

1994

# Student perceptions of their teachers, their school, and themselves as learners

Janice Marie Donahue  
*Iowa State University*

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themselves as learners**

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**Iowa State University, 1994**

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Student perceptions of their teachers, their school,  
and themselves as learners

by

Janice Marie Donahue

A Dissertation Submitted to the  
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## CHAPTER I. INTRODUCTION

For the past decade, our nation has been intensely examining the quality of its schools. Since 1983, when the report A Nation At Risk was written, the states have generated more rules and regulations about all aspects of education than in the previous 20 years (Timar, 1989). Out of the more than 270 task forces and commissions appointed among the states to answer the failings of the education system as outlined in A Nation At Risk came stiffer high school graduation requirements, more attention to quality in the selection and training of teachers, higher teacher salaries, and additional time devoted to schooling (Lewis, 1989). Such reforms were an effort to improve schools through teacher accountability. But most school improvement initiatives cited the individual school as the key component in educational change. As National Education Association President Willard H. McGuire told the 1983 national representative assembly, "Excellence must be achieved in the classroom or it will not be achieved at all." Attaining excellence is the impetus for the concern for student learning, which has many school districts focusing on school climate and the evaluation of teacher performance.

## Teacher Evaluation and Student Feedback

Most educators concur that the purpose of teacher evaluation is to maintain and improve the quality of teacher performance (Weber, 1992). Teacher evaluation, however, continues to be an area of controversy; the debate centers around the process of assessment including the evaluators.

Generally speaking, by state mandate, local board regulations, tradition, or administrative practice, the responsibility for evaluation of teachers has been that of the principal (Oliva, 1989). Most evaluations are based on one to three classroom visits by the principal, who provides a written summary for the teacher. Such procedures are so time-consuming that the principal has difficulty finding time to conduct them and provides little assistance to the teachers (Savage & McCord, 1986). Hidlebaugh (1973) contends that principal evaluations are one-sided and subjective and looked upon with disfavor by teachers in general. In order to have an evaluation system that is equitable and objective as possible (Hidlebaugh, 1973), the various "publics" should be involved in the system. Manatt (1988) proposes using student feedback as one way to combat the single data gathering procedures of the teacher evaluation programs.

The recipients of instruction--the learners--are now being asked to give feedback to assess instruction. At the postsecondary level, use of student ratings in the evaluation of teachers is a familiar part of the total evaluation system. The learners can provide insights into the instruction that cannot be gained otherwise (Oliva, 1989). The use of student ratings as a component in the evaluation program for teachers in the elementary and secondary education system is in its infancy stage of implementation (Omotani, 1993). According to Hidlebaugh (1973), "the bulk of the empirical evidence indicates that student ratings are probably the best single indicator of a teacher's true performance." As one assessment measure, student ratings of teacher performance clearly should not be overlooked, for students are the only people who each day observe a

classroom teacher's performance for the entire instructional period. Students are in a position to make more accurate judgments about teacher performance than is an outside evaluator who visits the classroom once or twice a year (Savage & McCord, 1986; Shepherd, 1989).

### School Evaluations

The quest for increased student achievement as part of the school reform efforts since 1983, has prompted school districts to focus not only on teacher performance, but on school improvement efforts regarding school climate. As Purkey and Smith (1983) point out, if the locus of the educational process is at the lowest structural level, the classroom, it is nevertheless the adjacent layer, the school, that forms the immediate environment in which the classroom functions. The quality of the process at the classroom level will be enhanced or diminished by the quality of activity at the level above it. Evaluating the quality of the school then seems to be an important component in school improvement, but evaluation of the school and school reform efforts have been nearly void of student feedback. Student feedback for both teacher evaluation and school climate are critical components that are missing from the drive for school reform.

As Fullan (1991) asks, "What would happen if we treated the student as someone whose opinion mattered in the introduction and implementation of reform in schools?" Effective change in creating quality schools involves just as much cognitive and behavioral change on the part of students as it does for anyone else. Information is negligible as to what students think of specific innovations that affect them (Fullan, 1991).

Student feedback concerning areas of the educational system including school climate is minimal, yet such information could assist the teachers and administrators in making changes that matter.

#### Self-esteem

Student feedback depends on the students' perceptions of their learning environment including the climate, the teacher, the teacher's instructional performance, and how they think of themselves in this environment. Shavelson, Hubner, and Stanton (1976) suggest that student perceptions are formed through experiences with and interpretation of one's environment, and are influenced especially by reinforcements, evaluations by significant others, and one's attributions for one's own behavior. Students want teachers to recognize who they are, to listen to what they have to say, and to respect their efforts (Phelan, Davidson, & Cao, 1992).

A child's perception about him or herself is a key factor in his or her ability to achieve in school (Scheirer & Kraut, 1979). Maruyama, Rubin, and Kingsbury (1981) claim that the relation between self-esteem and scholastic achievement has been of interest to social scientists for several decades and identify the work by Gergen in 1971, who estimates that since the 1940s there have been over 2,000 studies of self-concept; many have directly or indirectly addressed the relation between self-esteem and achievement. Professional psychologists as early as William James emphasized that a person's beliefs about self will influence personal decisions and actions. William Purkey, one of the top

researchers in this area, sums up his key conclusions as follows: "There is a significant and positive relationship between a student's concept of himself and his performance in school. Students who feel good about themselves and their abilities, are the ones most likely to succeed" (Friedland, 1992).

Hansford and Hattie (1982) believe, however, that although many researchers convey the impression that a moderate and positive association exists between self and measures of performance and achievement, an initial and cursory assessment of the literature suggests that this relationship is neither precise nor clear. In fact, given the volume and diversity of research literature, it is possible to find support for all viewpoints.

#### Validity, Reliability, and Discriminating Power

Though student ratings (feedback) of teachers have been heavily researched, concerns remain about their reliability, validity, and discriminating power. Research by Aleamoni (1981) indicates that student evaluations at the secondary level are valid and reliable. They are not, as some suggest, popularity contests. Aleamoni (1981) reports research conducted by Guthrie in 1924, which showed that students can make consistent judgments concerning teacher performance. Recent research by Weber (1992) and Omotani and Manatt (1992) support student feedback for teacher performance as a valid and reliable means of evaluation. Studies by Manatt (1988) indicate the necessity for teacher evaluation criteria to be not only valid and reliable, but legally discriminating. Menne and

Tolsma (1971) have stressed the importance of item discrimination for instruments used to measure characteristics of individuals by means of grouping responses. Menne (1972) notes that in teacher performance ratings three conditions must be met: 1) There must be more than one rater, 2) the raters must closely agree in their ratings, and 3) the ratings must indicate differences between teachers. Teacher ratings must be consistent and yet also must indicate differences between the performance of different teachers.

#### Statement of the Problem

American schools have been confronted with demands for reform in order to provide an educational system that prepares our students for the challenges of the future. The public's demand for quality and accountability from their public schools is as serious and urgent as their demand of quality and accountability from American business. Schools, like American companies, must improve their products, practices, and services. Efforts to improve the school system have focused on improved teacher performance and school climate. Schools must be apprised of student expectations, satisfactions, and perceptions of program and personnel in order to make necessary changes.

Though use of student ratings is common and seen as a favorable tool in the evaluation process at the postsecondary level, the literature on student feedback for teacher evaluations for kindergarten through grade 12 is limited. However, the literature strongly supports the use of student

ratings as one component in an evaluation system for elementary and secondary levels.

The literature on student feedback for evaluation of school climate is also minimal. Student opinion is rarely considered as a part of an evaluation program for school improvement initiatives. Student ratings about the school would reveal information that is unavailable from any other source.

The problem for this study will be to obtain student feedback from secondary students on teacher performance, school climate, and self-esteem that will provide information in assessing the school environment, personnel, and their sense of self.

This study will continue the research begun by Hidlebaugh (1973), who developed teacher evaluation items that had discriminating power when analyzed using the Menne and Tolsma method and were used as part of a multiple appraisal approach for a teacher evaluation program. In addition, the study will continue the research of Judkins (1987), Omotani (1992), and Weber (1992), who used Hidlebaugh's survey items for student feedback for teacher evaluation programs in various school settings.

The study will examine the data from the student feedback survey in order to determine if students' responses concerning their teachers, school, and themselves and their Cornell Critical Thinking Test score are affected by gender, attendance, academic status, and academic achievement.

First, items for the teacher evaluation survey will be selected from the items used in the Weber (1992) and Omotani (1992) research conducted by the School Improvement Model (SIM) at Iowa State University. Next,

items will be developed by the school teachers so as to be specific to and sensitive to the reform efforts of the school. All survey items will be examined for their discriminating power using the Menne-Tolsma method. Finally, items derived from the Self Esteem Questionnaire published by Test Analysis and Development Corporation will be added to the survey to gain information concerning how students perceive themselves, and how their perception of self relates to their responses of teacher and school, and the variables including attendance, gender, academic status, and academic achievement.

The problem of this study can be guided by the investigation of the following questions:

1. What items on the Hidlebaugh and Judkins surveys are discriminating given to a group of students and addressing a group of teachers?
2. What items on the student feedback instrument which was designed by the teachers will be discriminating?
3. What is the relationship between the students' perceptions of self, school, and teachers and their gender, attendance, achievement (ITED), academic status (GPA), and critical thinking ability?
4. What is the relationship between the following: a) students' attendance, b) their achievement (ITED), c) their academic status (GPA), d) their critical thinking ability, and e) their gender?

5. Do gender, achievement performance (ITED), academic status (GPA), and attendance make a difference in the student's critical thinking ability and perceptions of self, school, and teachers?

#### The Hypotheses

1. There is no significant difference in the discriminating power of the items on the student feedback survey.
2. There will be no significant differences in the discriminating power of the original SIM items and the new locally developed items.
3. There will be no relationship in the student perceptions of self, their school, and their teachers, and gender, their attendance, their academic status, their achievement performance, and their critical thinking ability.
4. There will be no relationship between the students' attendance, their achievement performance, their academic status, and their critical thinking ability.
5. There will be no difference in the student's critical thinking ability and perceptions of self, school, and teachers because of gender, achievement performance, academic status, and attendance.

#### Definition of Terms

1. Assessment: Often used as a synonym for evaluation. More recently used in referring to testing which is judgmental rather than paper-pencil.

2. Bias: Systemic errors or a disposition to errors of a kind that are likely to adversely affect humans. Anything tending to influence or prejudice.
3. Client: The recipient of social services that involve some client-professional relationship.
4. Criteria: A standard, rule, or test that can be used to judge performance based upon the research on effective teaching.
5. Critical thinking: The process of reasonably deciding what to believe and what to do.
6. Discriminating item: An item which separates high teacher performance from that of average and low performance. An instrument item is considered to be most effective when it has a high level of item discrimination.
7. Evaluation: Process of determining the merit, worth, or value of something, or the product of the process.
8. Improvement of instruction: A series of steps that leads to an increased level of professional competence in the classroom.
9. Rater: A student who uses a survey, questionnaire or feedback instrument to evaluate teacher performance.
10. Rating scale: Device for standardizing responses to requests for judgments of teachers.
11. Student feedback: The process of collecting pupil information for the purpose of instructional improvement.
12. Student feedback instrument: A form or tool used to collect student opinions regarding teacher performance.

13. Reliability: Raters of a particular teacher consistently rate that individual similarly on a specific item.
14. Validity: The concept that the items in fact measure what they are intended to measure.

#### Delimitations

The following items were observed for this investigation:

1. The student feedback survey was administered and collected by the school district teachers. Code numbers were used to keep the identity of the students anonymous.
2. The Cornell Critical Thinking Test was given and corrected by the school district teachers.
3. The student essay assignment was given by the school district teachers and scored by outside raters. Code numbers were used to keep the identity of the students anonymous.
4. Item validation of the survey was established as a part of the Hidlebaugh (1973) and Judkins (1987) research. Those findings were accepted for the purposes of this research.
5. School information such as gender, achievement level, academic status, and attendance was made accessible to the researcher by the school district.
6. The student rating survey contained 20 questions. Each student response was weighted from 0-5 points, yielding a possible total rating score of 100. The total mean was determined for each of the 20 items.

7. The study was limited to a sample population of 64 ninth graders and their teachers at one school site.

## CHAPTER II. REVIEW OF LITERATURE

The quest to discover how to increase the academic achievement of students has not been overwhelmingly successful. Yet the nation's commitment to school reform is evident in the six National Education Goals established in 1990 by the nation's governors and former President Bush at the "education summit" in Charlottesville, Virginia. The proposal, America 2000, outlined an ambitious set of goals that called for no less than the best schools in the world, schools that will enable all students to meet "world class" academic standards. With the Clinton administration's law entitled, "Goals 2000: Educate America," continued emphasis has been placed on the need to improve the educational system for a better future.

The whole notion of school improvement has been bound up in change--change in the sense of growth toward agreed upon goals. Most would agree that improvement will not take place in our schools and goals will not be reached without the support and commitment of all who come to "own" the new educational ideology and techniques. The studies of school effectiveness that look at changing schools repeatedly point out the importance of the process by which people within schools must interact to determine goals and ensure change (Houlihan, 1988). The general strategy of school improvement is best characterized as one that promotes collaborative planning, collegial work, and commonly shared expectations and goals (Purkey & Smith, 1983).

Research has demonstrated that successful implementation must also include the degree to which users see the change as needed and the degree to which the innovation is perceived to be of quality and practicality by those affected by the change (Fullan, 1982). According to Fullan, innovations may fail because too often those that try to get others to change actually ignore what a particular innovation means to those who do the changing. The focus to successful reforms in schools must, therefore, include the involvement of not only students as active learners but as partners and clients in the educational process.

This study will investigate student feedback as it relates to the students' teachers, their school, and to themselves as learners. This review of literature will 1) discuss the literature relating the characteristics of quality schools and quality businesses focusing on client feedback and client satisfaction; 2) review the research concerning student feedback and teacher evaluation at the K-12 and postsecondary level; 3) summarize the validity, reliability, and discriminating power of student feedback surveys for teacher evaluation systems; 4) describe the practices in student feedback of specific school innovations and current school climate surveys; 5) summarize the literature relative to student self-concept and academic achievement; and 6) review the research relating academic self-concept, achievement, and gender.

Research efforts for this study utilized sources such as Dissertation Abstracts, Educational Resources Information Center (ERIC), Encyclopedia of Educational Research, Review of Research in Education, Scholar, and InfoTrack. Various research studies were critically analyzed for

applicability of research to the present study, credibility of the journal, and adequate sample size.

#### Quality in Business and Education

The values identified in the effective schools research are high expectations for students, commonly shared goals, genuine caring about individuals, collegiality, and a commitment to quality. The instructional mission of the school is valued as the primary directive of the system. Fullan (1983) draws a comparison between the values of the effective schools research and the components of success in the business world, especially the focus on quality. Successful companies are "close to the customer," are obsessed with meeting the needs of clients, have a strong sense of care and respect of individuals, and have "a bias for action" (Fullan, 1983). Excellent companies are clear on what they stand for and create a shared sense of highly valued purpose.

The push for quality has led to many changes in some businesses to improve both their practices and products. Quality concepts of W. Edwards Deming and J. M. Juran, who helped Japan rebuild its economy after World War II, have made an impact in the business arena with concepts focusing on the client or customer. Companies that embrace Total Quality Management (TQM) recognize that quality is defined by their customers. Quality is the conformance to customer expectations, and companies understand that they must clarify customer expectations and meet or surpass those expectations. These companies adopt the principle of continuous improvement and collect data and use feedback from a variety of

sources as part of a process to improve the quality of the product or service.

The quality movement has been felt in public education, and the effective schools research initiatives resulting from the reforms of the 1980s parallel this movement in business. The equivalent of Deming's "customer" would seem to be the student, for the customer determines the "product" which in schools is a course of study directed toward the education of the student (Holt, 1993) for either the world of work or the higher education institutions.

Other researchers on quality in schools (Bradley, 1993; Bonstingl, 1992) have identified both the students and parents as primary clients. Bradley (1993) admits, however, that one of the most interesting aspects of applying the concept of quality to schools is identifying the role of students. As Bradley points out, students can be viewed as performing multiple roles; they are the clients and the workers, and from the accountability aspect, they are also the products of the school. But the fact that schools have recognized their clients does not make a quality program. Schools must identify and pursue client satisfaction similar to business companies who are intent on quality performance. Schools must diligently seek student satisfaction and clarify student expectations to achieve educational quality. The collection of data to improve school practices has been limited primarily to teachers and administrators (O'Connell, 1993).

It is time schools collected data from their primary clients, specifically their students. Schools intent upon meeting the needs and

demands of their clients for a more quality educational system must listen carefully to the customers. If the ultimate goal of the effective schools research is to make the school a quality school, then the school must get feedback from its students. It is evident that tremendous changes in the way schools do business will have to take place in the future. It appears that with the past successes in Total Quality Management (TQM) in business, industry, and the public sector, the possibilities of applying TQM to education seem to exist (Teigland, 1993).

This study is based on feedback from high school students who participated in a pilot project using the interdisciplinary approach to curriculum and organization. The assessment of the first year of this pilot project will be based in part on the responses of the clients on the student feedback questionnaire. The premise for using student feedback for the pilot project is that student perceptions of their teachers, their school, and themselves as learners is valuable information, and the quality principle of continuous improvement is as important in education as it is in business.

#### Multiple Evaluators

The growing concern for continuous school improvement has begun to focus on student (client) feedback, not only in the area of school programs but in teacher competence and the evaluation system of a teacher's performance. School districts that are determined to become quality institutions know that teacher performance is critical and seek an effective evaluative system that is fair, reliable, and legally

discriminating. Common practice of teacher assessment generally has been by a single appraiser, though this has been a source of great concern for both teachers and administrators. Most teacher evaluations have been based on a limited number of visits by an appraiser, which causes teachers to question the competence of evaluators and the reliability of performance data collected from a few visits. In a search for quality improvement, there is a need for more valid and reliable evaluation systems; school districts have begun looking at multiple evaluator systems for teacher evaluation.

Proponents of the multiple evaluator system (Hidlebaugh, 1973) admit that in order for an evaluation system to be as equitable and objective as possible, the various "publics" with which the teacher associates should be involved. Involving the various publics would mean that peer teachers, administrators, and students (clients) would become part of the evaluation system. McGreal (1988) contends that any evaluation system is more likely to support teacher and teaching growth if it allows and encourages feedback activities and provides the use of multiple sources of data to ensure the fullest possible picture of effective teaching. McGreal states, "There is a group of judges who are ready, willing and able to assist in the process of teacher evaluation. These are the students themselves, who are in the best place of anyone to tell us some important things." Since students are the recipients of instruction, they are able to provide an important, unique, and necessary perspective to judging such effectiveness (Shepherd & Trank, 1989).

### University Evaluations and Student Feedback

Student ratings of university instructors is, perhaps, the most widely used form of assessing teacher effectiveness. Opponents (Hofman & Kremer, 1980) of student ratings, however, argue that ratings are biased and fail to reflect real differences in teaching effectiveness. Other researchers (Tollefson, Chen, & Kleinsasser, 1989; Drews, Burroughs, & Nokovich, 1987) counter this perspective by denouncing student bias as a factor in student ratings of instructors and affirm that student ratings do reflect teaching effectiveness. When reliable and valid instruments have been used (Braunstein, Klein, & Pachla, 1973; Aleamoni, 1987), student judgment is stable, discriminating, and improves performance. It is not biased nor a popularity contest, as other research studies (Abrami, Leventhal, & Perry, 1976) have proposed.

L'Hommedieu, Menges, and Brinko (1990) note that researchers who address the question of improving instruction through systematic feedback are exploring an issue of immense practical value. Rotem and Glasman (1979), on the other hand, maintain that student ratings do not reflect how well students have learned, nor is student feedback to teachers always beneficial. They conclude that student feedback is not effective for the purpose of improving instructional performance. While a few studies have continued to question the potential of student feedback in the teacher evaluation process, Weber (1992) found that the balance of research has supported the use of student feedback as one component of teacher evaluation and/or instructional improvement, and H. Murray (1987) has

concluded that student ratings have an overwhelmingly positive impact on the quality of postsecondary teaching.

Murray has found that nearly all postsecondary institutions now have some sort of plan for student evaluation of teaching, with the results of evaluation used as diagnostic feedback to instructors and/or as evidence in decisions on faculty retention, tenure, and promotion. Students can learn without teachers (McKeachie & Kulik, 1975), but the teacher and his/her methods are rightfully perceived by the students as crucial elements in determining their learning. Student feedback will produce positive changes in performance. Levinson-Rose and Menges (1981) also found that student feedback assisted the teachers in changing teaching behaviors. In many postsecondary institutions, student ratings are the only form of teacher evaluation.

Though such an evaluation practice is viewed as a major component of the teacher evaluation system at the university level, student feedback as part of a teacher evaluation program has been used infrequently at the K-12 level. Judkins (1987) notes that "one valuable source of information on teacher performance, students, is rarely used at the secondary and elementary level, although the advantages and disadvantages of student ratings have been thoroughly researched at the college level."

Too frequently, K-12 school districts overlook the client (student) feedback as part of the data collection, yet Manatt and Omotani (1992) and Weber (1992) suggest that students are the only people who each day observe a classroom teacher's performance for the entire instructional period. Students are in a position to make more precise judgments about

teacher performance than an outside evaluator who visits the classroom infrequently. Therefore, students treated as the clients in public school should be given serious consideration as one possible source of evaluative feedback. According to Duke and Stiggins (1986), there may be no more valid source of information on learning environments than students who live and work in those environments; students can provide insights no one else can. Teachers who are serious about professional growth assert these researchers should be interested in how they affect students and how they are perceived by them. In a more recent study by Manatt and Price (in press), student ratings of teacher performance was the most significant placement predictor on a teacher career ladder. The study identified the influence of factors used in determining teacher placement on a career ladder and concluded that when all factors were of equal weight, including appraisal reports, student achievement, and the professional growth plans, student ratings of teacher performance were found to be the most significant.

#### K-12 Evaluations and Student Feedback

In the judgment of many, students are a powerful source of data about classrooms (Duke, 1977; Walberg, 1969). According to a study by Driscoll et al. (1985), even very young students appear to contribute important evaluative information on teaching. Ratings of teachers by primary aged students were a reliable source of obtaining information on teacher effectiveness. Such feedback is a good source of information to be included in a comprehensive teacher evaluation system or used for teacher

feedback. In another study (Vollmer & Creek, 1988), the perceptions of children were not found to be reliable for the evaluation of teaching performance. The study determined that primary aged students were unable to discern the gradation of teaching competencies of beginning teachers and master teachers. However, if care is taken in the construction and use of the rating forms, student feedback has proven to be reliable (Driscoll et al., 1985; McGreal, 1988).

Evaluators can obtain reliable student information if they concentrate on describing life in the classroom rather than making judgments of the teacher. Walberg (1974) reinforced this view when he indicated that a series of studies have demonstrated that student perceptions of the classroom learning environment can be measured reliably. Scriven (1990) postured that if gathered in a suitable, secure way and using a suitably designed form, student feedback can provide a useful basis for rating teachers.

In Judkins' (1987) study, a pool of items was developed that reflected research on effective teaching behaviors which made a difference in student performance and that were suitable to both elementary and secondary students. When the items were tested as an instrument for student feedback for teacher performance, the instrument was found to have reliability and discriminating power. Judkins (1987) concluded that all students K-12 are quite capable of providing student feedback to teachers that would discriminate among teachers and be a valuable component in a teacher evaluation system.

In his study of high school students, Omotani (1992) also found that student feedback was a reliable source of information in a teacher evaluation system. Primarily using the items from Judkins' (1987) instrument, Omotani (1992) solicited student feedback on teacher performance in a single school system resulting in student ratings that were discriminating. Weber's research (1992) with student ratings involving elementary students in a single school setting supported the previous research of Omotani and Judkins. Weber insists, "When feedback items ask for judgment regarding work; that is, the teacher's assigning interesting work, students' receiving work back quickly, test taking, and homework, even elementary students are able to be discriminating judges of teacher performance." Even when additional questions concerning the effect of extraneous variables are offered, research has reaffirmed the ability of students of all ages to use valid, reliable, and discriminating feedback surveys in rating teacher performance (Omotani, 1992).

Hidlebaugh (1973) discusses the accountability in the personal or group sense for achieving the school goals which are accepted and which govern behavior. Evaluation when used in the group sense becomes the means by which the school's staff assesses their own performance toward the goals and objectives of the school. We have student feedback on individual teacher performance as a part of an evaluation system, but we can and should evaluate a group of teachers on their performance as part of an evaluation system that looks at the whole school or school program. We need to evaluate the total program by evaluating the performance of the teaching staff. This research will investigate the evaluation of a group

of teachers by the students of one school system in order to evaluate the program and its goals.

#### General Self-concept

Over the past decade educational innovations and goals have become increasingly directed toward the enhancement of students' self-concepts. The importance of a positive attitude towards oneself has been regarded as a major factor in all aspects of behavior. Interest in self-concept stems from its recognition as a valued outcome in itself, the assumption that the improvement of self-concept may facilitate improvements in other areas, and interest in how self-concept is related to other constructs (Marsh, Smith, Barnes, & Butler, 1983). Self-concept is an individual's perception of self, formed through experience with the environment, interactions with significant others, and attributions of his/her own behavior (Shavelson & Bolus, 1982). Self-concept of ability is a measure of self-esteem in school situations. Byrne (1986) believes that students' perceptions about themselves within the school environment play a key role in their level of academic achievement. There are other researchers who disagree. Mintz and Muller (1977) found in their research low correlations between self-concept and achievement; they do not support the association between self-concept and achievement.

Review of the literature reveals numerous studies concerned with aspects of self-concept in a variety of educational settings; clearly, self-concept is considered a critical variable in the educational context. Because the school is such an important and pervasive context for the

students, it is not surprising that there has been a great deal of research on self-concept and its relationship to academic ability and performance in school.

Ample evidence of a significant correlational relationship between general self-concept and achievement exists (Sheirer & Kraut, 1979). The vast majority of studies have found strong relationships between children's self-concepts and their academic achievement. Given the volume and diversity of the literature, it is possible to find some support for virtually any viewpoint regarding the relationship between self and performance. Sheirer and Kraut predict that students possessing high self-esteem have been found to do well educationally. When students have a better self-concept of themselves as learners, they will perform well, and in turn, this sense of self-confidence will serve to strengthen their performance. In the face of conflicting findings, it seems very likely that the relationship between self-concept and achievement is at least somewhat reciprocal.

This study will examine how students feel about themselves as learners and determine if their attendance and academic achievement as measured by their grade point average (GPA) and the Iowa Test of Educational Development (ITED) affect that perception of self.

#### Multidimensionality and Hierarchical Structure of Self-concept

Historically, self-concept research emphasized a general, overall, or total self-concept and specific facets such as academic self-concept were relegated to a minor role in a hierarchical structure. Some researchers

(Coopersmith, 1967; Marx & Winne, 1977, 1978) claimed that self-concept was too heavily dominated by a general factor and that distinct areas of self-concept such as academic self-concept could not be differentiated. In addition, Soares and Soares (1977) maintained that low correlations between self-concepts in different areas created a distinct classification system which did not support a hierarchical ordering of the facets of self-concept including academic self-concept. But a growing literature (Byrne, 1984; Hansford & Hattie, 1982; Marsh, 1986, 1987; Marsh, Byrne, & Shavelson, 1988; Shavelson & Bolus, 1982) indicates that academic self-concept is clearly differentiable from, but correlated to, general self-concept.

In their landmark study, Shavelson, Hubner, and Stanton (1976) posited self-concept to be a multifaceted, hierarchical construct which was divided into academic self-concept and nonacademic self-concept. Prior to this research, most studies examined only between-network relations of the construct, that is, correlating general self-concept with other constructs such as academic achievement or family background, or self-concept ratings by significant others. Since Shavelson, Hubner, and Stanton's findings, within network research on self-concept has focused on the relation of the multidimensionality of self-concept and hierarchy of the construct. According to these researchers, self-concept is organized or structured in that people categorize the vast amount of information they have about themselves and relate the categories to one another. It is multifaceted, and the specific facets reflect the category adopted by the individual. Self-concept is hierarchical, with perceptions of

behavior at the base moving to inferences about self in subareas such as English or math. Then perceptions move to inferences about self in academic and nonacademic areas and then to inferences about self in general.

The researchers (Shavelson, Hubner, & Stanton, 1976) maintain that self-concept becomes increasingly multifaceted as the individual develops from infancy to adulthood and that it is descriptive and evaluative and can be differentiated from other constructs such as academic achievement. Academic self-concept may be divided again into subject matter areas, and the nonacademic self-concept may be divided into social, emotional, and physical self-concepts and then divided into more specific facets in a manner similar to academic self-concept. Recent research has focused extensively on the specific areas of academic self-concept.

#### Causal Relationship

Since many educational programs are based upon the premise that an improvement in academic self-concept will lead to gains in academic achievement, perhaps the most intriguing question regarding academic self-concept and academic achievement has been the causal relationship of academic self-concept and academic achievement.

Some researchers (Shavelson & Bolus, 1982; Felson, 1984; Sheirer & Kraut, 1979) believe that academic self-concept influences academic achievement. This viewpoint is supportive of the self-enhancement theory. If students have a positive perception of themselves as learners, then they will perform well in school. The issue of why student perceptions

should affect academic performance has generally been ignored (Felson, 1984). Student perceptions of their ability or self-concept may affect how hard they study, which in turn may affect their performance. The more ability students attribute to themselves, the greater their estimation of their probability of success if they work hard. Students (Felson, 1984) may act in ways that are consistent with or expressive of their self-concepts. These theorists further argue that time and effort should be spent in trying to increase the self-concept of students in new and innovative educational programs.

Some studies (Newman, 1984; Wylie, 1979; Bachman & O'Malley, 1977; Galsyn & Kenny, 1977) promote the theory that the academic achievement determines the academic self-concept. This is the skill development theory. Skill development theory claims that prior student performance affects academic self-concept. Prior academic achievement helps to form the academic self-concept.

The Byrne (1984) and Newman (1984) studies used standardized achievement tests to infer academic achievement and found that prior academic self-concept had no causal influence on subsequent test scores. In contrast, Shavelson & Bolus (1982) used school grades to infer academic achievement and found that prior academic self-concept did have a causal influence on subsequent school grades. These researchers found that student self-concepts in specific areas such as English, science, and mathematics were internally consistent and stable over time. Other researchers (Hansford & Hattie, 1982; Wylie, 1979) also found that school performance indicators such as GPA to be more highly correlated with

academic self-concept than IQ or general academic achievement. Marsh (1987) and Bachman and O'Malley (1986) have suggested that prior academic self-concept is more likely to affect subsequent achievement if achievement is inferred from school grades (GPA) rather than from standardized test scores. These researchers contend that one of the primary mechanisms by which students are informed about their academic ability is through grades and, therefore, consider the predominant causal direction to be from grades to self-concept. Marsh (1990) also argues that school-based performance is more likely to be affected by effort and motivational influences than are standardized test scores, so that prior academic self-concept is more likely to affect subsequent school performance than to affect standardized test scores.

Other studies (Marsh, 1986; Marsh, Byrne, & Shavelson, 1988) claim that no final and definitive conclusions can be made concerning the causal relationship of academic self-concept and academic achievement because other factors play an important part in determining the cause of either academic self-concept or academic achievement.

#### Gender and Age and Self-concept

A range of opinions occurs in the literature regarding the possibility of a gender difference in academic self-concept and academic achievement. Despite a plethora of studies on self-concept, research focusing on gender differences in self-concept is not only sparse, but inconsistent and indeterminate (Byrne & Shavelson, 1987). Chadwick, Bahr, and Stauss (1977), on the basis of a North American Indian sample,

reported "that self-esteem is much more closely linked on GPA for males than females." In contrast, other studies (Rubin, 1978; Primavera, Simon, & Primavera, 1974) report that self-esteem ratings are more clearly related to academic achievement for girls than boys. Burns (1979) reported that boys have increasingly more positive self-concepts than girls starting in the late primary grades. However, Burns cautions that sex differences on any particular self-concept scale might be an artifact of unintentional sex biases in the wording of items. Wylie (1979), however, maintains that "the evidence from studies involving well-known instruments fails to support a relationship between sex and overall self-regard."

Historically, self-concept researchers examined sex differences in general self-concept (Wylie, 1979), but more recently researchers have investigated and shown that sex differences vary systematically with the particular facet of self-concept (Byrne & Shavelson, 1986, 1987; Marsh, Barnes, Cairns, & Tidman, 1984; Marsh, Parker, & Barnes, 1985). Although there is little evidence for sex differences in the structure of self-concept or the level of overall self-concept (Marsh, Barnes, Cairns, & Tidman, 1984), there do seem to be differences in specific components of self-concept that are consistent with sex stereotypes.

The relation between sex differences in academic achievement and those in self-concept is particularly relevant to such current concerns as the performance of girls and boys in verbal areas and in math. Marsh, Smith, and Barnes (1985) found differences in math and verbal self-concept for fifth grade boys and girls. Fifth grade girls had lower math self-

concepts than did boys, even though their math performance was better on standardized tests and according to teacher ratings. In the research of Marsh, Byrne, and Shavelson (1988), girls had substantially higher verbal achievements and verbal self-concepts than did boys. Although much of girls' advantage in verbal self-concepts could be explained by their higher verbal achievements, girls still had higher verbal self-concepts even after the researcher controlled for verbal achievements. Boys had substantially higher math self-concepts than did girls, yet had slightly lower math achievements than did girls. These researchers attribute the relations between sex differences in self-concept and achievement scores to sex stereotypes. They report that sex stereotypes directly influence math and verbal self-concepts in addition to indirect effects through the achievement scores.

In the 1992 research study conducted by the American Association of University Women Educational Foundation (AAUW) entitled How Schools Shortchange Girls, the findings indicated that differences between girls and boys in math achievement are small and declining. Yet in high school, girls are still less likely than boys to take the most advanced courses and be in the top-scoring math groups. The study also found that girls do not leave our schools with the same degree of confidence and self-esteem as boys. The 1990 AAUW poll, Shortchanging Girls, Shortchanging America, documents a loss of self-confidence in girls that is twice that for boys as they move from childhood to adolescence.

Though some research does not support the age factor in self-esteem (Monge, 1973; Wylie, 1979), the effects of age on self-concept have been

found in other research to vary with the particular area of self-concept (Marsh, Parker, & Barnes, 1985). In the study of Marsh, Barnes, Cairns, and Tidman (1984) with students in grades 2-5, and the research with grades 7-12 of Marsh, Parker, and Barnes (1985), there were some interesting points of comparability: Sex and age were statistically independent, neither sex nor age accounted for more than 10% of the variance in any of the self-concept scales, sex was not significant for the sum of responses across all the items on the Self Description Questionnaire (SDQ II and SDQ), but sex differences were apparent in specific scales, and age was significantly different and generally consistent across the different self-concept scales. During preadolescent years, the effect of age was primarily linear, with self-concept declining with age. For adolescent years the effect was nonlinear; self-concept appears to reach its lowest point with year 9 students and then to rise in year 10 and the year 11/12 samples. The relationship between self-concept and academic achievement clearly depends on the area of self-concept that is considered.

Efforts to define circumstances under which changes in self-esteem could influence achievement would be a worthwhile goal of future studies that examine antecedents of achievement.

#### School Climate

The examination of student attitudes toward self and their perceptions of teacher performance are clearly vital elements in assessing continuous improvement of schools. Relationships, self-concept,

attitudes, and performance are the cornerstones of any organization, and these components together create the school climate (Houlihan, 1988). School climate is a determining factor in the success or failure of our schools. It is best characterized (Brookover & Lezotte, 1979) as one that promotes collaborative planning, collegial work, a sense of community, clear goals, and order. School climate is how people feel about their environment. An innovative school environment suggests a participatory approach, and how a school moves toward increasing its effectiveness is critical. School climate is viewed as extremely important in the whole process of change and school improvement.

Climate influences student outcomes, including cognitive and affective behavior, and recognizing the climate in a building will help to improve the understanding and prediction of student behavior (Anderson, 1982). There have been major instruments used to measure the general overall feeling or climate in schools, such as the School Climate Inventory (SCI) designed by Pinckney (1982) utilizing teacher feedback about the organizational functions of a school. Other instruments are: the Organizational Climate Description Questionnaire (OCDQ), the High School Characteristics Index (HSCI), My School Inventory (MDSI), Elementary School Environment Survey (ESES), School Survey (SS), the Effective School Battery (ESB), the Comprehensive Assessment of School Environments (CASE), and the Quality of School Life (QSL). In such comprehensive reviews (Anderson, 1982), there has been little consistency regarding school climate. However, one of the findings that continues to emerge in the data on school climate is student shared decision making.

Anderson concludes that respecting student feedback and giving students a significant voice in decision making seem to have beneficial effects in the school climate.

#### Specific Student Feedback for School Innovations

Critical to understanding climate and how specific educational change affects the climate is the recognition that the changes in students and teachers must go together. Students themselves are also being asked to change their thinking and behavior in the classroom. There is growing recognition (Weinstein, 1983) that students influence outcomes as much as teachers do. Involving students in consideration of the meaning and purpose of continuous improvement will help them to better understand the goals of the school and be committed to the goals. Educators who want students to be engaged in their learning should be interested in what students and how students perceive school to be and the value that students assign to their experience (Stinson, 1993). Continuous improvement leading to successful change efforts is more likely to be realized by involving, at appropriate levels and frequency, the people affected in the decision-making and implementation process (Purkey & Smith, 1983) which includes both teachers and students. Not only should the schools include students in the decisions, but they should conduct follow-up studies to determine how the school and its innovations can better meet the students' needs.

But the information is negligible (Fullan, 1991) as to what students think of specific innovations that affect them. Weinstein (1983) contends

that we have ignored the intelligence that children bring to the classroom, and that researchers are just beginning serious investigations of the student point of view about classroom processes and specific climate. Studies have looked at changes in attitudes of students as they progress through school and at attitudes of student and achievement in different subjects. But for the most part (Chase, 1982), very few data are available on how students themselves feel about the educational experiences they are having. Chase surveyed a broad base of student opinion to see how students felt about their school, about the work they did there, about school staffs, and about school programs. Using 24 school systems across the United States and surveying more than 10,000 high school students, Chase reported that generally speaking, students expressed positive feelings toward schools more than twice as often as they expressed negative feelings.

Two areas of concern emerged in Chase's work: Students do not feel sufficiently involved in the regulation of their school lives, and they want much more personal attention. School climate assessments by themselves will solve no problems nor lead to innovations, but they are useful to initiate action that may help programs develop.

The development and management of school improvement is a continuous process, not a one-shot event. Information about the school should be gathered from all relevant groups including students, and used in long-range planning which is reviewed periodically. Climate assessment (Gottfred & Hollifield, 1988) often stimulates planning for school improvement, but as Fullan (1990) concludes, unless the students have some

meaningful role in the process of change, most educational change will fail. Sweeney (1988) advises educators to tune in the students and include students in decision making. Schools that strive to become the best they can be (Sweeney, 1992) are driven or led by beliefs and values which are shared by all who are a factor in the life of the school. Finding out how students feel about the overall quality of the environment in which they learn can help educators design schools that are pleasant and stimulating. Educators should be encouraged to conduct more student-centered research (Duke, 1977); it is important for teachers to come to know the world of school from the perspective of the students. Being aware of students as active interpreters of classroom events forces teachers to examine more closely the effects of their own behavior on the recipients of these innovations. (See Tables 1-4.)

#### Summary

The effective school movement supports continual improvement to meet the students' needs while emphasizing a quality instructional program, a positive school climate, and participatory decision making in order to improve schools. But schools intent upon meeting the ever changing needs of students must determine if these changes, in fact, make a difference to their students. Great schools and great teachers make a conscious effort to be close to students; they get into the students' world and provide innovative experiences that make a difference.

Table 1. A synthesis of the research literature for students' ratings of teacher performance

Research study	Support of student evaluations	Nonsupport of student evaluations
Braunstein, Klein, & Pachla (1973) University	Student ratings improve performance.	
Walberg (1974)	Students' perceptions are reliable data.	
Rotem & Glasman (1979) University		Minimal effect on instructional improvement.
Levinson-Rose & Menges (1981) University	Student evaluations improve instruction.	
Driscoll, Peterson, Crow, & Larson (1985) Grades K-3	Young students are reliable evaluators.	
Judkins (1987) K-12	Student feedback is discriminating for teacher evaluation.	
Drews, Burroughs, & Nokovich (1987) University	Students and instructor self-ratings are significantly correlated.	
H. Murray (1987) University	Student evaluations improve instruction.	
McGreal (1988) K-12	Student feedback is reliable.	
Vollmer & Creek (1988) Grades K-3		Perceptions of young children may not be reliable for teacher evaluations.

Table 1. Continued

Research study	Support of student evaluations	Nonsupport of student evaluations
Tollefson, Chen, & Kleinsasser (1989) University	Student ratings do reflect differences in teaching effectiveness.	
Manatt & Omotani (1992) Grades 7-12	Student feedback is discriminating for teacher performance.	
Weber (1992) Grades K-6	Young students are discriminating raters.	
McKeachie & Kulik (1975)	Student feedback will produce positive change in performance.	
Scriven (1990)	Student feedback is useful in rating teachers.	
Hofman & Kremer (1980)		Student/instructor attitudes are biased and influence instructor evaluation.

Table 2. A synthesis of the research literature for self-concept and academic achievement predominance

Research study	Self-concept predominates achievement	Achievement predominates self-concept	No relationship
West & Fish (1973)			Causal relationship is unclear.
Calsyn & Kenny (1977)		Achievement is predominant over self-concept.	
Mintz & Muller (1977)			Low correlations, no causal relationship.
Maruyama, Rubin, & Kingsbury (1981)			No causal relationship.
Byrne (1984)		Self-concept had little influence on achievement (test scores).	
Shavelson & Bolus (1982)	Self-concept over achievement.		
Felson (1984)	Self-concept influences performance.		
Newman (1984)		Self-concept had little influence on achievement (test scores).	

Table 2. Continued

Research study	Self-concept predominates achievement	Achievement predominates self-concept	No relationship
Bachman & O'Malley (1986)		Self-concept influenced by achievement.	
Byrne (1986)			Causal predominance not established.
Marsh (1988, 1990)		Self-concept influences academic achievement.	

Table 3. A synthesis of the research literature for the multidimensionality and the hierarchy of self-concept

Research study	Nonsupport of multidimensionality and hierarchy	Support of multidimensionality and hierarchy
Coopersmith (1967)	Distinct areas cannot be differentiated.	
Primavera, Simon, & Primavera (1974)		Self-esteem related more to academic achievement for girls than boys.
Shavelson, Hubner, & Stanton (1976)		Self-concept divided into academic and nonacademic self-concepts.
Marx, Winne, & Taylor (1977); Marx & Winne (1978)	Distinct areas are not differentiable; distinct areas are not empirically differentiable.	
Soares & Soares (1977)	Self-concept is not hierarchical but taxonomic.	
Rubin (1978)		Self-esteem related to academic achievement more for girls than boys at an earlier age.
Byrne (1979)	Age and sex effect for self-concept not significant.	
Shavelson & Bolus (1982)		Subject-specific facets of self-concept correlated with academic self-concept.

Table 3. Continued

Research study	Nonsupport of multidimensionality and hierarchy	Support of multidimensionality and hierarchy
Marsh, Smith, & Barnes (1983)		Academic ability correlates with academic self-concept.
Marsh, Smith, Barnes, & Butler (1983)		Self-concept is stable; changes are specific.
Marsh, Parker, & Smith (1983)		Academic ability highly correlated with specific academic self-concept.
Marsh, Barnes, Cairns, & Tidman (1984)		Age and sex have significant effect for specific self-concept components.
Marsh, Parker, & Barnes (1985)		Age significantly correlates to self-concept; sex differentiates in specific areas.
Byrne & Shavelson (1987)		Sex differences vary with facet of self-concept.
Marsh, Byrne, & Shavelson (1988)		Sex differences in math, verbal, and school self-concepts correspond to sex differences in math, verbal, and overall school achievements.

Table 4. A synthesis of the research literature for school climate

Research study	Climate influences school improvement	Student feedback influences climate
Duke (1977)		Student perspective help view innovations on recipients.
Houlihan (1988)		Student attitude, self-concept, performance, and relationships are components of climate.
Anderson (1982)	Climate influences student behavior. Little consistency regarding school climate.	
Weinstein (1983)		Students influence outcomes. Beginning to study student point of view of classroom.
Stinson (1993)		Educators should be interested in what and how students perceive classroom.
Purkey & Smith (1983)	When teachers and students are part of decision making, climate improves.	
Fullan (1990)	Change process needs student input.	
Fullan (1991)		Negligible data on what students think about innovations.

Table 4. Continued

Research study	Climate influences school improvement	Student feedback influences climate
Chase (1982)		Little data on student feedback on education.
Gottfred & Hollifield (1988)	Climate assessment stimulates school improvement planning.	
Sweeney (1992)	Need shared beliefs to become the best.	

Literature reinforces utilizing the student perspective to gauge the influence of these classroom innovations as well as instructional behaviors. Student feedback regarding instructional behaviors and a teacher's performance has been found to be valid, reliable, and discriminating. In addition, student feedback provides teachers the information concerning if and how their strategies are affecting their clients both academically and behaviorally. Students can help lead in exploring ways for improvement.

Since many of our current programs have been initiated in order to enhance student behavior and self-esteem, as innovative educators we need to analyze who is affected by these changes and how these changes are specifically influencing the lives of our clients. Educators need to continue to do the important things well and make the necessary changes for continual improvement.

Much has been written on school climate as a critical component of effective schools. The literature on school climate has overwhelmingly supported student input and feedback in decision making. Student feedback into the changes in the school affects a positive school climate, thus influencing student behavior.

This study examines student feedback as a vital component in school improvement. Student perceptions of their teachers, their school, and themselves as learners can provide valuable data for teachers and administrators who seek quality educational programs.

## CHAPTER III. METHODS

This research was designed to study students' ratings of their teachers, their school, and themselves as learners and their critical thinking ability in order to determine the association of gender, attendance, academic status (GPA), and academic achievement (ITED). At the time of the research study, Mason City High School was embarking on an interdisciplinary pilot project for the ninth grade. Five teachers on the Mason City staff of approximately 60 teachers researched and boldly initiated an interdisciplinary studies curriculum that emphasized "learning to learn by learning to think." The project included a 3-hour block of instructional time in which social studies, science, and language arts were taught. The project intended to provide a sense of belonging for the students and a focus on student-centered instruction with teachers and students involved in the learning. It endeavored to engender a means to connect content areas, and provide strategies for experiences with diversity for the 67 out of 330 students in the ninth grade class who volunteered to participate in the pilot project.

The Board of Education of the Mason City School District requested that the pilot project be assessed at the end of the first year. Mason City administration contacted the leaders of the Iowa State University School Improvement Model (SIM) to assist in evaluation of the project. As a means to assess the project, the Cornell Critical Thinking Test and a student feedback questionnaire were administered to ninth grade students voluntarily participating in the project. In addition, the students wrote

an essay designed by the Mason City High School teachers, participated in a problem solving activity which was rated and videotaped by Iowa State University Education Department, and were formally interviewed by trained Iowa State personnel. (See Figure 1.)

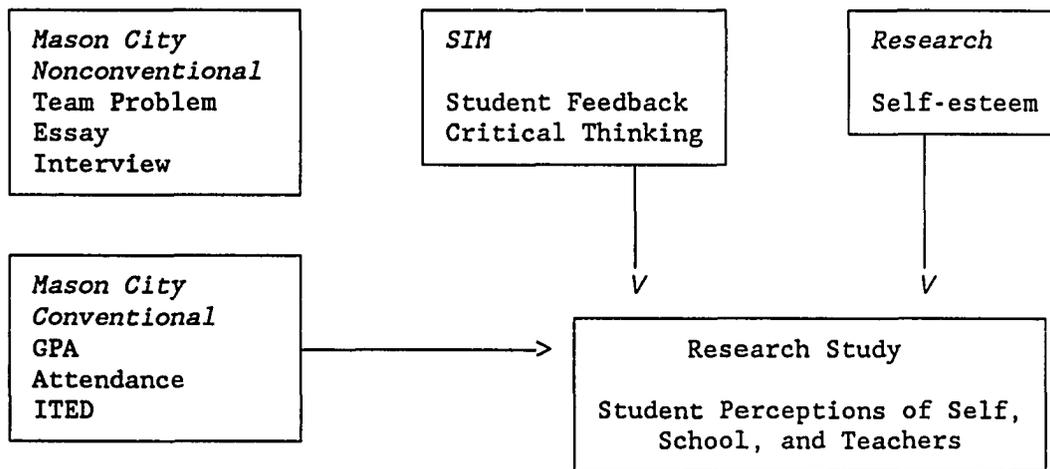


Figure 1. Mason City ninth grade interdisciplinary pilot project components

The results from the Cornell Critical Thinking Test and the student feedback questionnaire were used in this research with information provided by the Mason City staff concerning attendance, grade point average (GPA), and the composite score from the Iowa Test of Educational Development (ITED).

The objectives of the study were: 1) to analyze the student feedback questionnaire items developed by the School Improvement Model (SIM) and the Mason City teachers to determine the discriminating items; 2) to

collect data regarding student perceptions of personnel, school, and self; 3) to determine the relationship between the following: students' perceptions, gender, critical thinking ability, academic status, attendance, and achievement performance; and 4) to ascertain the differences in students' perceptions and critical thinking ability according to their gender, academic status (GPA), attendance, and achievement performance (ITED).

The initial phase of the study involved selecting the critical thinking test and formulating the items for the student feedback questionnaire regarding their teachers, their school, and themselves as learners. The student feedback survey was developed from the School Improvement Model (SIM) research available on student feedback in a total-systems approach for teacher evaluation. After the review of several critical thinking tests, the Cornell Critical Thinking Test was selected by the Mason City High School staff in conjunction with Iowa State School Improvement Model (SIM) personnel.

The second phase of the study was to gather and compute the following data: the student ratings from the questionnaire, the critical thinking test scores, the attendance, grade point average (GPA), and Iowa Test of Educational Development (ITED) composite scores. All items of the student feedback survey were analyzed for their discriminating power using the Menne-Tolsma method. The Cornell Critical Thinking Test was scored by the Mason City staff and coded by the Iowa State School Improvement Model (SIM) staff.

### Sample Selection and Collection of Data

All ninth grade students in Mason City High School who participated in the school's interdisciplinary pilot project were eligible for this study. Only those who received parental permission were participants in this study. The total number of ninth grade students responding to the student feedback survey was 121; 65 of the students were pilot project participants and 56 of the respondents were in a control group. The control group was selected and stratified according to the Iowa Test of Educational Development (ITED) reading and composite scores. The control group was involved because the Menne-Tolsma methodology used for this study requires at least two groups of raters with 15 raters in each group. The current study will serve as baseline data for future research with the Mason City project.

After completion of the first year of the pilot project, the student questionnaire was administered in the spring of 1992 by the Mason City teachers and scored by the Iowa State University scoring service at the Durham Computer Center.

The Cornell Critical Thinking Test was completed by 28 randomly selected pilot project students. Students took the test in the spring of 1992, and the scoring was done by the Mason City teachers. Each item was worth one point, and the percentiles were figured by the Mason City teachers as directed in the manual for the Cornell Critical Thinking Test.

## Instrument Construction

Questionnaire items for the student feedback survey concerning student perceptions of teachers were primarily derived from the School Improvement Model (SIM), which began researching administration and teacher performance appraisal systems approximately 20 years ago. Since 1973, the School Improvement Model (SIM) has steadily improved the student rating forms for K-12 teachers and fostered research for teacher performance evaluation systems (Hidlebaugh, 1973; Judkins, 1987; Omatoni, 1992; Price, 1992; Weber, 1992). Four sets of evaluation instruments are available which have been carefully controlled for reading level, type of response mode, and checked for bias by gender, subject, grade level, required or elective course, and so forth. The instruments have also been useful as part of the overall algorithm for career ladder evaluation systems. Several questionnaire items concerning student perceptions of their school were designed by the teachers of Mason City High School in order to personalize the instrument to Mason City High School's pilot program and to gain specific feedback from the students in the interdisciplinary project.

Two of the items regarding the students' perceptions of self were taken directly from the Self Esteem Questionnaire (SEQ3) published by the Test Analysis and Development Corporation and reviewed by the Mason City staff. The remainder of the items were modified from this source or written by the Mason City teachers. The Self Esteem Questionnaire (SEQ3) provided information on two variables: self-esteem and self/other satisfaction. Self-esteem is defined by the questionnaire as the feeling

a person has that he/she is capable, significant, successful, and worthy. Self/other satisfaction is defined as the level of satisfaction a person has with respect to his/her feelings of self-esteem.

The 20-item questionnaire contained eight items relating to the students' perceptions about their teachers, six items pertaining to the students' perceptions about their school, and six items about the students' perceptions of themselves as learners.

The students' questionnaire used a five-point rating scale for each of the 20 items and were weighted with the following values: 0=Never, 1=Not often, 2=Sometimes, 3=Usually, and 4=Almost always. Thus, a teacher receiving an "almost always" rating on each of the 20 items would receive a total rating of 80. This procedure was used with the previous School Improvement Model (SIM) research.

The Cornell Critical Thinking Test consisted of 71 statements measuring the students' ability in the areas of induction, deduction, value judgment, observation, credibility, assumptions, and meaning. The test was designed for evaluation and use for curriculum and teaching experiments for appraisal of the critical thinking ability of a group and as criteria for program admission and employment. The reliability for the Cornell Critical Thinking Test using the KR 21 method is .90. The 50-minute multiple choice test was administered and scored by the Mason City staff.

### Operational Procedures

Following the administration and completion of the student questionnaire, the questionnaire items were analyzed to determine the discrimination power of each. Table 5 identifies those items that were originally from the School Improvement Model (SIM) program, those that were revised, and those that were authored by the Mason City High School teachers. This classification of source of origin provided a basis for study and determination of 1) whether items from the original SIM research would continue to discriminate when used with a total population, and 2) whether revised or district-written items would possess discrimination power.

The Cornell Critical Thinking Test questions were scored using computer answer sheets and coded for confidentiality. Although there were several areas being tested, there are considerable concept overlaps and interdependence among the various categories tested; therefore, each student received a single score and percentile ranking for the entire test. Standard directions and scoring procedures were used.

### Statistical Procedures

This study utilized a variety of procedures to compute and analyze the data. The following procedures were employed: the Menne-Tolsma methodology, the Cronbach coefficient alpha, the Pearson product-moment correlation, t-tests, and one-way analysis of variance (ANOVA).

Table 5. SIM questionnaire items and Mason City designed items

---

Questionnaire  
item number

---

SIM Items

1. My teachers give assignments related to what we are studying.
2. My teachers tell us how we can use what we have already learned to learn new things.
3. My homework helps me to learn the subject being taught.
4. My teachers use a variety of classroom activities and resources.
5. We work in different groups depending upon the activity in which we are involved.
6. My teachers encourage us to look at problems in new ways and find new ways to solve problems.

Mason City Modified and/or Designed

7. I believe I can learn most things well.
9. I think that I am a successful student.
10. When I work hard in school, I do better in school.
12. I am confident that I can learn.
13. Students feel comfortable in this school.
14. I feel comfortable in this school.
15. Students and teachers work together at our school.
16. This school is a friendly place.
17. Students are accepting of each other in this school.
18. This school treats students fairly.
19. My teachers are interested in me as a person.
20. My teachers are interested in learning themselves.

Self Esteem Questionnaire (SEQ3)

8. Most people who are important to me, who know me, think I do most things well.
  11. I'm satisfied with the way I handle most situations.
-

Menne-Tolsma methodology

Item discrimination power is important to this study to ensure that items on the student feedback survey identify differences between the performance of different groups of teachers. Menne and Tolsma stressed the importance of item discrimination for instruments used to measure characteristics of individuals by means of group or multi-rater responses. They noted that between-group and within-group variances are important characteristics when assessing whether a particular item on a group or multi-rater measuring instrument measures difference. Items which have a pattern of low within-group variance in relationship to the between-group variance are considered to be discriminating items.

The items selected for an instrument must be capable of eliciting similar responses from members of the same group, and eliciting different responses from members belonging to a different group when the groups in question have, in fact, been exposed to or have perceived dissimilar conditions. Performance must be measured before it can be evaluated. One way to ensure that performance has been measured is by making certain that the conditions for meaningful measurement as outlined by Menne and Tolsma (1971) are met.

In order for the Menne-Tolsma procedure to work, there must be a required minimum of 15 raters and there must be at least two groups of raters. The Menne-Tolsma procedure requires that in order for an item to discriminate, a certain minimum percentage of the total sum of squares must be due to the variance between teachers. The minimum percentage sufficient to discriminate at the .05 level is 13%. The minimum

percentage necessary to discriminate at the .01 level is 22%. The 13% figure is determined algebraically as follows:

<u>Source</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>
Between groups	2-1=1	x	x	$\frac{4.20}{1}$
Within groups	2(15-1)=28	100-x		
Total	29	100		

Therefore:

$$\frac{x}{100-x} = \frac{4.20}{28}$$

$$x = 4.20 \frac{100-x}{28}$$

$$28x = (4.20)(100-x)$$

$$28x = 420 - 4.20x$$

$$(28 + 4.20)x = 420$$

$$32.2x = 420$$

$$x = 13.04$$

$$100-x = 86.96$$

#### Cronbach coefficient alpha

The internal consistency of the student feedback instrument was measured using the Cronbach coefficient alpha. The Cronbach alpha reliability coefficient was computed for all criteria which discriminated between performance of teachers at the .05 level of significance. The Cronbach alpha procedure assesses inter-item consistency or homogeneity of the items. It was selected as one appropriate measure because students

were asked to rate their teachers, school, and themselves on a multiple-scored scale. Coefficient alphas greater than  $\pm .70$  often are defined as describing a strong relationship or consistency. Those between  $\pm .30$  and  $.70$  have been defined as a low to moderate relationship, and alphas of less than  $\pm .30$  can be described as weak (Hinkle, Wiersma, & Jurs, 1988).

#### Frequencies, means, standard deviations

Frequencies, means, standard deviations, and percentages were calculated for each of the following: the ITED composite percentile score, the attendance, the grade point average (GPA), the Cornell Critical Thinking Test, and each of the 20 items on the student feedback questionnaire.

In addition, the 20 questionnaire items were categorized into three groups: 1) statements that dealt with students' perceptions of their teachers, 2) statements that dealt with students' perceptions of their school, and 3) statements that dealt with students' perception of themselves as learners. After the means, frequencies, and standard deviations were calculated for each statement, the total group means, standard deviations, frequencies, and percentages were then determined for each of these three categories (see Table 6).

#### Explanation of Variables

The attendance was divided into two categories: those who were absent 10 days or less and those who were absent for more than 10 days. The mean for each of the groups was found by adding the days of attendance

Table 6. The three categories of statements on the student feedback survey

---

Questionnaire  
item number

---

Student Perceptions of Their Teachers

1. My teachers give assignments related to what we are studying.
2. My teachers tell us how we can use what we have already learned to learn new things.
3. My homework helps me to learn the subject being taught.
4. My teachers use a variety of classroom activities and resources.
5. We work in different groups depending upon the activity in which we are involved.
6. My teachers encourage us to look at problems in new ways and find new ways to solve problems.
19. My teachers are interested in me as a person.
20. My teachers are interested in learning themselves.

Student Perceptions of Their School

13. Students feel comfortable in this school.
14. I feel comfortable in this school.
15. Students and teachers work together at our school.
16. This school is a friendly place.
17. Students are accepting of each other in this school.
18. This school treats students fairly.

Student Perceptions of Themselves

7. I believe I can learn most things well.
  8. Most people who are important to me, who know me, think I do most things well.
  9. I think that I am a successful student.
  10. When I work hard in school, I do better in school.
  11. I'm satisfied with the way I handle most situations.
  12. I am confident that I can learn.
-

and dividing by the number of students in each of the two groups.

Frequencies, standard deviations, and percentiles were also determined.

The grade point averages (GPA) were divided into four levels: those with grade point averages less than 2.00, those with grade point averages from 2.00 to 2.99, those with grade point averages from 3.00-3.50, and those with grade point averages from 3.51-4.00. The mean for each of the four levels was calculated by adding the average for the individual and dividing by the number of individuals in that particular level.

Frequencies, standard deviations, and percentiles were determined.

The Iowa Test for Educational Development (ITED) composite percentiles were divided into three levels: high, middle, and low. The low percentile level was from 1-39, the middle percentile level was from 40-69, while the high percentile level was from 70-99. The mean score was found by adding all the scores within each level and dividing by the number of scores in the category.

#### Pearson product-moment correlation

The Pearson product-moment correlation was used to determine the association between the three categories of the student feedback survey and the relationship between these three categories and the other measures: ITED composite percentile, attendance rate, grade point average (GPA), gender, and the Cornell Critical Thinking Test score.

t-tests

A t-test was used to determine the difference in the means for males and females with each of the three student feedback survey categories and the Critical Thinking Test. The total mean score for each of the three categories was found by adding the means of each statement for females and males and dividing by the number of females and males responding. The Critical Thinking Test percentile scores were added together for males and females and divided by the number in each group.

A t-test was used to determine the difference in the means for attendance with each of the three student feedback survey categories and the Critical Thinking Test.

Analysis of variance--A comparison of mean scores of student perceptions

A one-way analysis of variance (ANOVA) was used to determine whether the students' perceptions of their teachers were affected by the level of their grade point average. A one-way analysis of variance (ANOVA) was also used to determine whether the students' perceptions of their school were affected by the level of their grade point average. And a third one-way analysis of variance (ANOVA) was used to determine whether the students' perceptions of themselves as learners were affected by the level of their grade point average. The grade point average was divided into four levels: 1) less than 2.00, 2) 2.00-2.99, 3) 3.00-3.50, and 4) 3.51-4.00. The grand mean for each of the categories (student perceptions of their teachers, student perceptions of their school, and student

perceptions of themselves as learners) was divided by the number of students in the specific level of grade point average.

A one-way analysis of variance (ANOVA) was used to determine how much the levels of the Iowa Test of Educational Development (ITED) affected the perceptions of students concerning their teachers. Another one-way analysis of variance (ANOVA) was used to determine whether the students' perceptions of their school were affected by the levels of the Iowa Test of Educational Development (ITED), and a third one-way analysis of variance (ANOVA) was used to determine whether the students' perceptions of themselves as learners were affected by the levels of the Iowa Test of Educational Development (ITED). The grand mean for each of the student feedback categories (student perceptions of their teachers, student perceptions of their school, and student perceptions of themselves as learners) was divided by the number of students in the specific level of Iowa Test of Educational Development (ITED).

Analysis of variance--A comparison of mean scores of the Cornell Critical Thinking Test

A one-way analysis of variance (ANOVA) was used to determine whether the student percentiles on the Cornell Critical Thinking Test were significantly different because of the levels of the grade point average (GPA). The grade point average was divided into four levels: 1) less than 2.00, 2) 2.00-2.99, 3) 3.00-3.50, and 4) 3.51-4.00. The total mean percentile scores for the Cornell Critical Thinking were obtained by adding the percentiles in each level of grade point average and dividing by the number of students in that level.



sought, that confidentiality of data was assured, and that informed consent was obtained by appropriate procedures.

## CHAPTER IV. FINDINGS

## Introduction

The problem for this study was to design an instrument in order to obtain feedback from students about their perceptions regarding their school, their teachers, and themselves as learners and determine if these perceptions and their critical thinking ability were influenced by their attendance, gender, academic achievement (ITED), and academic status (GPA).

The study involved 65 ninth grade students in Mason City High School. Mason City High School had been piloting a new interdisciplinary program during the 1992-93 school year. For three hours every day, the pilot group of ninth graders was in the interdisciplinary unit consisting of social studies, language arts, and science. As a means to assess the pilot program, the Mason City Board of Education requested that baseline data be gathered to demonstrate progress toward increasing achievement. Data gathered from the following instruments provided baseline information for the interdisciplinary project: a student feedback questionnaire, a student writing assignment, an interview conducted by Iowa State Education Department, a student team-centered problem-solving exercise, the Cornell Critical Thinking Test, student attendance record, grade point average (GPA), and the composite score from the Iowa Test of Educational Development (ITED). This study utilized the results from the student feedback questionnaire, the Cornell Critical Thinking Test, student

attendance, student grade point average (GPA), and the composite score from the Iowa Test of Educational Development (ITED).

Both the students involved in the pilot project and a control group completed a 20-item, five-point Likert-type response mode questionnaire soliciting ratings of their teachers' instructional performance, how they felt about their school, and how they viewed themselves as learners. Two groups of raters with at least 15 members in each group are necessary for data analysis when using the Menne-Tolsma methodology. There were 65 pilot students and 56 control group students completing the survey. The control group students were selected and matched to the pilot students according to their Iowa Test of Educational Development (ITED) reading and composite scores.

Too frequently, educators disregard the potentially critical feedback from students concerning their teachers' performance and instructional innovations, though they are the individuals most directly affected by the instructional effectiveness, ineffectiveness, and innovations. K-12 schools continue to rely on a single appraiser system for teacher evaluation that has proven to be time consuming and has provided little assistance to the teachers (Savage & McCord, 1986). Student ratings at the postsecondary level are a familiar part of the teacher evaluation process; research has supported such a component as valid and reliable.

Information about what students think of specific changes in their educational program is almost nonexistent. If teachers and administrators are concerned about teacher performance in the classroom and the effectiveness of the changes taking place in their schools, it would seem

prudent that they seek student feedback on how these strategies and innovations are affecting the clients of the system both academically and attitudinally. Soliciting input from clients is a vital component in the efforts for continual progress in business, industry, and the public sector; it is time that the educational organizations follow their lead and actively pursue client feedback.

This chapter will report the results of statistical tests related to each research question under study and will display the findings of the statistical tests in table form. The questionnaire used for the data collection can be found in Appendix B.

#### Item Discrimination Questionnaire

Research Question 1: What items taken from the Hidlebaugh and Judkins' surveys are discriminating given to two groups of students and addressing a group of teachers?

Research Null Hypothesis 1: There will be no significant difference in the discriminating power of the items on the student feedback survey when 65 students from the pilot group and 56 students from the control group participate in the survey regarding ninth grade teachers.

In determining whether the items on the Hidlebaugh and Judkins' surveys have discriminating power when given to two groups of students and addressing a group of teachers rather than an individual, the Menne and Tolsma methodology (1971) was applied to all items on the questionnaire (Appendix C). This statistical analysis identified questionnaire items which discriminated at the .05 level of significance and identified which

items had a between groups variance equaling or exceeding 22%, thus discriminating at the .01 level of significance.

Data analysis based on the Menne and Tolsma methodology (1971) for determining discrimination power indicated that a total of three items had a sum of squares between groups variance equal to or exceeding 13% of the total sums of squares variance. The between groups variance was determined by using both the pilot group and a control group. Membership in the control group was matched to the pilot group according to their Iowa Test of Educational Development (ITED) reading and composite scores. With the number of participating students (65 pilot and 56 control) and the number of teachers (60) for whom data were analyzed, it is believed that the items identified as discriminating in this study are representative of items that when answered by two groups of students can and do measure differences.

Thus, three items of the 20-item survey discriminated at the .05 level; all described teacher instructional behavior. Of the three that discriminated at the .05 level, all three were from the previous SIM work. None discriminated at the .01 level of significance. Though only three items were discriminating using the Menne-Tolsma method, the remaining items do indicate more agreement than disagreement of attitudes for all the participants, regardless of whether they were members of the pilot or control group, toward their teachers, their school, and themselves as learners. Specifically, item 4 (My teachers use a variety of classroom activities and resources), item 5 (We work in different groups depending upon the activity in which we are involved), and item 6 (My teachers

encourage us to look at problems in new ways and find new ways to solve problems) discriminated at the .05 level of significance.

Research Question 2: What items on the student feedback instrument which were from the Self Esteem Questionnaire or designed by the teachers will be discriminating?

Research Null Hypothesis 2: There will be no significant differences between the control group and the pilot group in the discriminating power of the items taken from the Self Esteem Questionnaire and the other items designed by the teachers on the student feedback instrument.

Though none of the items from the Self Esteem Questionnaire (Appendix D) or those authored or modified by the Mason City staff dealing with student perceptions of their school, teachers, or themselves as learners discriminated at the .05 level of significance, there were important findings in these data. The students in the pilot group and the students in the control group generally in agreement regarding their perceptions of their teachers, their school, and themselves as learners. Regardless of the educational structure or program in the ninth grade, students have similarly perceived their teachers' performance, their school, and themselves as learners (Table 7).

This study's additional statistical procedures were conducted with the pilot students only; the control group was not included in the subsequent data analyses. Prior to statistical analysis of the study involving the 65 pilot students, the reliability was tested for the 20-item questionnaire. The questionnaire, which used a five-point Likert

Table 7. Item discrimination values in percent for the student feedback questionnaire

Item number	Item	Item discrimination in percent
<u>Hidlebaugh and Judkins Survey Items</u>		
1	My teachers give assignments related to what we are studying.	0
2	My teachers tell us how we can use what we have already learned to learn new things.	8
3	My homework helps me to learn the subject being taught.	2
4	My teachers use a variety of classroom activities and resources.	19 <sup>a</sup>
5	We work in different groups depending upon the activity in which we are involved.	16 <sup>a</sup>
6	My teachers encourage us to look at problems in new ways and find new ways to solve problems.	29 <sup>a</sup>
<u>Items from the Self Esteem Questionnaire and Mason City Staff</u>		
7	I believe I can learn most things well.	0
8	Most people who are important to me, who know me, think I do most things well.	0
9	I think that I am a successful student.	0
10	When I work hard in school, I do better in school.	0
11	I'm satisfied with the way I handle most situations.	2
12	I am confident that I can learn.	0
13	Students feel comfortable in this school.	0
14	I feel comfortable in this school.	0
15	Students and teachers work together at our school.	0
16	This school is a friendly place.	2
17	Students are accepting of each other in this school.	0
18	This school treats students fairly.	0
19	My teachers are interested in me as a person.	0
20	My teachers are interested in learning themselves.	2

<sup>a</sup>Item discrimination above 13%.

scale, was divided into three categories: eight statements that dealt with the students' perceptions of their teachers, six statements that dealt with the students' perceptions of their school, and six statements that dealt with the students' perceptions of themselves as learners. The internal consistency of each category was measured using the Cronbach coefficient alpha which assesses the inter-item consistency.

For the statements describing the perceptions of themselves as learners, the alpha was .89 with an inter-item correlation mean of .56. For the statements regarding perceptions of their school, the alpha was .86 with the inter-item correlation mean of .51. For the statements regarding perceptions of their teachers, the alpha was .78 and the inter-item correlation mean was .31.

A reliability alpha above .70 is considered a strong reliability. The statements in each of the three categories had a high reliability alpha, which meant that the statements in each category were consistent with each other or homogenous. This high alpha allowed using an additive score for the total mean of the category in further statistical analyses (Table 8).

Research Question 3: What is the relationship between the pilot students' perceptions of self, school, teachers; and gender, their attendance, achievement performance (ITED), academic status (GPA), and critical thinking ability?

Research Null Hypothesis 3: There will be no relationship in the pilot students' perceptions of self, their school, their teachers; and

Table 8. Reliability analysis of the student feedback questionnaire for the pilot students<sup>a</sup>

Item number	Item	Mean	S.D.	N
<u>Statements relating to student perceptions of school</u>				
13	Students feel comfortable in this school.	2.62	.91	65
14	I feel comfortable in this school.	2.89	.94	65
15	Students and teachers work together at our school.	2.48	.84	65
16	This school is a friendly place.	2.35	.90	65
17	Students are accepting of each other in this school.	2.10	.87	65
18	This school treats students fairly.	2.29	.89	65
Inter-item correlations		.51		
Alpha		.86		
<u>Statements relating to student perceptions of teachers</u>				
1	My teachers give assignments related to what we are studying.	3.25	.82	65
2	My teachers tell us how we can use what we have already learned to learn new things.	2.60	.99	65
3	My homework helps me to learn the subject being taught.	2.32	.91	65
4	My teachers use a variety of classroom activities and resources.	2.87	.89	65
5	We work in different groups depending upon the activity in which we are involved.	2.82	1.13	65
6	My teachers encourage us to look at problems in new ways and find new ways to solve problems.	3.21	.94	65
19	My teachers are interested in me as a person.	2.40	.87	65

<sup>a</sup>Rating: 0=Never; 1=Not often; 2=Sometimes; 3=Usually; 4=Almost always.

Table 8. Continued

Item number	Item	Mean	S.D.	N
20	My teachers are interested in learning themselves.	2.43	1.01	65
Inter-item correlations		.31		
Alpha		.78		
<u>Statements relating to student perceptions of self</u>				
7	I believe I can learn most things well.	2.97	.97	65
8	Most people who are important to me, who know me, think I do most things well.	2.89	.86	65
9	I think that I am a successful student.	3.00	.93	65
10	When I work in school, I do better in school.	3.03	.97	65
11	I'm satisfied with the way I handle most situations.	2.73	.77	65
12	I am confident that I can learn.	3.33	.92	65
Inter-item correlations		.56		
Alpha		.89		

gender, their attendance, their academic status (GPA), their achievement performance (ITED), and their critical thinking ability.

A review of the perceptions of the students and the correlation of the perceptions with other instruments was used. In order to determine if there was a relationship between any of the three components of the questionnaire and the other instruments, a Pearson product-moment correlation was used.

One method of examining the Pearson correlation is by looking at the strength of the relationship. Correlations greater than  $\pm .70$  often are defined as describing a strong relationship. Correlations of between  $\pm .30$  and  $.70$  have been defined as a moderate relationship, and correlations of less than  $\pm .30$  can be described as weak or having no relationship (Hinkle, Wiersma, & Jurs, 1988).

This study found several significant and positive correlations between the students' perceptions and the other variables used in the study: gender, Iowa Test of Educational Development (ITED), attendance, grade point average (GPA), and the Cornell Critical Thinking Test. Students' perceptions of their teachers had a high, significant, and positive correlation with the students' perception of their school and themselves as learners. There were moderate, positive, but significant correlations between perceptions of themselves as learners and both their perceptions of their school and their performance on the Iowa Test of Educational Development (ITED) as measured by the composite score. As the means for the students' perceptions of their teachers increased, so did their means for perceptions of themselves as learners and their

perceptions of their school. As the means for students' perceptions of themselves as learners increased, so did the means indicating their feelings or perceptions of their school. As the means for perceptions of themselves as learners became greater, their performance on the Iowa Test of Educational Development improved.

Attendance, grade point average (GPA), gender, and their percentile on the Cornell Critical Thinking Test had no significant linear correlation to their perceptions regarding their teachers, their school, or to themselves as learners. Generally, research findings support the association of self-esteem and academic status (Sheirer & Kraut, 1979; Hansford & Hattie, 1982; Marsh, 1990; Felson, 1984; Shavelson & Bolus, 1982); that is, a positive self-concept helps students to perform better in school and their improved performance helps to build a positive self-concept. However, some researchers (Mintz & Muller, 1977) do not support the relationship between self-esteem and academic performance. In addition, recent research on gender and self-concept (The AAUW Report, 1992) finds that a loss of self-confidence in girls is twice that for boys as they move from childhood to adolescence.

Research Question 4: What is the relationship between the following: the pilot students' attendance, gender, their academic achievement as measured by the Iowa Test of Educational Development (ITED), their academic status as measured by their grade point average (GPA), and critical thinking ability?

Research Null Hypothesis 4: There will be no relationship between the pilot students' attendance, gender, their academic achievement (ITED), their academic status (GPA), and their critical thinking ability.

The students' academic status as measured by their grade point average (GPA) had a moderate, positive, but significant correlation with three of the variables: their academic achievement as measured by the Iowa Test of Educational Development (ITED), the students' attendance rate, and the percentile score for the Cornell Critical Thinking Test. As grade point averages increased, so did the days of attendance and the scores on both the Iowa Test of Educational Development and the Cornell Critical Thinking Test. Therefore, when attendance improved, so did their academic achievement (ITED) and their academic status (GPA). The Cornell Critical Thinking Test scores also had a moderate, positive, but significant correlation with the Iowa Test of Educational Development (ITED); therefore, as the Cornell Critical Thinking Test scores increased, so did the scores for the Iowa Test of Educational Development. Gender had no significant correlations with grade point average (GPA), the percentile on the Cornell Critical Thinking Test, or the Iowa Test of Educational Development (ITED) (Table 9).

Research Question 5: Do gender, achievement performance (ITED), academic status (GPA), and attendance make a difference in the pilot student's critical thinking ability and perceptions of self, school, and teachers?

Table 9. Pearson product correlations between the pilot students' perception of their school, their teachers, themselves as learners, their attendance, gender, their achievement (ITED), their academic status (GPA), and critical thinking<sup>a</sup>

	Perception of teachers	Perception of school	ITED	Attend- ance	GPA	Gender	Cornell Critical Thinking Test
Perception of self	.64**	.72**	.37**	-.05	.25	-.06	.28
Perception of teachers		.67**	.09	-.09	.03	.14	.27
Perception of school			.16	-.00	.08	-.08	.12
ITED				.02	.64**	-.11	.63**
Attendance					.35**	-.10	.13
GPA						.11	.63**
Gender							.08
Cornell Critical Thinking Test							

<sup>a</sup>Rating: 0=Never; 1=Not often; 2=Sometimes; 3=Usually; 4=Almost always.

\*\*Indicates items which discriminate at the .01 level of significance.

Research Null Hypothesis 5: There will be no difference in the pilot student's critical thinking ability and perceptions of self, school, and teachers because of gender, achievement performance, academic status, and attendance.

t-tests

The 20 questionnaire items were categorized into three groups:

- 1) statements that dealt with students' perceptions of their teachers,
- 2) statements that dealt with students' perceptions of their school, and
- 3) statements that dealt with students' perceptions of themselves as learners.

After the means and standard deviations were calculated for each statement, the total group means and standard deviations were determined for each category. There were no significant differences between males and females regarding their perceptions of their teachers, their school, and themselves as learners; however, there seemed to be more variability with the females than the males in the areas of self-perception and perceptions about school. There were no significant differences in the scores for males and females on the Cornell Critical Thinking Test; the variability of the scores on the Cornell Critical Thinking Test seemed to be somewhat greater for the males than the females (Table 10).

Table 10. Means, standard deviations for males and females regarding student perceptions and their critical thinking scores<sup>a</sup>

	Males			Females			t
	Mean	S.D.	N	Mean	S.D.	N	
Self	3.10	.41	26	3.03	.76	33	.46
Teachers	2.70	.48	26	2.84	.49	33	-1.05
School	2.58	.51	26	2.47	.71	33	.61
Thinking	48.90	7.70	10	50.00	6.42	16	-.39

<sup>a</sup>Rating: 0=Never; 1=Not often; 2=Sometimes; 3=Usually; 4=Almost always.

There were no significant differences in the students' perceptions of their school, teachers, and themselves as learners for either the students who had been absent for 10 or less days or those who had been absent more than 10 days (Table 11).

Table 11. Means, standard deviations, and F value for student perceptions for school, teachers, and themselves as learners and the attendance<sup>a</sup>

	<u>Absent more than 10 days</u>			<u>Absent 10 days or less</u>			t
	Mean	N	S.D.	Mean	N	S.D.	
Self	2.98	10	.66	3.07	49	.62	-.40
Teachers	2.82	10	.48	2.78	49	.48	.29
School	2.52	10	.69	2.51	49	.62	.01
Thinking	46.75	4	7.14	50.09	22	6.79	-.90

<sup>a</sup>Rating: 0=Never; 1=Not often; 2=Sometimes; 3=Usually; 4=Almost always.

#### One-way analysis (ANOVA)

In order to determine if differences exist between mean ratings of students' perceptions within the four levels of grade point average, a one-way analysis (ANOVA) was used. Table 12 describes the means, standard deviations, F ratio, and probability for each grade point average category.

As illustrated in Table 12, the analysis of variance (ANOVA) produced an F ratio of .89 with an F probability of .45 for students' perceptions of their teachers, indicating that there were no significant differences

Table 12. Means, standard deviations, F value, probability for student perceptions of their teachers, school, and self using grade point average categories<sup>a</sup>

	Group	N	Mean	S.D.	F ratio	Probability		
Teachers	1	5	3.02	0.56	0.89	0.45		
	2	10	3.61	0.33				
	3	21	2.76	0.58				
	4	23	2.83	0.42				
					Source	df	Sum of squares	Mean squares
					Between groups	3	.62	.21
					Within groups	55	12.90	.23
Self	1	5	3.00	0.77	3.05*	0.04		
	2	10	2.73	0.66				
	3	21	2.92	0.68				
	4	23	3.33	0.41				
					Source	df	Sum of squares	Mean squares
					Between groups	3	3.21	1.07
					Within groups	55	19.27	0.35

<sup>a</sup>Rating: 0=Never; 1=Not often; 2=Sometimes; 3=Usually; 4=Almost always.

\*Indicates discrimination at the .05 level.

Table 12. Continued

	Group	N	Mean	S.D.	F ratio	Probability												
School	1	5	2.67	0.85	1.00	0.40												
	2	10	2.30	0.45														
	3	21	2.43	0.69														
	4	23	2.65	0.58														
					<table border="1"> <thead> <tr> <th>Source</th> <th>df</th> <th>Sum of squares</th> <th>Mean squares</th> </tr> </thead> <tbody> <tr> <td>Between groups</td> <td>3</td> <td>1.17</td> <td>0.39</td> </tr> <tr> <td>Within groups</td> <td>55</td> <td>21.46</td> <td>0.39</td> </tr> </tbody> </table>		Source	df	Sum of squares	Mean squares	Between groups	3	1.17	0.39	Within groups	55	21.46	0.39
Source	df	Sum of squares	Mean squares															
Between groups	3	1.17	0.39															
Within groups	55	21.46	0.39															
Cornell	1	1	39.00	0.00	4.35**	0.01												
	2	3	43.33	0.58														
	3	11	48.18	6.74														
	4	11	53.64	5.22														
					<table border="1"> <thead> <tr> <th>Source</th> <th>df</th> <th>Sum of squares</th> <th>Mean squares</th> </tr> </thead> <tbody> <tr> <td>Between groups</td> <td>3</td> <td>431.50</td> <td>143.83</td> </tr> <tr> <td>Within groups</td> <td>55</td> <td>726.85</td> <td>33.04</td> </tr> </tbody> </table>		Source	df	Sum of squares	Mean squares	Between groups	3	431.50	143.83	Within groups	55	726.85	33.04
Source	df	Sum of squares	Mean squares															
Between groups	3	431.50	143.83															
Within groups	55	726.85	33.04															

\*\*Indicates discrimination at the .01 level.

at the .05 level among the four categories of academic status as measured by their grade point average (GPA).

The analysis of variance (ANOVA) for students' perceptions of self as learner resulted in an F ratio of 3.05 and an F probability of .04, indicating that there were significant differences at the .05 level within the four categories of academic status (GPA). Recent research findings would corroborate that a student's self-concept does make a difference in the student's grade point average.

Table 12 also indicates that there were no significant differences in student perceptions of their school and their grade point average (GPA), since the F ratio is 1.00 and the F probability is .40.

The analysis of variance (ANOVA) also indicates that the mean ratings for the Cornell Critical Thinking Test significantly differentiate for the four categories of the grade point average (GPA); however, the membership in group 1 is small and may not determine the accurate results conclusively.

In other words, when the students' mean ratings of teacher and school were analyzed by their grade point average (GPA), the students' ratings were not significantly affected by their level of academic status (GPA). However, the students' mean ratings of themselves as learners indicated that their level of academic status (GPA) seems to be associated with their perceptions of self. Due to the small number in the Cornell Critical Thinking Test, no conclusion can be determined.

A second analysis was used to determine significant differences for the student perceptions of teacher, school, and self as learner using

academic achievement as measured by their Iowa Test of Educational Development (ITED) composite scores. According to Table 13, there were significant differences between the students' perception of self as learner and their composite score on the Iowa Test of Educational Development (ITED). As indicated in the table, the F ratio is 5.58 with an F probability of .00. Those with low scores (below the 40th percentile) and those with high scores (above the 70th percentile) had significantly different perceptions of self as learner. These results are interesting and contrary to other research, because according to the findings of several researchers (Byrne, 1984; Newman, 1984), prior academic self-concept has no causal influence on subsequent test scores.

Table 13 illustrates that there were no significant differences at the .05 level between the mean ratings of student perceptions of their teachers and the student perceptions of their school for the three categories of the Iowa Test of Educational Development (ITED). The F ratio for the student perceptions of their teachers is 1.88 and the F probability is .16, while the F ratio for student perceptions of their school is 2.28 and the F probability is .11.

There were significant differences at the .05 level of significance between how students performed on the Cornell Critical Thinking Test and their academic achievement as measured by their Iowa Test of Educational Development (ITED) composite score. Those who were in the low category (percentile less than 40) and those who scored in the high category (percentile above 70) had significantly different means on the Cornell

Table 13. Means, standard deviations for student perceptions of their teachers, self, and school, thinking score, and ITED<sup>a</sup>

	Group	N	Mean	S.D.	F ratio	Probability		
Teachers	1	19	2.64	0.33	1.88	0.16		
	2	20	2.93	0.64				
	3	20	2.77	0.39				
					Source	df	Sum of squares	Mean squares
					Between groups	2	0.85	0.43
					Within groups	56	12.67	0.23
Self	1	19	3.69	0.63	5.58**	.00		
	2	20	3.20	0.68				
	3	20	3.26	0.39				
					Source	df	Sum of squares	Mean squares
					Between groups	2	3.74	1.87
					Within groups	56	18.74	0.33
School	1	19	2.28	0.51	2.28	.11		
	2	20	2.69	0.77				
	3	20	2.56	0.52				
					Source	df	Sum of squares	Mean squares
					Between groups	2	1.70	0.85
					Within groups	56	20.92	0.37

<sup>a</sup>Rating: 0=Never; 1=Not often; 2=Sometimes; 3=Usually; 4=Almost always.

\*\*Indicates discrimination at the .01 level.

Table 13. Continued

	Group	N	Mean	S.D.	F ratio	Probability		
Cornell	1	7	44.00	7.53	5.07**	.02		
	2	13	50.46	4.67				
	3	6	54.17	6.37				
					Source	df	Sum of squares	Mean squares
					Between groups	2	354.28	177.14
					Within groups	23	804.06	34.96

Critical Thinking Test. The F ratio was 5.07 and the F probability was .02.

In summary, when students' mean ratings of their teachers and their school were correlated by their Iowa Test of Educational Development (ITED) composite score, the students' mean ratings were not significantly associated with their ITED score. However, the students' mean ratings of themselves as learners and their Cornell Critical Thinking Test score may be related to their Iowa Test of Educational Development (ITED) score.

CHAPTER V. SUMMARY, CONCLUSIONS, LIMITATIONS,  
DISCUSSION, AND RECOMMENDATIONS

Summary

The focus of this study, conducted in the spring of 1993, was to create an instrument that would examine the students' perceptions of their teachers, their school, and themselves as learners and to determine if these student perceptions were associated with their gender, their critical thinking ability, their academic status (GPA), and their academic achievement (ITED). The survey was adapted from the Self Esteem Questionnaire (SEQ3) published by the Test Analysis and Development Corporation, earlier studies by the School Improvement Model (SIM), and those authored by the Mason City staff.

The purposes of the research were to 1) identify those items from the original Hidlebaugh and Judkins' studies that continue to be discriminating when administered to members of a single grade level for a group of teachers, 2) identify those items on the student feedback survey developed by Mason City teachers or the Self Esteem Questionnaire (SEQ3) that are discriminating, 3) determine the relationship between student perceptions of their school, their teachers, and themselves as learners, and their gender, academic status, academic achievement, attendance, and their critical thinking ability, 4) describe the association between the attendance, academic achievement (ITED), academic status (GPA), and critical thinking ability, 5) determine if attendance, gender, academic achievement (ITED), and academic status (GPA) make a difference in students' perceptions of teachers, school, and themselves.

This study involved 65 ninth grade students from Mason City High School voluntarily participating in a pilot project characterized by an interdisciplinary approach to the instructional program. The pilot project was characterized by "learning to learn by learning to think" and placed an emphasis on connectedness among content areas, teachers, and students as learners, and a sense of belonging to a group or team.

Both the pilot group and a control group completed a questionnaire using a five-point Likert-type scale to rate their perceptions of their teachers, their school, and themselves as learners. The questionnaire contained 20 items; eight of the items dealt with teacher performance, while six dealt with student perceptions of the school and six dealt with their perceptions of self. Two groups of raters are required for data analysis when using the Menne and Tolsma methodology (1971) to determine item discrimination power for the questionnaire. The control group was selected and matched to the pilot group according to their Iowa Test of Educational Development (ITED) reading and composite scores. The control group was used for determination of discrimination power of the items; only data from the pilot group were used in the other statistical analyses. Items which discriminated at the .05 level of significance were identified. The data were further analyzed utilizing Pearson product-moment correlation, t-test, and tests of one-way analysis of variance (ANOVA).

Item discrimination analysis

1. Three of the eight items on the student feedback survey discriminated significant differences between the pilot and the control groups in teacher performance for a group of teachers. All three of the statements were from the original Hidlebaugh and Judkins' survey for teacher evaluation. The three items were: item 4 (My teachers use a variety of classroom activities and resources), item 5 (We work in different groups depending upon the activity in which we are involved), and item 6 (My teachers encourage us to look at problems in new ways and find new ways to solve problems). The students in the pilot group did identify the teacher behaviors that seemed to characterize the pilot project such as working in groups, a use of a variety of resources and looking at problems in different ways or creative/critical thinking.

2. None of the items authored by the Mason City High School teachers or from the Self Esteem Questionnaire (SEQ3), published by the Test Analysis and Development Corporation and reviewed by the Mason City staff, significantly discriminated at the .05 level of significance. The Self Esteem Questionnaire (SEQ3) provided information on two variables: self-esteem and self/other satisfaction. Self-esteem is defined as the feeling a person has that he/she is capable, significant, successful, and worthy. Self/other satisfaction is defined as the level of satisfaction a person has with respect to his/her feelings of self-esteem.

Correlations for student perceptions and other variables

1. There was a significant, positive correlation between how students view themselves as learners and their perceptions of their teachers, their school, and their academic achievement as measured by the ITED. There was a significant, positive correlation between how students view their teachers and their school.

2. There was a significant, positive correlation between their academic status (GPA) and their academic achievement (ITED), attendance, and the performance on the Cornell Critical Thinking Test. In addition, there was a significant and positive correlation between the academic achievement and the Cornell Critical Thinking Test.

3. Gender was not significantly correlated with any of the variables: student perceptions of teachers, school, and themselves as learners, their Iowa Test of Educational Development (ITED), their grade point average (GPA), attendance, and Cornell Critical Thinking Test.

Differences in gender, GPA, ITED, attendance

1. There was no significant difference in males and females regarding their perceptions of their teachers, their school, and themselves as learners. Gender was also not associated with the scores on the Cornell Critical Thinking Test.

2. The students' academic status as measured by the grade point average (GPA) and their academic achievement as measured by the composite score on the Iowa Test of Educational Development (ITED) did not have a strong relationship to their perceptions of their teachers nor their

school; however, perceptions of themselves as learners and their critical thinking ability as measured by the Cornell Critical Thinking Test seemed to be associated with their academic status level (GPA) and their academic achievement as measured by their composite score on the Iowa Test of Educational Development (ITED).

### Conclusions

1. Using the Menne and Tolsma methodology, three items on the survey were able to discriminate for a group of teachers. These items were all from the original SIM survey measuring teacher performance. Ninth grade students are capable of providing student feedback that can discriminate the performance of a group of teachers. Students involved in the pilot project were able to assess their teachers with higher means than the control group in using a variety of resources and activities, using different groupings, and viewing problems in different ways.

2. None of the items authored by the Mason City staff or from the Self Esteem Questionnaire was found to discriminate for the group of teachers. Further revision of the instrument when used for evaluation purposes is necessary to determine items that will discriminate; however, the fact that these items did not discriminate does not mean that they are poor items, nor that the students cannot discriminate. It does indicate that the students are in consensus.

3. Both the students in the pilot group and the control group similarly perceived 17 of 20 items on the feedback instrument concerning the relevancy and importance of assignments, the acceptance and

comfortability within their school community, viewing themselves as learners and their teachers as learners. It is apparent that the majority of ninth grade students are in agreement about their teachers, school, and self-esteem regardless of the group or educational program in which they were involved.

4. The pilot students who think highly of themselves as learners, that is, they had a positive self-concept, also think highly of their teachers and of their school. In addition, when they liked their teachers, they subsequently liked their school and felt comfortable at school.

5. The pilot students who have a positive self-concept also perform better academically as measured by the standardized tests such as Iowa Test of Educational Development (ITED) and the Cornell Critical Thinking Test. Their attitudes about their teachers and their school were not associated with their performance on the ITED and Cornell Critical Thinking Test. Therefore, self-concept is important in how students perform on the standardized measures used in schools today.

6. When the students' performance on the Iowa Test of Educational Development (ITED) was high, so was their performance on the Cornell Critical Thinking Test and their academic status as measured by their grade point average (GPA). The students who performed well on standardized tests or achieved academically also do well in class work which is their academic status. The student academic performance on the ITED as measured by their composite score was positively correlated to both their academic status as measured by their grade point average (GPA)

and their score on the Cornell Critical Thinking Test. As the Iowa Test of Educational Development scores increased, the grade point averages and the scores on the Cornell Critical Thinking Test also increased.

7. Gender made no difference in student attitudes toward self-concept nor their perceptions about their teachers and their school. Both males and females feel good about themselves at Mason City High School, and they like their teachers and their school. There was no significant difference in the mean scores for males and females for the statements regarding student perceptions of themselves as learners and the statements regarding the student perceptions of their teachers and their school.

8. Student attitudes toward their teachers, their school, or themselves as learners were not associated to attendance. Regular attendance or poor attendance did not seem to be a factor in student attitudes. There was no significant difference in mean ratings for those who missed 10 days or less and those who were absent more than 10 days.

9. Students who attended school more regularly received higher grade point averages (GPA) than students with poorer attendance; therefore, if students have good school attendance, their academic status as measured by their grade point average will be better than those who have poorer attendance. The students' attendance was correlated only with their grade point average (GPA), so an increase in the rate of attendance corresponded with an increase in the grade point averages. Attendance did not make a difference with gender; male and female attendance rates were not significantly different.

10. Attendance and gender did not seem to make a difference in the students' performance on the Cornell Critical Thinking Test. Both males and females have good critical thinking ability and perform equally well when given tasks that require these skills. The total mean for the 28 randomly selected students from the pilot group was 47.67, with 43% of the students at the 90th percentile or better. There was no significant difference in the mean ratings of the Cornell Critical Thinking Test for either the males and females or for those who were absent 10 or less days or more than 10 days; however, the limited number in the cell of more than 10 days may have affected the results.

#### Limitations

Certain limitations, due to design, were imposed on this study.

These limitations were:

1. All students and teachers were from a single school and grade level. Further study of student perceptions would garner feedback from a variety of schools in size, location, and educational organization.

2. The performance level of the teachers was not assessed independent of the questionnaire results, i.e., the investigation focused on the instrument items and a comparison of students' ratings on the items.

3. No attempt was made to determine whether students' academic performance level in specific content areas was associated with the ratings of teachers for specific subject areas. Much research has been written regarding specific academic performance and teacher evaluation.

4. Teachers were rated by only two groups of at least 15 students.
5. Not all the Hidlebaugh (1973) and Judkins' (1987) criteria were included in the instrument.
6. This study was conducted at the end of the first year of the new pilot program in Mason City. It is possible that results could have been influenced by the membership of 65 students in the pilot program.
7. Sample size was small and students participated on a voluntary basis.
8. The self-esteem instrument did not measure specific academic self-concept for any content areas such as math, language arts, social studies, or science.
9. Attendance was used as two discrete variables, rather than a continuous variable.

#### Discussion

This research examined the discrimination power of the perception ratings of high school students to evaluate a single group of teachers. The current study, using the selected items from the student feedback survey of Hidlebaugh and Judkins, resulted in similar findings to the 1992 Omotani study, which concluded that high school students can indeed make valid, reliable, and discriminating judgments of individual teacher performance. Three of the original six survey items continued to discriminate when two groups of students evaluated the performance of a group of teachers rather than individual teachers. Therefore, student feedback, as part of the evaluation process for a group of teachers,

should be considered an important component in evaluation. Though 17 of the 20 items didn't have discrimination power, it doesn't mean that the items were poor or invalid or that the students were unable to discriminate. It does indicate that the students were in consensus on the items regarding their perceptions of their teachers, their school, and themselves as learners.

Another research study closely related to this study was conducted by the Search Institute (May 1994). This research study was prepared for the Lutheran Brotherhood RespecTeen program for the purpose of examining the attitudes and behaviors of 573 sixth through ninth grade students and gathering data for drug and alcohol use reporting. The report identifies assets and deficits in students' lives that influence their ability to make positive choices, describes grade and gender differences in these areas, examines how these assets and deficits are linked to 20 types of behaviors that compromise students' health and/or jeopardize their future. A summary of the report indicated that the students' view of a positive school climate was about the same for males and females, but generally lower at the ninth grade level than the other grade levels. Students' achievement motivation (viewing themselves as successful learners) was also about the same for males and females. Overall ninth grade students had lower achievement motivation than sixth, seventh, and eighth grade students, but about the same achievement motivation as the other high school students. Organizations interested in student attitudes and behaviors should use various student feedback surveys and comparative data

from different sources to strengthen the results and better guide new programs or innovations.

#### Pilot students' perceptions of their teachers

This study's findings indicated that pilot students' perceptions of their teachers' performance was not associated with any of the following: their academic achievement, as measured by the composite score on the Iowa Test of Educational Development (ITED); their academic status, as measured by their grade point average (GPA); their attendance; and their gender. Researchers (Tollefson, Chen, & Kleinsasser, 1989; Drews, Burroughs, & Nokovich, 1987) have previously demonstrated that student ratings reflect teaching effectiveness and are not biased by other factors such as academic achievement or academic status. This study would corroborate such findings. The pilot students' perceptions of their teachers were, however, significantly and positively related to their perceptions of their school and their perceptions of how they feel about themselves as learners. As the means for the perceptions of teachers increased, the means for both the perceptions of their school and themselves as learners increased. Therefore, if the students felt positively about their teachers, they felt positively about their school and themselves as learners. The pilot students' perceptions of their teachers' instructional behavior were very positive. On a scale with 4.0 ("Almost always") being the maximum and 2.0 indicating "Sometimes" and 3.0 indicating "Usually," the range of means for the statements regarding student perceptions of their teachers was from 2.32 (My homework helps me

to learn the subject being taught) to 3.25 (My teachers give assignments related to what we are studying).

#### Pilot students' perceptions of themselves as learners

Students' perceptions of themselves as learners were positively related to their perceptions of their teachers, their perceptions of their school, and their academic achievement as measured by the Iowa Test of Educational Development (ITED). As the means for student perceptions of themselves as learners increased, so did the means for perceptions of teachers and school and their means for the Iowa Test of Educational Development. When students feel good about themselves as learners, they perform better on the ITED and feel good about their teachers and school. There was no correlation between their perceptions of themselves as learners and their grade point average (GPA), attendance, gender, and their critical thinking ability. Their self-esteem was related to the level of their grade point average, though the number in the cell containing the lowest grade point average was small. There were only five members in this category.

The findings of this research support Shavelson, Hubner, and Stanton (1976), who suggest that students' perceptions are formed through experiences with and interpretation of one's environment and are influenced especially by reinforcements, evaluations by significant others, and one's attributions for one's own behavior. It would seem that teachers, as significant others, and the school climate are important in producing a positive relationship for how students feel about themselves

as learners and how they feel about their school and school personnel. The results also reinforce other research studies (Friedland & Stan, 1992; Byrne, 1986; Sheirer & Kraut, 1979) that find a strong relationship between self-esteem and achievement and that students who feel good about themselves and their abilities are the ones most likely to succeed, though some researchers (Mintz & Muller, 1977) refute the association between self-esteem and achievement.

The students were very positive about themselves as learners. On a scale with a maximum of 4.0 ("Almost always") and a 2.0 indicating "Sometimes" and 3.0 indicating "Usually," the range of means for the statements regarding themselves as learners was from 2.73 (I'm satisfied with the way I handle most situations) to 3.33 (I am confident that I can learn).

#### Pilot students' perceptions of their school

Students' perceptions of their school were significantly and positively related to their perceptions of their teachers and themselves as learners. How students feel about their teachers and how they feel about themselves as learners has a relationship with how they view their school. As the mean ratings of the statements regarding their perceptions of their school increased, their mean ratings for both perceptions of their teachers and themselves as learners increased. Critical to understanding climate and how specific educational change affects the climate is the recognition that the changes in students and teachers must go together. Houlihan (1988) felt that relationships, self-concept,

attitudes, and performance are the cornerstones of any organization, and these components together create the climate or how people feel about their organization. This research would reinforce Houlihan's opinion.

Students' perceptions of their school did not seem to be associated with their academic status (GPA), their academic achievement (ITED), their gender, their performance on the Cornell Critical Thinking Test, or their attendance rate. Students' perceptions of their school were related to their perceptions of their teachers and themselves as learners and were not related to their academic performance, academic status, gender, or attendance. Therefore, as the mean ratings of the statements regarding students' perceptions of their school increased, their mean ratings of their perceptions of their teachers and themselves as learners increased accordingly.

Students were favorable toward their school. On a scale with a maximum of 4.0 ("Almost always") and 3.0 indicating "Usually" and 2.0 indicating "Sometimes," the range of means was from 2.10 (Students are accepting of each other in this school) to 2.89 (I feel comfortable in this school). The lowest mean of the survey was in this area. Ninth grade students may not feel as accepted in the school community as much as older students who have attended the high school for several years.

#### Cornell Critical Thinking Test

Pilot students' performance on the Cornell Critical Thinking Test significantly and positively correlated to their academic achievement as measured by their composite score on the Iowa Test of Educational

Development (ITED) and their academic status as measured by their grade point average (GPA). As mean scores for the Cornell Critical Thinking Test increased, the mean ratings for both the Iowa Test of Educational Development and grade point averages increased. In addition, the students' level of academic status (GPA) and their academic achievement (ITED) seemed to make a difference in their performance on the test. Though the number in the cell was small, students whose grade point average was low (1.00-2.00) and whose ITED composite percentile was low (less than 35%) had significantly lower scores on the Cornell Critical Thinking Test. The total mean score for the 28 participants on the Cornell Critical Thinking Test was 47.67, which was at the 75th percentile. Approximately 43% of the students scored at the 90th percentile or above.

#### Gender and attendance

Gender did not seem to make any difference in how the pilot students felt about their teachers, how they felt about their school, or how they felt about themselves as learners. The students' academic achievement as measured by the composite score on the Iowa Test of Educational Development (ITED) and their academic status as determined by their grade point average (GPA) were not related to gender. Contrary to current research including The AAUW Report: How Schools Shortchange Girls, girls in this study did not have a lower self-concept or lower achievement (ITED) or lower academic status (GPA). Gender equity would not seem to be

a serious problem for this ninth grade class; it appears to be a very positive aspect in this educational program.

Research focusing on gender differences for a general view of self-concept is inconsistent and indeterminate (Byrne & Shavelson, 1987); however, more recent studies have supported that sex differences may vary systematically with specific facets of self-concept (Byrne & Shavelson, 1986, 1987; Marsh, Barnes, Cairns, & Tidman, 1984; Marsh, Parker, & Barnes, 1985). There is little evidence for sex differences in the structure of self-concept or the level of overall self-concept (Marsh, Barnes, Cairns, & Tidman, 1984); there do seem to be differences in specific components of self-concept that are consistent with sex role stereotypes.

Pilot students' attendance seemed to have little effect on their perceptions of their teachers, school, and themselves as learners. Though there was a relationship between attendance and their grade point average, their level of academic status as determined by the four categories was not associated with their attendance. The attendance rate of this group was quite good; only 10 students were absent more than 10 days. Out of 180 instructional days, the average days present was 173.5 with the minimum days present at 138.5.

#### Recommendations for Use

The results of this study offer suggestions to teachers, administrators, and superintendents.

1. When selecting items for an instrument to use by students in rating or evaluating individual teacher performance as part of the formal teacher evaluation program, only those items that possess discriminating power, such as the Hidlebaugh and Judkins' survey items, should be selected. Because items on an evaluation instrument can actually direct the actions of those being evaluated, items selected should be those which reflect effective teaching practice and which match the district's philosophies, policies, and beliefs.

2. Additional demographic data should be collected in order to determine whether the mean score ratings are affected by the students' family background, race, socio-economic status, and location of the school.

3. The student feedback instrument should be used with high school students only to ensure appropriate reliability of the instrument and accurate discrimination power of teacher performance. (Other SIM instruments should be used for students in K-2, 3-5, and 7-8 grades.)

4. A minimum of 15 student evaluators should be used in rating each teacher. If fewer than 15 raters evaluate a teacher, the resulting data must be reanalyzed in order to determine whether the items continue to possess discriminating power.

5. The literature on research techniques generally recommend that teachers not administer the student feedback questionnaire to their own classes, but rather the questionnaire should be administered by an associate or peer.

### Recommendations for Further Research

Continued feedback from students is necessary in order to make the vital innovations to become a quality educational system.

1. This investigation should be replicated in other districts. Additional studies are needed to determine if the items identified as being discriminating in this study would also be discriminating in other districts and at other grade levels. It is recommended that districts varying in size, location, socio-economics, racial composition, and educational programs and structure be used.

2. Further studies should expand the research to include a larger sample to permit a more statistically valid comparison between the variables: academic status as measured by the grade point average (GPA), attendance, gender, and academic achievement as measured by the composite score on the Iowa Test of Educational Development (ITED).

3. Correlations between parental or guardian involvement in the educational program and students' perceptions of their teachers, school, and themselves as learners should be explored to determine whether the student ratings will be associated to the amount or frequency of parent or guardian involvement with their child's education. A recommended survey (Appendix G) will provide data for correlation between parental involvement and students' perceptions of teachers, school, and themselves as learners.

4. This study researched perceptions of those students in the pilot project in ninth grade; further research efforts should be broadened to include other grade levels.

5. Further studies should expand the research to include items on the student feedback survey developed specifically for local innovations in progress. Comparisons can be made between traditional educational programs and more innovative programs.

6. Student feedback data should be gathered over time--for approximately three or four years--and include frequencies of response means of the individual item response, and total means for all the items within the categories of students' perceptions of teachers, school, and self. Item results should be displayed in histogram format for ease in interpretation and use of comparative data with other surveys that examine student attitudes and behavior.

7. Continued research efforts should address whether the mean score ratings of teachers' performance are affected by the students' age, gender, student attitudes of proficient instructional strategies, and academic achievement.

8. Further studies should investigate the correlation between specific academic self-concept and specific areas of academic achievement. A recommended survey (Appendix G) will provide for data regarding mathematics and English self-concept; such data should be correlated to the specific areas of academic achievement.

9. University-based researchers should team with school district personnel in order to improve the research-based innovations and expand the use of student decision making and student feedback specific to the innovations.

10. Further research should be done to analyze students' attitudes toward their decision-making opportunities and involvement in the regulation of their school lives. A recommended survey (Appendix G) will provide for data regarding student decision-making opportunities.

11. Investigation of comparative data between teachers' perceptions of their performance and the school climate with students' perceptions could provide a valuable view of the educational program for continued school improvement efforts.

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ninth grade students and their entire staff care very much for their school.

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To all these people--please know how grateful I am.

To my friend, Jerry, a special thank you for his continual support, encouragement, and understanding. I value his friendship and look forward to the future.

I dedicate this study to my parents, James and Lillian Donahue. My father placed a high value on education and hard work; to him I owe a love of reading and the drive to set and reach goals. And my mother--though miles separate us, my mother was always there to listen and to comfort. My mother has always been an inspiration to me for her work ethic, her strength of character and self-discipline, and her graciousness. How fortunate I have been to have these parents--to guide me, to inspire me, and to care for me.

APPENDIX A.

HUMAN SUBJECTS RELEASE LETTER FROM  
MASON CITY COMMUNITY SCHOOL DISTRICT

# MASON CITY COMMUNITY SCHOOL DISTRICT

Administration Building, 1515 South Pennsylvania, Mason City, Iowa 50401  
515-421-4401

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David F. Darnell, PhD  
Superintendent of Schools

May 1, 1993

Dr. Richard P. Manatt, Director  
School Improvement Model  
College of Education  
Iowa State University  
E005 Lagomarcino Hall  
Ames, Iowa 50011

Dear Dick:

As per your request, the following permissions are granted to you and your staff to proceed with our joint project. You do have our permission to interview ninth grade students and to observe problem-solving by 28 students on May 5 and 28 students on May 6 in the Mason City High School Media Center. In addition, you and your staff may test ninth grade students on critical thinking ability--to score an essay in government and history. Finally, you have our permission to survey ninth grade students with an instrument to determine their attitudes toward the faculty and school.

The specifics for the handling and distribution of that information were discussed informally by you and our staff at an earlier meeting. As we move through this project, please contact me so that we can prepare appropriate strategies for dissemination, etc. I believe this answers the questions you needed answered. If you need additional information, don't hesitate to contact me.

Sincerely yours,



David F. Darnell, PhD  
Superintendent of Schools

DFD:pb

cc: Keith Sersland, Assistant Superintendent  
Joyce Judas, Principal, MCHS  
Kathy Schladweiler, Supervisor of Instructional Programs

APPENDIX B.  
STUDENT FEEDBACK INSTRUMENT

## STUDENT FEEDBACK TO TEACHERS

0-NEVER    1-NOT OFTEN    2-SOMETIMES    3-USUALLY    4-ALMOST ALWAYS

1. My teachers give assignments related to what we are studying.
2. My teachers tell us how we can use what we have already learned to learn new things.
3. My homework helps me to learn the subject being taught.
4. My teachers use a variety of classroom activities and resources.
5. We work in different groups depending upon the activity in which we are involved.
6. My teachers encourage us to look at problems in new ways and find new ways to solve problems.
7. I believe I can learn most things well.
8. Most people who are important to me, who know me, think I do most things well.
9. I think that I am a successful student.
10. When I work hard in school, I do better in school.
11. I'm satisfied with the way I handle most situations.
12. I am confident that I can learn.
13. Students feel comfortable in this school.
14. I feel comfortable in this school.
15. Students and teachers work together at our school.
16. This school is a friendly place.
17. Students are accepting of each other in this school.
18. This school treats students fairly.
19. My teachers are interested in me as a person.
20. My teachers are interested in learning themselves.

APPENDIX C.

MEAN VARIANCE AND ITEM DISCRIMINATION VALUES FOR INSTRUMENT

MANATT MASON CITY FEEDBACK SP93

LYSIS BASED ON 121 SUBJECTS IN 2 GROUPS.

M	N	MEAN	VARIANCE	SS TOTAL	SS WITHIN	SS BETWEEN	ITEM DISCRIMINATION
1	121	4.28099	0.49956	60.44628	60.39313	0.05315	0%
2	121	3.37190	0.84516	102.26446	93.93819	8.32628	8%
3	121	3.42975	0.67482	81.65289	80.05467	1.59822	2%
4	121	3.48760	0.91100	110.23140	88.94396	21.28745	19%
5	121	3.42975	1.10457	133.65289	112.76676	20.88613	16%
6	121	3.67769	1.07793	130.42975	92.11429	38.31547	29%
7	121	3.54215	0.68260	82.59504	82.49203	0.10301	0%
8	121	3.70083	0.75050	90.80992	90.72967	0.08025	0%
9	121	3.95041	0.77440	93.70248	93.53819	0.16429	0%
10	121	4.13223	0.77590	93.88430	92.43846	1.44584	2%
11	121	3.68595	0.54600	66.06612	65.87253	0.19359	0%
12	121	4.32231	0.66471	80.42975	80.39973	0.03003	0%
13	120	3.58333	0.67639	81.16667	81.02098	0.14569	0%
14	121	3.90083	0.75050	90.80992	90.72967	0.08025	0%
15	120	3.36667	0.59889	71.86667	70.14266	1.72401	2%
16	121	3.38843	0.81606	98.74380	98.39313	0.35067	0%
17	121	3.14050	0.61662	74.61157	74.28544	0.32613	0%
18	121	3.33058	0.66758	80.77686	80.57115	0.20571	0%
19	119	3.33613	0.72735	86.55462	86.47983	0.07479	0%
20	116	3.32759	0.80648	93.55172	92.14555	1.40617	2%

611

CRONBACH ALPHA RELIABILITY BASED ON 3 ITEMS WITH DISCRIMINATION  $\geq$  13% IS 0.751

APPENDIX D.  
CORNELL CRITICAL THINKING TEST

**SECTION I**  
**WHAT HAPPENED TO THE FIRST GROUP?**

The first job of your group is to find out what happened to the first group of explorers. Your group has landed on Nicoma and has just discovered the metal huts put up by the first group. From the outside, the huts appear to be in good condition. It is a warm day, and the sun is shining. The trees, rocks, grass, and birds make Nicoma appear like much of North America.

You and the health officer are the first to arrive at the group of huts. You call out, but get no answer.

The health officer suggests, "Maybe they're all dead." You try to find out if he is right.

Listed below are some facts you learn. You must decide whether each fact supports the health officer's idea, or suggests that the health officer's idea is mistaken—or neither.

For each fact, mark one of the following on your answer sheet:

- A. This fact **supports** the health officer's idea that everyone in the first group is dead.
- B. This fact **goes against** the health officer's idea.
- C. **Neither**: this fact does not help us decide.

Here is an example of the kind of problem in this part of the test:

1. You go into the first hut. Everything is covered by a thick layer of dust.

Is this fact **for** or **against** the health officer's idea, or **neither**? It certainly isn't enough to prove him right, but it does give some support. If a fact supports the health officer's idea, you should mark **A** on your answer sheet. Mark **A** for Number 1.

Mark your answer for this next example:

2. Other members of your group discover the first group's rocket ship nearby.

The answer is **C**. Knowing that the first group's rocket ship has been discovered doesn't help you decide one way or the other. Since this fact doesn't help you decide whether the health officer is right, **C** is correct.

**GO ON TO THE NEXT PAGE.**

APPENDIX E.  
EVALUATION INSTRUMENTS FOR THE PILOT PROJECT  
IN MASON CITY

## ESSAY WRITING EXPERIENCE

Directions: Select two individuals from the list below and describe the impact each had on the events which led to the Civil War. The rubrics below will be used to score your essay.

John Brown  
Stephen Douglas  
Ored Scott

Harriet Beecher Stowe  
Harriet Tubman  
Frederick Douglass

RUBRIC

## Quality

## 1. (Reasoning)

- 4 main points have been developed logically with extensive, supporting detail
- 3 main points have been developed logically, but lacks sufficient supporting detail
- 2 only the main points were cited
- 1 some of the main points were cited
- 0 main points were unsatisfactorily cited and developed

## 2. (Correct Specific Details)

- 4 excellent details: concrete, specific, relevant
- 3 sufficient details: consistent, specific, relevant
- 2 limited details: supportive, relevant
- 1 vague, inappropriate details
- 0 no supportive details

## Organization

## 3. (Focus established within introduction)

- 4 focus established with a clear, concise thesis
- 3 focus established and maintained
- 2 adequate thesis
- 1 vague thesis
- 0 no focus established

## 4. (Has introduction, body, conclusion)

- 4 excellent introduction, body, conclusion
- 3 good introduction, body, conclusion
- 2 adequate introduction, body, conclusion
- 1 beginning or ending missing
- 0 single paragraph response

## 5. (Paragraphing)

- 4 all paragraphs are well developed, relevant
- 3 most paragraphs are completely developed
- 2 paragraphs are adequately developed
- 1 paragraphs are inappropriate, composed using one or two sentences
- 0 no paragraphs used or a single paragraph response

## Sentence Structure

## 6. (Completeness)

- 4 complete sentences with variety in structure: simple, compound, complex
- 3 complete sentences with limited variety in structure
- 2 adequate simple sentence structure
- 1 run-on sentences present
- 0 sentences fragments present or words omitted

## Mechanics

## 7. (Punctuation/Capitalization)

- [half page length]
- 4 0 errors
  - 3 1-2 errors
  - 2 3-4 errors
  - 1 5-6 errors
  - 0 7 or more errors

- [full page length]
- 4 0 errors
  - 3 2-3 errors
  - 2 4-5 errors
  - 1 6-7 errors
  - 0 8 or more errors

## 8. (Spelling)

- [half page length]
- 4 0-1 errors
  - 3 2-3 errors
  - 2 4-5 errors
  - 1 6-7 errors
  - 0 8 or more errors

- [full page length]
- 4 0-2 errors
  - 3 3-4 errors
  - 2 5-6 errors
  - 1 7-8 errors
  - 0 9 or more errors

STUDENT INTERVIEW FORM SIM MAY 5,6, 1993  
MASON CITY SENIOR HIGH SCHOOL

Student # \_\_\_\_\_

Student Name: \_\_\_\_\_

Interviewer: \_\_\_\_\_

1. Do you believe it is your teacher's responsibility to give you answers for your questions?

 No, never is OK Almost always OK Sometimes OK Other \_\_\_\_\_ Usually OK

2. My teachers and I learn about topics together.

 Never Usually Not often Almost always Sometimes Other \_\_\_\_\_

(Probe) Describe one learning situation when you and your teacher learned together.

3. Do you see a relationship in content between or among your classes?

 Never Usually Not often Almost always Sometimes Other \_\_\_\_\_

(Probe) Do you study the same problems in two or more classes?  
(Use as an alternative question)

 math science social studies language arts fine arts vocational P.E.

4. Does what you're studying in school have anything to do with your life outside of school?

 Never Usually Not often Almost always Sometimes Other \_\_\_\_\_

- 5a. The worst part about missing school is...

 I get behind on school work I miss class discussions/info I miss my friends/classmates I miss my teachers I have to do make-up work I have to make up tests Other \_\_\_\_\_ my study team needs me

- 5b. Does it bother you to miss school for a day?

No, never  
 Not often  
 Sometimes

Usually  
 Almost always  
 Other \_\_\_\_\_

6. Is it important for people to know what their beliefs and values are?

No, it is not important  
 Yes, Sometimes  
 Other \_\_\_\_\_

Yes, Usually  
 Yes, Almost always

7. Describe what conditions make a good learning environment for you?

quiet or  
 bright light or  
 by yourself or

with distractions e.g. music  
 dim light  
 with others

8. Have you traveled outside of Cerro Gordo county?

Yes

No

Have you traveled outside of Iowa?

Yes

No

Have you traveled outside of the United States?

Yes

No

9. Are there many points of view to a situation?

Rarely  
 Not often  
 Sometimes

Usually  
 Almost always  
 Other \_\_\_\_\_

(Probe) Are there more than two sides to an argument?  
 (Use as an alternative question)

10. Would it be fun to be a teacher at Mason City High School?

Yes

No

11. Which subject or subjects do you like the most this year?

Math  
 Science  
 P.E.

Language Arts  
 Fine Arts  
 Health

Social Studies  
 Vocational

12. How would you feel if each year's courses (10,11,12) were run as they were this year in 9th grade?

GROUP PROBLEM SOLVING SCENARIO  
MASON CITY SENIOR HIGH SCHOOL

ISU SIM Team

May 5, 6, 1993

## VIOLENCE IN AMERICA

You and your three fellow students have been asked by Iowa Senators Tom Harkin and Charles Grassley to help the U.S. Congress solve the problem of Violence in America!

Violence in America Defined: Americans tend to kill each other more than members of other societies. We use guns, knives, bombs, poison, cars--sometimes we only wound or maim--but often we kill brothers, sisters, parents, children, spouses, enemies, or total strangers. Some folks seem to solve arguments with fighting---they pinch, hit, scratch--following a philosophy of "might makes right". Violence appears more often in certain areas and among certain age groups. Violence is very expensive not only in wasted lives, medical attention etc. but it causes great expense for security to protect against violence. Why are we so violent? What can be done to stop it?

Instructions

Use the attached problem solving steps (yellow) to determine the sub-problems, the central problem and the best solution (s). You may use all of the resources of your library/media center. During the time your group works in the study site your actions will be televised and an observer will record your discussions and progress. When you are finished each of you will fill out and turn in the Blue "student response work sheet"

Thanks for helping our senators!

## PROBLEM-SOLVING STEPS

### Step 1: Research and Problem Identification

Read the scenario carefully. Pick a recorder to write down your ideas. Gather information about the general situation described in the scenario in your group. Brainstorm 10-15 problems that you think might arise from the scenario. (Use the rules of brainstorming.)

#### Rules of Brainstorming

1. Say every idea about the topic/scenario that comes to your mind. (Recorder lists all the ideas.)
2. Expanding on the ideas of others is good.
3. Don't evaluate or criticize what others say.
4. When you can't think of anything else, wait a minute and try it again.

### Step 2: Central Problem Identification

Review your list of problems. Imagine you can solve only one of them. Which problem would have the *greatest impact* on the overall situation? Your group will focus on that problem. Write out exactly what the problem is. Include these factors: Who or what, is the problem? Where is the problem occurring? When is the problem occurring? Why is it a problem?

### Step 3: Solutions

Brainstorm 15-20 solutions to the central problem you identified in Step 2. think of as many types of solutions as possible--economic, political, mechanical, philosophical. (Follow the rules for brainstorming.)

### Step 4: Evaluation of Solutions

To measure the quality of your solutions, you must develop some means of determining exactly what makes up a good solution. These measurements of quality, or criteria, will enable you to select the solution that best addresses the central problem. Choose FIVE criteria carefully so that you are really measuring an aspect of the solution that is relevant to the problem. For example, if you were buying a car, your criteria might be:

- Which car:
1. is least expensive?
  2. is a two-door?
  3. is my favorite color?
  4. will get the best mileage?
  5. has the sun roof?

You could take this list to each car dealer and check each criterion against each model. The car that had the most positive checks would be the best car for you to buy.

**STUDENT RESPONSE WORKSHEET**

**Step 1: Research and Problem Identification**

List your resources that your group used below. Use extra paper if necessary.

List the 10-15 problems that your group came up with in the brainstorming session. Use extra paper if necessary.

**Step 2: Central Problem Identification**

Write the problem that your group feels has the greatest impact on the overall situation.

**Step 3: Solutions**

List the 10-15 solutions that your group came up with in the brainstorming session. Use extra paper if necessary.

**Step 4: Evaluation of Solutions**

Write you FIVE criteria.

- 1.
- 2.
- 3.
- 4.
- 5.

Write ten of your best solutions in the evaluation grid below. Across the top of the grid, write in the criteria.

SOLUTIONS	CRITERIA				
A. _____					
B. _____					
C. _____					
D. _____					
E. _____					
F. _____					
G. _____					
H. _____					
I. _____					
J. _____					

Beginning with the first criterion, decide which solution fits that criteria best--give it a rating of 10. Give the worst solution a rating of 1. Rate the rest of the solutions somewhere within this range. Do not duplicate your ratings; this is within a criteria column, only one solution can have a rating of 3. etc. Go on to the next criterion. After you have evaluated all solutions for all criteria, total the rows to the right. The solution with the highest total is the best solution according to your criteria.

## PROBLEM-SOLVING RUBRIC

1. **Research**
  - Yes - No      extrapolates relevant information
  - Yes - No      additional resources are varied
  - 4              uses 5 resources
  - 3              uses 4 resources
  - 2              uses 3 resources
  - 1              uses 2 resources
  - 0              uses 1 or no resources
  
2. **Problem Identification**
  - 4              10 problems identified
  - 3              9 problems identified
  - 2              8 problems identified
  - 1              7 problems identified
  - 0              6 or less problems identified
  
3. **Problem Selection**
  - Yes - No      problem is central to issue
  - Yes - No      problem has high degree of impact on issue
  
4. **Criteria**
  - 4              5 criteria
  - 3              4 criteria
  - 2              3 criteria
  - 1              2 criteria
  - 0              1 or 0 criteria
  
5. **Solutions**
  - (fluency)
  - 4              10 relevant problems
  - 3              9 relevant problems
  - 2              8 relevant problems
  - 1              7 relevant problems
  - 0              6 or less relevant problems
  
  - (flexibility)
  - 4              10 aspects of issue are considered
  - 3              9 aspects of issue are considered
  - 2              8 aspects of issue are considered
  - 1              7 aspects of issue are considered
  - 0              6 or less aspects of issue are considered
  
6. **Best Solution**
  - Yes - No      originality--insight is rare for age level
  - Yes - No      relevance --tied exactly to problem
  - Yes - No      humaneness--high positive and productive impact
  - Yes - No      solution has highest criteria score

## PROBLEM SOLVING GROUP SCORE SHEET

	<u>MAY 5</u> <u>Group I</u>	<u>MAY 6</u> <u>Group 2</u>
<u>RUBRIC LISTING</u>		
Research	_____	_____
Problem Identification	_____	_____
Problem Selection	_____	_____
Criteria	_____	_____
Fluency	_____	_____
Flexibility	_____	_____
Best Solution	_____	_____

Assign 10 points for each rubric criterion.

Student Name \_\_\_\_\_

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Observer \_\_\_\_\_

Student # \_\_\_\_\_

Check one:

\_\_\_\_\_ Group 1 (May 5)

\_\_\_\_\_ Group 2 (May 6)

PROBLEM-SOLVING (INDIVIDUAL SCORING)

Directions: Observe the students in your problem-solving group when they are working at the table. Use the symbols below to indicate the kinds of responses given by the students as they work to solve the problem.

?=asking a question including a rhetorical question pertaining to solving the problem.

√=recommending responsibilities to others, generating ideas, initiating solutions, suggesting directions.

O= non-participant, passive, not involved.

\*=cited a reference

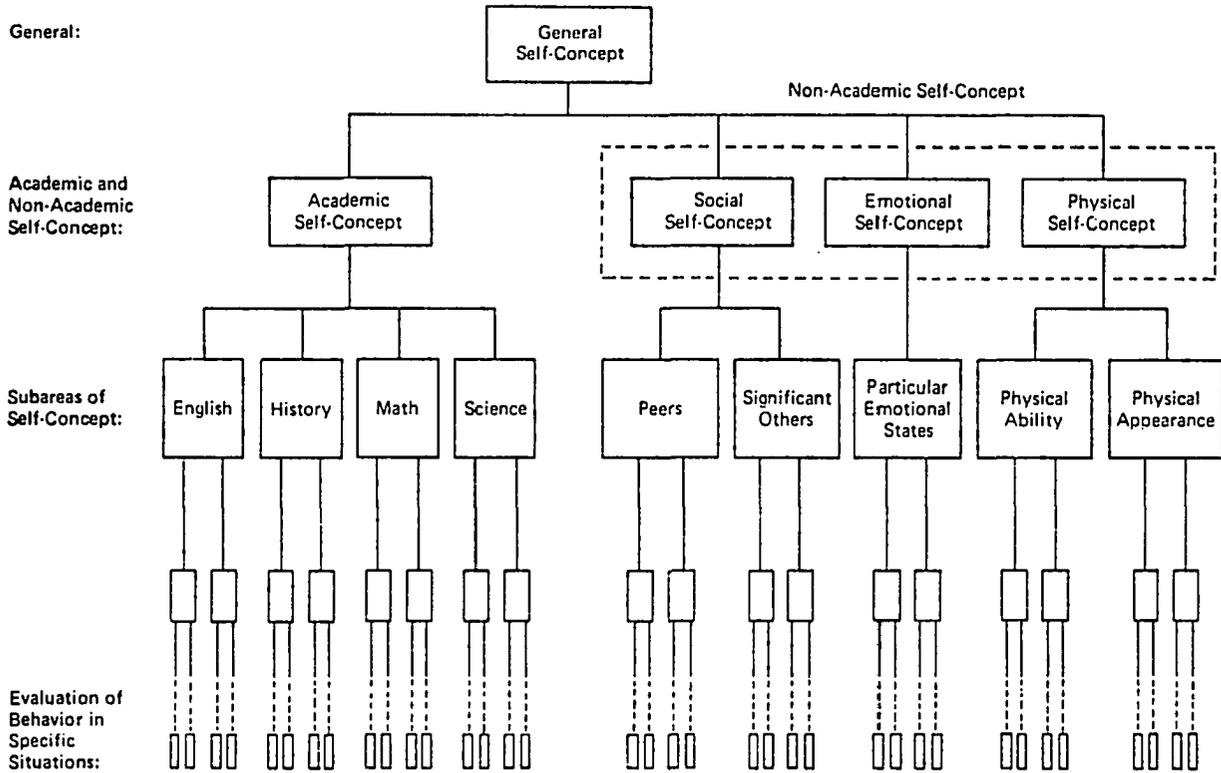
other= write any comments

	Student 1	Student 2	Student 3	Student 4
Hour one				

Student

	1	2	3	4
Hour two				
Hour three				

APPENDIX F.  
SELF-CONCEPT CONSTRUCT DIAGRAM



(Shavelson, Hubner, & Stanton, 1976)

APPENDIX G.  
RECOMMENDED STUDENT FEEDBACK INSTRUMENT

Student Feedback Instrument

1 = Never      2 = Not Often      3 = Sometimes      4 = Usually      5 = Almost Always

Student Perceptions of Teachers

1. My teachers use a variety of classroom activities and resources.
2. We work in different groups depending upon the activity in which we are involved.
3. My teachers encourage us to look at problems in new ways and find new ways to solve problems.
4. My teachers ask questions to see if we understand what has been taught.
5. My teachers give feedback about my performance.
6. My teachers maintain discipline in our classes.

Student Perceptions of School

7. I like school.
8. Students feel comfortable in this school.
9. I get a lot of encouragement at my school.
10. Students are involved in the decision-making concerning the curriculum.
11. This school has high expectations for all students.

Student Perceptions of Self as Learner

12. I think that I am a successful student.
13. At school I try as hard as I can in order to do my best.
14. It bothers me when I don't do something well.
15. Most people who are important to me, who know me, think I do most things well.
16. I do well in mathematics courses.
17. I do well in English courses.

Parental or Guardian Involvement

18. My parents (or guardians) talk with me about my school work.
- 19 My parents (or guardians) attend conferences and other meetings at school.
20. My parents (or guardians) help me with school work.