THE RELATIONSHIP OF HOME ECONOMICS INSTRUCTION AND OTHER FACTORS ON EARLY ADOLESCENTS' DECISION MAKING SKILL LEVELS

A Thesis
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CHAPTER I

INTRODUCTION

Background

The decision making abilities of our youth is one of the vital concerns in the education arena of the 1990’s. Furthermore, the education of our early adolescent youth is critical in determining the future success or failure for adult life preparation. There are two conditions that make this such a critical time in the education our adolescents. First, in America, young adolescents who are growing up find themselves in two transitions, developing from child to adult and choosing a healthy or a self-destructive lifestyle. Because of this critical time period in these youths’ education, there is a need existing for decision making research and study. Secondly, in education during these school years, there is the potential to make a tremendous impact on the development of preadolescence, yet this area of education has been virtually ignored by any educational reform in the 1980’s. Another need for this study is also evident in the fact that most research done on decision making is at the high school ninth and tenth grade levels. Higher and lower grade research on
decision making skills could aid educating the youth of our country. Consequently, this study's intent is to determine what influences early adolescents' decision making skill levels.

Recent research suggests that most adolescents moving from elementary to middle grades attend large and impersonal schools; learn from unconnected, and seemingly, irrelevant curricula; trust few adults in the school; lack access to health care and counseling; and fail to receive guidance (Carnegie Council on Adolescent Development, 1989). This situation has been tolerated for many years at the middle school level but now our society is changing. Young adolescents are far more at risk for self-destructive behaviors (such as educational failure, drug and alcohol abuse, school-age pregnancy, contraction of sexually transmitted disease, and violence) than their age group ever was before. Our schools are simply not producing young adolescents who have learned to adopt healthy lifestyles. Therefore, our schools must help facilitate this development by teaching better methods of problems solving and critical thinking skills. To obtain a healthy lifestyle, the preadolescent needs these problem solving abilities to live in our society (Carnegie Council on Adolescent Development, 1989).
The Carnegie Council on Adolescent Development takes the position that every student in the middle grades should learn to think critically through mastery of an appropriate body of knowledge, lead a healthy life, behave ethically and lawfully, and assume the responsibility of citizenship in society. The purpose of these goals is practical: that all future members of our nation be able to contribute to the common good of society and fulfill their responsibilities as a citizen. In order to meet these goals, more than a core academic curricula may be needed. These core subjects offered to our preadolescents often ask that they be competent in the subject knowledge, but not in the ability to think. Middle grade curricula can be tremendously improved if instruction programs teach critical thinking so preadolescents can reason for themselves and choose to develop healthy lifestyles (Carnegie Council on Adolescent Development, 1989).

In order to face these life problems with success, adolescents must learn how to use the higher order thinking skills of critical thinking, problem solving, decision making, and judgement. Decision making interacts with critical thinking (Laster, 1987) and research has examined decision making abilities. One such study about early adolescents and decision making was researched by John Ross
(1979-1981). An article he wrote about adolescent decision making skills (John Ross, 1981, p. 294) supports instruction for decision making. "...Studies are persuasive and give grounds for optimism that schools can considerably increase the ability of students to confront the problems of adolescence by providing them with instruction in the information-processing skills relevant to decision making."

Ross reviewed several programs for decision making instruction and concluded that effective decision making requires the mastery by students of a minimal set of skills. This set of skills became the basis for the development of Ross's study. Ross set out to study the decision making levels the student achieves with decision making instruction. In the first study of three, Ross developed a test to measure decision making skills. Real life problems encountered by students were used as examples for the test. Five decision making skills were identified for decision making instruction in his study and used for testing of 7th through 10th grade students. From the data in this study, he found no relationship between scores on the items and the marks that students reported in mathematics and English. This finding, together with some other evidence suggests that the skills of decision making are not part of the
general ability of students; it suggests that these skills involve learned behavior (Ross, 1979, p.62). Secondly, there was virtually no relationship between scores on the items and the grade levels of students. This suggests that there is very little growth in these decision making skills during the adolescent years (Ross, 1979, p.63). For the purpose of this study, Ross’s findings indicate decision making skills should be taught to adolescent students to gain skills. The analysis that Ross has done with decision making levels has been built upon with other home economics research using his testing framework.

Three such home economics studies that supports teaching decision making skills to raise decision making abilities are Manifold (1984), Eldersheim (1988), and Martin (1988). Manifold (1984) found:

Significant differences were found in responses of students who have been taught practical reasoning as well as those students who had not been taught practical reasoning. Students may function at higher decision-making skill levels or stages when solving practical home economics problems using concepts from home economics content areas where specific criteria for evaluating alternatives are taught. This finding gives credence to McPeck’s (1981) contention that skills in critical thinking are related to a person’s content knowledge. Since critical thinking is inherent in practical reasoning decision making, one is led to believe it also affects the decision making skill level and more precise stages (p. 85).

Eldersheim (1988) found, "many factors contribute to
students' decision making levels and skills and are important in designing future studies, particularly reading level, gender, and prior home economics experience" (p.66). Martin's study (1988) investigated the effect of a practical reasoning instructional unit and integration of practical problem solving throughout the semester on tenth grade students decision making skill level. She found:

The mean decision making skill levels for the experimental group increased from 2.4 to 4.8 over sixteen month period with eighteen weeks of practical reasoning instruction. The control group I had means that varied from 3.0 to 2.9. This group essentially remained the same, as the mean did not indicate an increase in decision making skill levels, but had a slight decrease over the sixteen month period (p. 87-88).

She concluded that:

Students with practical reasoning instruction had a higher decision making level compared to groups without practical reasoning. Comparing home economics students with no high school home economics experience, indicates a need to teach home economics students the practical reasoning processes, including decision making skills for this particular study (p.88).

Martin (1988) recommended that future studies examine "other factors to include besides home economics experience are reading levels, decision making instruction, practical reasoning instruction, age, gender, number of tests given, teacher effectiveness, and nonformal instruction" (p. 91).
Problem Statement

Middle schools have been largely ignored in the surge of educational reform of the 1980s. Most American middle school grades do not meet the developmental needs of young adolescents. Educators are challenged to teach adolescents skills so they can make informed, deliberate decisions that lead to healthy lifestyles.

This study was designed to determine the effectiveness of decision making instruction in one middle school and the contribution of other factors, i.e., reading levels, test time, age, gender, experiences in 4-H and Boy/Girl Scouts, and church/Sunday School attendance on decision making skill levels of seventh grade home economics students in a rural middle class community.

Research Questions

Answers to the following research questions are sought to fulfill the purpose of the study.

1. What effect does decision making instruction in home economics have on the decision making skill levels of seventh grade students?

2. What effect does reading levels have on decision making skill levels of seventh grade students?
3. What factors are related to seventh grade decision making skill levels?
   a. nonformal educational activities
      1. 4-H
      2. Boy/Girl Scouts
      3. Church/Sunday School Attendance
   b. test time
   c. age
   d. gender

Assumptions

1. Instructional materials used in this study are relevant to middle school students.

2. Decision making instruction is equally relevant to each content area of home economics and each student.

3. The same decision making instructional materials are appropriate to be used in the curriculum for all seventh grade students, regardless of reading levels.

4. Decision making levels can be reliable assessed.

Hypotheses

The following directional hypotheses were formed following the review of literature concerning decision making instruction and middle school instruction.

1. When decision making instruction, including a decision making unit with decision making activities, occurs in a middle school home economics program, then there is a significant increase in the decision making skill level of seventh grade students.

2. The lower the reading levels of students, the lower the decision making levels.
3. The participation of students in community activities/organizations, such as 4-H, Boy/Girl Scouts, and church/Sunday School, the higher the decision making levels are.

4. Shorter test times reduce the decision making levels achieved.

5. Seventh grade females score higher in decision making levels than seventh grade males.

6. The older aged seventh graders score higher than the younger aged seventh graders in decision making levels.

**Definition of Terms**

**Adolescent** - A person growing up in the transition from childhood to adulthood, from about twelve to fifteen years of age; teenager.

**Critical Thinking** - Reflective evaluative reasoning; a higher order evaluative information process; Nonalgorithmic; tends to be complex, involving multiple perspectives; often yields multiple rather than unique solutions; involves dealing with uncertainty and gaps in information; involves the application of multiple, sometimes conflicting criteria, including ethical and prudential standards; is self-regulating; involves considerable mental effort (Resnick, 1987).

**Decision making** - An information processing strategy involving the simultaneous performance of complex and cognitive skills and the application of a compendium of knowledge. Specifically, deciding among alternative actions, means, and/or choices by comparing alternatives and evaluating information about alternatives in terms of criteria (Ross, 1979). Progresses from simplistic to complex information processing.
**Decision making level** - An information processing strategy in a hierarchy of decision making performance. Each level describes a strategy, an outline of procedure, one or more decision making skills (Ross, 1982).

**Decision making skill** - A specific cognitive process required to decide what to do; Processes progress from simple to complex approaches to deciding what to do.

**Early Adolescent** - Preadolescent; young adolescent; A person growing up in the beginning transition from childhood to adulthood, from about ten to fifteen years of age.

**Healthy Lifestyle** - Being aware and consciously making choices that are not endangering life or health. Being independent of any addictive chemical substance.

**Middle Grades** - Levels of education for early adolescence, from about the fifth grade (sixth year of school, inclusive of kindergarten) through ninth grade (tenth year of school, inclusive of kindergarten). Levels of education found in a middle, junior high, or intermediate school.

**Middle Grade Schools** - Middle schools; Junior high schools; Intermediate schools; Educational institutions where early adolescents attend for schooling. Educational levels can include fifth through ninth grades.

**Practical Reasoning** - The complex thinking process necessary for solving the everyday routine and unexpected problems facing individuals and families. Deciding what to do and believe from the knowledge available. Requires decision making, critical thinking, and creative thinking (Coombs, 1984; Laster, 1987).
CHAPTER II
REVIEW OF LITERATURE

In these changing times of high technology and societal issues, young people face unprecedented choices and pressures. At the time of adolescence, our youth face opportunities to choose a path toward a healthy or a self-destructive lifestyle. During this critical developmental period of life, educators need to teach both knowledge and thinking processes so our students can be prepared to face the complexities of the future (Martin, 1988).

In order to examine the relationship of home economics instruction on early adolescents' decision making skills, this review of literature will include three topics. First, understanding of the relationships between the higher order thinking processes, i.e. critical thinking, problem solving, decision making, and judgement is needed to teach students decision making skills. A knowledge base of these processes and how they work together is important. Secondly, the intellectual development of adolescents is an important
aspect to consider as decision making becomes a part of the middle school home economics curriculum. The final segment will concentrate on factors affecting the decision making process.

Higher Order Thinking Skills

The goal of helping students become more effective thinkers is fundamental to American schooling. This goal has importance today because we are in the midst of the information age. The information era has prompted a huge emerging rate of knowledge. The requirements of the information age have affected educational goals and practices of all subject areas. The National Science Board Commission on Pre-College Education in Mathematics, Science, and Technology wrote:

We must return to basics, but the basics of the 21st century are not only reading, writing, and arithmetic. They include communication, higher problem solving skills, and scientific and technological literacy - the thinking tools that allow us to understand the technological world around us.... Development of students' capacities for problem-solving and critical thinking in all areas of learning is presented as a fundamental goal (McTighe, 1985, p. 3).

Critical Thinking

One thinking tool that will allow students to better understand and live in the world around them is critical thinking. Instead of an increase in students using critical
thinking, there has been a decline in students' critical thinking abilities (McTighe, 1985). In order to meet the demands of teaching knowledge to students, teachers have been spending 70-75% of class time on instruction (McTighe, 1985). This has resulted in students having less time in critical thinking activities. Consequently, McTighe (1985) concludes that we must begin to teach higher level thought processes, much more than fact finding for students to function effectively. These higher level thought processes will provide a better chance for students to be successful, to be good citizens, and to deal with the complex and threatening problems currently facing society (Nickerson cited in Baron, 1987).

Critical thinking is reflective and reasonable thinking that is focused on deciding what to believe or do (Ennis, 1985). Beyer (1984) listed the skills of critical thinking as:

1) distinguishing between verifiable facts and value claims;
2) determining the reliability of a claim or source;
3) determining the accuracy of a statement;
4) distinguishing between warranted or unwarranted claims;
5) distinguishing between relevant and irrelevant information, claims, or reasons;
6) detecting bias;
7) identifying stated and unstated assumptions;
8) identifying ambiguous or equivocal claims or arguments;
9) recognizing logical inconsistencies in a line of reasoning; and
10) determining the strength of an argument (p. 557).

Norris (1985) listed the skills of critical thinking as:

1) to assess the views of others and one's own views according to acceptable standards;
2) to produce alternative courses of action;
3) to produce reliable observations, make sound inferences, and offer reasonable hypotheses; and
4) to think critically about issues.

As societal forces and the information age era influence education, a strong feeling that teaching just critical thinking is not enough. It does not correspond with the real life problems students will face (Sternburg, 1985). To face these real life problems, decision making interacts with the process of critical thinking (Laster, 1987).

**Problem Solving**

Decision making interacts with critical thinking through the process of problem solving. "Problem solving appears to be one complex process of intelligence: a complex cognitive process/activity including decision making; representing, planning, self-monitoring, reasoning, creativity, and critical evaluation" (Laster, 1987, p. 39). "Students require a basic strategy for making decisions that can be modified to meet the needs of a particular problem" (Ross, 1979, p. 3).
Decision Making

There are many varieties of the decision making model. The basic decision making process is based on Bloom’s higher levels of thinking. It involves four operations:

1) stating the goal;
2) generating ideas;
3) preparing a plan; and
4) taking action (Wales, Nardi, and Stager, 1986).

Ross (1979), used a minimal set of five core skills for the decision making process. These five skills of decision making were included in Ross’s instruction and on the decision making test in his study. These decision making skills are used as a guideline for this study’s instruction and instruments to measure decision making skill levels.

Ross’s five core decision making skills are:

a) the skill of identifying a good set of alternatives to select from,
b) the skill of identifying good criteria for making decisions,
c) the skill of assessing alternatives,
d) the skill of summarizing information to make a choice, and
e) the skill of self-evaluation (Ross, 1979, p. 2-3).

Another model according to Beyer (1984) is:

1) state the desired goal or condition and the obstacles to realizing the goal;
2) identify alternatives for overcoming each obstacle;
3) examine each alternative in terms of resources needed;
4) rank alternatives in terms of consequences; and
5) choose the best alternative.

These models are similar in the fact they examine
alternatives in the decision making process. Ross does include the skill of self-evaluation as part of the process.

Decision making is a complex cognitive act which can involve a lengthy list of skills and the application of knowledge. However, not all decisions are complex. Most decisions are made automatically with little thought. But for decisions in which the consequences of making an inappropriate choice are severe, considerable time and effort is required to choose alternatives wisely (Ross, 1979). In this study, the focus is on the real-life decisions and not the decisions made with little effort or skill. The improvement of decision making skills of middle school students is focused on their ability to make decisions about real-life problems that require critical thinking, problem solving, decision making skills, and judgement.

**Judgement**

Judgement and decision making are of critical importance and to study them in a scientific, empirical manner is new and exciting. Judgement and decision making are activities engaged by all of us throughout everyday. The ability to form good judgements and make wise decisions is considered the mark of a successful person in the matters of living (Arks & Hammond, 1986).

To analyze decision making and to make good judgements,
one must put it into components before the decision is made. This is similar to critical thinking. The basic components of critical thinking are to ask questions, gather information, and assess the information (Quest Student Workbook, 1988). "Components of decision making can be accomplished by construction of a decision tree prior to making a decision. It is an easy way of guiding and simplifying the decision process into probabilities and utilities and thus providing a clear picture. Each alternative of the decision tree can be weighted according to possible outcomes" (Arks & Hammond, 1986, p. 4). The decision tree construction is part of this study's decision making instruction intended to guide students in making judgement and decision choices in a simplified manner. Similarities are found in the critical thinking components where judgements must be made. Judgement takes place when the decision maker must assess the information they have gathered.

Intellectual Development of Adolescents

Mature and literate adults focus and frame their approach to decision making in a sophisticated way. Their behavior can be analyzed and described. Children, on the other hand, approach their decisions in a very
unsophisticated manner, which can also be analyzed and described. Between the two exists a gap which is bridged by experience and practice. Through experience and practice, skill maturation and accumulation of appropriate decision making knowledge is gained (Ross and Maynes, 1983).

It follows then that those who would improve the quality of children's experience through the medium of instruction should be aware that mature performance may be initially beyond the grasp of most elementary or early secondary school children. However, if incremental levels between the upper and lower extremes are described and instruction matched to these, students can be helped towards the upper goal by focusing successively on the lower and intermediate levels. In this way each identified skill increment can be achieved without overloading the capacity of the students..." (Maynes & Ross, 1983, p. 8).

That is the goal of this study's decision making instruction for the adolescent subjects.

"Teaching is the creation of environments in which students' cognitive structures can emerge and change" (Joyce & Weil, 1986, p. 102). Kohlberg believed, "It is possible to influence a student's level of thinking and that it is important to organize instruction with development as a guiding principle" (Kohlberg, 1976, p. 190). Piaget also believed, "humans develop increasingly more complex levels of thinking in definite stages" (Joyce and Weil, 1986, p. 103).

Another theory of human development that is related to the adolescents' maturity is the conceptual-systems theory
developed by David Hunt and his associates (Harvey, Hunt, and Schroder, 1961; Schroder, Driver, and Streufert, 1967). The theory describes human development in terms of increasingly complex systems for processing information about people, things, and events. Hunt suggests growth is "an interactive function of the person's level of personality development and the environmental conditions he encountered" (Joyce and Weil, 1986, p. 450). Optimal development occurs when the environment facilitates the "conceptual work necessary for the person's conceptual growth" (Joyce and Weil, p. 451). "As an individual becomes more complex, the environment needs to change to continue growth at an optimal rate. Theoretically, the closer a teaching strategy is tailored to the learner's conceptual level, the more learning will take place" (Joyce and Weil, 1986, p. 451). Hunt and Schroder felt as Kohlberg did, that growth was most evident by mismatching the environment to the cognitive level of students, e.g. heterogeneous groups create mismatched environments.

With these principles in mind to instruct adolescents in decision making and to be successful in gaining decision making skills, the examination of their intellectual development is imperative. Jean Piaget posits the occurrence of qualitative changes in mental activity
during adolescence. Of chief concern at this point is Piaget’s concept of a transition from concrete to abstract thought that supposedly occurs at about the beginning of adolescence. Concrete thought is the ability to form concepts involving "operational groupings concerning objects that can be manipulated or known through the senses" (Piaget, 1952, p. 123); a stage of development that lasts until it is superseded by abstract thought. "From 11-12 years and during adolescence, formal thought is projected and its groupings characterize the completion of reflective thought" (Piaget, 1952, p. 123; Medinnus & Johnson, 1969).

A common problem of young adolescents is their tendency to interpret situations more complexly than warranted. Formal operations allow a student to hold many variables in mind at the same time, but the young adolescent has compacity to think of many alternatives and is not immediately coupled with the ability to assign priorities and decide which choice is best. Formal operations also allow young adolescents to think about other people’s thinking. This ability is not always coupled with the ability to distinguish between what is of interest to others and what is of interest to self (Wiles & Bondi, 1986, p. 22).

It is important to recognize these behaviors and
developments of the middle school student. Behavior of adolescents reflects the intellectual immaturity that must be considered as instruction is planned and implemented. Middle school educators can themselves become more rational in their reactions and instruction of these adolescent students (Wiles and Bondi, 1986).

Decision making instruction can be an important part of the adolescent's development from concrete to abstract thought processes. Instruction and practice with adolescents in critical thinking, problem solving, decision making, and judgement can only improve their skills as they move onto a higher operational thinking level of abstract thoughts.

Factors Affecting the Decision Making Process

The factors affecting the decision making process addressed in this study and/or from previous studies are: reading level, age, gender, prior home economics experience, test time, nonformal educational activities, and home economics curriculum for decision making instruction. Each will be reviewed and discussed as part of this review of literature.
Reading Levels

Reading levels of students have been found to be a significant factor in contributing to the decision making skill levels of students in previous home economics research findings of Tartell (1983), Edersheim (1988), and Martin (1988). Tartell found that the test instrument used in her study to measure practical reasoning in housing correlated at .65 with the Stanford Achievement Test stanine scores indicating reading level is moderately correlated with the knowledge section of the testing instrument (Tartell, 1983, p. 75). Edersheim found reading level contributed 31% to the variance in tenth grade students’ decision making skills at the significance level of .0001 (Edersheim, 1988). Martin found in her study of ninth and tenth graders that reading level contributed 20% to the variance of decision making skill levels at the .0002 significance level (Martin, 1988). According to Whimbey, a reading subtest could statistically produce about as accurate a measure of general reasoning ability as any reasoning test (Whimbey, 1985). These findings agree with Whimbey’s statement and a relationship between reading level and decision making skill levels of students does exist.
Age and Gender

Age as a contributing factor to decision making skills was found in the study of Edersheim (1988). Age is sometimes used as an indicator of maturity development. However, the age factor contributed only 1% of the variance in the decision making skill levels at a significance level of .05 among the tenth grade students in the Edersheim study.

The contribution of the gender factor was assessed in studies done by Ross (1979), and Edersheim (1988). Ross’s test results indicated that for two-thirds of the items there was a weak relationship between student performance and gender differences. On some items males scored slightly higher, on other items they scored slightly lower but there was no consistent pattern in the direction of the difference either by skill or by issue (Ross, 1979, p. 63). Edersheim found gender contributed only 1% at the significance level of .03 (Edersheim, 1988). Both age and gender in past studies have not been significant factors in decision making skills.

Prior Home Economics Experience

Prior home economics experience was analyzed as a contributing factor to decision making skills in the students studied by Edersheim (1988), and Martin (1988).
Edersheim's and Martin's findings were very similar. They showed that prior home economics experience contributed little variance in decision making skill scores.

Edersheim found, "prior home economics experience, alone, was not a large contributing factor, but interaction with reading contributed significantly to the students' decision making level" (Edersheim, 1988, p. 65). In Martin's study, "an analysis of covariance with the instructional group, reading levels, and prior home economics experience as covariants indicated prior home economics experience (f = .54; \( p = .47 \)) contributed little to the decision making skill level for the three groups tested" (Martin, 1988, p. 86-87).

All of these factors -- reading level, age, gender, and prior home economics experience -- have been measured in previous studies. These findings give a foundation to this study for comparison and analysis.

**Test Time**

Test time as a factor contributing to the quality of decisions, is a variable which has not been studied. Test time may be indicative of reflective thinking, a component of critical thinking and problem solving. The premise that the more time a student takes to think through a decision, i.e. reflective thinking, more alternatives and criteria are
considered and a better decision can be made. The values of reflective thinking are:

1) it makes actions with a conscious aim possible;
2) it makes systematic preparations and creative inventions possible;
3) it gives meaning to things and, therefore, enriches them, and
4) it provides added control (Bobbitt, 1987, p. 62).

John Dewey pioneered the concept of reflective thinking and referred to it as "being or as including critical thinking, problem solving, inquiry, and reflective judgement" (Dewey, 1938, cited in Bobbitt, 1987, p. 62).

"Reflective thinking requires the use of data and ideas. Data form the material to be interpreted, explained, accounted for, and deliberated. Ideas occur in the mind. The process continues with anticipation, supposition, conjecture, imagination, foresight, prediction, planning, theorizing, and speculation" (Bobbitt, 1987, p. 62).

According to Bobbitt, all these processes take time to do when confronted with a problem to solve. Test time can be an indicator of this reflective thinking, especially if the problem is one where the individual considers alternatives and the criteria to judge and alternatives in solving the problem and making a decision.

Nonformal Educational Activities

Home economics has three education delivery systems;
formal, nonformal, and informal. The delivery system of nonformal education is described as:

Organized out-of-school learning opportunities and programs in a variety of settings; usually not age-specific or graded. Educational efforts sponsored by an agency or institution which seeks to affect specific behavioral changes in a target population (Laster, n.d., p. 1).

Examples of nonformal educational opportunities available to adolescents include 4-H, Boy/Girl Scouts, and religious educational activities. No studies were found to investigate the contribution of these learning experiences on early adolescents’ decision making skills, but Martin (1988) suggested these as possible factors influencing decision making skill levels. In her study of tenth graders, Martin found 56% of the variance in her students decision making skill levels was not explained by her measured factors of instructional group, reading level, and prior home economics experience.

Other variables which might contribute to the difference in scores include nonformal instruction such as: parent and home education, church activities, extra curricular activities (FHA/HERO); 4-H Club; and work responsibilities. Variables, such as nonformal instruction, may help explain the wide range of scores found within the groups (Martin, 1988, p. 75).

Skill development is an evolutionary process. Students do not suddenly become capable of performing difficult, cognitive tasks. They begin with a very primitive capacity to perform the skill and gradually improve through a period
of clearly defined stages to a point at which they have developed a sophisticated mastery of the skill. It is unreasonable to expect that students will reach the highest level of a skill without taking them through the initial stages first (Ross, 1979, p. 5). With this in mind, nonformal educational activities may provide another avenue for the skill development process.

**Home Economics Curriculum and Instruction**

The final factor being studied for contribution to variance in decision making skills in this study is home economics instruction. Home economics curriculum can be a primary educational program designed to assist teenagers with the decision making process of their adolescent years. The period of adolescence is a stressful maturation period. The normal developmental changes are compounded with situational crises. Presenting a decision making process that adolescents can use gives them a model to follow and evaluate their own coping behaviors. Once adolescents receive active decision making instruction they can begin to accept responsibility for their own behaviors (Baugher, 1981).

Decision making and problem solving have been a part of the planned home economics curriculum since the 1930s (Loftis, 1986). In a 1960 Home Economics Curriculum Census
Study, Hughes (1980) found that decision making was included in home economics curriculum across the country. Over 80% of the schools teaching Vocational Home Economics included decision making instruction.

From Ross’s (1981) findings, the test data provided sound evidence that the program of decision making instruction was effective in the seventh through tenth graders in the study. Mean scores gains from pretest to posttest were given by each skill, skill level 0 - 6. The highest average mean gain was 1.93 (Ross, 1981). These findings give direction to this study in determining the decision making skills students can gain with decision making instruction.

Practical Reasoning Curriculum

One home economics decision making instruction approach is the practical reasoning model. This instruction was used in the studies of Tartell (1983), Manifold (1984), Edersheim (1988), and Martin (1988). Brown and Paolucci (1979), define practical reasoning as the series of mental activities used to solve practical problems. Thus, practical reasoning is the thinking process necessary for solving the everyday routine and unexpected problems facing individuals and families (Laster, 1987). Practical reasoning involves the student making judgements and decisions. Laster
Interprets practical reasoning in home economics as: reaching conclusions about what to do and believe in everyday home and family problems from the knowledge available (Laster, 1987).

In two studies, teaching practical reasoning was found to be a significant factor relating to decision making skills of students. In the study by Edersheim (1988), practical reasoning contributed 2% of the variance in tenth graders decision making skill levels at the significance level of .004. This study was conducted during the mechanical stage of teacher implementation of the practical reasoning curriculum and instruction innovation. After an additional year of using the innovation at the routine level of use, Martin (1988) found practical reasoning instruction contributed 23% of the variance in tenth graders decision making skill levels at a significance level of .0005.

Skills for Adolescence Curriculum

The home economics decision making instruction used in this study is largely from the Skills for Adolescence Curriculum, published by the Quest National Center, Granville, Ohio. The program focuses on early adolescents grades 6 through 8. Skills for Adolescence was developed in cooperation with Lions Clubs International and a team of 57 scholars and experts on youth. The program offers
detailed lesson plans and curricular materials, including a textbook for students, a guide for parents, and a series of parent seminars, giving young adolescents a wide variety of opportunities to interact with one another and to explore issues of adolescence life, including decision making (Gerler, 1986).

Summary

There are three main points in this review of literature that are significant to this study. First, it is important to understand the higher order thinking processes of critical thinking, problem solving, decision making, and judgement. These topics are relevant to instruction and how the instruction should be implemented with early adolescents. These higher order thinking skills are all related and one cannot be used without the other skills being part of it. To be effective in decision making instruction it involves critical thinking, problem solving and judgement. The second significant aspect of the review of literature was the intellectual development of adolescents. Dealing with this group of students requires understanding of their development and capabilities as students. Educators need to know early adolescent students are at the concrete level of thinking and moving into the
abstract level of thinking. To best help them, educators need to strive to move students to a higher skill level than the one at which they are currently operating. Third, factors that have been found to contribute significantly to decision making skill levels of students are students’ reading levels and practical reasoning instruction. Little or no contribution has been attributed to age, gender, and prior home economics experience. There has been little research to determine the contribution of nonformal educational activities and test time to decision making skill levels. Most research studies focused on high school adolescents except for Ross’s study that dealt with subjects in grades seven through ten. With this information, needed research dealing with early adolescents and factors contributing to decision making skill levels can add to the knowledge base of research by confirming, refuting, or exploring the areas reviewed.
CHAPTER III

METHODOLOGY

This study was designed to determine what influences decision making skill levels of seventh grade home economics students in a rural middle class community. This study was organized to test three research questions:

1. What effects does decision making instruction in home economics have on the decision making skill levels of seventh grade students?

2. What effects does reading levels have on decision making skill levels of seventh grade students?

3. What factors are related to seventh grade decision making skill levels?
   a. Nonformal educational activities
      1. 4-H
      2. Boy/Girl Scouts
      3. Church/Sunday School Attendance
   b. Test time
   c. Age
   d. Gender

In order to test these research questions, the null hypotheses were proposed:

1. There is no significant increase in the decision making skill levels of seventh grade students who have had decision making instruction.

2. There is no significant differences in the decision making skill levels among the three experimental groups of seventh grade students.
3. There are no factors that significantly predict the decision making skill levels of seventh grade students.

The research design, setting, population and sample, experimental conditions, instruments, data collection, and data analysis procedures are described in this methodology.

Research Design

A quasi-experimental research design, using pretesting and posttesting, was used for this study. This study involved using existing classrooms with pretesting done before exposure to research treatment and posttesting done after the research treatment. For the experimental groups, this study was planned to assess the influences of the independent variable, decision making instruction. The intervening variables considered were the decision making skill level before the instruction, IOWA Basic Skills reading test scores, age, gender, test time, and participation in nonformal educational activities (indicated by 4-H and Boy/Girl Scouts experience and church/Sunday School attendance). These variables were studied in relation to the decision making skill level after instruction, the dependent variable. The relationship of the variables used to test the hypotheses is indicated in Table 1.
Table 1

Research Variables for the Study

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Independent/Intervening Variables</th>
<th>Dependent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Conditions</td>
<td>Decision Making Instruction</td>
<td></td>
</tr>
<tr>
<td>1. IOWA Tests of Basic Skills Scores</td>
<td>Decision Making Skill</td>
<td></td>
</tr>
<tr>
<td>2. Decision Making Skill Level (T1) (T2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Test Time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Nonformal Ed. Exp. (indicated by 4-H and Boy/Girl Scouts experience and Church/Sunday School attendance)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend

- Test 1 Pretest of Decision Making Problems - T1
- Test 2 Posttest of Decision Making Problems - T2
The dependent variable, decision making instruction, was in two segments in the curriculum. This instruction involved a problem solving and a decision making concept development segment. These segments were combined with other home economics units throughout the second semester to reinforce concepts. Other home economics units that the problem solving and decision making segments' concepts were used in are Improving Peer Relationships, Strengthening Family Relationships, and Developing Critical-thinking Skills for Decision Making. The decision making instruction is reviewed in Table 2, and lessons for the instruction is found in Appendix A.
### Table 2

**Schematic of Quasi-Experimental Design: Multiple Time Series**

<table>
<thead>
<tr>
<th>E1: T1</th>
<th>X1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E2: T1</th>
<th>X1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E3: T1</th>
<th>X1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>X3</td>
<td></td>
</tr>
</tbody>
</table>

**Legend**

- **E** = Experimental Groups
- **E1** = Experimental group with high to average reading level scores given decision making instruction in a middle school home economics course.
- **E2** = Experimental group with average reading level scores given decision making instruction in a middle school home economics course.
- **E3** = Experimental group with low to average reading level scores given decision making instruction in a middle school home economics course.

- **X** = Experimental Conditions
- **X1** = Decision making instruction in middle school home economics course
- **X2** = Decision making practice experience
- **X3** = Required health class

- **T** = Decision Making Test
- **T1** = Test 1 - Pretest
- **T2** = Test 2 - Posttest after decision making instruction, decision making practice experience, and required health class
In Table 2, T refers to the observation and measurement of the dependent variable, decision making skill level. In this research design, each experimental group, E, had a pre-experimental measure of decision making skills (T1). This measurement was taken before the instruction was given. T2 represents the observation on the final test given to all seventh grade students participating in the study. This observation, T2, indicates the differences in decision making skill levels after the decision making instruction, practice experience, and the required health class. All observations were done at the same time for the experimental groups. The individual differences of maturity indicated by age and entry decision making skills were controlled statistically by analysis of covariance.

In Table 2, X refers to the experimental treatment which the students experienced. X1 represents skill instruction, the decision making segment was presented as part of the home economics instruction to students. X2 represents the combination of decision problems given throughout the middle school home economics course. X3 represents the required health class experienced by all seventh grade students. The health course did involve some decision making instruction, but only in combination with chemical substance teachings, not as a unit. There wasn't
any practice in decision making during the health course. It was primarily a course for students to gain information on health topics. The same teacher taught the health course to all students participating in this study.

This quasi-experimental study using the pre/post test design, controls for the most part, the threats of internal validity of selection and mortality. Possible weaknesses of this design include not controlling history, maturation, testing, instrumentation, and selection interactions. A possible source of concern is regression, a function of the degree of correlation; the lower the correlation, the greater the regression toward the mean (Gay, 1987).

The classroom research lends itself toward this type of design because of the lack of a comparable control group. All students were required to receive this instruction during the semester, and no other schools were found to have similar characteristics needed to conduct the study. This limitation was considered as the research is conducted, collected, and analyzed.

Setting

The setting for this experiment was in a rural middle class school district in southwestern Ohio. The majority of students were basically from "blue collar" families with a
smaller percentage from "white collar" families. The community is made up of small businesses, factories, and farming enterprises.

The middle school consists of fifth through eighth grades. In the school, the seventh graders received one required home economics course which met three times a week for a total of one-hundred twenty six minutes per week. The school offers a core academic program. These subjects are language arts, science, mathematics, social studies, physical education, and health. The exploratory programs of the school are home economics, industrial arts, computer education, art, band, and music.

Population and Sample

The population for the study was one-hundred sixty nine seventh grade students. The sample of three classes was chosen from six classes of seventh grade students. These classes were leveled with students having differing reading abilities that are normally found at the seventh grade level. These levels included similar numbers of students with high, average, and low IOWA Test of Basic Skills reading scores found at the seventh grade. For the most part, each student was placed in the class according to his/her reading abilities. There were a few students placed
in these classes according to behavior rather than reading abilities. This is very rare, but does happen time to time. The three classes of the six that were chosen for the study were the most defined high, average, and low reading level groups. The total sample included eighty-four students, one class of each level, high, average, and low. The useable sample was numbered at sixty-four. There were seven students in the sample that had no IOWA Basic Skills Test Reading Score on file, and thirteen absent on one or both of the two test days. The breakdown of gender was a comparable proportion of thirty-four girls and thirty boys. In the high to average reading level group (E1), the gender proportion was twelve male and fourteen female students. In the average reading level group (E2), the gender proportion was the same. In the low to average reading level group (E3), the gender proportion was equal, six male and female students. The experiment was conducted during the second semester of the 1990 school year during classtime with the students. The population experienced the same required middle school home economics course with decision making instruction. Characteristics of the sample are shown in Table 3.
Table 3

Characteristics of Sample

n = 64

<table>
<thead>
<tr>
<th>Groups</th>
<th>Total Group (n = 64)</th>
<th>E1 (n = 26)</th>
<th>E2 (n = 26)</th>
<th>E3 (n = 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-H</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>51.6%</td>
<td>65.4%</td>
<td>53.8%</td>
<td>16.7%</td>
</tr>
<tr>
<td>No</td>
<td>48.4%</td>
<td>34.6%</td>
<td>46.2%</td>
<td>83.3%</td>
</tr>
<tr>
<td>Scouts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>46.9%</td>
<td>46.2%</td>
<td>50.0%</td>
<td>41.7%</td>
</tr>
<tr>
<td>No</td>
<td>53.1%</td>
<td>53.8%</td>
<td>50.0%</td>
<td>58.3%</td>
</tr>
<tr>
<td>Church/Sunday School</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>68.8%</td>
<td>88.5%</td>
<td>50.0%</td>
<td>66.7%</td>
</tr>
<tr>
<td>No</td>
<td>31.3%</td>
<td>11.5%</td>
<td>50.0%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Pretest Time Mean Minutes</td>
<td>12.19</td>
<td>12.65</td>
<td>11.92</td>
<td>11.75</td>
</tr>
<tr>
<td>Posttest Time Mean Minutes</td>
<td>11.63</td>
<td>12.12</td>
<td>10.96</td>
<td>12.00</td>
</tr>
<tr>
<td>Age Mean Months</td>
<td>156.23</td>
<td>158.0</td>
<td>154.25</td>
<td>156.67</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>46.9%</td>
<td>46.2%</td>
<td>46.2%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Female</td>
<td>53.1%</td>
<td>53.8%</td>
<td>53.8%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Reading Level Mean/Grade</td>
<td>7.09</td>
<td>8.14</td>
<td>6.86</td>
<td>5.33</td>
</tr>
</tbody>
</table>

Legend
E1 = Experimental Group with high to average reading levels
E2 = Experimental Group with average reading levels
E3 = Experimental Group with low to average reading levels
4-H, Scouts, Church/Sunday School = Participation or yes or no in percentages.
Reading Level = Mean of grade level and months (e.g. 7.09 = 7th grade and 1 month level of reading)
Experimental Conditions

The seventh grade students in this school are in three existing instructional groups. These seventh grade classes are grouped according to reading level scores of the IOWA Basic Skills Test administered in the second semester of the sixth grade. The experimental groups were comprised of the available classes of a required middle school home economics course for one year, meeting three times a week for a total of one hundred twenty-six minutes per week of instruction.

For the decision making instruction, the primary resource used was the Skills for Adolescence Curriculum of the Quest National Center, Granville, Ohio. The decision making instruction was taught in two segments. The problem solving segment was included in the Improving Peer Relationships and Strengthening Family Relationships Units. The second segment, decision making skills, was included in the Developing Critical-thinking Skills for Decision Making Unit. The same lessons, worksheets, class handouts, and evaluations were used by all classes. Each class was instructed by the same teacher. The stability of the independent variable was a primary concern in this study for good research control. Each lesson was conducted as script-like as possible by the teacher to ensure each class
received the same instruction. All lessons which include the names of worksheets, handouts, and evaluation methods used by the teacher for the instruction are included in Appendix A.

**Instrumentation**

Two instruments were used to collect data for this study. The Practical Problem Test Version C which the researcher titled Decision Making Test (Appendix B) and the Scorecard for Evaluating the Decision Making Framework of Practical Problems (Appendix C). The IOWA Test of Basic Skills reading scores were used as a covariant in the analysis. The characteristics of these instruments are described in this section.

**Practical Problem Test Version C/Decision Making Test**

The Practical Problem Test Version C/Decision Making Test (Appendix B) was used for the pretest and posttest to determine the dependent variable. This test was used as part of the regular decision making instruction. It was used as a teaching resource, but grades were not taken to try and release any grade anxiety the test may create. In order to learn from the test, the test items were discussed after the posttest was complete. The test instrument was composed of
a demographic information page and four practical problems that young adolescents could face and designed to determine decision making skills. The first page asked for: date, name, age in years and months, birth date, gender, teacher, school, title of class, 4-H and Boy/Girl Scouts Experience (yes or no), attending Sunday School and church (yes or no), and time beginning test. The four problem solving items on the test were made with the consideration of several resources. First, a list of practical problems generated by previous research projects done on this subject were reviewed. The problems had to be changed because most research which could be found on decision making were with high school students. These questions were not age revelant to middle school students and decisions they make. The test used for high school students was the Practical Problem Solving Test (Eldersheim, 1988 and Martin, 1988) after which the researcher modeled the questions for middle school students. Secondly, middle school curriculum materials were examined for examples of problems adolescents find themselves facing in today's society. Third, recent research of at-risk situations that preadolescents face at this critical time of life were reviewed. From those considerations, problems were established with the help of an advisory committee. These were based on problems middle school students and families face in real life situations in
varying cultures. Students were instructed to describe: "HOW you would go about deciding what to do?"; WHAT is your decision? WHAT would you do?"; and WHY did you make this decision?". At the end of the last problem the student was to fill in the test-ending time. To protect the identity of students, each student was given an identification number. Names were removed from the testing instrument.

Regarding reliability of this test, Eldersheim (1988) conducted a split-half reliability test to determine the internal consistency of the Practical Problem Solving Test - a test the Decision Making Test is modeled after. The average Guttman coefficient was .88. A reliability coefficient over .90 would be acceptable for any test (Gay, 1987).

Reliability tests of the Practical Problem Test Version C/Decision Making Test was done for both the pretest and posttest. The Cronbach's alpha statistical formula was used. The reliability coefficient for the pretest was .76 and the posttest reliability coefficient was .92. Reliability testing is done to test the degree to which a test consistently measures whatever it measures (Gay, 1985, p.166). If a test were perfectly valid and reliable, all coefficients would be 1.00 (Gay, 1985, p.180). What constitutes an acceptable level of reliability is to some degree determined by the type of test although a coefficient
over .90 would be an acceptable for any test. Personality measures do not typically report such high reliabilities and therefore one would be very satisfied with a reliability in the eighties and might even accept a reliability in the seventies. Attitude scale reliabilities usually fall in the sixties to eighties range. (Gay, 1985, p. 181). Thus, reliability coefficients ranging from 1.0 to .60 are considered acceptable.

Scorecard for Evaluating the Decision Making Framework of Practical Problems

The open-ended test item responses were scored using the Scorecard for Evaluation the Decision-Making Framework for Solving Practical Problems (Appendix C). This framework was developed by Dr. John Ross at The Ontario Institute for Studies in Education. The scorecard indicates rules students use when making decisions. These skills are used in solving practical problems (Ross, 1944; Manifold, 1984; Martin, 1988). The measurement scale for this instrument is an interval scale. The scoring has equal intervals predetermined on the scorecard. Categories of decision making skill levels are numbered 1 through 13, with 13 being the highest skill level.

All tests were scored by the researcher and one other evaluator. Before the scoring began, both raters were
trained in the use of the decision making framework utilizing the handbook, *Evaluating Practical Reasoning in Home Economics* (1987). Each rater read, rated, and discussed sample student responses until agreement on skill scores were reached.

Raters only evaluated student responses to the first question: "HOW would you go about deciding what to do?". The two raters evaluated the test in the same order after tests were randomly arranged, using a computer random numbers program. Raters first scored responses to question 2, then responses to question 3, question 4, and question 1. Both raters' scores were averaged together for the statistical analysis. The total score was used in statistical procedures, i.e. analysis of variance, & tests, and forward stepwise regression. In order to determine the average decision making skill level, the total score was divided by four. The highest decision making skill level possible is 13.

The inter-rater reliability for the test scoring was determined by using decision making level score based on Ross' (1984) Decision Making Framework (Appendix C) and the percentage of agreement between the raters. Two raters rated five unusable student tests and fifteen student tests on four items. Agreement of scores were taken (Appendix D). The agreement of scoring was 88.75%. The Chi square
calculation was 0, showing no difference among raters. As the rating continued past the fifteenth test, the raters agreed more than they had at the beginning of the rating. This was evident by observing scores past test fifteen; the same scores were given by raters on their rating sheets. This was evidence that the reliability was greater as the raters continued. An average of each item scored was taken as the data for each test.

Content validity was established for both the test and scorecard by using a panel of four experts in the area of home economics decision making instruction and practical reasoning. Each panel member was asked to evaluate items on the theoretical framework, comprehensiveness of the items, and clarity. Few suggestions were made and the instruments were considered valid (Gay, 1985).

**IOWA Tests of Basic Skills**

The IOWA Tests of Basic Skills reading scores were used as an intervening variable and a covariant. This test was administered in the second semester of sixth grade. The IOWA Tests of Basic Skills provide for comprehensive and continuous measurement of fundamental skills: vocabulary, reading, the mechanics of writing, methods of study, and mathematics. These skills are crucial to current day-to-day
learning activities as well as to future educational development. Test analysis was based on the students' raw scores. A raw score is the number of items answered correctly on a given test. Raw scores are converted to developmental scores, grade-equivalent scores, in order to be interpreted meaningfully. Grade-equivalent scores are useful because they indicate the developmental level of the pupil's performance. The scores may be averaged for purposes of making group comparisons, and they are suitable for measuring growth. The grade-equivalent of a given raw score on any test indicates with the first number the grade level and the second number indicates the month (example 32 - made by a typical pupil in the 3rd grade level, at the end of the 2nd month) (Hieronymus and Lindquist, 1986). These scores were made available to the researcher through the English teachers of the students. These scores are accessible to teachers and were accessible to the researcher as a teacher to help in the instruction of students. Names were removed from the demographic sheets where the reading level was written and identification numbers were given to each student to protect their identity.

Content validity for the IOWA is quite good and matches content objectives for most teachers. Ample information is provided to assist school personnel in evaluating the degree of content validity (Hieronymus and Lindquist, 1986).
Data Collection

Permission was granted by the middle school principals to conduct the study. After this approval, three seventh grade classes were given the Decision Making Pretest, T1, at the beginning of the second semester. During the second semester, the experimental students received decision making instruction in home economics classes. The required health class was being taught during this time. Through the months of February to April, the decision making instruction and practice during the home economics classes took place in the experimental groups. T2, Decision Making Posttest, was given at the end of April to the three classes.

Experimental students responded to the test items during regular home economics class time. The teacher who taught the instruction administered the test to all three classes alike. A conscious effort was put forth to treat each class alike as much as possible in instruction and testing. When the testing occurred, the teacher told the students that their help was needed in understanding how people go about making decisions. Students were asked to fill out the cover page as completely and accurately as possible. The teacher emphasized the questions found in each test item. All students were encouraged to read and answer each question carefully. The teacher read the example and answered any
questions before the testing began and while the testing took place. If lower reading ability students had difficulty reading the questions, the teacher helped students individually or read questions out loud. Students recorded the beginning and ending time of the test. These particular steps of instructions were given each time the test was administered.

Data Analysis

In this study, analysis of variance (ANOVA) was used to determine if the decision making instruction treatment affected the decision making skills of students with varying reading levels. This statistical method was used to minimize the initial differences of the groups, since the groups are existing classes and non-equivalent but similar in gender and ability levels instead of randomly selected. Analysis of variance is recommended to equate groups on one or more variables (Gay, 1987). The ANOVA was used to show any significant difference of the instruction between the groups. To determine the effect of decision making instruction within each group, E1, E2, and E3, t-tests were used to determine any significant differences between T1 and T2. In this study, IOWA Tests of Basic Skills reading scores, initial decision making skill level, gender,
age, test time, and nonformal educational activities were covariants in testing the hypotheses (Table 4). A forward stepwise regression was used to determine if these variables contribute to or are related to the decision making skill levels.

Table 4

Instrumentation, Variables, and Data Analysis Procedures

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Independent Variable</th>
<th>Dependent Variable</th>
<th>Statistical Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect on DM Skill Levels</td>
<td>DM</td>
<td>DM Skills</td>
<td>Paired t-test</td>
</tr>
<tr>
<td></td>
<td>Instruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effects on DM Skill Levels</td>
<td>Reading Levels</td>
<td>DM Skills</td>
<td>ANOVA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Forward Stepwise Regression</td>
</tr>
<tr>
<td>Relationship/Contribution to DM</td>
<td>Age</td>
<td>DM Skills</td>
<td>Forward Stepwise Regression</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>DM Skills</td>
<td>Forward Stepwise Regression</td>
</tr>
<tr>
<td></td>
<td>Test Time</td>
<td>DM Skills</td>
<td>Forward Stepwise Regression</td>
</tr>
<tr>
<td></td>
<td>Nonformal Education Activities</td>
<td>DM Skills</td>
<td>Forward Stepwise Regression</td>
</tr>
</tbody>
</table>

Legend:
- DM - Decision Making
- ANOVA - Analysis of Variance (with IOWA scores)
CHAPTER IV
FINDINGS AND DISCUSSION

In this chapter, findings from data analysis will be reported to answer the three research questions and test the null hypotheses. This quasi-experimental study used two instruments to collect data, the Practical Problem Solving Test Version C/Decision Making Test (DMT) and the Scorecard for Evaluating Decision Making Framework (DMF). The DMT was composed of four hypothetical real life problems of middle school students. The open-ended response test items were given as a pretest and posttest and scored by the DMF. The DMF identified the decision making skill levels of students. The findings and discussions are reported for each of the three research questions.

Effect of Decision Making Instruction

Research Question 1

What effect does decision making instruction in home economics education have on the decision making skill levels of seventh grade students?

The following null hypothesis was tested to answer question 1:
There is no significant increase in the decision making skill levels of seventh grade students who have had decision making instruction.

The analysis used to test the hypothesis was a paired $t$-test. The differences in pretest and posttest scores represent the decision making instruction given to students. The paired $t$-tests were performed for the total group and for each group separately to show any significant differences in the pretest and posttest scores of the seventh grade students. This null hypothesis was refuted in the findings. There were, in fact, significant differences found for the total group and the E1 group, the highest reading group (Table 5). The total group paired $t$-test showed a significant increase in decision making skill levels among all groups at the $p = .001$ level ($t = 3.47$) indicating that all groups did score higher on the posttest than the pretest. Students did gain decision making skills with decision making instruction. However, only one group, E1, showed a significant difference in decision making skill levels ($p = .009$). This paired $t$-test result indicates that the higher reading level students did gain more from the decision making instruction than the other two class groups. E3, the lowest reading level group, also showed an increase in decision making skill levels, but there was not enough students to get a significant difference ($n = 12$). The E3 group started at a lower skill level than the other
groups, pretest mean 5.42, but did have the largest percentage gain, posttest mean 9.50, 75% gain. This is in comparison to E1's percentage gain of 55%.

Table 5

Paired t-Test Analysis of Decision Making Instruction Within Experimental Groups

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>TPreT</th>
<th>TPosT</th>
<th>Diff</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>64</td>
<td>8.55</td>
<td>13.22</td>
<td>4.67</td>
<td>3.47</td>
<td>.001</td>
</tr>
<tr>
<td>E1</td>
<td>26</td>
<td>10.81</td>
<td>18.31</td>
<td>7.50</td>
<td>2.82</td>
<td>.009</td>
</tr>
<tr>
<td>E2</td>
<td>26</td>
<td>7.73</td>
<td>9.85</td>
<td>2.12</td>
<td>1.29</td>
<td>.210</td>
</tr>
<tr>
<td>E3</td>
<td>12</td>
<td>5.42</td>
<td>9.50</td>
<td>4.08</td>
<td>1.98</td>
<td>.074</td>
</tr>
</tbody>
</table>

Legend
a = Total Pretest Score Mean (no division by problems/items is done)
b = Total Posttest Score Mean (no division by problems/items is done)
c = Difference of Posttest - Pretest Score Mean

A comparison of mean scores of the total sample and for each group, E1, E2, and E3, are found in Table 6. The mean scores show that after home economics classroom decision making instruction and activities, the mean scores for the posttest are higher than the pretest. The total
Table 6

Mean Scores and Ranges of Pretest and Posttest Decision Making Skill Levels for All Seventh Graders in Experimental Groups

<table>
<thead>
<tr>
<th>DMT</th>
<th>Total Group n=64</th>
<th>E1 n=26</th>
<th>E2 n=26</th>
<th>E3 n=12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest DMSL Mean</td>
<td>b 2.14</td>
<td>2.70</td>
<td>1.93</td>
<td>1.36</td>
</tr>
<tr>
<td>Pretest DMSL Range</td>
<td>c 0-6.0</td>
<td>.75-6.0</td>
<td>.75-5.0</td>
<td>0-3.5</td>
</tr>
<tr>
<td>Posttest DMSL Mean</td>
<td></td>
<td>3.31</td>
<td>4.58</td>
<td>2.46</td>
</tr>
<tr>
<td>Posttest DMSL Range</td>
<td></td>
<td>.25-9.0</td>
<td>.25-9.0</td>
<td>.5-9.0</td>
</tr>
<tr>
<td>Gain in DMSL Mean</td>
<td>d +1.17</td>
<td>+1.88</td>
<td>+.53</td>
<td>+1.00</td>
</tr>
</tbody>
</table>

Legend
a = DMT/Practical Problem Test Version C Decision Making Test
b = DMSL/Decision Making Skill Level Mean Score was determined by dividing the DMT total by number of problems/items on the test (4).
c = DMSL/Decision Making Skill Level Range Score was determined by dividing the DMT total high and low by number of problems/items on the test (4).
d = Gain in mean score of DMSL was found by subtracting the mean pretest score from the mean posttest score.

Sample mean score was 2.14 on the pretest and 3.31 on the posttest, a gain of 1.17 skill level. Each experimental group showed a gain in mean scores. E1 had the highest gain
In mean score of the three groups of 1.88, E2 had the lowest gain in mean score of the three groups of .53, and E3 had a gain in mean score of 1.00. These test mean scores suggest that decision making instruction and activities of the experimental seventh grade home economics classes did influence their score.

The null hypothesis, there is no significant increase in the decision making skill level of seventh grade students who have had decision making instruction was refuted. There was significant increases among the total group in decision making skill levels, especially for students of the higher reading levels.

**Discussion**

This finding is similar to findings by Martin (1988). In her study, the practical reasoning instruction made a significant contribution to decision making skill levels, $f = 9.13$ at the significance level of .0005. In contrast to this study of three months, the students were tested first at the beginning of the second semester of the ninth grade level, they received home economics instruction but did not receive any decision making instruction during the semester and was tested once again four months later. Then a third decision making test was administered to these students at tenth grade, second semester. The practical
reasoning unit was taught and another test was given after eighteen days of instruction. The final decision making test was given at the end of the semester. For comparison to this study, the ninth grade students without practical reasoning, but with one semester of home economics instruction had a decision making skill level mean of 2.92. This would compare to the decision making skill level mean for this study's subjects of 2.14 on the pretest and 3.31 mean score on the posttest. In both of these studies similar pretest mean scores were found, but a higher posttest mean score was achieved for seventh graders with decision making instruction in home economics than ninth graders without decision making in home economics instruction.

The highest score on the decision making test achieved by any student was 9.0 on the 13 point scale (See Appendix C). The instruction taught to these seventh graders began at the lower levels of decision making and ended at the ninth level. Since students were taught to the ninth level, level thirteen (the highest possible level) was not expected to be obtained. It might have been possible for students to reach level thirteen, but it would have been with the student's own initiative, not from the instruction.

The E2 group's, the middle reading level group, gain
mean score on the DMT was +.53, the lowest gain of the three
groups. This compared to the E3 group's, the lowest reading
level group, mean score was a 1.00. However the range of
scores for all groups reached the 9.0 level. This is the
highest level instruction was given to students. This could
indicate that all students of differing reading abilities
can reach the higher levels of decision making skills with
instruction and practice.

Other factors than reading may have influenced these
scores. Two such factors could be the motivation of
students and/or the time of day the class was held for these
students. The motivation could have been less for the E2
group for several reasons. The fact the test included the
same problems of the test they had taken earlier could have
influenced their motivation. This may have been a factor in
each class since negative scores were made in all three
groups. The time of day the class was held for these
students could have been another factor. The school day
for these students begins at 9:20 A.M. and ends at 3:45
P.M.. The morning classes seem to be more alert and ready
to learn than the afternoon classes. If frustrations in the
school setting have occurred during the day, i.e., poor
grades, detentions, tardiness to class, conflicts with
friends or teachers, etc., afternoon students show much
less enthusiasm for class than morning students. E2 was the only afternoon classes in the study. E1 and E3 were both morning classes.

As data was collected, the researcher found question 4 from the DMT had relatively low scores compared to the other questions that students achieved decision skill levels of 2.0 - 9.0 on the other three questions. This could have affected the outcome of the test scores. Question 4 stated: Your parents have finally allowed you to go to your first big party with your friends from school. You’re having a great time when one of your friends come over, with a big grin on their face, and asks if you would go outside behind the house. “Willie brought some beer. Want to come?” How do you go about deciding what to do? Out of 128 test scores, 37 scores (27%) scored question 4 at the 0 or 1st level when questions 1 - 3 was scored at level 2 or higher. Typical responses were:

"Say no. I would get in trouble."
"I would just say no."
"I would say I don’t want none."
"I would say no."
"I would say no and then I would leave."
"I would say no! Then make up some excuse."
"Say no!"

The researcher felt the drug education these students had received was making an impact. Classes of home economics, health, and science and the Drug Abuse Resistance Education
(D.A.R.E.) Program are educational influences of the study’s subjects. One big part of the drug education is teaching students to "just say no". Hopefully, students have gone through the decision making reasoning process in dealing with the drug issue through these classes and programs. Now, when given a problem situation about drugs on this DMT, they give a simple but firm answer. A choice is made, but no justification or alternatives are discussed (level 0 on the DMT). This does not show the decision making processes of the student, but hopefully it has taken place earlier. Another possible reason for the "no" answers on the question 4 could be that students are doing what an authority figure has told them to say without any reasoning process for themselves. A problem that is not as familiar, requiring more judgement about drugs might have been a better question 4. One positive point in using this question on the DMT is the researcher learned that many students are using the "just say no" choice in drug decision making.

Effect of Reading Levels on Decision Making Skill Levels

Research question 2

What effect does reading levels have on decision making skill levels of seventh grade students?

The following null hypothesis was tested to answer question 2:
There is no significant differences in the decision making skill levels among the three experimental groups of seventh grade students.

The analyses used to test this null hypothesis was an analysis of variance (ANOVA) and a forward stepwise regression. From these analyses, reading levels were found to be significantly related to students' decision making skill levels, thus refuting the hypothesis.

In the ANOVA analysis, no significant differences was established between the groups at the p = .05 level, f = 1.69, p = .19. This may indicate that all classes did gain in decision making skill levels and it was not significant between the groups because all classes received equal amounts of instruction and the same learning experiences (See Appendix A). This gained knowledge and experience in decision making was among all classes.

The mean reading levels and range of reading levels for each seventh grade class, E1, E2, and E3, in this study are reported in Table 7. As indicated on the table, the reading levels range from 3.0, 3rd grade level, to 11.2, 11th grade, 2 months level. Since each class is grouped by reading levels, the mean reading levels begin with E1 at the highest reading ability to E3 at the lower reading ability. There are instances when behavior is the main consideration of
placement in a class. In this sample, one student in the E2 group was placed there for that reason. If reading level had been the first consideration, this student would have been placed in the E3 class group. The reading level for that student was 3.0, 3rd grade. The next lowest reading level in E2 was 5.0, 5th grade. Taking that into account, each group's range of reading levels is sequenced, overlapping slightly: E1 at 5.7 - 11.2, E2 at 5.0 - 9.2, and E3 at 3.0 - 6.8. Data from each group was collected and analyzed from students as placed in classes. The researcher decided one student did not jeopardize the validity of the findings because of one lower reading level in the E2 class group.
### Table 7

**Reading Levels of Experimental Groups of Seventh Graders**

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean of RL</th>
<th>Range of RL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Group n=64</td>
<td>7.09</td>
<td>3.0 - 11.2</td>
</tr>
<tr>
<td>E1 n=26</td>
<td>8.14</td>
<td>5.7 - 11.2</td>
</tr>
<tr>
<td>E2 n=26</td>
<td>6.86</td>
<td>3.0 - 9.2</td>
</tr>
<tr>
<td>E3 n=12</td>
<td>5.33</td>
<td>3.5 - 6.8</td>
</tr>
</tbody>
</table>

**Legend**

- **a** = Mean of RL - Mean of Reading Levels given in grade level and months (ex. 7.8 = 7th grade, 8 months reading level)
- **b** = Range of RL - Range of Reading Levels given in grade level and months.
- **c** = This range would be 5.0 - 9.2 if one student placed in E2 for behavior was placed in E3 because of reading level.

In another analysis of the second hypothesis, two model selection methods were used: forward and stepwise methods. Both techniques used the same model of variables for decision making skill levels. The variables that were considered in these selection methods were reading level, posttest time, pretest time, age, gender, and nonformal
educational activities. The regression variable, reading level, was found to contribute significantly to the students' decision making skill levels (p = .006, See Table 8). The B value or constant used to predict the magnitude of a variable's effect on the student's decision making skill levels was .08. When a constant factor, such as this, has a positive value, the variable is adjusted upward. If the constant factor contribution is negative, there is a downward adjustment of the variable. The B value constant suggests how the variable affects the decision making skill level of students. If the B value is positive, the variable is highly interrelated and the model R^2 will be greater.

Table 8

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>a</th>
<th>b</th>
<th>2b</th>
<th>Partial R</th>
<th>Model R</th>
<th>F value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Level</td>
<td>.08</td>
<td>.12</td>
<td>.12</td>
<td>8.15</td>
<td>.006</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend
a = Constant factor entered in analysis; positive (+) B value = upward adjustment of variable; (-) B value = downward adjustment of variable
b = The total percentage of this variable (reading level) entered into this statistical model that contributes to the decision making skill level of students.
When nine variables were entered into the forward stepwise regression, reading level was found to contribute significantly. The reading level contributed 11.6% to the variance in students' decision making skill levels or their ability to do well on the DMT. The level of significance was .006.

Another indicator that reading levels contributed to students' decision making skill levels is evident from Table 6. Because of the differing levels of reading ability, the pretest score and the gain was higher for E1 than E2 or E3. This regression finding indicates that reading ability does contribute to the decision making skill levels of these seventh grade students.

Thus, the null hypothesis, that there is no difference in the decision making levels among the three experimental groups of seventh grade students, was refuted.

Discussion

Two previous home economics research studies had similar findings. Edersheim (1988) and Martin (1988) also found students' reading levels contributed to their decision making skill levels. Edersheim found that reading level contributed 31% to the variance in students' decision making level scores. The subjects in Edersheim's study were tenth graders in contrast to this study's subjects of seventh
graders. Similarly, both samples were from a rural school setting. Martin's sample also included ninth and tenth grade students from a rural school setting. Martin used the analysis of covariance with the instructional group, reading levels, and prior home economics experience as the covariants. In her study, reading levels contributed 20% to her tenth grade students' decision making skill levels ($f = 16.25$), a significant finding at the .0002 level.

Factors Contributing to Seventh Grade Students Decision Making Skill Levels

Research question 3

What factors are related and contribute to seventh grade decision making skill levels?

a. reading level
b. nonformal educational activities
   1. 4-H
   2. Boy/Girl Scouts
   3. Church/Sunday School Attendance
c. test time
d. age
e. gender

The following null hypothesis was tested to answer question 3:

There are no factors that significantly predict the decision making skill level of seventh grade students.

The variables, reading level, nonformal educational activities, test time, age, and gender, were collected at pretest time. Using these factors in a forward stepwise regression analysis, the null hypothesis was refuted.
While a total of nine separate variables were entered into the forward regression, reading level and posttest time were the only variables found to have contributed significantly. The contribution of reading level and posttest time contributed significantly to the variance in students' decision making skill levels: 12% (p = .006) and 7% (p = .002) respectively. These two factors together contributed 19% to the variance in students' decision making skill levels (Table 9). This suggests that other variables, not measured in this study contributed 81% or less to the variance.

Table 9

Forward Stepwise Regression of Factors Related or Contributing to Students' Decision Making Skills

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>a</th>
<th>b</th>
<th>Partial R</th>
<th>2b</th>
<th>Model R</th>
<th>2</th>
<th>F value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Level</td>
<td>.08</td>
<td>.12</td>
<td>.12</td>
<td>8.15</td>
<td>.006</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest Time</td>
<td>.29</td>
<td>.07</td>
<td>.19</td>
<td>7.10</td>
<td>.002</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend
a = Constant factor entered in analysis; positive (>=) B value = upward adjustment of variable; (-) B value = downward adjustment of variables.
b = The total percentage of this variable entered into this statistical model that contributes to the decision making skill level of students.
Posttest Time

Posttest time was a significant factor. This could be due to the negative differences of the posttest/pretest scores. There were 22 students out of 64 (34%), who did not gain in scores from pretest to posttest. Possible reasons for this could be motivation, repeat of the same problems on the DMT, or no learning took place for these students and they forgot earlier knowledge or skills they had for the pretest score. Each group had the following percentages of scores: E1 had 11 of 26 (42%), E2 had 9 of 26 (35%) and E3 had 2 of 12 (17%) negative scores. Seeing that the higher reading level group had the highest percentage of the negative scores, the researcher reasoned that motivation may have been one reason these negative scores were achieved. Since the test was used as a teaching tool and not as a test grade and the problem test items were a repeat, the challenge may have not been there for the higher level students. Many of these students might have felt it a waste of time to repeat something they already knew and didn’t put forth effort since it "doesn’t count" toward a grade. This could have affected the posttest time factor. Other possible causes for the posttest time factor could be students had spent time in the classroom doing reflective thinking during the instruction and were faster on the posttest because of that practice. This may have
been coupled with the fact the posttest was a repeat of the same problem test items and the students were familiar with them so reading took less time.

**Gender**

Gender was not a significant factor in this study. Two research studies dealing with decision making have similar and different findings from those of this study, Ross (1979) and Edersheim (1988). Ross’s subjects were adolescents of the middle school age and he found that the test results indicated, in two-thirds of the items on the decision making test, a weak relationship between student performance and gender differences. On some items, males scored slightly higher, on other items they scored slightly lower but there was no consistent pattern in the direction of the differences either by skill or by issue (Ross, 1979). Ross’s study showed some slight differences. Edersheim looked at many possible variables contributing to decision making skills and found gender to contribute 1% at the significance level of .03 and age to contribute 1% at the significance level of .05 (Edersheim, 1988). This study found a small contribution of the age variance to decision making skill levels.

**Age**

The age variable was not a significant factor in this
study. The age variable was very similar among subjects. The range of age of the total group was 26 months. There were only four months of a mean difference among groups which means developmentally these students are very close together. A significant difference may have been seen if age were a wider range of months or years.

**Nonformal Educational Participation**

Nonformal educational participation in 4-H, Boy/Girl Scouts, or church and Sunday School attendance was not a significant factor in this study. In analysis of the data, variables were entered into a regression using each activity singly, and then grouping them as having participated or not participated in one or more of these activities. Both regression analyses did not show a significant contribution of nonformal educational activities to the decision making skills levels of these students. For the nonformal educational activities, a possible significant difference might be measured if more specific data were collected. Number of years in the organization, offices/leader roles held, and activities of participation would give more accurate data for analysis.

Students who did participate in 4-H or Scouts would have had one to four years of experience. During this experience, students have hopefully seen examples of
decision making through leaders, older members, and parents. Actual decision making done by the individual student without help from a leader, older member, or parent could be very limited. These students are in the lower levels of doing decision making on their own but critical to their development as they progress to higher decision making levels. Ideally, examples are set and most decision making processes are done with other adults or older members to help guide them. Without this foundation, the development of higher levels are not likely to be reached. It is unreasonable to expect students will reach the highest levels of the skill unless they are taken through the initial stages. The researcher considers these students may be at an advantage because of the foundation they are building. If is difficult to quantitatively measure the foundation skills of decision making in these nonformal educational activities. The contribution to decision making skills may be better assessed when more student participation and experience occurs.

The null hypothesis tested, that there are no factors that significantly predict the decision making skill levels of seventh grade students, was refuted. The posttest time factor, along with reading level was found to have contributed to the variance of students' decision making
skills, but gender, age, and nonformal educational experiences were not found to contribute to this variance.

**Discussion**

An analysis of the variables' frequencies show a much higher 4-H participation in groups E1 (65%) and E2 (54%) compared to E3 (17%) (see Table 3). Participation in scouts was very similar in all groups ranging from 42% to 50%. Church and Sunday School attendance was 89% for E1, 50% for E2, and 67% for E3. E3 has the lowest percentages in all nonformal educational activities except for church and Sunday School attendance.

These findings could be attributed to motivation. If a student of lower reading abilities is not self-motivated or family-motivated to participate in out-of-school educational activities, the student may choose not to participate. Lack of motivation may come from lower reading ability students becoming frustrated or parents having frustrations with the educational setting. Another possible cause of less participation of the E3 group could be that these students possess lower self-esteem. Past failures or difficulties that these students may have in educational settings may be a cause. They will choose not to risk failure rather than participate and risk being successful. This is a cycle that is hard to break.
Table 3 lists the other variables of test time, age, and gender. Test time means of both pretest and posttest, age means, and gender percentages are similar for all groups. Test times range from 12.65 minutes to 10.96 minutes. Age mean is similar in all groups, with only four months being the largest mean difference in age. The gender percentage range is 46% males and 54% females among the three groups.

Summary of Findings

All three null hypotheses were refuted. In testing the first, there was a significant increase in the decision making skill levels of seventh grade students who had decision making instruction. A comparison of mean scores showed a significantly higher posttest mean score for all three experimental groups. A significant difference did occur within groups when a paired *t*-test analysis was conducted, but the total group showed a significant difference of *t* = 3.47, *p* = .001, along with the single group of E1 of *t* = 2.82, *p* = .009. Previous home economics research, (Martin, 1988), also refuted this null hypothesis.

The second null hypothesis was refuted: there were significant differences in the decision making skill levels among the three experimental groups of seventh grade
students. Similarly, a forward stepwise regression showed reading level contributing 11.6%, \( p = .006 \) to the variance in students' decision making skill levels. Another indicator of this finding was a comparison of mean pretest scores for the groups. The higher reading level group, E1, had a higher pretest score than the other two reading level groups. Earlier home economics research done on decision making support this finding also (Edersheim, 1988 and Martin, 1988). An ANOVA analysis established no significant difference between groups. This indicated all groups received similar instruction.

The third null hypothesis was also refuted: there were factors that significantly predict the decision making skill level of seventh grade students. Along with reading level, posttest time was found to be a contributing factor \( f = 7.10, p = .002 \). Thus, all null hypotheses of this study were refuted by statistical analyses.
CHAPTER V
SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Summary

The purpose for this quasi-experimental and correlational study was to determine the effectiveness of decision making instruction, and the contribution of reading levels, test time, age, gender, experiences in 4-H and Boy/Girl Scouts, and church/Sunday School attendance to the decision making skill levels of seventh grade home economics students in a rural middle class community.

Three reading level groups of sixty-four seventh grade students comprised the sample. Each group received the same home economics instruction on decision making and a required health course. Pretest and posttest were administered over a period of three months.

The instruments used to collect data for this study were: the Practical Problem Solving Test Version C/Decision Making Test (DMT) and the Scorecard for Evaluating Decision Making Framework (DMF). The DMT was composed of four real-life problems middle school students could encounter. The open-ended response test items were scored by two
raters. The DMF was used to analyze and identify the decision making skill levels of students.

Reliability for the DMT pretest and posttest was determined by using the Cronbach's alpha statistical formula. The reliability coefficients were .76 for the pretest and .92 for the posttest.

Inter-rater reliability for the DMF was determined by percentage of agreement and Chi square calculations. Percentage of agreement was 88.75% and the Chi square coefficient was 0, indicating no difference among the raters.

The analysis of variance with the instruction as the variable indicated that the decision making instruction did not make a significant difference between the groups, \( f = 1.69, p = .19 \). There was a gain in mean score from pretest to posttest between the groups, +1.17, but it was not found to be a significant.

The instruction was found to be significantly different within the groups. Using a \( t \) - test analysis, the total group showed a significant difference between pretest scores and posttest scores of \( t = 3.47, p = .001 \). Determining the analysis of each group determined the high to average reading group to have a significant difference between pretest and posttest scores of \( t = 2.82, p = .009 \).
A forward stepwise regression was used to show the contribution of reading level, age, gender, test time, 4-H and Scouts participation, and church/Sunday School attendance to decision making skill levels. The test showed a 12% variance in decision making skill levels for reading level at a significance level of $p = .006$, and a 7% variance in decision making skill levels for posttest time at a significance level of $p = .002$.

Conclusions

Several conclusions were reached in this study:

Decision making instruction and practice in a middle school home economics curriculum can improve the decision making skill levels of early adolescent students. A significant gain in decision making skill levels within groups of seventh grade students with varying decision making levels resulted from three months of decision making instruction using many resources from the Quest Skills for Adolescent Curriculum.

Students with higher reading levels reached higher decision making skill levels.

While reading level and posttest time contributed 19% to the variance in decision making skill levels, many other factors contributed 81% to students' decision making skill
levels that were not identified or explained in this study.

Implications

The findings in this study suggest several implications for teachers and others interested in improving decision making skill levels in middle school students.

Middle School Educators

Middle school educators should consider decision making instruction an important component of the middle school home economics curriculum and look for ways to increase decision making levels of students in other classes.

Middle school educators should be sure each decision making experience, whatever the time allowance, contributes to the decision making skill levels of early adolescent students.

Teaching resources are available to middle school educators for teaching decision making instruction. A home economics curriculum and Quest Skills for Adolescence Curriculum were the resources used for the decision making instruction in this study. The Ohio Department of Education, Division of Vocational and Career Education Home Economics Middle School Resource Guide (1990) is now available to be used for decision making instruction also.

Middle school educators should provide real-life problems for early adolescents to use and practice decision
making. Role-modeling and role-playing should be an important part of the decision making instruction. This will provide an example to students and a chance to practice decision making skills in the classroom among peers and teachers. Remembering adolescents are moving from the concrete to abstract levels of thinking (Piaget, 1952), this provides a concrete base for abstract thinking to occur.

Educators need to be aware of the reading levels of students and how reading levels contribute to decision making skill levels. Educators need to present decision making lessons taking into account the reading abilities of students and strive to improve both the reading levels and decision making skill levels. Students need to be given as many opportunities as possible for reading activities through written or oral expression in all classrooms. Students with lower reading levels may have lower decision making skills because of false assumptions about what they can and cannot do, failures in the educational system, fears of answering questions incorrectly, poor reasoning skills, past nonformal educational experiences, and/or motivation from their environments.

In order to get students to engage in higher order thinking skills and practice the decision making process
students need to be encouraged to do reflective thinking. Processing questions from the teacher, wait time when questioning, discussion of problems in the classroom, and ample time for written expression will give students the time they need to develop an ability to do reflective thinking and reach high levels of decision making. Opportunities to do reflective thinking can come through role-modeling from the teacher, role-playing with peers, and discussions of problems in the classroom among peers.

Parents

Middle school is a transition for both parents and the young adolescent. It is important to help parents understand the differences in middle school and elementary course offerings through orientations, parent meetings, newsletters, or articles in school publications. Parent encouragement of students to enroll and be successful in curriculum that has decision making instruction will help their adolescent achieve better decision making skills.

Parents need to be a role-model of good decision making skills. Parents need to understand ways to involve their adolescent in as much family decision as they can and to encourage decision making activities for their youth. This will provide another way for their son/daughter to build
decision making skills of their own.

Policy Makers

Policy makers need to be encouraged to promote and provide state funded home economics curriculum that includes decision making instruction at the middle school level. This is a vital resource to help adolescent youth with the tough decisions they need to make in our society today as they choose a healthy or destructive lifestyle.

Policy makers need to be aware that "minuses" many times are in a much greater need than the "pluses". That is, educators tend to get caught up in the statistics of a certain program and look for the big gains. When success is there, then support for the program is provided. Many times when educators are not visibly being successful or showing large gains on a test, e.g. youth at risk and decision making instruction, there needs to be support and help from legislators. Lack of large gains in a program doesn't mean it isn't working. Small gains may indicate a slow paced process that little by little the goal is achieved.

Recommendations

The following recommendations are made for further studies:

An true experimental design with early adolescents, control and treatment groups, with pre/post testing, needs
to be conducted to assess the contribution of middle school
home economics decision making instruction on decision
making skill levels. This will allow a better analysis of
the effect of decision making instruction vs.
non-instruction and the contribution of health education.

In this study, the variance of reading levels and
posttest time only contributed a total of 19% to the
decision making skill levels. There are other factors that
are causing 81% of the variance. Additional studies need to
be conducted to identify and or study the many probable
factors that contribute to the decision making skill levels.
There are many possible factors to study for this variance,
e.g. self-esteem, family factors, and grade point average.

A qualitative and quantitative study that examines
factors of nonformal educational activities, including
parenting educational experiences and their contributions to
decision making skill levels of students needs to be done.
Getting more specific data, i.e. years of participation,
leadership/officer roles, project types, responsibilities in
the activities, etc., would be helpful in increasing
detailed data to analyze.

The size of sample should be increased and/or even in
all groups. Sampling of groups should be random if
possible. Differing locations of population and sample are
needed, suburbs and urban.

A longitudinal study or follow up study of this sample in decision making instruction and skill levels with analysis of factors contributing to the development of decision making skill levels is needed. This would provide an overall study of students' progression in the maturation process in developing thinking skills. Teachers could benefit in the findings for presentations of classroom lessons, where weaknesses are in the curriculum, what curriculum is needed or obsolete.

A battery of decision making test problems/items are needed for repeat testing. Pretest questions need to differ from posttest questions so problems will not confound the findings by student non-motivation.

In developing a study with pretest and posttest decision making problems, use the test as a testing resource, e.g. for extra credit, added points to an existing assignment, or points given if an increase in decision making skill levels is made from pretest to posttest. This will increase the motivation to do well on the test without anxiety.
APPENDIX A
Lessons for Decision Making Instruction
Many resources from *Skills for Adolescents Curriculum*,
Quest National Center, Granville, Ohio
Unless Otherwise Specified
Middle School Level
Building Self-Confidence Through Better Communication

**Unit Title:** Ear Ye! Ear Ye!: Learning Effective Listening

**Concept:** Communication

**Generalization:** Effective listening improves self-confidence and improves our ability to communicate.

**Objectives:** The student will:
- 1. name the three key elements of good listening.
- 2. give examples of each one.
- 3. explain how good listening can enhance self-confidence and community building.
- 4. experience listening well and being listened to.
- 5. appreciate the benefits of good listening.

**Learning Experiences**

<table>
<thead>
<tr>
<th>Learning Experiences</th>
<th>Teaching Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Review poor listening habits.</td>
<td>Review/Introduction/Review Skills</td>
</tr>
<tr>
<td>Go over the worksheets, &quot;Magic Keys to Good Listening&quot; and &quot;My Listening Skills&quot;.</td>
<td>Lecture</td>
</tr>
<tr>
<td>2. Teacher and a student will demonstrate the three keys to good listening by dividing into pairs and using worksheet &quot;Boundary Breakers&quot;.</td>
<td>Role-modeling</td>
</tr>
<tr>
<td>3. Have students turn to &quot;Boundary Breakers&quot;. Choose several pairs of students to demonstrate the good listening skills by one being the speaker and the other the listener.</td>
<td>Role-playing</td>
</tr>
<tr>
<td>4. Bring the class together and discuss the good listening skills shown.</td>
<td>Discussion</td>
</tr>
</tbody>
</table>

**Processing Questions**

1. What was easiest about listening well?
2. What was the hardest thing to do?
3. Which poor listening habits kept showing up?
4. How did it feel to be listened to? Focused upon?
Encouraged to answer questions?
5. What is the greatest benefit of good listening for the listener? For the speaker?
6. What are some of the most important things you’ve learned from doing this exercise?
Evaluation Procedures
1. Questioning allows monitoring of student's progress of processing objectives.
2. Worksheet "Magic Keys to Good Listening".
3. Worksheet "My Listening Skills".
Middle School Level

Friends: Improving Peer Relationships

**Unit Title:** The I's Have It: Communication With "I Feel" Statements

**Concept:** Peer Relationships/Communication

**Generalization:** Direct and honest communication with friends help solve problems and resist negative peer pressure.

**Objectives:** The student will:

1. identify some typical roadblocks to healthy friendships.
2. describe ways to use "I feel" statements in removing these roadblocks.
3. identify characteristics of positive communication in healthy friendships.
4. support the need for using "I feel" statements in order to remove roadblocks in relationships.
5. become committed to taking responsibility for her/his feelings in relationships.

<table>
<thead>
<tr>
<th>Learning Experiences</th>
<th>Teaching Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The need to belong to a group and have friends is extremely important to adolescents. No matter what kind of friendship we're involved in, we'll always be better off if we can experience the most direct and honest communication possible in our friendships. One way of being direct and honest in a friendship is to use an &quot;I feel&quot; statement.</td>
<td>Introduction/Lecture</td>
</tr>
</tbody>
</table>
| 2. Write down "I feel" statement formula - When you...
  I feel...
  Because.... | Lecture |
| 3. Share with the class an example. | Role-modeling |
| 4. Have students brainstorm some situations that might come up in a friendship. Write them down. | Brainstorm/Inquiry |
| 5. Worksheet "I Feel Statements". Have students choose six situations and write "I feel" statements. Have students share with the class their statements. Insist that all students follow the "I feel" statement format. | Simulation |
6. Emphasis that the "I feel" statements do not solve problems. They're a way of making communication clearer and more direct.

Processing Questions
1. How does an "I feel" statement help to make the sharing of thoughts and feelings more direct and honest?
2. How might you share these statements with your family? Friends? Teachers? Others?
3. When would an "I feel" statement not work? For what reasons? What might be a better way to handle these situations.

Evaluation Procedures
1. Questioning allows monitoring of student's progress of processing objectives.
2. Worksheet "I Feel Statements".
4. Handout of questions over reading.
Middle School Level

Friends: Improving Peer Relationships

Unit Title: Peer Pressure: To Do or Not To Do - That is the Question

Concept: Peer Relationships

Generalization: Direct and honest communication with friends help solve problems and resist negative peer pressure.

Objectives: The student will:
1. define and describe the concept of peer pressure.
2. distinguish between assertiveness and aggressiveness.
3. describe how assertiveness can help control peer pressure.
4. be concerned about the influence of peer pressure in his/her life.
5. appreciate the importance of assertiveness in controlling peer pressure.
6. develop assertiveness and the confidence to resist peer pressure when it contradicts her/his personal feelings or beliefs.

Learning Experiences
Teaching Strategies
1. Today we're going to explore other new ways to communicate openly, honestly, and directly with our friends so that we can stand up for ourselves and maintain our friendships at the same time. Introduction/Lecture
2. Ask the students:
   a. How do you define peer pressure?
   b. What are the benefits of peer pressure?
   c. What are the danger of peer pressure?
   d. What do you think is the difference between positive and negative peer pressure?
   e. What do you think is the difference between peer pressure and peer support?
   Questioning/Discussion
f. What are some of the reasons why it might be important to resist peer pressure?

3. Guide the students to understand that often peer pressure forces people to say and do things they might not otherwise want to say or do. One of the best ways to resist negative peer pressure is to learn to be assertive. Define assertiveness.

4. Demonstrate assertiveness.

5. Make two lists - one labeled Assertive Behaviors and the other Aggressive Behaviors. Have students brainstorm actions, words, and feelings that best describe the two categories.

6. Ask students to role-play situations of assertiveness and aggressiveness.

7. Discuss each situation. Decide if it was aggressive or assertive.

Processing Questions
1. What is the hardest part of resisting peer pressure?
2. What are some things we can do to improve our ability to express ourselves, meet our own needs, and do what is best for us in group situations?

Evaluation Procedures
1. Questioning allows monitoring of student's progress of processing objectives.
2. Homework Worksheet - "Family Interview on Peer Pressure".
Middle School Level

Friends: Improving Peer Relationships

Unit Title: Pressure: Inside and Out

Concept: Peer Pressure

Generalization: Direct and honest communication with friends help solve problems and resist negative peer pressure.

Objectives: The student will:
1. define "inside pressure" and be able to give examples.
2. identify situations in which she/he experiences inside pressure.
3. Use self-talk and other strategies to resist inside pressure.
4. develop the skills to change negative self-talk.

Learning Experiences

1. Have you ever been with people who were doing something you didn’t want to do, and you end up doing it anyway even though no one put pressure on you? The pressure you feel is caused by what you’re saying to yourself.

2. Display examples of inside pressure sayings.

3. Display a written situation(s) in which inside pressure can result on easel.

4. Display examples of what you can do to handle inside pressure on easel.

5. Do handout "Inside Pressure Situations".

Teaching Strategies

Introduction/Questioning/Discussion

Lecture - Notetaking

Discussion/Inquiry

Discussion/Brainstorming

Processing Questions:
1. Consider the various ways to handle inside pressure that we have discussed. Which do you feel most comfortable with?

Evaluation Procedures:
1. Questioning allows monitoring of student’s progress of processing objectives.
2. Worksheet - "Inside Pressure Situations"
Middle School Level

Friends: Improving Peer Relationships

Unit Title: A.S.K.: A Three-Step Process for Saying No

Concept: Peer Relationships

Generalization: Direct and honest communication with friends help solve problems and resist negative peer pressure.

Objectives: The student will:
1. describe the three-step process for saying "no" to negative peer pressure.
2. explain how and under what circumstances the process might be helpful.
3. practice each of the steps in simulated situations.

<table>
<thead>
<tr>
<th>Learning Experiences</th>
<th>Teaching Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In the last few days we’ve been talking about pressure - both inside and outside - and how to resist it. What are some examples of inside pressure? How do we handle inside pressure?</td>
<td>Introduction/Lecture/Review</td>
</tr>
<tr>
<td>2. Introduce the A.S.K. process with the worksheet &quot;A.S.K.&quot;.</td>
<td>Lecture/Student Reading</td>
</tr>
<tr>
<td>3. Give examples of even when people know how to handle inside pressure and be assertive with friends, they get involved in problem situations. Why?</td>
<td>Lecture/Student Reading Discussion</td>
</tr>
<tr>
<td>4. Students give examples of alternatives that would work in these situations.</td>
<td>Brainstorming</td>
</tr>
<tr>
<td>6. How can we know when a situation can lead to trouble. Use easel for answers. Have some ready.</td>
<td>Lecture/Brainstorming</td>
</tr>
<tr>
<td>7. Give students situations where they use the A.S.K. process.</td>
<td>Role-playing</td>
</tr>
</tbody>
</table>

Processing Questions
1. What is hard about asking questions in a potentially negative situation?
2. How did you feel asking questions when we role-played? Saying no?
3. Name a situation you've been in these skills could have helped you?

**Evaluation Procedures**
1. Questioning allows monitoring of student's progress of processing objectives.
2. Worksheet - "A.S.K. Process".
3. Participation in role-playing activities.
Middle School Level

Friends: Improving Peer Relationships

Unit Title: Building Bridges, Not Walls: Handling Conflict in Friendships

Concept: Peer Relationships

Generalization: Direct and honest communication with friends help solve problems and resists negative peer pressure.

Objectives: The student will:
1. describe and practice the six-step problem solving method.
2. describe how the six-step problem solving method can be used to resolve conflict.
3. state reasons why conflict is inevitable in friendship.
4. accept conflict as a normal part of friendship.
5. be concerned about solving conflicts in friendships through positive communication.
6. accept the six-step problem solving method as a positive way of handling conflict in friendships.

Learning Experiences
1. Today's lesson introduces another way to communicate effectively in our relationships, particularly in solving conflicts. In most friendships, there tends to be some conflict, even if it's short-lived and unimportant. Ask the students:
a. Why do you think conflict is a normal part of friendship?

Teaching Strategies
Introduction/Lecture/Questioning/Discussion

2. Have students brainstorm situations in which friends might become involved in conflicts or arguments with each other and write them down.

3. Introduce the six-step problem solving method:
Step 1 - What is the problem?
Step 2 - What questions need to be asked?
Step 3 - What are all the possible ways to solve the problem?
Step 4 - Which solution(s) is the best to solve the problem?
Step 5 - Which solution(s) allows both sides to win?
Step 6 - How well did the solution work?

4. Illustrate an example using the steps.
5. Give students an opportunity to discuss their reactions. Ask students questions about their reactions.
6. Have the students divide into pairs. Fill out worksheet, "Six-Step Problem-Solving", using situations brainstormed earlier.
7. Bring students back to the large group and discuss solutions chosen and how they got to that point.

Processing Questions
1. What do you think the benefits of using this conflict resolution process could be in your own life?
2. For what reasons is it so important to state the problem clearly? To ask questions?
3. What is helpful about coming up with as many solutions as possible in the third step?
4. How do both parties "win" to some extent when this method is used?
5. What are some conflicts that you might be able to solve now?

Evaluation Procedures
1. Questioning allows monitoring of student’s progress of processing objectives.
2. Worksheet "Six-Step Problem-Solving".
Middle School Level

Strengthening Family Relationships

**Unit Title:** The Family Should Be Like an Elephant - All Ears

**Concept:** Family Relationships

**Generalization:** Direct and honest communication with family members helps solve problems and improves the family relationship.

**Objectives:** The student will:

1. Identify how to use good listening skills in typical family situations.
2. Identify how to use "I feel" statements in typical family situations under appropriate circumstances.
3. Describe ways in which family meetings can help to improve family communication.
4. Appreciate the value of sharing personal feelings and concerns within the family by using "I feel" statements.
5. Appreciate ways of improving communication within the family.
6. Accept that family members have their own concerns and that communication can be improved if each family member tries to understand the others' perspectives.

<table>
<thead>
<tr>
<th>Learning Experiences</th>
<th>Teaching Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Review lessons on listening skills and &quot;I feel&quot; statements.</td>
<td>Introduction/Review</td>
</tr>
<tr>
<td>2. Worksheet - &quot;The Family Should Be Like an Elephant - All Ears. Have students write in three family concerns they have and write an &quot;I feel&quot; statement for each.</td>
<td>Questioning/Inquiry</td>
</tr>
<tr>
<td>3. Bring group together and share &quot;I feel&quot; statements. Discuss if they feel the situation is appropriate for a statement and if stated properly.</td>
<td>Discussion/Class Sharing</td>
</tr>
<tr>
<td>4. Worksheet - &quot;My Family Tree&quot;</td>
<td>Questioning/Inquiry/Discussion/Class Sharing</td>
</tr>
</tbody>
</table>
**Processing Questions**

1. How does listening fairly to family members improve family relationships?
2. What do "I feel" statements accomplish?
3. How do "I feel" statements help us communicate better?
4. Why do you think "I feel" statements might help family members listen to each other instead of becoming defensive?
5. When might they not work?

**Evaluation Procedures**

1. Questioning allows monitoring of student's progress of processing objectives.
2. Worksheet "A Family Should Be Like an Elephant - All Ears".
3. Worksheet "My Family Tree"
4. Homework - Reading over Changes, Part 5.
5. Homework - Handout of questions over Changes reading, part 5.
Middle School Level

Strengthening Family Relationships

Unit Title: Handling Family Conflict

Concept: Family Relationships

Generalization: Direct and honest communication with family members helps solve problems and improves the family relationships.

Objectives: The student will:
1. identify ways to solve family conflict effectively.
2. apply the six-step problem-solving method to family conflicts.
3. appreciate the importance of resolving family conflicts by using the six-step problem-solving method.
4. become committed to using the six-step problem-solving method in resolving family conflicts.

Learning Experiences
1. A good way to handle conflicts in the family is through problem solving. Ideally, the solution will be acceptable and fair to everyone involved. It takes self-discipline to learn to solve family problems well.
2. Review the steps in the six-step problem-solving method.
4. Ask the class to brainstorm typical family problems or conflicts.
5. Divide the class into pairs. Use the worksheet "Learning To Solve Family Conflicts" and have one person be the parent and the other the teen. Fill out the sheet using the problem solving method and the conflicts the students brainstormed.
6. Bring the group back together and share the solutions each group decided upon. Discuss if the solution is reasonable, realistic, and the five steps were followed.

Teaching Strategies
1. Introduction/Lecture
2. Review/Lecture
3. Role-modeling
4. Brainstorming/Inquiry
5. Cooperative Learning
6. Discussion
Processing Questions
1. What are some of the problems that come up when you’re trying to solve a family conflict?
2. What can you do if someone won’t budge on a point?
3. What might be some ways to convince a family member that the six-step problem-solving method is worth trying?

Evaluation Procedures
1. Questioning allows monitoring of student’s progress of processing objectives.
2. Worksheet "Learning to Solve Family Conflicts".
Middle School Level

Developing Critical Thinking Skills for Decision Making

Unit Title: Do Your Own Think: Critical Thinking Skills

Concept: Decision Making

Generalization: Decision-making reflects varying degrees of rationality.

Objectives: The student will:
1. define the steps of the critical thinking process.
2. use the critical thinking process to examine typical experiences of early teenagers.
3. recognize the importance of critical thinking skills.
4. develop confidence in using critical thinking skills.

<table>
<thead>
<tr>
<th>Learning Experiences</th>
<th>Teaching Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. This unit emphasizes the important decisions you have to make in the months and years to come. Our community wants each of you to live a drug-free life and to assert your determination not to use harmful chemicals. We will be also be addressing the issue about what to do about people who insist on using alcohol and drugs.</td>
<td>Lecture</td>
</tr>
<tr>
<td>2. Lecture on critical thinking.</td>
<td>Lecture</td>
</tr>
<tr>
<td>a. What affects the decisions we make?</td>
<td></td>
</tr>
<tr>
<td>b. Critical thinking steps.</td>
<td></td>
</tr>
<tr>
<td>3. Pass out cigarettes advertisements to students. Discuss the ads. Ask the students:</td>
<td>Discussion/Questioning</td>
</tr>
<tr>
<td>a. How do the people look in the ads?</td>
<td></td>
</tr>
<tr>
<td>b. What else is on the ad?</td>
<td></td>
</tr>
<tr>
<td>c. Do you stop and ask yourself whether these healthy-looking people really smoke or whether they’re just models paid to look as if they smoke?</td>
<td></td>
</tr>
<tr>
<td>d. Is it possible to be healthy-looking and happy without smoking cigarettes?</td>
<td></td>
</tr>
<tr>
<td>e. Obviously the advertisers don’t want you to think so. But do you have a mind of your own? Can you think for yourself?</td>
<td></td>
</tr>
</tbody>
</table>
4. Fill out worksheet "Do Your Own Think".

**Processing Questions**
1. Why do you think it is so important to understand and use critical thinking skills in making decisions? What do they help us do?
2. What are some areas of our lives in which we can apply these skills?

**Evaluation Procedures**
1. Questioning allows monitoring of student's progress of processing objectives.
2. Worksheet "Do Your Own Think."
Middle School Level

Developing Critical Thinking Skills for Decision Making

Unit Title: Choices and Consequences: A Part of Living

Concept: Decision Making

Generalization: Risk and uncertainty in decision-making vary with people and situations.

Objectives: The student will:
1. explain the concept of risk taking.
2. describe various types of risks that are common in the lives of young adolescents.
3. identify positive and negative examples of risk taking.
4. use critical thinking skills to identify consequences of risks before making the decision to take the risk.
5. be committed to analyze the consequences of a risk-taking decision before acting upon the decision.

Learning Experiences
1. Write several risks on the chalkboard. Ask students what these have in common.
2. Lecture on risks.
a. definition
b. types
c. reasons people take risks
d. positive and negative risks
3. Fill out worksheet "Thinking About Taking Risks". Share with the class and discuss consequences.
4. Have students write "A risk I took that paid off" and "A risk I took that didn’t pay off".
5. Begin Ch. 3 - "Deciding for Yourself" and Ch 4 - "Decisions, Decisions" Handouts

Teaching Strategies
Introduction/Inquiry
Lecture
Questioning/Class Sharing/Discussion
Individual
Reading/Questioning/Class Sharing/Discussion

Processing Questions
1. What have you learned about taking risks?
2. About risks and consequences?
3. About positive and negative risks?
4. How can you apply this information to your life?

**Evaluation Procedures**
1. Questioning allows monitoring of student’s progress of processing objectives.
2. Worksheet "Thinking About Taking Risks".
3. Homework - "The Decision Game"
Middle School Level

Developing Critical Thinking Skills for Decision Making

**Unit Title:** The Decision Tree

**Concept:** Decision Making

**Generalization:** Rational decisions represent choices resulting from logical analyses of the elements of situations.

**Objectives:** The student will:
1. describe the basic steps of decision making.
2. explain possible uses of the decision making steps in the typical experiences of young teenagers.
3. prefer the decision making steps to the trial and error methods that people often use.

<table>
<thead>
<tr>
<th>Learning Experiences</th>
<th>Teaching Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The ability to make wise and healthy decisions is not something with which people are born. They learn it, often through trial and error but also in courses like this that teach specific critical thinking and decision-making skills. Ask students - &quot;What was the first decision you made today?&quot;. Write down their responses.</td>
<td>Introduction/Questioning</td>
</tr>
<tr>
<td>2. Then ask students - &quot;How did you make that decision?&quot;. Encourage the students to point out the alternatives of each decision and possible consequences.</td>
<td>Questioning</td>
</tr>
<tr>
<td>3. Draw the decision tree on the chalkboard. Illustrate an example.</td>
<td>Role-modeling</td>
</tr>
<tr>
<td>4. Use the worksheet &quot;My Decision Tree&quot; and fill out the two sides using two situations provided.</td>
<td>Questioning</td>
</tr>
<tr>
<td>5. Share results with the class. Discuss decisions made.</td>
<td>Class Sharing/Discussion</td>
</tr>
</tbody>
</table>

**Processing Questions**
1. What did you learn from applying the decision-making steps to the situations you selected?
2. What elements of the process were easiest to apply? Most difficult?
3. How could this process help you make decisions in your own life?

**Evaluation Procedures**
1. Questioning allows monitoring student’s progress and processing objectives.
2. Worksheet "My Decision Tree".
4. Homework - Handout with questions about reading.
APPENDIX B
Practical Problem Test, Version C/Decision Making Test
PRACTICAL PROBLEM TEST, VERSION C/DECISION MAKING TEST

Name - ____________________________ Sex (circle) M F
Birth Date - ____________________________
Age - Years_____ Months____, Grade - ____________
School - __________________________
Title of Class - ____________________________
Teacher's Name - ____________________________
4-H Experience - ____Yes ____No
Boy/Girl Scout Experience - ____Yes ____No
Campfire Girl Experience - ____Yes ____No
Indian Guide/Princess Experience - ____Yes ____No
Are you now attending Sunday School or Church? - ____Yes ____No

TIME BEGINNING TEST: ____________

DECISION MAKING TEST

Directions: This test is composed of four problems that you or others in families may face. In the space provided, describe HOW you would go about deciding what to do; then tell WHAT your decision would be and WHY.
1. Imagine that you have been assigned the chore of doing laundry for the first time. **HOW would you go about deciding what to do?**

**WHAT** is your decision?  **WHAT** would you do?

**WHY** did you make this decision?
2. Imagine that you have told a neighbor that you will babysit for them. Now your friends want you to come with them to a movie. HOW would you go about deciding what to do?

WHAT is your decision? WHAT would you do?

WHY did you make this decision?
3. You and your little brother decide to go together to a shopping mall. You and your brother wait for half an hour in the rain for the bus that would take you to the mall. While you wait, it begins raining and you become wetter and colder by the minute. To your surprise, a car stops at the bus stop and the driver, a nice looking man, leans over and offers you a lift. Your little brother starts to get in the car. HOW would you go about deciding what to do?

WHAT is your decision? WHAT would you do?

WHY did you make this decision?
4. Your parents have finally allowed you to go to your first big party with your friends from school. You’re having a great time when one of your friends come over, with a big grin on their face, and asks if you would go outside behind the house. "Willie brought some beer. Want to come?" HOW do you go about deciding what to do?

WHAT is your decision? WHAT would you do?

WHY did you make this decision?

TIME ENDING TEST:___________
APPENDIX C
Scorecard for Evaluating the Decision Making Framework of Practical Problems
**APPENDIX C**

Student ID# - __________
Evaluator - __________

SCORECARD FOR EVALUATING THE DECISION MAKING FRAMEWORKS OF PRACTICAL PROBLEMS

This scorecard is to be used to evaluate the decision making frameworks of the students who participated in the practical reasoning problem solving test.

The number that appears on the student's test should be placed in the space for student identification number.

Circle the highest total point/s that the student reaches. Remember, you are not judging the content of the student's response but only whether or not he/she gives an indication of the specified indicator. Follow the guidelines for scoring in the Manual For Evaluating Students' Practical Reasoning Decision Making Skills (1987).

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>INDICATOR</th>
<th>POINTS PER INDICATOR</th>
<th>TOTAL POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>A choice is made with no justification</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>A justified choice is made</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>More than one alternative is considered</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>The alternatives are compared:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Unspecified</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>b. In terms of the advantages of each</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td>c. In terms of advantages/disadvantages</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>or</td>
<td>d. In terms of one criterion applied to all alternatives</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>or</td>
<td>e. In terms of more than one criterion applied to all alternatives</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>IF 3e. IS MET, GO ON TO LEVEL 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>The information about alternatives in terms of criteria is evaluated:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Unspecified</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>or</td>
<td>b. Using positives/negatives</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>or</td>
<td>c. Using rankings</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>or</td>
<td>d. Using scaled ratings</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>IF 4d. IS MET, GO ON TO LEVEL 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Criterion weightings will be used multiplicatively (criteria X alternative)</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td>A classification scheme is used to invent new alternatives and/or categories of comparison</td>
<td>1</td>
<td>13</td>
</tr>
</tbody>
</table>
Appendix D
Agreement of Items Scored with Decision Making Framework Scorecard
Agreement of Raters on Decision Making Framework Scorecard

<table>
<thead>
<tr>
<th>Problem 1</th>
<th>Problem 2</th>
<th>Problem 3</th>
<th>Problem 4</th>
<th>% Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.T. #1</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>100%</td>
</tr>
<tr>
<td>U.T. #2</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>100%</td>
</tr>
<tr>
<td>U.T. #3</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>75%</td>
</tr>
<tr>
<td>U.T. #4</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>100%</td>
</tr>
<tr>
<td>U.T. #5</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>75%</td>
</tr>
<tr>
<td>Test #1</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>50%</td>
</tr>
<tr>
<td>Test #2</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>75%</td>
</tr>
<tr>
<td>Test #3</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>50%</td>
</tr>
<tr>
<td>Test #4</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>100%</td>
</tr>
<tr>
<td>Test #5</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>100%</td>
</tr>
<tr>
<td>Test #6</td>
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<td>+</td>
<td>100%</td>
</tr>
<tr>
<td>Test #7</td>
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</tr>
<tr>
<td>Test #8</td>
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<td>100%</td>
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<tr>
<td>Test #9</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>100%</td>
</tr>
<tr>
<td>Test #10</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>75%</td>
</tr>
<tr>
<td>Test #11</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>100%</td>
</tr>
<tr>
<td>Test #12</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>75%</td>
</tr>
<tr>
<td>Test #13</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>100%</td>
</tr>
<tr>
<td>Test #14</td>
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<td>+</td>
<td>+</td>
<td>100%</td>
</tr>
<tr>
<td>Test #15</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>100%</td>
</tr>
</tbody>
</table>

Total Agreement 88.75%

Legend
U.T. = Unusable pre/posttests because of missing data.
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