 |
| Administrators | 1 | 8 | 37 | 46 | 92 |
| Nonuser Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 1 | 5 | 14 | 20 | 40 |
| 7 | 2 | 6 | 39 | 34 | 81 |
| 8 | 2 | 7 | 31 | 31 | 71 |
| Administrators | 4 | 17 | 41 | 27 | 89 |

Table A11

Desirability of Decentralized Administrative Authority Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 3 | 11 | 34 | 29 | 77 |
| 7 | 0 | 14 | 42 | 15 | 71 |
| 8 | 2 | 9 | 43 | 17 | 71 |
| Administrators | 2 | 16 | 50 | 25 | 93 |
| Nonuser Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 2 | 7 | 23 | 8 | 40 |
| 7 | 5 | 17 | 38 | 21 | 81 |
| 8 | 7 | 21 | 34 | 10 | 72 |
| Administrators | 4 | 35 | 36 | 10 | 85 |

Table A12

Implementation of Common Teacher Planning Time During the School Day Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 16 | 21 | 16 | 23 | 76 |
| 7 | 20 | 14 | 20 | 18 | 72 |
| 8 | 23 | 19 | 17 | 13 | 72 |
| Administrators | 22 | 26 | 24 | 20 | 92 |
| Nonuser Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 21 | 9 | 7 | 2 | 39 |
| 7 | 49 | 23 | 6 | 2 | 80 |
| 8 | 44 | 20 | 4 | 3 | 71 |
| Administrators | 45 | 35 | 6 | 3 | 89 |

Table A13

Implementation of Team Control of Student Schedules Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 12 | 20 | 29 | 15 | 76 |
| 7 | 18 | 20 | 25 | 9 | 72 |
| 8 | 15 | 23 | 27 | 8 | 73 |
| Administrators | 21 | 27 | 34 | 10 | 92 |
| Nonuser Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 20 | 10 | 7 | 2 | 39 |
| 7 | 45 | 23 | 12 | 1 | 81 |
| 8 | 37 | 22 | 11 | 0 | 71 |
| Administrators | 49 | 27 | 12 | 1 | 89 |

Table A14

Implementation of Team Control of Large and Small Group Instruction Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 16 | 33 | 19 | 8 | 76 |
| 7 | 22 | 24 | 20 | 6 | 72 |
| 8 | 20 | 25 | 20 | 7 | 72 |
| Administrators | 26 | 36 | 21 | 10 | 93 |
| Nonuser Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 20 | 15 | 5 | 0 | 40 |
| 7 | 44 | 28 | 8 | 1 | 81 |
| 8 | 38 | 24 | 9 | 0 | 71 |
| Administrators | 52 | 23 | 10 | 2 | 87 |

Table A15

Implementation of Child Centered Curriculum With Interdisciplinary Units Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 14 | 24 | 28 | 7 | 73 |
| 7 | 19 | 27 | 23 | 2 | 71 |
| 8 | 23 | 24 | 21 | 3 | 71 |
| Administrators | 26 | 30 | 31 | 4 | 91 |
| Nonuser Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 17 | 12 | 10 | 1 | 40 |
| 7 | 39 | 25 | 14 | 2 | 80 |
| 8 | 35 | 19 | 17 | 0 | 71 |
| Administrators | 42 | 32 | 12 | 2 | 88 |

Table A16

Implementation of Decentralized Administrative Authority Between Reported User and Nonuser Schools

| Degree of Desirability | Undesirable 1 | 2 | 3 | Highly Desirable 4 | Total |
|---|---|---|---|---|---|
| User Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 21 | 20 | 28 | 7 | 76 |
| 7 | 18 | 20 | 28 | 6 | 72 |
| 8 | 14 | 31 | 21 | 5 | 71 |
| Administrators | 26 | 28 | 31 | 8 | 93 |
| Nonuser Schools | | | | | |
| Teachers: | | | | | |
| Grade 6 | 20 | 12 | 8 | 0 | 40 |
| 7 | 47 | 19 | 13 | 1 | 80 |
| 8 | 38 | 23 | 9 | 1 | 71 |
| Administrators | 46 | 29 | 10 | 2 | 87 |

Table A17

Frequency of Peak SOC Scores by Grade

| Highest Stage | 0 | 1 | 2 | 3 | 4 | 5 | 6 | Total |
|---|---|---|---|---|---|---|---|---|
| User Teachers: | | | | | | | | |
| Grade 6 | 13 (50%) | 4 (15.38%) | 1 (3.85%) | 2 (7.69%) | 0 (0%) | 5 (19.23%) | 1 (3.85%) | 26 |
| 7 | 17 (58%) | 3 (10.34%) | 2 (6.9%) | 4 (13.79%) | 1 (3.45%) | 1 (3.45%) | 1 (3.45%) | 29 |
| 8 | 10 (40%) | 5 (20%) | 3 (12%) | 2 (8%) | 0 (0%) | 5 (20%) | 0 (0%) | 25 |
| Nonuser Teachers: | | | | | | | | |
| Grade 6 | 14 (63.64%) | 8 (36.36%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 22 |
| 7 | 12 (66.67%) | 5 (27.78%) | 0 (0%) | 1 (5.56%) | 0 (0%) | 0 (0%) | 0 (0%) | 18 |
| 8 | 17 (89.47%) | 1 (5.26%) | 1 (5.26%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 19 |

Table A20

Piers-Harris Children's Self-Concept Scale Frequency Distribution

| Score Range | User | | Nonuser | |
|---|---|---|---|---|
| | 6th Grade | | | |
| 0- 5 | 0 | 0% | 0 | 0% |
| 6-10 | 0 | 0% | 1 | 0.3% |
| 11-15 | 2 | 0.5% | 2 | 0.6% |
| 16-20 | 4 | 1.0% | 9 | 2.8% |
| 21-25 | 4 | 1.0% | 12 | 3.7% |
| 26-30 | 10 | 2.7% | 30 | 9.2% |
| 31-35 | 17 | 4.6% | 18 | 5.5% |
| 36-40 | 22 | 5.9% | 22 | 6.7% |
| 41-45 | 24 | 6.5% | 25 | 7.7% |
| 46-50 | 33 | 8.9% | 23 | 7.1% |
| 51-55 | 42 | 11.3% | 33 | 10.1% |
| 56-60 | 35 | 9.4% | 40 | 12.3% |
| 61-65 | 55 | 14.8% | 34 | 10.4% |
| 66-70 | 48 | 12.9% | 36 | 11.0% |
| 71-75 | 56 | 15.1% | 38 | 11.7% |
| 76-80 | 20 | 5.4% | 3 | 0.9% |

Total N = 1949 User N = 1044 Nonuser N = 905

6th Grade User N = 372 6th Grade Nonuser N = 326

6th Grade User $\mu$ = 56.7 6th Grade Nonuser $\mu$ = 50.6

t = 5.10

| Score Range | User | | Nonuser | |
|---|---|---|---|---|
| | | 7th Grade | | |
| 0- 5 | 0 | 0% | 0 | 0% |
| 6-10 | 0 | 0% | 0 | 0% |
| 11-15 | 2 | 0.6% | 0 | 0% |
| 16-20 | 2 | 0.6% | 6 | 1.9% |
| 21-25 | 4 | 1.2% | 9 | 2.8% |
| 26-30 | 13 | 3.8% | 17 | 5.2% |
| 31-35 | 11 | 3.3% | 15 | 4.7% |
| 36-40 | 11 | 3.3% | 18 | 5.6% |
| 41-45 | 28 | 8.3% | 27 | 8.5% |
| 46-50 | 18 | 5.3% | 19 | 6.0% |
| 51-55 | 39 | 11.5% | 30 | 9.4% |
| 56-60 | 36 | 10.6% | 42 | 13.2% |
| 61-65 | 56 | 16.6% | 51 | 16.0% |
| 66-70 | 45 | 13.3% | 36 | 11.3% |
| 71-75 | 63 | 18.6% | 36 | 11.3% |
| 76-80 | 10 | 3.0% | 13 | 4.1% |

Total N = 1949 User N = 1044 Nonuser N = 905

7th Grade User N = 338 7th Grade Nonuser N = 319

7th Grade User $\mu$ = 57.7 7th Grade Nonuser $\mu$ = 54.3

t = 2.99

| Score Range | User | | Nonuser | |
|---|---|---|---|---|
| | 8th Grade | | | |
| 0- 5 | 0 | 0% | 0 | 0% |
| 6-10 | 0 | 0% | 0 | 0% |
| 11-15 | 0 | 0% | 4 | 1.5% |
| 16-20 | 5 | 1.5% | 3 | 1.2% |
| 21-25 | 2 | .6% | 5 | 1.9% |
| 26-30 | 9 | 2.6% | 15 | 5.8% |
| 31-35 | 10 | 3.0% | 9 | 3.5% |
| 36-40 | 9 | 2.6% | 17 | 6.5% |
| 41-45 | 13 | 3.8% | 20 | 7.7% |
| 46-50 | 21 | 6.2% | 20 | 7.7% |
| 51-55 | 33 | 9.9% | 21 | 8.1% |
| 56-60 | 39 | 11.7% | 26 | 10.0% |
| 61-65 | 61 | 18.3% | 34 | 13.1% |
| 66-70 | 56 | 16.8% | 31 | 11.9% |
| 71-75 | 61 | 18.3% | 39 | 15.0% |
| 76-80 | 15 | 4.5% | 16 | 6.1% |

Total N = 1949 User N = 1044 Nonuser N = 905

8th Grade User N = 334 8th Grade Nonuser N = 260

8th Grade User $\mu$ = 59.7 8th Grade Nonuser $\mu$ = 55.1

t = 3.75

| Score Range | User | | Nonuser | |
|---|---|---|---|---|
| | | Male | | |
| 0- 5 | 0 | 0% | 0 | 0% |
| 6-10 | 0 | 0% | 0 | 0% |
| 11-15 | 2 | 0.4% | 4 | .9% |
| 16-20 | 6 | 1.2% | 8 | 1.8% |
| 21-25 | 3 | 0.6% | 9 | 2.0% |
| 26-30 | 18 | 3.6% | 29 | 6.6% |
| 31-35 | 16 | 3.2% | 28 | 6.4% |
| 36-40 | 16 | 3.2% | 24 | 5.5% |
| 41-45 | 26 | 5.1% | 34 | 7.7% |
| 46-50 | 33 | 6.5% | 35 | 8.0% |
| 51-55 | 51 | 10.1% | 41 | 9.3% |
| 56-60 | 52 | 10.2% | 54 | 12.3% |
| 61-65 | 81 | 16.0% | 55 | 12.5% |
| 66-70 | 74 | 14.6% | 51 | 11.7% |
| 71-75 | 101 | 20.0% | 53 | 12.1% |
| 76-80 | 27 | 5.3% | 14 | 3.2% |

Total N = 1949 User N = 1044 Nonuser N = 905

Male User N = 506 Male Nonuser N = 439

Male User $\bar{X}$ = 59.1 Male Nonuser $\bar{X}$ = 53.1

t = 6.07 df: 943

| Score Range | User | | Nonuser | |
|---|---|---|---|---|
| | | Female | | |
| 0- 5 | 0 | 0% | 0 | 0% |
| 6-10 | 0 | 0% | 1 | 0.2% |
| 11-15 | 2 | 0.4% | 2 | 0.4% |
| 16-20 | 5 | 0.9% | 10 | 2.1% |
| 21-25 | 7 | 1.3% | 17 | 3.6% |
| 26-30 | 14 | 2.6% | 33 | 7.1% |
| 31-35 | 21 | 3.9% | 14 | 3.0% |
| 36-40 | 25 | 4.7% | 33 | 7.1% |
| 41-45 | 37 | 7.0% | 38 | 8.2% |
| 46-50 | 38 | 7.2% | 27 | 5.8% |
| 51-55 | 63 | 11.8% | 43 | 9.2% |
| 56-60 | 58 | 10.9% | 54 | 11.6% |
| 61-65 | 90 | 16.9% | 64 | 13.7% |
| 66-70 | 75 | 14.1% | 52 | 11.2% |
| 71-75 | 79 | 14.8% | 60 | 12.9% |
| 76-80 | 18 | 3.5% | 18 | 3.9% |
| Total N = 1949 | User N = 1044 | | Nonuser N = 905 | |
| Female User N = 532 | | | Female Nonuser N = 466 | |
| Female User $\mu$ = 57.1 | | | Female Nonuser $\mu$ = 53.3 | |
| t = 3.93 | | | df: 921 | |