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A comparison of teaching methods with achievement scores in the home economics classroom

Denise Schares
University of Northern Iowa

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Abstract

Teaching methods and their relationship to learner achievement have long been an area of concern to educators. Experienced classroom teachers know that some instructional methods are more effective than others for presenting specific types of information to students. Teachers in all curriculum areas and at all grade levels are constantly evaluating methods of instruction in order to determine the methods that will result in the highest level of achievement for their students as the outcome of their instruction. Student achievement received added attention in recent years with the release of the report by the National Commission on Excellence in Education (1983) which states that "We are a nation at risk (p.11) because of a marked decline in educational achievement since the early 1960's. This report and the concern that it has generated have made educators' concerns for implementing effective methods of teaching more concentrated than in the past.

A COMPARISON OF TEACHING METHODS WITH ACHIEVEMENT SCORES IN THE HOME ECONOMICS CLASSROOM

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Director of Research Paper
Dr. Jean Trout

Graduate Faculty Adviser
Dr. Jean Trout

Head, Department of Educational Psychology and Foundations
Dr. Larry L. Kavich

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Date Approved

This is to certify that

DENISE SCHARES

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Examining Committee

Chairperson Dr. Jean Trout

Member Dr. Marilyn Story

Member Dr. Thomas Berg

Member

Transmitted by:

Lawrence L. Kavich, Head
Department of Educational
Psychology and Foundations

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INTRODUCTION

Statement of the Problem

Teaching methods and their relationship to learner achievement have long been an area of concern to educators. Experienced classroom teachers know that some instructional methods are more effective than others for presenting specific types of information to students. Teachers in all curriculum areas and at all grade levels are constantly evaluating methods of instruction in order to determine the methods that will result in the highest level of achievement for their students as the outcome of their instruction. Student achievement received added attention in recent years with the release of the report by the National Commission on Excellence in Education (1983) which states that "We are a nation at risk" (p.11) because of a marked decline in educational achievement since the early 1960's. This report and the concern that it has generated have made educators' concerns for implementing effective methods of teaching more concentrated than in the past.

Because of the national concern and the concern of educators at the local level, the La Porte City School District has undertaken a district wide project to improve effectiveness of instruction and improve student achievement. This project will involve every teacher in

the district before its completion and will involve a great deal of time, money, and energy. This level of commitment is evidence of the school district's concern with student achievement and the implementation of effective teaching methods.

In the area of home economics, the diversity of material that is presented lends itself easily to a variety of teaching methods, making the selection of the most effective teaching method a more difficult task than in many other curriculum areas. Before considering which teaching method would be most effective, it is important that we first examine the purpose of home economics. Frazier and Murray (1984) state that the purpose of home economics is "to assist families to define and strive to attain an optimal quality of life. If this purpose is to be fulfilled, individuals and families must become informed; capable of assuming responsibility; and of thinking rationally, independently, creatively, and critically" (p. 73). This broad range of program goals points out that we must consider not only the acquisition of knowledge in the content area of home economics but also the ability of the student to retain and apply this knowledge to their lives now and in the future. By carefully studying the effectiveness of teaching methods in the content area of home economics and by measuring the achievement that results from these methods, we can more accurately assess the effectiveness of the entire program with which we are concerned.

With the concern over diminishing enrollment in many elective courses, including home economics, and the national concern over problems in family life and family life education, it is essential that we take a closer look at what constitutes an effective program in this area. Effective teaching can be defined as a combination of factors that contribute to an overall environment that makes learning more achievable. The classroom teacher has control over many of these factors and must constantly be aware of them in order to direct the effectiveness of the instruction in the classroom. Fleck (1980) states that most teachers want to be effective. Often discussions of teaching methods and their effectiveness have emphasized the role of the teacher. Not only is knowledge, skill, understanding, and appreciation of the subject matter of great importance, but creative teachers must also recognize their influence on the minds, actions, attitudes, and personalities of students. This is an almost overwhelming responsibility, and teaching methods and their selection cannot be taken lightly according to Fleck.

Rosenshine (1983) in his work identifies several factors that he believes lead to effective instruction. Among these factors are such things as frequent monitoring, time management, maintaining the dignity of the student, and teacher directed instruction which we will focus on in this research. Much of Rosenshine's

work, done on the subject areas of science and math, places a great deal of emphasis on the role of the teacher and the effect of teacher directed instruction on student achievement.

This study will focus on the role of teacher directed instruction and its effectiveness as compared to a teacher guided independent study method of instruction in the area of home economics.

Review of the Literature

Teaching effectiveness research has received much recent publicity and has been conducted by people such as Jere Brophy, Tom Good, and Jan Stallings. They go into classrooms and watch teachers work by using an observation form to describe what teachers are doing. Then they look at student achievement. They have found that some teachers, operating in certain patterns, produce consistent achievement gains. Other teachers, operating in other patterns, produce less consistent achievement results (Duffy, 1982).

One factor found to be present in high achieving classrooms is teacher directed instruction. Teacher directed instruction is a concept which says that teachers seem to be most effective in producing achievement outcomes when the teacher is in charge and actively involved in the teaching process (Duffy, 1982). Examples of this method include lecture, discussion, and large and small group activities as well as films

followed by discussion.

Of the many factors to consider when studying effective teaching, certainly one of the most important, is the selection of teaching methods. Berliner and Gage (1976) define teaching methods as recurrent, instructional processes used by many teachers in the teaching of various subject-matter areas. Verner Coolie (1962) sets several guidelines for the selection of effective teaching methods. They include the following:

1. If the learning situation is a part of real life, students will perceive the relevance and be more eager to learn.
2. If the student participates both physically and mentally, interest will be higher and learning more rapid.
3. If there is psychological ownership of the learning situation, motivation and learning are increased.
4. If the student sees relevance in the learning activities, motivation and learning will be increased (p. 9).

These guidelines point out the importance of the use of teaching methods that involve the students and offer a variety of experiences. The teacher directed method of instruction would provide the opportunity for the students to perceive the relevance of the material by the use of small and large group discussion which give students the opportunity to become involved and explore their ideas and the ideas of other students.

Psychological ownership and participation both physically and mentally are more likely to occur when using the teacher directed method due to the variety of teaching techniques involved and the active participation of teacher and students in discussions and activities.

Rosenshine (1978) refers to direct instruction as instruction which takes place within teacher directed classrooms and involves the use of sequenced, structured materials. He states that effective classroom teaching takes place when student time is spent engaged in relevant content, and activities are selected and directed by the teacher.

The most in-depth study of effectiveness of high school home economics programs was conducted by Clara Brown Anry (1952) in 20 Minnesota schools from 1943 to 1948. Both reimbursed and non-reimbursed schools were included. Teachers, administrators, students, curriculum, facilities, teaching methods, and budgets were examined. A variety of research techniques were used to collect and analyze the data which include interviews, questionnaires and on sight observations. The results were extensive and were reported in an 18-page summary followed by 47 pages of generalizations and recommendations. In the section dealing with effective teaching methods, the author recommended the use of teaching methods that directly involve both students and the teacher in making the teaching situation as relevant and true to life as

possible. The discussion method of instruction was emphasized as a method effective in achieving a high degree of understanding and achievement when used to supplement lectures. This research supports the idea of the use of the teacher directed method of instruction as a component of effective teaching and, therefore, a key factor when researching student achievement. Anry's classic study evokes contemplation on why there has not been more duplication of the methods and procedures she used to gather information. Had we more closely followed her lead in the succeeding years, we would be saturated with effectiveness data according to Anderson (1984).

Further support for the use of the teacher directed method comes from a study done by MacNeil (1968). She randomly assigned students registered for a one-semester course in nutrition either to a lecture-discussion treatment or to a self-directed study treatment utilizing only 10 percent as many class sessions as in the lecture-discussion treatment. Both treatments were carried out by the same instructor. Students in both treatment groups increased their amount of nutrition knowledge but the lecture-discussion group increased significantly more.

Similar research in the area of child development is limited. More research on the process of teaching home economics than on the results of teaching has been done with what limited funds have been made available (Nelson, 1979). However, a few large-scale studies examining program effectiveness were carried out and discussed in

Comparative Assessment (1975). Using naturalistic methods, seven secondary home economics programs identified as effective were examined through in-depth studies. Results of these studies showed the teacher and the teacher's direct instruction to be a key factor in teaching effectiveness. Pestle (1978) prepared, tested, and found effective programmed units of study for secondary students in home economics programs dealing with the needs of the elderly in relation to nutrition, food purchasing, food management, and housekeeping. However, programmed units of instruction were not recommended for teaching units in family life education or child development. The problem with programmed instruction, the primary example of the independent study method of instruction, is that the type of learning that takes place with this method is limited, and some students find it very boring. The fragments of information and the ultra simple questions seem almost insulting to some students and the variety of reading levels of students in any given class presents a serious problem because programs are usually available on only one level. Another problem in the area of home economics is the lack of availability although beginnings have been made in infant care and nutrition (Spitze, 1979).

Accountability for the effect which home economics curricula and programs have on their learners has prompted program evaluation and the development of

competency-based teacher preparation materials (Nelson, 1979). Results of survey studies by home economics educators have suggested that renewed efforts and new strategies are needed for program evaluation and teaching effectiveness (Simpson, 1979). Schulz and Williams (1968) suggest a variety of approaches to teaching family life and sex education that revolve around the use of the teacher directed method of instruction and teaching effectiveness as measured by student achievement. They state that a major goal of family life and sex education is to develop sound student attitudes and clear understandings of the material presented. If we are to assure that the material is well understood, it seems that an effective method for doing this would be allowing interaction and discussion between students and teacher as suggested by the teacher directed method of instruction.

The limited amount of research in the area of teaching methods for child development and family living courses has become apparent in recent years as studies have been done on teacher preparation in these areas. One such study by Jennifer Martin (1980) suggests that as many as 60% of practicing home economics teachers feel inadequately prepared to teach in the area of sex education. Over half of the respondents to her survey said that the concepts included in a sex education and family living course were important and that they were interested in effective teaching methods in the area of

family life and human sexuality.

As a result of the research summarized, we can see that there is a body of information which suggests that teacher directed instruction leads to student achievement and is therefore presented as an effective teaching method. In addition, we have seen that there is a need and a desire for more research and information on the use of this method in the curriculum area of home economics.

The purpose of this study is to determine whether a teacher directed method of instruction will result in higher achievement on posttests than an independent study method when the two methods are compared in teaching a unit on prenatal development to juniors and seniors in high school. Based on research done on effective teaching methods and personal experience, it is hypothesized by the researcher that the students who are taught by use of the teacher directed approach will score higher when comparing gain scores between a pretest and posttest than those students taught by an independent study method.

Chapter 2

METHOD

Subjects

The hypothesis stated in Chapter 1 was tested at La Porte City High School where the researcher is currently employed. This research was carried out in the regular classroom of the researcher with subjects ranging in age from 16 to 19 years. The La Porte City High School has approximately 80 students in the senior class and 65 students in the junior class. The home economics classes are all offered as elective courses, and the course entitled Personal and Family Relationships in which the research was done is offered with no prerequisite. The two classes involved in this study had an enrollment of 19 and 20 students which is an average size for this course. The researcher taught both groups.

Design

The design used for this study was the non-equivalent group design described by Campbell and Stanley (1963). t-tests were used on various data to show equivalency between the two intact classes. These measures included ITED scores in math, ITED scores in science, grade point average, and the grade earned in the health course required of all students.

A pretest consisting of matching questions,

multiple-choice questions, definitions, and essay questions was given several weeks before the unit was taught; and the same test was given as a posttest upon completion of the unit. Gain scores were compared to measure achievement of the two groups. The results showed no significant difference between the two groups; and because the data was strongly skewed to the right, logarithmic and square root transformations were applied, but the results still showed no significant differences at the .05 level of probability.

Variables

Independent Variable

The independent variable for this study was the method of instruction used to teach the two intact classes. The teacher directed method was used for the experimental group and the independent study method was used for the control group.

Students in the teacher directed group (TDG) were taught a unit on prenatal development by the use of teacher lecture, group discussion, both large and small group activities, and films followed by discussion led by the teacher. Students had the opportunity to interact with the teacher and with other students on a regular basis.

The students in the independent study group (ISG) were taught the same unit on prenatal development with topics corresponding to the teacher directed group each

Table 1

Equivalency Measures Comparing Groups

Variable	Group	N	Mean	Standard Deviation	t	Degrees of Freedom	p
ITED Science	TDG	20	40.2	30.3	-1.34	37	0.19
	ISG	19	27.8	27.2			
ITED Math	TDG	20	39.6	29.8	-1.38	37	0.18
	ISG	19	27.1	27.0			
Grade Point Average	TDG	20	2.23	.801	-0.89	37	0.38
	ISG	19	2.06	.699			
Health Grade	TDG	20	5.8	2.44	-1.62	37	0.11
	ISG	19	4.21	3.61			

TDG consisted of 16 seniors and 3 juniors, 7 girls and 12 boys.

ISG consisted of 11 seniors and 9 juniors, 13 girls and 7 boys.

Grade point average was figured on a 4 point scale.

Health grade was figured on an 11 point scale.

day. Students were assigned daily readings, worksheets and questions over reading materials to be completed at the end of each class period. No discussion followed films or readings.

Dependent Variable

The dependent variable for this study was the achievement of students based on gain scores between the pretest given before the unit and the posttest given upon completion of the unit.

Procedure

The experimental group was taught a unit on prenatal development by the teacher directed method of instruction. The topic was presented each day with the teacher having direct involvement in the presentation of the material. Students in this group were encouraged to ask questions and discuss materials presented. Discussion questions and lecture materials were prepared prior to the class and followed as a guideline. Films were presented with introductions given before the film and discussions held following the film. Class activities directed by the teacher supplemented lectures and discussions. Students also completed written assignments which were handed in and evaluated. A unit posttest was given at the end of the two week unit to assess achievement. (See Appendix A for a complete set of lesson plans, (pp. 33-69) assignments, and unit test (pp. 71-77).

The independent study group was assigned daily

readings of prepared materials including worksheets, study guides and individual activities relating to assigned readings. All worksheets and other written work was handed in at the end of each period. A unit posttest which was the same test used in the teacher directed group was given at the end of the 2 week unit to assess achievement and was compared to the pretest which had been given before the unit began. (See Appendix A for a complete set of lesson plans, (pp. 33-69) assignments and unit test (pp. 71-79).

Limitations

This study was done in one school and in one course only. Subjects for the study were not randomly selected but were taken from two intact classes. Table 1 (p. 13) shows that there were no significant differences between the two groups at the .05 level of probability. The use of a pretest could have effected the validity since it is possible that it could have sensitized students to information that would be presented again on the posttest. In order to control for this threat, the pretest was given several weeks before the unit began. The decision to use a teacher prepared test for this study stems from the unavailability of a standardized test dealing specifically with the information presented. In order to give the test a degree of face validity, the test was read by Dr. Mary Franken, home economics professor at the University of Northern Iowa. Recommendations were given by Dr. Franken and followed by

the researcher when revising the original draft of the test (see Appendix A, pp. 71-77). Scoring of the essay portion of the test could be considered a limitation of this study since it is difficult to score essay test items with a high degree of reliability. In order to control for this threat, the essay portion of the test was scored according to suggestions by Ahmann and Glock (1975). As suggested, all tests were scored anonymously, all responses to each test item were scored at one time without marking on the test paper, and the tests were scored a second time by the researcher without knowledge of the first judgments.

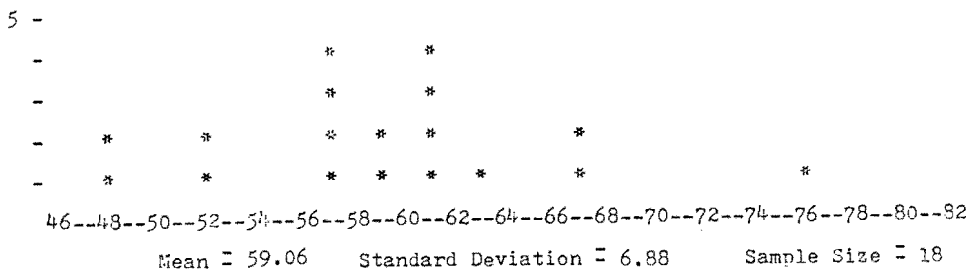
Chapter 3

RESULTS

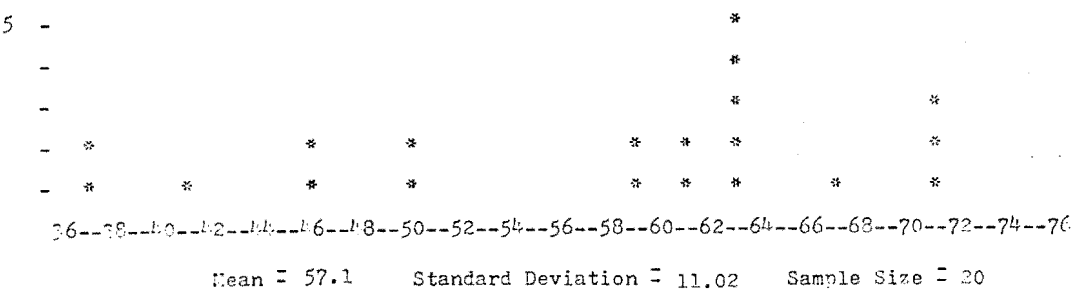
There were 20 students in the group taught by the teacher directed method and 19 students in the group taught by the independent study method. All students in the TDG completed the study and 18 of the 19 in the ISG completed the study. One student in this group transferred to another school during the unit. The posttest was given after the unit was completed (see Appendix A, pp. 71-77). Both groups started and completed the unit at the same time since material covered each day corresponded between the two groups.

The original hypothesis stated that the students taught the unit by use of the teacher directed method would score higher when comparing gain scores between a pretest and posttest than those students taught by an independent study method. The t-test was chosen as the most appropriate statistical method to test the differences of the mean scores since the frequency distribution (see Table 2) approached a normal distribution of scores. The pretest and posttest comparisons for the two classes are given in Tables 3 and 4. From the data in Table 4, one sample t-tests were completed on each group to determine if a significant gain was made in that group. The TDG yielded a value of ($t=7$, $df=19$, $p=.001$). The ISG yielded a value of ($t=7$, $df=19$, $p=.001$).

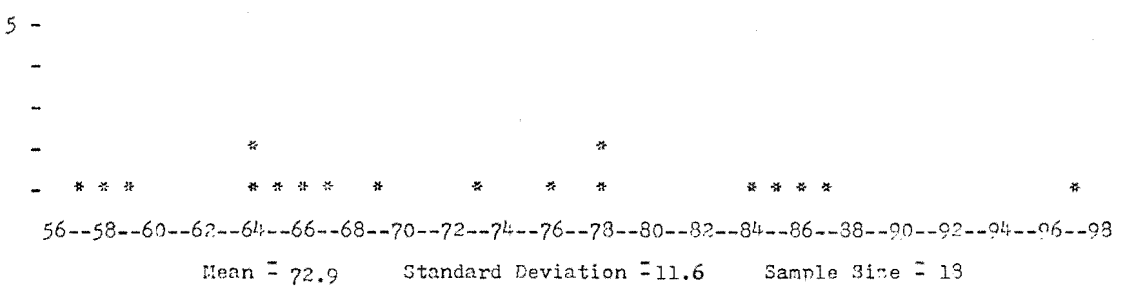
Table 2



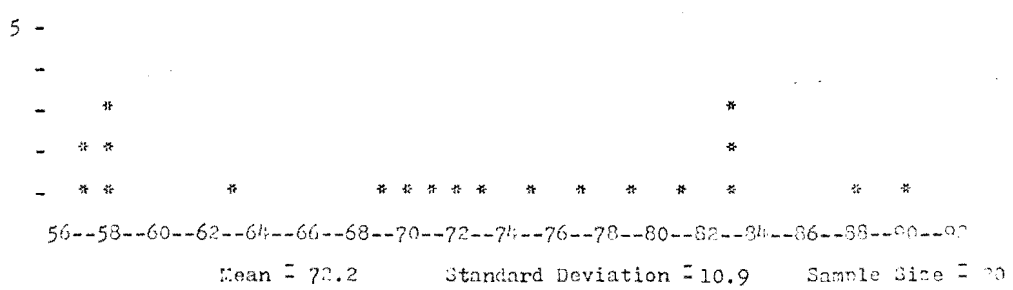
Histogram of Percentage Scores on Pretest--ISG



Histogram of Percentage Scores on Pretest--TDG



Histogram of Percentage Scores on Posttest--ISG



Histogram of Percentage Scores on Posttest--TDG

Table 3

Results of Pretest

Group	N	Mean	Standard Deviation	t	p
TDG	20	57.10	11.00	.66	.51
ISG	18	59.06	6.88		

Table 4

Results of Posttest

Group	N	Mean	Standard Deviation	t	p
TDG	20	72.20	10.00	.19	.85
ISG	18	72.90	11.60		

Table 5

Results of Gain Scores

Group	N	Mean	Standard Deviation	t	p
TDG	20	15.10	10.70	.39	.70
ISG	18	13.89	9.36		

After examination of the data, one can conclude that the use of the teacher directed method of teaching this unit did not result in a significantly higher level of achievement than did the independent study method since the comparison of the two groups' gain scores shows no significant difference at the .05 level of probability (see Table 5, p. 19).

Chapter 4

DISCUSSION AND CONCLUSIONS

The results of the pretest showed that both of the classes had limited knowledge in the area of prenatal development. The mean of the TDG was 57.10 while the mean of the ISG was 59.10. The posttest scores showed that there was a significant ($p < .001$) increase in learning in both groups. Both groups had a 15 point mean gain in the average pretest to posttest score enabling us to conclude that both teaching methods resulted in a moderate level of achievement although no significant difference was established between the two teaching methods.

Some observations should be noted pertaining to the teaching of the two groups by the two different methods. The ISG was accustomed to a more teacher directed teaching approach from the previous units that were taught by that method. They continued to try to initiate teacher and student interaction during the first two days of the unit but got into the new routine quickly after that. Although difficult to do in a regular school setting, for the purpose of the research it would have been beneficial to remove the researcher from the classroom in order to alleviate all possibility of interaction from the setting. Another possibility for helping students adjust more quickly to the different teaching method would be to teach the unit just previous to the one being used for research in a similar style in

order to allow students to adjust before the research began and possibly alleviate some of the initial uneasiness with the independent study method.

The TDG responded well to the subject manner and had questions about each of the topics presented in the unit. This was the same teaching method that had been used in previous units, so adjustments on the part of the students were not necessary.

Since both groups showed significant increase in learning without a significant difference between the groups, it is important that we examine possible explanations for the achievement of each group. One factor that should be considered is sex differences in learners. Ausubel (1968) cites a wide variety of studies on sex differences which indicate that girls show a slight superiority to boys in general intelligence during adolescence with the differences particularly evident in verbal abilities for girls and spatial-mechanical abilities for boys. Torrance and Aliotti (1969) used the Minnesota Test of Creative Thinking with 118 rural fifth-graders and found that girls perform at a consistently higher level than boys on all of the verbal tasks. The fact that the ISG in this study was made up of 13 girls and 7 boys and the TDG was made up of 7 girls and 12 boys could have influenced achievement since the ISG used more verbal skills and girls would be expected to do better in this area.

Time on task was high in both groups. The daily lesson for each group was carefully organized and very structured. The amount of material presented each day was carefully monitored in order to make sure that it corresponded between the two groups daily. This structure and organization could account for the basically equal achievement in both groups. It was noted by the researcher that it was more difficult to cover the alloted material in the TDG since the discussions often became more time consuming than expected. In the ISG, material was assigned and the students either finished the assignment in class or took it home with them making the responsibility for finishing the material more of a student task than a teacher task.

The ISG had more printed materials distributed to them where as the TDG had to rely on their notes for material to study for the test. This factor could have made a difference in the posttest scores. Make-up work could have also entered into the results because even though the attendance was not significantly different between the two groups, it was easier for students in the ISG to get assignments of printed materials and worksheets and to make up their missed work than it was for students in the TDG to make up for missed discussion topics and notes.

Students in the ISG were responsible for completion of each assignment individually making the level of accountability higher and amount of practice more than in

the TDG where many of the assignments were completed in large or small group situations. The individual completion of all work may have increased achievement in the ISG due to the added amount of practice and rehearsal of facts that this group had.

Level of interest and enjoyment of the class unit were not specifically measured; however, the researcher did note several differences that could have influenced posttest scores. Students in the TDG had more chance to share personal examples and stories and to ask questions or for further explanation when needed. Very little questioning or discussion took place in the ISG, but when it did it was near the beginning of the class period and ended quickly when the reading assignment was made. This lack of personal discussion and involvement could have been balanced out the more readily available printed materials to study from for the test.

Differences in academic ability among individual students was not a factor examined separately for the purpose of this study, but it is a possible area of study for future research. There is a body of research which suggests that when acquisition of information is the aim, different teaching methods yield similar average results according to Berliner and Gage (1978). It is also worth noting here that although one teaching method may not be superior to another in student achievement when looking at class averages, students with different aptitudes

may very well perform differently depending on which teaching method is used (Berliner and Gage, 1978). This information points out that the examination of different students' level of ability may influence the effectiveness of a certain teaching method.

Reading level would be another factor to consider when the teaching method focuses primarily on the use of written material as did the independent study method in this study. None of the learners had an identified disability in reading but the normal variance in reading ability could have played some part in the rate of achievement in that group.

In summary, this research found that there was no significant difference in achievement as measured by gain scores. It is clear that more research is needed in the area of effective teaching methods in home economics. This study pointed out that each teaching method has specific advantages and that perhaps the approach that will result in the highest overall achievement of students is a combination of methods that involves a variety of teaching techniques. Sex differences in learners and the difference in amount of individual rehearsal of material are factors that may have resulted in higher achievement of the ISG than expected and are both factors to consider for future research on effective teaching methods.

REFERENCES

REFERENCES

Ahamnn, J. S., & Glock, M. D. (1975). Evaluating Pupil Growth. Boston: Allyn and Bacon.

American Home Economics Association. (1984). Definitive themes in home economics and their impact on families. Washington, D.C.: American Home Economics Association.

Anderson, E. A. (1984). The effectiveness of home economics education programs. In M. East & J. Thomson (Eds.). Definitive Themes in Home Economics (pp. 163-179). Washington, D.C.: AHEA Publications.

Anry, C. B. (1952). The Effectiveness of the High School Program in Home Economics. Minneapolis: University of Minnesota Press.

Ausubel, D. P. (1968). Educational Psychology: A Cognitive View. New York: Holt, Rinehart, and Winston, Inc.

Berliner, D. C., & Gage, N. L. (1976). The Psychology of Teaching Methods. Chicago: University of Chicago Press.

Comparative Assessment of Secondary Consumer and Homemaking Education Programs. (1975). Illinois State Office of Education, Springfield, Il. (ERIC Document Reproduction Service No. ED 126 285).

Coolie, V. (1962). A Conceptual Scheme for the Identification and Classification of Processes for Adult Education. Washington: Adult Education Association of the U.S.A.

Duffy, G. (1982). Staff development and the research on effective teaching. Unpublished paper, Michigan State University, East Lansing.

Fleck, H. (1980). Toward Better Teaching of Home Economics. New York: Macmillan Publishing Co., Inc.

Frazier, A. & Murray, E. (1984). A framework for reconceptualizing home economics. Canadian Home Economics Journal, 34(2), 73.

Hunter, M. (1976). Improved Instruction. El Segundo: Tip Publications.

MacNeil, C. (1968). A comparative study of two instructional methods employed in teaching nutrition. In H.Y. Nelson (Ed.), Review and synthesis of research on home economics education (p. 20). Minneapolis: University of Minnesota.

Martin, J. (1980). Texas homemaking teachers' assessment of their college undergraduate preparation to teach sex education. Master Thesis Abstracts, 135. (Order No. 13155883).

National Commission on Excellence in Education. (1983). Our nation is at risk. The Chronicle of Higher Education, 26 (10), 11-16.

Nelson, H. Y. (1979). Home economics education: A review and synthesis of the research. Columbus, OH: The Ohio State University, National Center for Research in Vocational Education. (ERIC Document Reproduction Service No. 179 768).

Pestle, R. E. Adaptions of homemaking skills for the aged: Curriculum materials. Tallahassee: State of Florida Department of Education.

Rosenshine, B. (1978). Academic engaged time, content covered, and direct instruction. Journal of Education, 160(3), 39-59.

Rosenshine, B. (1983). Teaching functions in instructional programs. The Elementary School Journal, 4, 335-351.

Schulz, E. D. & Williams, S. R. (1969). Family life and sex education: Curriculum and instruction. New York: Harcourt, Brace and World.

Simpson, E. J. (1979). Legislation for consumer and homemaking education: Social implications. In The Planning Papers on Consumer and Homemaking Education Programs. (Vocational Education Study Publication No. 2). Washington, D.C.: U.S. Government Printing Office of Education.

Spitze, H. T. (1979). Choosing techniques for teaching and learning. Washington, D.C.: American Home Economics Association.

Stanley, J. C. & Campbell, D. T. (1963). Experimental and quasi-experimental designs for research. In N. L. Gage (Ed.) Handbook of research on teaching. Chicago: Rand McNally.

Torrance, E. P. & Aliotti, N. C. (1969). Sex differences and levels of performance test-retest reliability on Torrance Tests of Creative Thinking Ability. Journal of Creative Behavior, 3, 52-57.

References Used In Lesson Plans

Films and Media

Human Reproduction [Film]. California: McGraw-Hill. (1981). Area 7 #2785. Animation is used to show the functioning of reproductive organs. Includes a description of the reproductive organs and the process of fertilization.

Have a Healthy Baby [Film]. California: Churchhill Films. (1979). Area 7 #9744. Animation details the growth of the human embryo from conception through pregnancy. Paralleling the animation, mothers experience some of the joys and discomforts of each stage. Stresses health habits.

Inside My Mom [Filmstrip]. New York: National Foundation March of Dimes. Area 7 #6627. Filmstrip discusses the importance of good nutritional and diet habits from the viewpoint of the unborn baby. Also points out the dangers of using drugs during pregnancy.

Conception to Birth Board [Chart]. Texas: Spenco. Area 7 #7191. Display of actual size models focusing on the stages of growth and development of the unborn child. Literature accompanies the kit to serve as a guide.

Life Before Birth [Filmstrip]. New Jersey: Time-Life Multimedia. Filmstrip examines the development of the baby before birth and points out important developments at each stage.

Pamphlets

(Available through the March of Dimes, 1275 Mamaroneck Avenue, White Plains, New York 10605.) No date or editor listed.

Drugs, Alcohol, and Tobacco Abuse During Pregnancy

Recipe for Healthy Babies

Be Good To Your Baby Before It's Born

Eat Wisely for You and Your Baby

Textbooks

Kendziorski, S. & Purdy, C. (1980). Understanding Your Sexuality. Glenview: Scott, Foresman and Company.

Riker, A. P. & Brisbane, H. E. (1976). Married Life. Peoria: Chas A. Bennett Co., Inc.

Schultz, J. (1980). Contemporary Parenting Choices, Module 2. Ames: Iowa State University Press.

Westlake, H. G. (1984). Parenting and children. Lexington: Ginn and Company.

APPENDIX A

Lesson Plans

Exercises

Answers to Exercises

Day 1

Topic: Conception

Objectives:

1. The student will explain the functions of the male and female reproductive system.
2. The student will explain the meaning of conception.
3. The student will distinguish between facts and myths related to pregnancy.

Content:

1. The human reproductive process
2. Factors that affect the human ability to reproduce
3. Pregnancy myths

Activities:

Teacher Directed Group

1. Fill out Pregnancy: Fact or Fiction Quiz (p. 36).
2. Correct quizzes in class using answer sheet (p. 37).
3. Tell students the way that myths get started, the danger in unclarified myths and reliable sources of information about reproduction.
4. Students take notes as teacher lectures over the reproductive system using lecture notes (p. 38).

Independent Study Group

1. Fill out Pregnancy: Fact or Fiction Quiz (p. 36).
2. Check answers with key at teacher's desk using answer sheet (p. 37).

3. Read and outline Chapter 2, The Reproductive System (Kendziorski, 1980, pp. 14-25).
4. Students fill out chart of reproductive organs and their functions (pp. 40-41).

PREGNANCY: FACT AND FICTION

by Sherry Lynn Mims Jimenez, R.N.

Some cultures believe that an eclipse produces mysterious powers that may cause birth defects. When an eclipse occurs, pregnant women in these societies wear keys, frequently taped to the abdomen, to protect their unborn babies. Other groups believe that eating certain foods during pregnancy will affect the sex of the child. How much do you know about pregnancy and birth defects? Test yourself with this quiz.

QUESTIONS

1 If a pregnant woman raises her arms above her head, the umbilical cord will wrap around the baby's neck.
TRUE ☐ FALSE ☐

2 If a pregnant woman swims or bathes, the baby may drown.
TRUE ☐ FALSE ☐

3 By smoking one cigarette a day, the pregnant woman may lower the baby's birthweight.
TRUE ☐ FALSE ☐

4 If an expectant mother suffers a severe fright, her child may inherit the fear.
TRUE ☐ FALSE ☐

5 Tea and cocoa can have adverse effects on the disposition of the unborn child.
TRUE ☐ FALSE ☐

6 Wine is good for pregnant women because it thickens the blood.
TRUE ☐ FALSE ☐

7 A woman loses a tooth for each pregnancy.
TRUE ☐ FALSE ☐

8 The baby's sex can be determined by the way a pregnant woman carries the baby.
TRUE ☐ FALSE ☐

9 The blood of the pregnant woman flows through the baby's body to provide oxygen and nourishment.
TRUE ☐ FALSE ☐

10 A pregnant woman needs 2000–3000 calories daily and should gain at least 23 pounds.
TRUE ☐ FALSE ☐

PREGNANCY: FACT OR FICTION QUIZ ANSWER SHEET

ANSWERS:

1) *False.* The baby is encased in a liquid-filled, balloon-like sac within the uterus, and the muscles of the pregnant woman's arms cannot affect the umbilical cord. At birth 25 percent of infants have a loop of cord around the neck. This occurs through the baby's movement in the uterus and usually is not a problem in a birth attended by a physician or certified nurse-midwife.

2) *False.* Since the child is completely submerged in amniotic fluid without drowning, this would not be a problem even if it were possible for water to enter the uterus. The uterine opening is protected by a hard mucus plug, and swimming and bathing are fine as long as the mucus plug is in place.

3) *True.* Smoking decreases circulation to the placenta, and this results in a drop in the amount of oxygen and nutrients reaching the baby. Studies have shown that smoking mothers have babies with lower birthweights than nonsmoking mothers. A study in England has also linked prenatal smoking to learning disabilities in children. If a woman stops smoking by the fourth month of pregnancy, she probably will reverse any ill effects on the child.

4) *False.* Although prolonged stress may affect the growth and development of the unborn child, a single fright is not harmful. Fear is not hereditary, and if a child shares the fears of his parents, it is something he learns from them after birth.

5) *True.* The caffeine in tea and cocoa, as well as in soft drinks, coffee, and chocolate, may cause the baby to be cranky and irritable the first few weeks after birth.

6) *False.* Wine does nothing for the blood, and the consumption of alcoholic beverages during pregnancy, including beer, wine, and hard liquor, is dangerous for the baby. Infants of mothers who drink excessive amounts of alcohol may be born with mental as well as physical defects. Many doctors advise women to have no more than two drinks of any alcoholic beverage a day during pregnancy.

7) *False.* Although the baby needs a large amount of calcium, he does not get it from the mother's teeth. The pregnant woman should have four servings of milk products daily to satisfy the baby's calcium requirements.

When a baby needs more calcium than his mother ingests, he may draw the mineral from her bones. This is possible because, unlike teeth, bones continue to grow in width until a person is about 45 years old. This growth activity allows for the resorption of calcium into the bloodstream, where it is carried to the baby. If the pregnant woman does not consume enough calcium, she and her baby run the risk of softened, fragile bones.

8) *False.* The way in which a pregnant woman carries her baby depends on her muscle tone, the size of her pelvis, and the position and size of the baby.

9) *False.* A thin membrane separates the circulatory systems of mother and child. (The baby may even have a blood type completely different from that of his mother.) This membrane has pores, which allow oxygen and nutrients to flow through to the baby and waste products to travel from the baby to the mother. Blood cells are too large to pass through the pores.

Unfortunately, many undesirable elements are not too big to reach the baby's bloodstream. Some infections, especially viral ones such as German measles, pass through and may harm the baby. When a pregnant woman drinks or smokes, so does her unborn baby. Most drugs pass through the baby's bloodstream too.

To be on the safe side, the expectant mother should avoid large amounts of alcohol, smoking, exposure to infections, and all medications not prescribed by her physician. Since fumes also pass through the placental membrane, it is wise to avoid unnecessary exposure to chemicals.

10) *True.* The pregnant woman needs a lot of energy, and that comes from calories such as those found in milk, cheese, eggs, meat, vegetables, fruits, and whole grains.

A woman who begins pregnancy below her desirable weight needs more calories than an overweight woman. The active woman needs more than the sedentary one. A good weight gain averages between 23 and 30 pounds. Studies have shown that the more a woman gains during pregnancy, the bigger and healthier her baby will be.

For more information about pregnancy and the prevention of birth defects, ask your doctor or childbirth educator, or contact the March of Dimes Birth Defects Foundation, P.O. Box 2000, White Plains, NY 10602. □

Sherry Lynn Mims Jimenez is a registered nurse and a childbirth educator. Her third book, CHILDBEARING: A GUIDE FOR PREGNANT PARENTS, will be published in October, 1980.

Lecture Notes over Human Reproduction

Lecture notes taken from (Kendziorski, 1980, pp. 14-25).

I. Puberty: stage of growth and development at which males and females become physically able to produce. Females 8-13; Males 10-14. Variations of these ages are considered normal.

II. Adolescence: entire stage of life between childhood and adulthood.

III. Endocrine System:

Hormones

Pituitary glands

Gonads

Ovaries: ovum produced

Testes: sperm produced

Female hormones: progesterone (prepares uterus for pregnancy)

estrogen (secondary sex characteristics)

Male hormones: testosterone (growth and development of male reproductive organs)

IV. Female Reproductive System: Show chart and describe internal and external organs and their functions. Use chart of menstrual cycle to explain ovulation and menstruation.

V. Male Reproductive System: Show chart and describe internal and external reproductive organs and their functions.

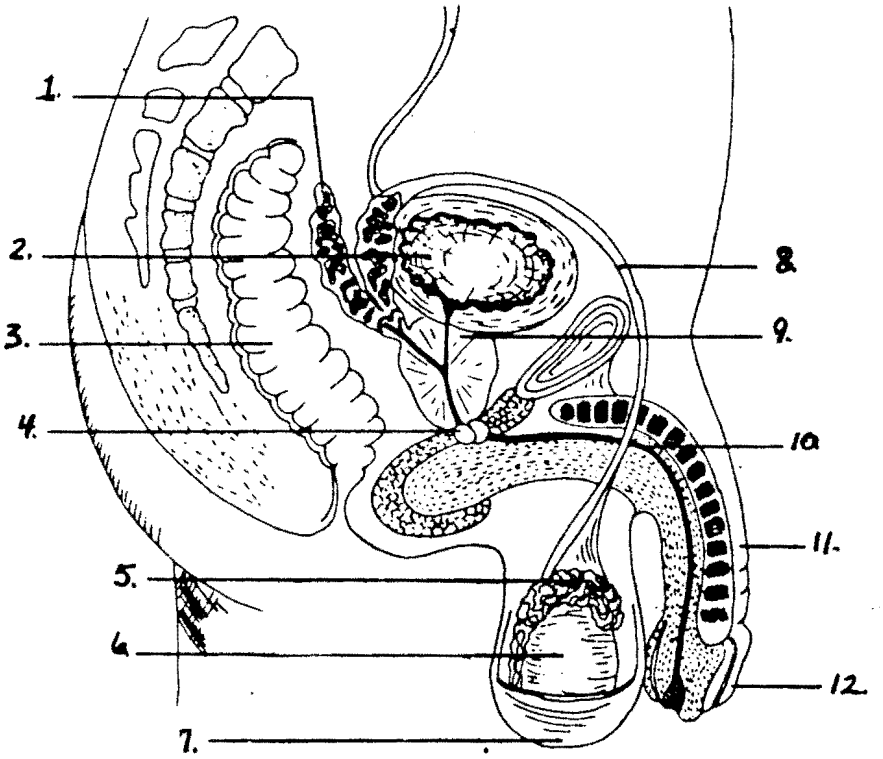
Questions for discussion:

1. Why do you suppose so many sperm cells are produced in and released from the male's body, when only one sperm is needed to fertilize an ovum?

2. At what age should people first learn about their own reproductive system? When should they learn about the reproductive system of the opposite sex? Why? If you were a parent, how would you go about teaching your children about the reproductive systems?

3. Discussion of any question raised by class members.

Instructions: Identify the male structures numbered on the diagram by writing the appropriate term in the blanks provided below.



1. _____ 7. _____

2. _____ 8. _____

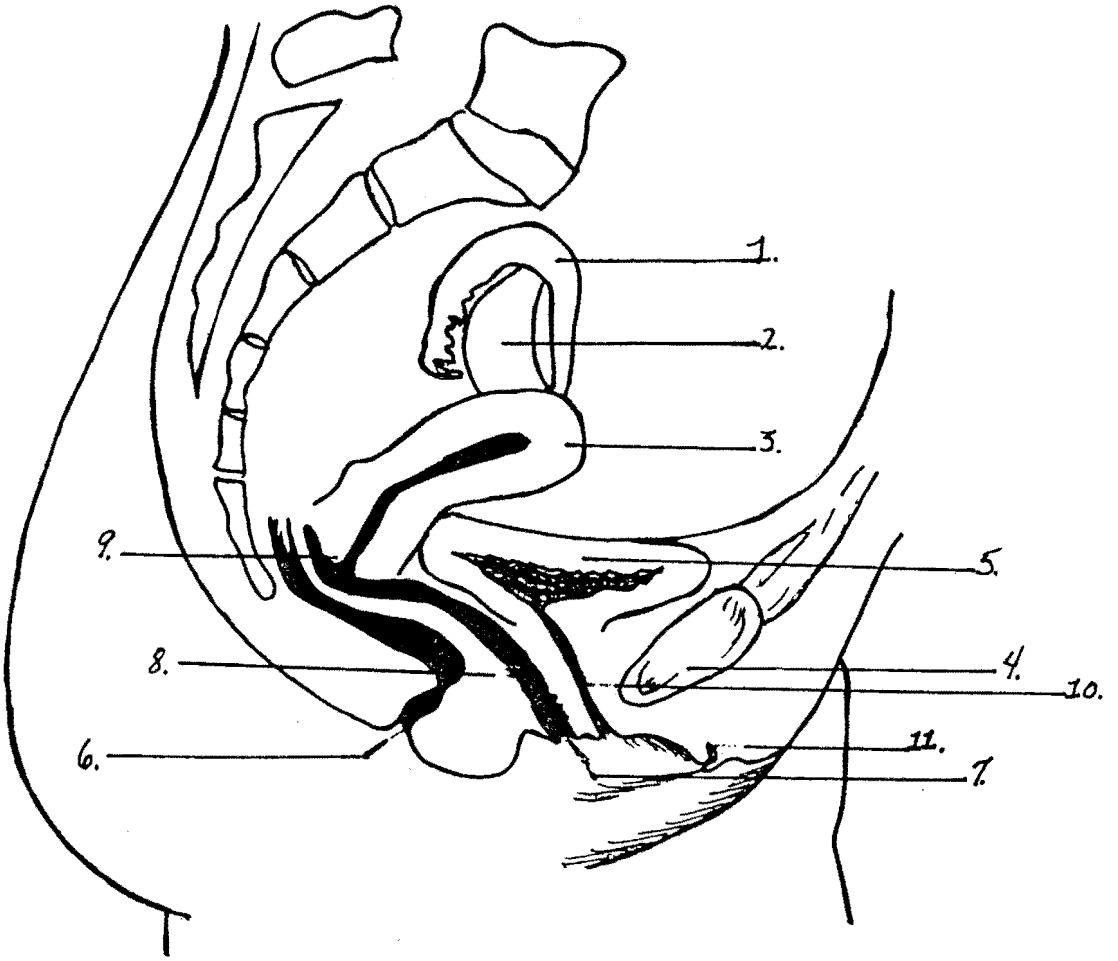
3. _____ 9. _____

4. _____ 10. _____

5. _____ 11. _____

6. _____ 12. _____

Instructions: Identify the female structures numbered on the diagram by writing the appropriate term in the blanks provided below.



1. _____ 7. _____

2. _____ 8. _____

3. _____ 9. _____

4. _____ 10. _____

5. _____ 11. _____

6. _____

Day 2

Topic: Conception

Objectives:

1. The student will know the functions of the reproductive organs of the male and female system.
2. The student will explain the meaning of conception.

Content:

1. The human reproductive process
2. Factors that affect the human ability to reproduce

Activities:

Teacher Directed Group

1. Take "Human Reproduction Quiz" (p. 43).
2. Check quiz and discuss in class using answer key (p. 44).
3. View film Human Reproduction.
4. Fill out summary sheet over film (p. 45).
5. Discuss summary sheet answers.

Independent Study Group

1. Take "Human Reproduction Quiz" (p. 43).
2. Hand in quizzes to be checked.
3. View film Human Reproduction.
4. Fill out summary sheet over film (p. 45).
5. Hand in summary sheet.

HUMAN REPRODUCTION QUIZ TO REVIEW

INDICATE WHETHER THE FOLLOWING STATEMENTS ARE TRUE OR FALSE BY PLACING A "T" IN FRONT OF THE TRUE STATEMENTS AND AN"F" IN FRONT OF THE FALSE STATEMENTS.

_____1. Puberty is the stage of growth and development at which males and females become physically able to reproduce.

_____2. The uterus is a hollow, muscular organ located between the ovaries.

_____3. Conception takes place in the vagina.

_____4. When a mature ovum is released from the ovary it is called ovulation.

_____5. Testes produce testosterone and sperm cells.

_____6. When sperm cells leave the testis through the epididymis, they travel through a tube called the seminal vesicle.

_____7. 20 to 30 thousand sperm are released with each ejaculation.

_____8. An erection is caused by blood vessels that fill with blood.

DEFINE EACH OF THE FOLLOWING TERMS.

1. Cervix—

2. Fallopian tube—

3. Hormone—

4. Ovary—

5. Semen—

ANSWER SHEET TO HUMAN REPRODUCTION QUIZ

1. True
2. True
3. False
4. True
5. True
6. False
7. False
8. True

1. Cervix--Narrow, lower end of the uterus.
2. Fallopian tube--Tubes that extend from the upper part of the uterus to serve as a passage for ova to move from an ovary to the uterus.
3. Hormone--A chemical substance that regulates body processes including reproduction, growth and development.
4. Ovary--Female gonad which produces ovum.
5. Semen--Mixture of sperm cells and fluid.

Summary Sheet for Human Reproduction Film

1. What was the main theme of the movie?

2. What concepts were new to you?

3. List all the uses that you can think of for a film on human reproduction such as this one.

4. Did you have any misconceptions that were cleared up by the information presented in the film? If yes, list them.

5. What points brought up in the film would you like to discuss further or have more information on?

6. How would you explain the process of human reproduction to a younger brother or sister?

Day 3

Topic: Influences of Heredity

Objectives:

1. The student will describe the role of heredity in reproduction and prenatal development.
2. The student will explain how dominant and recessive traits effect heredity.
3. The student will describe the functions of genes in transmitting heredity.

Content: Heredity and the influences on reproduction

Activities:

Teacher Directed Group

1. Teacher lecture over genetics and heredity (pp. 47-49).
2. Discuss questions given at end of lecture notes (p. 49).

Independent Study Group

1. Read Chapter 2, "Who Am I?" (Riker, 1976, pp. 20-40). (Topics covered-genetics, influences of heredity, and implications for human reproduction.)
2. Fill out Chapter 2 study guide (pp. 51-52). Check answers at teacher's desk using answer key (p. 53). Correct wrong answers and hand in at end of class period.

Lecture Notes Day 3
Influences of Heredity

Lecture notes taken from (Riker, 1980, pp. 20-40).

I. Genetics: the study of how we inherit some characteristics.

A. Gregor Mendel: Studied principles by crossbreeding garden peas (Illustration on board).

B. Implications for humans: may not think has much effect but imagine you marry someone with Rh positive blood and yours is Rh negative, could have implications on survival of children (second child and future) if not aware of genetics laws. Now can give injection and avoid problems.

C. Much work still being done. Estimate 20,000 different human genes and only about 1,000 are known about as far as function.

D. Starts at conception: single chromosome determines sex of child. In nucleus of egg are 46 chromosomes: 23 from each parent. Along the chromosomes are genes which transmit specific inherited characteristics, such as eye color and body build. Before each cell divides and multiplies, the chromosomes form exact replicas of themselves and every new cell also contains 23 pairs of chromosomes. Twenty-two pairs cannot determine which parent came from. Twenty-third pair is called the pair of sex chromosomes.

E. Sex Chromosomes

Female-XX Male-XY If X from female fuses with Y sperm, child is male. If X from female fuses with X sperm, child is female. Male sperm swim faster and more male children are conceived. Some men produce more male sperm, some more female sperm, some equal amounts of each. In each man, the ratio stays consistent. (Can separate male from female sperm, making it possible to determine sex of child.)

F. Mistakes: Errors in which one or more chromosomes are missing or duplicated occur rarely in the formation of a new human. (Downs' Syndrome-duplication of nonses chromosome.)

G. Dominant and recessive genes: 2 genes inherited, one from each parent, for each characteristic. Some genes are dominant or more likely to produce their effect; others are recessive or less likely to produce a visible effect. (Show chart of eye color and hair color dominant and recessive traits.)

H. Misbehaving genes: Mutation means a change in a gene which may cause a change in the effect it produces. Certain kinds of blindness, deafness, and mental retardation result from the action of mutations. Exposure to high energy radiation or contact with certain drugs may also damage genes. Geneticists estimate that about two percent of

all babies born carry some minor or major genetic defect. Since most mutations are recessive, they do not appear unless the affected person marries someone with the same defect.

Case study: hand out case study papers and let students answer on own then discuss in small groups. Share main points of discussion with whole group and discuss.

I. Marriage to a close relative: most of us carry several recessive genes for serious disorders. The chances remain small that two parents carry the same recessive genes unless the marriage is consanguineous(close blood relative.) Then double the chance of defect. If brother and sister, 10% chance of defect.

J. Genetic Counseling: Careful study of family records and past medical history. A thorough genetic study can reveal the approximate statistical likelihood of a couple having a defective child as compared to the likelihood for couples in the general population.

Discussion Questions:

Do you believe that your friends are concerned about genetics when picking a marriage partner? Are you? Imagine a situation where you either were about to propose to a girl or expected a proposal from a boy you liked, but did not know anything about the person's *family history. Would you propose or accept without*

inquiring? If not, what questions would you ask to find out? Suppose you learn about a serious genetic problem. Would any such information affect your plans for marriage?

Chapter 2 Name _____

Pages 20–40 Score (30 possible) _____

CHAPTER 2
"Who Am I?"

1. Gregor Mendel discovered genetic principles by doing cross-breeding research on _____
   a. Austrian monks. c. white mice.
   b. garden peas. d. tulips.
2. Scientists now know the function of all the human genes. (T or F) _____
3. Humans receive 23 chromosomes from each parent. (T or F) _____
4. The master chemical of life that determines the heredity of every living thing is _____
   a. RNA. c. DNA.
   b. STP. d. DDT.
5. A girl baby is produced by _____
   a. the fusing of a Y chromosome and an X chromosome.
   b. the fusing of 2 Y chromosomes.
   c. the fusing of 2 X chromosomes.
   d. the fusing of 2 X chromosomes with a Y chromosome.
6. The sex of a child is determined by the mother's chromosome. (T or F) _____
7. Duplication of a nonsex chromosome causes mental retardation. (T or F) _____
8. Testing for chromosomal defects is called _____
   a. mongolism. c. genetic evaluation.
   b. Down's syndrome. d. karyotyping.
9. Genes that are likely to produce their effect in an offspring are called _____
   a. dominant. c. normal.
   b. recessive. d. abnormal.
10. A mutation is a change in a gene that is most often for the worse. (T or F) _____
11. Identical twins have exactly the same heredity. (T or F) _____
12. Environmental factors can influence or change inherited characteristics. (T or F) _____
13. A consaguineous marriage occurs when _____
    a. people of different races marry.
    b. people with different blood types marry.
    c. close blood relatives marry.
    d. people with superior genes marry.
14. Eugenics is the science of producing human beings of superior quality. (T or F) _____
15. From birth to maturity, boys are well ahead of girls in development. (T or F) _____
16. Which of the following is *not* a secondary sex characteristic of males? _____
    a. deepening voice c. wide hips
    b. growth of facial hair d. broad shoulders
17. As a group, boy babies are more active and aggressive than girl babies. (T or F) _____
18. Alcoholism, drug addiction, and suicide are most common in women. (T or F) _____
19. Psychological sex roles are primarily learned after birth. (T or F) _____

20. Aptitudes are inherited; interests are learned. (T or F) _____

21. Using the clues on the left, fill in the empty blanks with the letters needed to complete each word.

a. expected way of behaving _ _ l _

b. a change in a gene _ _ _ a _ _ _ _

c. when active sexual development begins _ _ _ _ _ _ y

d. a natural ability a _ _ _ _ _ _ _

e. the study of how we inherit our characteristics _ _ n _ _ _ _ _

f. the time a baby spends inside the mother's body _ e _ _ _ _ _ _ _

g. a gene that is not likely to produce a visible effect _ _ _ _ _ _ _ v _

h. conditions present at birth _ _ _ g _ _ _ _ _ _

i. released by sex glands; cause development of secondary sex characteristics _ _ _ m _ _ _ _

j. science of producing superior humans e _ _ _ _ _ _ _

ANSWERS TO STUDY GUIDE CHAPTER 2 PAGE 9 and 10

"Who Am I?"

1. b
2. F
3. T
4. c
5. c
6. F
7. T
8. d
9. a
10. T
11. F
12. T
13. c
14. T
15. F
16. c
17. T
18. F
19. T
20. T
21.
A. role
B. mutation
C. puberty
D. aptitude
E. genetics
F. gestation
G. recessive
H. congenital
I. hormones
J. eugenics

Day 4

Topic: Environmental Factors That Influence Development

Objectives:

1. The student will recognize environmental factors that can effect a baby's development before birth.
2. The student will identify the effect that a given environmental influence can have on a developing embryo or fetus.

Content:

1. Factors that influence development of an unborn child
2. Specific influences of environmental factors on an unborn child

Activities:

Teacher Directed Group

1. Students read pamphlet called Birth Defects, Tragedy and Hope produced by the March of Dimes (1984).
2. Class discussion of topics presented in reading including the cause of birth defects, the steps that can be taken by a pregnant woman to reduce the chances of birth defects and the help available to parents before and after the birth of their child.

Independent Study Group

1. Students read pamphlet called Birth Defects, Tragedy and Hope produced by the March of Dimes (1984).
2. Students take notes over the assigned reading to hand in at the end of the class period.

Day 5

Topic: Environmental Factors That Influence Development

Objectives:

1. The student will recognize environmental factors that can effect a baby's development before birth.
2. The student will identify the effect that a given environmental influence can have on a developing embryo or fetus.

Content:

1. Factors that influence development of an unborn child
2. Specific influences of environmental factors on an unborn child

Activities:

Teacher Directed Group

1. Students work in small groups and select a topic of interest from those listed (p. 57).
2. Students prepare a report to be presented to the rest of the class on the topic selected. The outline will be handed in following the presentation on report form (p. 58).

Independent Study Group

1. Students work independently to select a topic of interest from those listed (p. 57).
2. Students prepare a written report on the topic chosen to be handed in at the end of the class

period using report form (p. 58).

Environmental Factors That Influence Development Report Topics

1. Alcohol
2. Antacids
3. Antibiotics
4. Aspirin and analgesics
5. Laxatives
6. Narcotics, hallucinogens and amphetamines
7. Prescription drugs
8. Smoking
9. Vitamins

Information for these reports is available in class or in the school library. Students may use resource books, pamphlets and articles provided by the teacher or go to the library to use other resources available.

Name(s)_____

_____

_____

ENVIRONMENTAL FACTORS THAT INFLUENCE PRENATAL DEVELOPMENT REPORT FORM

1. Topic:
2. Reason for selection of topic:
3. Resources used:
4. Summary of important information gathered for report:
5. Recommendations given for control of this influence:

Day 6

Topic: Prenatal Nutrition

Objectives:

1. The student will describe the proper nutritional intake for a pregnant woman.
2. The student will indicate the normal range for weight for the pregnant woman.
3. The student will plan a menu that meets the nutritional requirements of a pregnant woman.

Content:

1. Influence of diet on the development of an unborn child
2. Components of a nutritionally sound diet
3. Normal weight gain during pregnancy

Activities:

Teacher Directed Group

1. Students read March of Dimes pamphlet Recipe for Healthy Babies and Iowa State University Extension pamphlet Eat Wisely for You and Your Baby.
2. As a class, plan one day's menu for a pregnant woman and record menu on board. Ask students for input for ways to improve the menu. Record any changes.
3. Students work in small groups to plan one day's menu for a pregnant woman using food models to display meals. Each group report to entire class their reasons for menu choices.

Independent Study Group

1. Students read March of Dimes pamphlet Recipe for Healthy Babies and Iowa State University Extension pamphlet Eat Wisely for You and Your Baby. Take notes over readings.
2. Fill out Meal Plan Sheet (p. 64) using information from reading.
3. Students work independently to plan one day's menu for a pregnant woman using food models to display meals. Meal displays will be graded by teacher as students finish.

Day 7

Topic: Prenatal Nutrition

Objectives:

1. The student will describe the proper nutritional intake for a pregnant woman.
2. The student will indicate the normal range for weight gain for a pregnant woman.
3. The student will plan a menu that meets the nutritional requirements of a pregnant woman.

Content:

1. Influence of diet on the development of an unborn child
2. Components of a nutritionally sound diet
3. Normal weight gain during pregnancy

Activities:

Teacher Directed Group

1. View filmstrip Inside My Mom.
2. View film Have a Healthy Baby.
3. Discuss facts about the importance of a good diet for a pregnant woman brought out in the film and filmstrip.
4. Do Case Study Activity (p. 63). List recommendations on board. Discuss.

Independent Study Group

1. View filmstrip Inside My Mom.
2. View film Have a Healthy Baby.
3. Do Case Study Activity (p. 63).

4. Write out recommendations to be handed in.

Case Study Activity on Prenatal Nutrition

Have students work in small groups to consider each of the following case studies in relation to what they have learned about health care during pregnancy. Ask groups to recommend modifications in lifestyle for each woman during her pregnancy.

Case 1

---Diane is a short-order cook working nights, six days a week, at a restaurant about five miles from home. She is four months pregnant with her second child. Diane and her husband John are separated. While John does provide money to assist with rent, their son Billy's maintenance, and Diane's current medical expenses, she is on a limited budget. Diane's neighbor baby sits Billy each morning while she tries to get some sleep. Home is a tiny apartment. Diane has no option but to drive to and from work. The car is also necessary to take Billy to and from her mother's each evening. Diane is feeling very lonely, tired and depressed.

Case 2

---Susan is a 35-year-old, married typist who works in the administrative office of a farm machinery manufacturing plant. Husband Joe is a foreman at the same plant. They are expecting their long-awaited first child. Home is about a mile from the plant. Susan has been overweight all of her adult life, and is anxious about gaining excessive weight during pregnancy. Nevertheless, she is in the habit of munching candy and drinking pop while working. Joe and Susan like to spend their weekends motor bike racing, bowling and partying.

Bring class together to share recommendations.

MEAL PLAN SHEET NAME_____

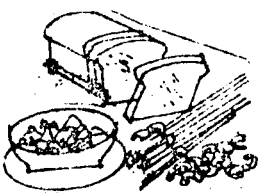
PLAN A ONE DAY MENU FOR A PREGNANT WOMAN. TO INSURE GOOD HEALTH FOR THE MOTHER AND BABY, USE THE BASIC FOUR FOOD GROUPS AS A GUIDE.

*FOUR OR MORE SERVINGS OF THE BREAD AND CEREAL GROUP

*FOUR OR MORE SERVINGS OF THE FRUIT AND VEGETABLE GROUP

*FOUR OR MORE SERVINGS OF THE MILK FROUP

*TWO OR MORE SERVINGS OF THE MEAT GROUP



BREAKFAST

main dish:

bread or cereal:

fruit or juice:

beverage:

LUNCH

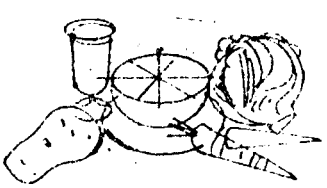
main dish:

vegetable:

salad:

dessert:

beverage:



DINNER

main dish:

starchy dish:

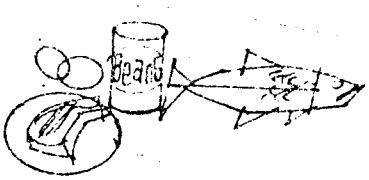
vegetable:

salad:

bread:

dessert:

beverage:



Day 8

Topic: Prenatal Development of the Unborn Baby

Objectives:

1. The student will list changes which occur during the growth of the embryo.
2. The student will identify changes which occur during the growth of the fetus.
3. The student will describe the progress of prenatal development stages.

Content:

1. Prenatal development stages
2. Growth during prenatal development

Activities:

Teacher Directed Group

1. Use Conception to Birth Board (media) to present illustration of prenatal development.
2. Teacher lecture on prenatal development using kit as a guide.
3. Students fill out "Prenatal Development" worksheet as teacher lectures (p. 67).

Independent Study Group

1. Students read Westlake (1984, pp. 60-70). Topics included are prenatal growth and development.
2. Fill out worksheet "Prenatal Development" using reading (p. 67).
3. Display Conception to Birth Board (media) for students to examine and read about using

corresponding booklets.

PRENATAL DEVELOPMENT WORKSHEET

Stage	Size and weight	Important Developments
Ovum 1st 2 weeks		
Embryo 2 mths.		
Fetus 3 mths.		
4 mths.		
5 mths.		
6 mths.		
7 mths.		
8 mths.		
9 mths.		

Day 9

Topic: Prenatal Development of the Unborn Baby

Objectives:

1. The student will list changes which occur during the growth of the embryo.
2. The student will identify changes which occur during the growth of the fetus.
3. The student will describe the progress of prenatal development stages.

Content:

1. Prenatal development stages
2. Growth during prenatal development

Activities:

Teacher Directed Group

1. Students view filmstrip Life Before Birth.
2. Using Prenatal Development worksheet as an outline, discuss the growth and development of the unborn baby. Replay parts of the filmstrip to discuss and point out growth and development.

Independent Study Group

1. View filmstrip Life Before Birth.
2. Study Prenatal Development worksheet (p. 67) and fill in any parts using key at teacher's desk.

Day 10

Test over Prenatal Development Unit

Teacher distributes the posttest and answers questions regarding the test directions before test begins.

Teacher collects test papers as students finish.

TEST CONCEPT AND QUESTION SUMMARY

CONCEPT	Matching	Essay & Chart	Multiple Choice
Reproduction	2	1	1
Myths		1	
Heredity		1	5
Environmental Influences		1	3
Nutrition		1	2
Weight Gain			2
Growth		1	3
Development	1	1	3

PERSONAL AND FAMILY RELATIONSHIPS TEST NAME_____
PRENATAL DEVELOPMENT UNIT

Select the term from Column B that is most closely related to the phrase in Column A.

MALE REPRODUCTIVE SYSTEM

Column A	Column B
_____ 1. The sac-like structure that contains the testes	A. epididymis
_____ 2. The tube into which sperm cells pass from the many tubules of the testes	B. penis
_____ 3. The organ that surrounds the upper end of the urethra	C. prostate gland
_____ 4. The organ through which semen is ejaculated	D. rectum
_____ 5. The tube into which a seminal vesicle opens	E. scrotum
	F. seminal vesicle
	G. vas deferens

FEMALE REPRODUCTIVE SYSTEM

Column A	
_____ 1. The folds of skin surrounding the entrance to the reproductive tract	A. cervix
_____ 2. The muscular canal into which the uterus opens	B. clitoris
_____ 3. The organ through which an egg cell moves from an ovary to the uterus	C. Fallopian tube
_____ 4. The neck of the uterus	D. hymen
_____ 5. The thin bit of tissue, or membrane, that may partially cover the opening to the vagina	E. labia
	F. urethra
	G. vagina

CONCEPTION AND DEVELOPMENT

Column A	
_____ 1. An unborn child during the second month of pregnancy	A. conception
_____ 2. The ropelike structure through which food and oxygen are carried	B. embryo
_____ 3. The event that occurs when a sperm penetrates and fertilizes an egg	C. fetus
_____ 4. The network of blood vessels and tissue by which the unborn child is attached to the wall of the uterus	D. placenta
	E. umbilical cord

Select the term that best completes each of the following statements.

1. Sperm cells are produced in the

   a. penis
   b. testes
   c. urethra
   d. epididymis

2. Both semen and urine leave the male body, although never at the same time, through the

   a. urethra
   b. bladder
   c. seminal vesicle
   d. testes

3. An egg cell is usually fertilized in the

   a. uterus
   b. vagina
   c. Fallopian tube
   d. ovary

4. Ovulation is the process by which an egg cell is released from

   a. an ovary
   b. a Fallopian tube
   c. the uterus
   d. the cervix

5. With respect to a 28-day menstrual cycle, ovulation usually occurs

   a. during the first 3-5 days
   b. during the first 8-10 days
   c. on about the 14th day
   d. during the last 3 or 4 days

6. Eggs cells are to the ovaries as sperm cells are to the

   a. scrotum
   b. penis
   c. testes
   d. vas deferens

7. Sex hormones are produced by the

   a. ovaries and testes
   b. rectum and anus
   c. penis and clitoris
   d. scrotum and uterus

8. The time for a normal pregnancy is approximately

   a. 1 month
   b. 3 months
   c. 9 months
   d. 1 year

9. The sex chromosome pattern for a boy is

   a. XX
   b. YY
   c. Y
   d. XY

10. Before it is born, a baby is protected from bumps and shocks by a fluid in the

    a. yolk sac
    b. amniotic sac
    c. placenta
    d. umbilical cord

11. Which of the following pair of chromosomes determines the child's sex?

a. 21
b. 15
c. 23
d. 10

12. Environmental factors do the most damage to an unborn child

a. during the first 6 weeks
b. during intercourse
c. during the second trimester
d. during the third trimeste

13. If straight hair is dominant and curly hair is recessive, a child may have curly hair when both of his or her parents have straight hair if

a. his or her uncle on the father's side had curly hair
b. his or her grandfather on the father's side had curly hai
c. his or her aunt on the mother's side had curly hair
d. all of the above

14. A fetus will be better off is the mother stays away from

a. sleeping pills
b. aspirins
c. antacids
d. tranquilizers
e. all of the above

15. There are_____chromosomes in every normal sperm cell.

a. 23
b. 15
c. 46
d. 22
e. 21

16. Testing for chromosomal defects is called

a. mongolism
b. Down's syndrome
c. genetic evaluation
d. karyotyping

17. The number of servings that a pregnant woman needs each day from the milk group is

a. 2
b. 3
c. 4
d. 1

18. The average recommended weight gain for a pregnant woman is

a. less than 10 pounds
b. 20-30 pounds
c. 50 pounds
d. no range is usually set

19. The nutritional habits of a pregnant woman are especially important in early pregnancy because

a. the major organs of the baby are forming
b. she may not want to gain weight early in the pregnancy
c. eating habits can effect nausea
d. all of the above

20. The greatest weight gain for the unborn child occurs during development of the

a. embryo
b. fetus
c. zygote
d. incubation

21. The first stage of pregnancy is the development of the

a. embryo
b. fetus
c. incubation
d. zygote

22. The unborn child receives nutrients and oxygen from an exchange organ called the

a. placenta
b. umbilical cord
c. amniotic sac
d. uterus

23. Which changes occur in a developing baby during the first two months of growth? Circle two answers.

a. fingers and toes form
b. fetus moves its arms and legs
c. fingernails grow
d. eyes, ears and mouth form

24. The period of greatest growth of an unborn baby is

a. the first month
b. the second month
c. the third and fourth month
d. the ninth month

25. An average full term baby weighs

a. 4-5 pounds
b. 6 pounds
c. 7-7½ pounds
d. 9 pounds

Complete the following chart.

Stage	PRENATAL DEVELOPMENT Size and weight	Important developments
Ovum		
Embryo		
Fetus		
3 months		
4 months		
5 months		
6 months		
7 months		
8 months		
9 months		

Answer each of the following questions as thoroughly as possible in the space provided. Use complete sentences.

1. Your 10 year old brother has just asked you to explain where babies come from. Explain to him, being as specific as possible how human reproduction takes place.

2. Explain the implications of a Rh positive father and a Rh negative mother on the first pregnancy of the couple. What are the precautions that will need to be taken?

3. Your sister is expecting her second baby and seems unaware of the effects of her constant smoking and drinking and smoking on her unborn baby. What would you say to her to convince her to give up these habits?

4. Explain the importance of good prenatal nutrition and give an example of a good menu for one day for a pregnant woman.

5. List four myths related to pregnancy and state the facts that dispell the myths.

ANSWER KEY TO PERSONAL AND FAMILY RELATIONSHIPS TEST

PRENATAL DEVELOPMENT UNIT

Matching

1. E
2. A
3. C
4. B
5. G

1. E
2. G
3. C
4. A
5. D

1. B
2. E
3. A
4. D

Multiple Choice

1. B
2. A
3. C
4. A
5. C
6. C
7. A
8. C
9. D
10. B
11. A
12. A
13. D
14. E
15. C
16. D
17. C
18. B
19. D
20. B
21. D
22. A
23. A and D
24. D

Essays (key points)

1. 1. Male-female reproductive systems.
   2. sperm-egg.
   3. reproductive process.

2. 1. Rh positive blood is dominant.
   2. If baby is Rh negative and mother is Rh positive, complications occur.
   3. Build-up of antibodies.

3. 1. Dangers of bad health on pregnant woman (poor health, difficult delivery).
   2. Dangers to baby of habit of drinking and smoking (low birth weight, mental retardation).

4. 1. Good diet necessary for nutrient requirements to be met and for proper growth and development of the baby.
   2. Menu plans must include:
      4 milk
      4 breads or cereals
      4 fruits or vegetables
      2 meats

5. 1. Myths listed could include any four of the following:
   a. bathing might drown baby
   b. lifting arms will strangle baby
   c. drinking thickens blood
   d. pregnant women lose a tooth for each baby
   e. if frightened, baby will inherit the fear
   f. sex can be determined by how baby is carried

25. C

2. Facts that dispel the myths include:
   a. no, because baby is surrounded with fluid
   b. no, woman's arms do not affect umbilical cord
   c. no, wine does nothing to the blood
   d. no, baby needs calcium, but does not get it from the mother's teeth
   e. no, fear is not hereditary
   f. no, the way a woman carries a baby depends on her muscle tone, size of pelvis and position of the baby

APPENDIX B

Raw Data

Measures of Equivalency--TDG

Measures of Equivalency--ISG

Raw Data: Measures of Equivalency

Independent Study Group

	Sex	Grade	ITED Math	ITED Science	GPA	Health
1.	F	12	82	92	3.8	A
2.	M	12	55	54	2.4	C
3.	M	12	29	33	2.6	C+
4.	M	12	39	48	2.2	D+
5.	M	11	24	30	.9	D-
6.	M	12	19	1	1.6	D-
7.	M	12	6	3	.7	F
8.	M	12	90	92	2.7	C+
9.	F	12	6	14	1.3	F
10.	F	12	6	20	1.4	F
11.	F	11	38	25	2.2	C
12.	M	12	14	14	2.0	C-
13.	F	12	27	8	2.0	D-
14.	M	12	60	20	2.1	C-
15.	M	12	6	5	1.7	F
16.	M	12	9	38	2.2	D+
17.	F	12	9	14	2.1	D+
18.	F	11	11	16	2.6	A

Raw Data: Measures of Equivalency

	Sex	Grade	Teacher Directed Group ITED Math	ITED Science	GPA	Health
1.	F	11	17	60	1.8	C
2.	M	12	60	2	1.7	C+
3.	F	11	24	16	1.7	C+
4.	F	12	82	38	3.2	C
5.	F	11	44	20	1.8	C
6.	M	12	74	54	2.9	C+
7.	M	12	55	76	2.0	C+
8.	F	11	5	20	2.1	C-
9.	F	11	94	89	3.6	B
10.	F	11	38	42	2.9	C+
11.	F	12	19	33	2.0	D
12.	M	11	3	9	1.1	C
13.	F	12	32	53	2.0	D+
14.	F	11	87	86	3.7	B
25.	F	12	70	92	3.2	C
16.	M	12	19	3	2.1	C
17.	M	12	39	60	1.5	D
18.	F	12	24	43	2.7	B+
19.	M	11	5	6	.8	D-
20.	F	12	2	2	1.8	F

Raw Data

ISG

	Pretest (%)	Posttest (%)	Gain (%)
1.	76	97	21
2.	61	67	6
3.	48	76	28
4.	57	69	12
5.	57	58	1
6.	61	59	-2
7.	57	57	0
8.	67	87	20
9.	52	64	12
10.	61	78	17
11.	63	85	22
12.	59	65	6
13.	48	73	25
14.	57	84	27
15.	52	64	12
16.	59	66	7
17.	67	86	19
18.	61	78	17

Percentages based on a possible 106 test points.

Raw Data

TDG

	Pretest (%)	Posttest (%)	Gain (%)
1.	50	57	7
2.	63	75	12
3.	46	58	12
4.	59	90	31
5.	41	63	22
6.	61	73	12
7.	67	70	3
8.	37	58	21
9.	63	83	20
10.	46	79	33
11.	63	72	9
12.	59	57	-2
13.	61	77	16
14.	50	83	33
15.	63	81	18
16.	71	69	-2
17.	71	71	0
18.	71	88	17
19.	37	58	21
20.	63	83	20

Percentages based on a possible 106 test points.