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ABSTRACT

This study was initiated in order to assess the effectiveness of an innovative social studies curriculum, "Man: A Course of Study" (MACOS). The introduction presents an overview of MACOS, the major hypotheses tested, and the design and function of the observation instrument. Chapter 2 reviews the literature on MACOS, emphasizing the learning theory on which MACOS is based and the relationship of cultural background to scholastic achievement. Chapter 3 discusses observation findings, analyzing classroom lessons, nonverbal activities, and classroom atmosphere. Chapter 4 presents pre-posttest results and the item analysis and analysis of variance performed on the Man and Animals tests and the Netsilik Eskimo tests. Chapter 5 concludes that the major teaching styles and classroom atmosphere did change and that there was a clear movement toward a more student-centered classroom. MACOS did fulfill several of its pedagogical aims, such as development of inquiry skills, use of primary sources, increased communication, and promotion of open-ended discussions. Pre- and posttest results showed a definitive improvement on posttest scores. Students' scores varied significantly according to socioeconomic areas and on attitudes toward basic concepts. Appendixes include the observation form, notes and data, tests and accompanying data, and chi-square test on semantic differential items. (Author/KSM)

A STUDY OF MAN: A COURSE OF STUDY IN THE METROPOLITAN SCHOOL DISTRICT, NASHVILLE, TENNESSEE

by

Susan DeBolt

A Study Presented to the Faculty of the
Division of Education
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In Partial Fulfillment of the Requirements for the Degree
Specialist in Education

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CHAPTER I

INTRODUCTION

In September, 1970 the Metropolitan Nashville School System (METRO) initiated in selected schools an innovative social studies curriculum, Man: A Course of Study. This study is an attempt to assess the effectiveness of this curriculum in the schools in which it is used. The questions to be tested fall into two categories, those pertaining to (1) pre-post test learning results and (2) observation findings related to teaching and learning styles.

Overview of Man: A Course of Study

Jerome Bruner, whose theory of learning underlies the course, stated the broad outlines in 1965:

> "The content of the course is Man: his nature as a species, the forces that shaped and continue to shape his humanity... We seek exercises and materials which show wherein man is distinctive in his adaptation to the world, and wherein there is a discernible continuity between man and his animal forbears." [1]

The course is divided into two units, a Man and Other

[1] Jerome Bruner, "Man: A Course of Study -- An Experimental Social Science Course for Elementary Schools," in Man: A Course of Study Talks to Teachers, (Cambridge, Massachusetts: Education Development Center, Inc., 1969).

Animals Unit and a Netsilik Eskimo Unit. Data used in each represents the most recent findings in the behavioral sciences. Student material incorporated includes ethnographic film studies and field research. With these sources, the teacher and students are to explore man's relation to other men and other animals.

The authors of the course state that while studying the salmon, herring gull, and baboon, fundamental questions about the nature of man are introduced through contrast with these animals. Such topics as life cycle, adaptation, instinctive and learned behavior, the structure and function of an organism, and how all behavior must be understood in terms of requirements for survival undertaken. The baboon unit is based upon field research by Sherwood Washburn and Irven DeVore in Kenya.[2] Through the unit infant rearing, food gathering, defense against predators, intergroup relations, and communication are studied as a background against which to examine human social behavior. Baboon behavior raises some interesting questions about the functions of dominance, aggression, sharing and reciprocity, territoriality and exchange, and various interpersonal relationships within small groups, human and nonhuman alike.[3]

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[2]Sherwood Washburn and Irven DeVore, "The Social Life of Baboons," in Primate Social Behavior, ed. by C.H. Southwick (New York: D. Van Nostrand Co., Inc., 1963).

[3]Ibid.

These provide contrast for examining the child-rearing practices and social behavior of man.

The Netsilik Eskimo Unit looks at the concept of culture through this purest surviving example of traditional Eskimo culture. The authors of the course claim that it is probably the most complete record of another culture ever introduced into elementary schools. This unit provides a means for students to discover the meaning of man's humanness through the comparison of two human cultures. The developers of the course believe that by the end of the course students will have a vocabulary for thinking about man's distinctiveness and an increased sensitivity of the humanness of all cultures.[4]

Questions

Pre-Post Test Results

The major question to be tested in this category is, do students score better on the post-tests than they do on the pre-tests? Several related questions will also be investigated.

(1) Do students differ by the grade in which they are enrolled, in the amount of knowledge they possess about course content as they begin the course?

(2) Does the grade in which the student is enrolled influence the change in the pre-post test scores?

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[4] Man: A Course of Study (a brochure), (Washington, D.C.: Curriculum Development Associates, Inc., 1971).

(3) Is there a difference in the amount of knowledge students in differing socio-economic areas within the school system have about the course content as they begin the course?

(4) Are there differences in the improvement of students' scores according to socio-economic areas?

(5) In terms of the Netsilik Eskimo section of the course, are there significant changes in attitude?

Observation Findings

Observations in a sample of Man: A Course of Study (MACOS) classrooms were conducted in order to assess if teaching and learning styles change within the MACOS classes. The observation instrument is designed to determine:

> 1. The typical ways the curriculum was used in the classroom (e.g., frequency of different types of activities);
>
> 2. The major teaching styles and classroom atmospheres (e.g., types of roles teachers assume); and
>
> 3. Whether the above items change over time.[5]

Some related questions are:

(1) Does the teacher initiate and develop in youngsters a process of question-posing (the inquiry method);

(2) Do youngsters develop the ability to use a variety of primary sources as evidence from which to develop hypotheses and draw conclusions;

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[5]Janet Hanley, Dean Whitla, Eunice Moo, and Arlene Walter, Curiosity, Competence, Community, V. II, (preliminary copy) (Cambridge, Massachusetts: Education Development Center, 1970), p. V-3.

(3) Do youngsters learn to listen to others as well as express their own views in classroom discussions;

(4) Does the teacher give sanction and support to open-ended discussions where definitive answers to many questions are not found in an effort to legitimize the youngster's search for his own views;

(5) Does the teacher encourage children to reflect on their own experiences;

(6) Does a new teacher role develop, in which he becomes a resource rather than an authority.[6]

An analysis of the data determined whether there was a desirable change in teaching and learning styles and whether children gained a knowledge of course content. Once these conclusions have been drawn, one can then determine if Man: A Course of Study has been a worthwhile innovation and if it should be recommended for further incorporation into the school system's program.

Procedures (Testing)

The Sample

This study was conducted in the classrooms of eleven Metropolitan Nashville teachers of MACOS. The subjects consisted of approximately equal numbers of 5th and 6th grade students, divided equally into the three socio-economic

[6] Ibid., Chapter V.

groups. The total number of subjects was approximately 602.

Instruments and Sequence of Activities

1970 EDC versions of the Man and Other Animals Test and Netsilik Eskimo Test were revised by this author. Revisions were based on the results obtained from two experimental classes conducted as part of Peabody College's MACOS Regional Dissemination Institute in the summer of 1970. A few items were eliminated or modified which results in an improved instrument. Pre- and post-tests for both these units were administered by eleven classroom teachers of MACOS to their respective classes. The Man and Animals pre-test was given in September-October, with post-tests given between December and February. Pre-tests for the Netsilik Eskimo unit were administered from December to February, with post-tests given in May and June. Answers were marked on IBM computer answer sheets. A scanner owned by the METRO school system was used in the scoring and tabulation of test results. The tests were constructed specifically for MACOS by EDC; they were continuously revised over a period of five years of research and two years of field testing (1967-1969).[7]

[7] Janet Hanley, Dean Whitla, Eunice Moo, and Arlene Walter, Curiosity, Competence, Community, V. I (preliminary copy), (Cambridge, Massachusetts: Education Development Center, 1970), Chapter III.

Data and Statistical Treatment

Two statistical procedures were employed for both the Man and Animals and Netsilik tests. First, an item analysis was conducted based on responses from the total population taking each test. For the Man and Animals test, the number of students for the pre- and post-tests were 600 and 602, respectively; total numbers for the Netsilik test pre and post were 603 and 606, respectively. The Man and Animals Unit tests were further divided into two categores--those pertaining to (1) information and (2) reasoning. The first forty items of the Netsilik Unit test consisted of the Osgood Semantic Differential format . On these semantic differential items, using the total population of approximately 600, Chi Square tests of significance were employed to determine attitude change.

Second, for an analysis of the effects of the three variables--grade; socio-economic level (SES); and the effect of teaching and the course materials, or the treatment effect--a sample of twenty-eight subjects was randomly selected for each of six groups, constituting a total of 168. Subjects were selected using a random number table. An analysis of variance was conducted to determine if the effects of grade, SES, and treatment were significant at the .05 level.

Procedures (Classroom Observations)

The Sample and Sequence of Activities

Observations of classrooms were designed to determine (1) the typical ways the curriculum was used in the classroom; (2) the major teaching styles and classroom atmospheres; and (3) whether the above change over time. Seven teachers in schools of three different socio-economic areas were observed, and scores were tabulated on the observation form.[8] Observations were divided into "early" and "late" categories in order to delineate any trend in teacher or student behavior as the MACOS experience began and ended. Early observations were conducted from October through January, with two or three observations conducted for each teacher. Late observations, conducted in the same manner, took place from February through May. The total number of early and late observations were the same. Each observation was of approximately one hour duration. Observations covered the span of time from September, 1970 to May, 1971.

Five schools were choosen to provide a cross-section of children from different socio-economic levels. The schools also incorporated a wide variety of school organizations and teaching strategies. The diversity ranged from the more common elementary self-contained classroom, to an open space departmentalized organization, to a single classroom

[8] See APPENDIX A , pp. 87-97.

departmentalized organization.

In terms of the teachers' teaching experience, education, and age, there was a moderate amount of variance. Of the seven teachers, five held master of arts degrees and two held the bachelor of arts degree. All were certified elementary teachers. Two of the teachers had from three to five years of teaching experience; they also were under thirty years of age. The other five teachers had from six to twenty years of teaching experience. Their ages ranged from thirty to forty-five. Two teachers were male, five were female. All of the teachers using MACOS in METRO previously participated in a four week summer institute.

Instruments and Statistical Treatment

Evaluation of a lesson had two foci: (1) the content itself--the structure and characteristics of the lesson, and its success as the observer perceives it; and (2) the classroom atmosphere, with emphasis on the teacher's style. Dimensions such as the objectives of the lesson and kinds of activities which occur are included in the content section. The second section includes such dimensions as the teacher's stance and the teacher's role.[9]

Again, as for the tests, the observation instrument was designed by EDC specifically for MACOS classes. The

[9]Hanley et.al., Curiosity V.II (preliminary copy), Chapter V.

developers admit that precise measures of aspects of a class session such as provided by Flanders' Interaction Analysis do entail some advantages, the most important of which is reliability. Such instruments require training in the use of technique, and a disregard of all but a few pre-determined dimensions. The classroom, however, is extremely complex and the developers believed too much would be lost through oversimplification if a Flanders'-type instrument was employed. The MACOS observation instrument was researched for the last four years and tested for two years using several different observers. Observers obtained relatively comparable data, which indicates reliability of this instrument.

Data gathered through the observation instrument was analyzed through the application of t-tests. Data from early observations was compared to data from late observations. Differences would be deemed significant at the .05 level.

CHAPTER II

A REVIEW OF THE LITERATURE ON MAN: A COURSE OF STUDY

One of the central goals of social studies education in the American Democracy is to contribute to the fullest possible development of the individual by giving him every opportunity to develop his ability to think logically and to analyze societal information in a rational manner. The nature and circumstances of the childhood learning process is unquestionably of crucial importance to social studies educators as they strive to develop more effective curricula. Man: A Course of Study is an example of a curriculum based directly upon learning theory which attempts to develop children's analytic thinking ability.

In this review, major emphasis will be given to the learning theory upon which Man: A Course of Study is based and to the relationship of cultural background to scholastic achievement. The general plan of the chapter is the following topical sequence:

1. Studies concerned with how the process of learning takes place;
2. an investigation of the theories of children's

analytic thinking with emphasis upon Jean Piaget and Jerome Bruner and research related to the enhancement of analytic ability;

3. studies concerning the correlation between cultural background and scholastic achievement; and
4. studies concerned directly with the evaluation of MACOS.

The Learning Process

In the last two decades, a combination of stimulus-response theory and reinforcement theory have come to gain a wide acceptance among educators. In brief, these theories hold that individuals learn to think and behave according to certain patterns over a period of time by building images in the brain to represent particular environmental stimuli and then gradually developing dispositions to respond to these stimuli in specific ways. One develops a disposition to behave in a particular manner based upon certain drives and rewards. Particularly in young children, initial responses to a stimulus may be chosen at random. If the selected response does not lead to the desired result, another is choosen. Once a response, intuitive or reasoned, is followed by a rewarding result a relationship is gradually constructed. Formulation of the stimulus-response link can be reinforced if the stimulus is unusually intense or if the

reward follows the stimulus in a reasonably short time. In the same manner, if the reward became undesirable, the tendency to respond in this manner may dim and even be gradually extinguished. Importantly, extinction operates more slowly than reinforcement.

The importance of this pattern of learning is greatly enhanced by human beings acquiring predispositions to act in certain ways. Once a stimulus-response pattern has been learned, expansion of the response to different stimuli is likely. Individuals apply responses appropriate for one pattern of cues to a similar pattern. Eventually, they learn which responses should be applied to which cues, and as a result the individual gradually learns to discriminate.[10]

If the individuals respond intuitively at first and then gradually in a more reasoned manner to environmental stimuli, what are the circumstances of childhood learning? Research has shown that cues which tend to lead to particular responses in childhood learning are acquired from primary groups like the family, peer groups, and friendship groups; secondary associations such as the school and the church; and broad social groupings like class and ethnic groups. Cues for the most part tend to be acquired inadvertently, simply through

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[10] See J. McV. Hunt, Intelligence and Experience (New York: Ronald, 1961), pp. 65-108; Fred S. Keller, Learning: Reinforcement Theory (New York: Random House, 1954).

living in a particular environment. Greenstein asserts that the most important source of a child's conception of authority is, undoubtedly, in the civic instruction which goes on incidental to normal activities in the family.[11] Roberta Sigel points out, focusing on political socialization, that political learning is incidental to other experiences--it is acquired in a subtle, nondeliberate way; because it is incidental it has a more lasting effect. The child learns without being aware that he is learning.[12]

The principles of learning theory, then, shed important light on the ways in which children receive their initial orientations. The young child is very much dependent upon primary groups for cues on how to react to environmental stimuli. Primary groups operate on a personal contact basis and their opportunities for influence are great. There is no question that the family carries a powerful influence with regard to the socialization of young children, for youngsters often spend a large portion of time in the family setting when they are at a highly impressionable age.

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[11] Fred I. Greenstein, Children and Politics (New Haven: Yale University Press, 1965), p.44.

[12] Roberta Sigel, "Assumptions About the Learning of Political Values," in Roberta Sigel (ed.), Political Socialization: Its Role in the Political Process, Annals of the American Academy of Political and Social Science, Vol. 361 (September, 1965), pp. 4-7. See also James C. Davies, "The Family's Role in Political Socialization," in Roberta Sigel, (ed.) Political Socialization: Its Role in the Political Process, pp. 10-19.

Analytical Thinking of Children

A direct relationship exists between the following explanations about the nature of analytic thinking and the eventual end product, Man: A Course of Study. Unquestionably, Brunerian pedagogy is deeply rooted in the developmental theories of Jean Piaget. To understand the rationale supporting MACOS, it is necessary, first, to look briefly at the theories of Piaget and related research, then examine the ideas of Bruner and, finally, take account of some of his salient critics. It is also well to note that the research related to Piaget's theories should supply some information concerning the most appropriate grade level placement of a course dealing in concepts such as those dealt with in MACOS.

Research into the nature of analytic thinking reveals that it is a complicated process which requires a great deal of skill and practice, as well as a certain basic intelligence level. D.O. Hebb, examining the relationship of perception and learning, asserts that individuals receive stimuli from their environment and store representational images of the phenomena, action, or idea in a cell assembly of the brain. At first each cell assembly is isolated or independent and as a result, the very young child has not yet developed the ability to connect information in an ordered framework. Therefore, he lacks a way to respond analytically and operates largely on a basis of imitation and intuition.

Slowly, the child through experience builds connecting links in the brain which join together a number of cell assemblies. Hence, a sequence of thought of a subject is then possible. Analytic thinking ability largely depends on the stimuli a child receives over a period of time and the degree to which he builds up his mental processes in his responses to stimuli. Hebb argues that most young children are unable to think analytically because they have not yet undergone the experiences necessary to build the skills that are required for this ability.[13] Researcher Hebb's views are very much consistent with the theories of Jean Piaget.

Piaget believes that the learning capacity of children is closely linked with age and finds that children develop the ability to perform different tasks at particular stages of their development. Four major stages in the growth of children's thought patterns have been identified by Piaget, with each period building on those preceding it.

Stage one of development is the sensorimotor period. During this period, until about the age of two, the child is learning to coordinate his perceptions and his motor functions as he responds to external stimuli. At this stage, his

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[13] D.O. Hebb, "A Neuropsychological Theory," in Sigmund Kock (ed.), Psychology: A Study of a Science (New York: McGraw-Hill, 1959, Vol. I, pp. 622-643.

knowledge is limited to the ability to perform simple tasks and involves little in the way of explanation or understanding. Then, during the second stage, the pre-operational, the child begins to construct an understanding of his environment. Generally, most two through six year olds have developed images of aspects of their environment. However, they are usually unable to take more than one variable at a time into account. Hence, the child is still intuitive rather than exploratory in his thought patterns--strongly attached to the immediate situations.

The third stage of growth is that of concrete operations. Here seven through eleven year old children develop the ability to deal with concrete problems on the basis of data gathered in other situations. Children new can mentally transform evidence, organize it, and use it selectively in their responses. The child at this stage, then, has built representational images, can correlate these images, and respond to concrete situations in an analytic way. Finally, at the fourth stage, that of formal operations, the child can develop the ability to employ hypothetical reasoning and to perform controlled experimentation in abstract as well as in concrete situations. In this period of development, the child can interrelate abstract and concrete data from diverse sources into a coherent pattern as he responds to a problem

situation.[14]

A crucial point of Piaget's work which Flavell notes is the following:

> "The positive, constructive something we inherit, Piaget argues, is a mode of intellectual functioning. We do not inherit cognitive structures as such; these come into being only in the course of development. What we do inherit is a modus operandi, a specific manner in which we transact business with the environment. There are two important general characteristics of this mode of functioning. First, it generates cognitive structures. Structures come into being in the course of intellectual functioning; it is through functioning, and only through functioning, that cognitive structures get formed. Second, and this is a most important point, the mode of functioning which Piaget says constitutes our biological heritage remains essentially constant throughout life. . ."[15]

Piaget's research has shown that a child must be close to adolescence before he can think analytically in the full meaning of the term. Because of the important implications of his theories, researchers have been busy putting them to test. For example, in one study researchers

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[14] Barbel Inhelder and Jean Piaget, The Growth of Logical Thinking from Childhood to Adolescence (New York: Basic Books, 1958); Jean Piaget and Barbel Inhelder, The Psychology of the Child (New York: Basic Books, 1969); Jean Piaget, "Developmental Psychology: A Theory," International Encyclopedia of the Social Sciences (New York: MacMillan, 1968), IV, pp. 140-147; John H. Flavell, The Developmental Psychology of Jean Piaget (Princeton, New Jersey: VanNorstrand, 1963).

[15] John Flavell, Ibid., p. 43.

posed a hypothetical problem involving the establishment of a problem involving the establishment of a government in a new community on a Pacific island. Interviewing 120 students between the ages of eleven and eighteen, they found that the eleven year olds tended to view the proposition in personal terms and in a concrete fashion. Older children thirteen to fiveteen years old could put the situation into social perspective as well as generalize about it.[16] Studies concerned with the concept of time indicate that children may be able to understand time and chronology concepts at an earlier age than previously predicted. For example, Chase gave fifth and sixth grade students a chronological ordering test. He concluded that there was a range of individual differences among these pupils and that many of the students were ready for instruction in time concepts.[17] The time relationship understandings investigated in grades four through eight by Legere showed clearly that pupils entering fourth grade display a three-factored time

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[16] Joseph Adelson and Robert P. O'Neal, "Growth of Political Ideas in Adolescence: The Sense of Community," Journal of Personality and Social Psychology, 4 (November, 1966), pp. 295-306.

[17] W. Linwood Chase, "American History in the Middle Grades," in William Cartwright and Richard L. Watson, Jr., (eds.), Interpreting and Teaching American History. Thirty-first Yearbook (Washington, D.C.: National Council for the Social Studies, 1961), pp. 29-43.

relationship understanding and the child displays parallel and interrelated growth during maturation.[18]

Other studies about children's ability to use concepts have added to the store of information about pupils' potential for growth. Weber's work has shown that sixth grade pupils were unable to make predictions or draw inferences about the influence of the natural environment on Man. The inference level of his subjects was only slightly above the "specifics" without "elaboration" level. The children's lack of success was hypothesized to be caused by inability to see and consider significant features, to discriminate, and to understand relationships among environmental features.[19] Charlotte Crabtree's seeking of much less sophisticated responses from first graders has concluded that even first graders can hypothesize and then evaluate the validity of their suppositions in a geography lesson. What is essential is that the lesson be carefully guided by a skilled teacher and the children be provided

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[18] C.L. Legere, "An Investigation of Time Relationship Understandings in Grades Four Through Eight," Doctoral Dissertation, Boston University School of Education, 1962. Dissertation Abstracts 23: 1625; November, 1962.

[19] Carroll Eugene Weber, "A Study of Sixth Grade Children's Ability to Infer the Influence of the Natural Environment Upon Man," Doctoral Dissertation, University of California at Berkely, 1964. Dissertation Abstracts, 25: 4021, January, 1965.

with a variety of concrete aids to learning like photographs and maps.[20]

Piaget's analysis of the growth of cognitive ability in children is widely accepted by psychologists and educators, but as some of the above studies point out, there is widespread disagreement as to the age at which each stage of development usually begins. Piaget himself asserts there is nothing constant about his proposed ages; the capacity to perform cognitive operations depends in part on experience and the development of particular skills. Certainly some children develop more quickly and encounter greater opportunities to grapple with problems dealing in complex modes of thought.[21]

Jerome Bruner largely accepts the Piaget developmental structure, yet finds the stages not very clearly linked to age. Bruner is very skeptical of the idea of readiness and finds environment to be the stimulating or impeding factor in determining the occurance of various stages within

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[20] Charlotte Crabtree, "Supporting Reflective Thinking in the Classroom," in Jean Fair and Fannie R. Shaftel (eds.), Effective Thinking in the Social Studies (Washington, D.C.: National Council for the Social Studies, 1967), pp. 88-89.

[21] J.M. Tanner and Barbel Inhelder (eds.), Discussions on Child Development, Proceedings of the Meeting of the World Health Organization, Study Group on the Psychobiological Development of the Child (New York: International Universities Press, 1953), Vol. I; discussion also in Robert E. Cleary, Political Education in the American Democracy, (Scranton: International Textbook Company, 1971), p. 89.

a child.[22] The school, according to Bruner, should provide opportunities aimed at helping a child advance to the age at which he is ready to think in abstract terms. An "emphasis in education should be placed upon skills--skills in handling, in seeing and imagining and in symbolic operations. A curriculum should involve the mastery of skills that in turn lead to the mastery of still more powerful ones, the establishment of self-reward sequences. . . There is an appropriate version of a skill of knowledge that may be imparted at whatever age one wishes to begin teaching. . .Children often do not have a sense of conjecture and dilemma. The task of the curriculum maker and teacher is to provide exercises and occasions for its nurturing."[23]

As is exemplified in MACOS, Bruner firmly believes that even elementary school children can think in abstract terms and that curriculum building should be directed toward this goal. He suggests that curricula include training in "subtle spatial imagery," perhaps courses in visual design; leading children "to verbal skills, to a sense of paraphrase and exchange;" an emphasis on "transfer or retrievability of information;" facilitation of "the exploration of alternatives," and maximum use of pictures and symbols to aid in the

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[22] Jerome S. Bruner, Toward a Theory of Instruction, (Cambridge: Harvard University Press, 1966), pp. 27-29.

[23] Ibid., p. 89.

development of cognitive skills." [24] Such a school curriculum should be built according to "a theory of instruction" which would "specify the experience which most effectively implants in the individual a predisposition toward learning the ways in which a body of knowledge should be structured so that it can be most readily grasped by the learner. Bruner's "theory of instruction" would provide the most effective sequences in which to present materials to be learned and the nature and pacing of rewards and punishments in the process of learning and teaching.[25]

Bruner's studies and his conclusions concerning curriculum strategy have been the subject of much debate and related research. Critics find he tends to over-emphasize the importance to the learning process of structuring knowledge in particular ways. The recommendations regarding structure cannot be so easily applied to the social sciences. Surely knowledge in a number of the social sciences can be presented in different ways under varied patterns of organizations, wherein certain approaches are just as effective for learning purposes as others. It is now more than apparent that the social science boundaries are often nebulous and the content so complex that no one has yet evolved a structure for anyone

[24] Ibid., pp. 34-48.

[25] Ibid., pp. 40-41.

that is clearly the most useful way of organizing that discipline.[2]

What have been some findings related to the work of Bruner concerning his thesis on how to advance analytic ability? The most common response from educators is that it is extremely difficult to rapidly advance stage growth. Each individual child appears to have a set of particular maturational limits. Some children may simply be incapable of reaching the abstract thinking stage in the true sense of the word. While these limitations are noted, there is substantial evidence, and it is increasing, that stage growth can indeed be substantially advanced over what was previously thought possible. Scholars now argue that the important element is careful attention to curriculum construction and methods of teaching. Classroom experiences should contain a plentiful amount of enactive devices, discussion proceedures and vivid concrete learning aids. J. McV. Hunt notes that "it is no longer unreasonable to consider that it might be feasible to discover ways to govern the encounters that children have with their environments, especially during the early years of their development, to achieve a substantially faster rate of intellectual development and a substantially higher adult level of intellectual capacity." [27]

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[26] For a good discussion of Bruner's critics see Cleary, op. cit., pp. 90-91.

[27] Hunt, op. cit., p. 363.

In another study, Richard S. Crutchfield and his associates examined the ability of fifth and sixth grade pupils to hypothesize using a series of sixteen booklets. These were constructed in comic strip form in order to illustrate how two children might attempt to solve fictional problems. The young heroes of the comic series developed and redeveloped their hypotheses concerning the possibilities in each problem situation until they arrived at the most logical explanation congruent with the evidence. After the experimental group of two hundred and fifty, fifth and sixth grade pupils completed the eight hour study course, they were asked to propose possible solutions to new problems posed. This experimental group significantly outperformed a control group on the quantity and the quality of their suggested ideas.[28]

While research into the development of analytic ability shows substantial promise of advancing most children's competence, some scholars suggest that very early training may be crucial. Benjamin Bloom points out that "in terms of intelligence measured at age seventeen, about 50 per cent of the development takes place between conception and age four,

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[28]Richard S. Crutchfield, "Creative Thinking in Children: Its Teaching and Testing," in Orville G. Brim, Jr., Richard S. Crutchfield, and Wayne H. Haltzman (eds.), Intelligence: Perspectives 1965 (New York: Harcourt, 1966), pp. 33-64. (Materials available from The Productive Thinking Program, Educational Innovation, Berkely, California.)

about 30 per cent between ages four and eight, and about 20 per cent between ages eight and seventeen." Bloom's figures emphasize the importance of exposing young children to a wide variety of stimuli aimed at the enhancement of the child's intellectual, social, and emotional development. Bloom believes it is possible to prevent an early diminution of a child's intellectual ability and holds that it may be possible to develop an individual's ability to the fullest extent by early and sustained attention.[29]

In another very interesting study, Frasier trained teachers and developed a six day unit around Talcott Parsons' construct of four functional problems encountered by all successful societies. This very difficult construct was successfully taught to fourth, fifth, and sixth grade pupils at the Columbia Teacher's College Laboratory School. Frasier found through the use of Henderson's and Piaget's taxonomies that the appropriate teaching of this difficult material significantly advanced the children's analytic abilities on a pre-post test basis.[30]

Cultural Background and Achievement

While a direct relationship can exist between formal

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[29] Benjamin S. Bloom, Stability and Change in Human Characteristics (New York: Wiley, 1964), p. 88. and Cleary op. cit., p. 133.

[30] Vance Clark Frasier, "A Study of Students' Ability to Use Functional Imperatives as Strategies of Inquiry," Doctoral Dissertation, Columbia University, 1968. Dissertation Abstracts 29: 3911A: May, 1969.

educational experiences and analytic ability there are clearly limits on the effect of the school in helping develop these abilities in youngsters. First, as Robert E. Cleary ably notes, the overall impact of formal education depends on the interaction of the student with other agents of socialization as well as with the school itself. Different individuals react to similar situations not only in different ways, but the school is only one institution in a total environment. Students acquire their initial stimuli in advancing their thinking skills on a basis of interaction in a family environment before they enter school. Personal and informal contact and interaction inherent in friendship groups enables these forces to play an important role in individual development both before and during the years an individual spends in school.

The magnitude of the role of social class in determining academic achievement has been a subject much researched in recent years. In one review of some literature on the subject Wilbur B. Brookover and David Gottlieb concluded that there is a direct relationship between not only the child's socio-economic status and achievement but also his curriculum, his attendance patterns and his desires for higher education. Brookover and Gottlieb assert that the American educational establishment very much reflects the larger society's

social stratification.[31] This conclusion that American schools are perpetuating social segregation rather than achieving social mobility is unquestionably the most predominant thread running throughout the literature.

In a massive national survey recently conducted by the United States Office of Education, social background proved to be a crucial determinant to students' future educational plans and academic achievement. The authors of the multi-grade survey asserted that the role of social background is unusually pronounced where social and economic stratification on the basis of race or ethnicity is greatest. These authors suggest, as did the famous Coleman Report, that the aggregate effect of allocating students with similar social backgrounds into the same schools is to make it more difficult for schools to overcome the cumulative effect of socio-economic background.[32] Results of research conducted in the state of Michigan

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[31] William B. Brookover and David Gottlieb, Sociology of Education (New York: American Book Company, 1964), pp. 153-156, 166-179, 187-192. See also William B. Brookover and David Gottleib, "Social Class and Education" in John H. Chilcott, Norman C. Greenberg and Herbert H. Wilson in Readings in the Socio-Cultural Foundations of Education, (Belmont, California: Wadsworth Publishing Company, Inc., 1969), pp. 258-272.

[32] George W. Mayeski, Albert E. Benton Jr., Tetsuo Okada, Wallace M Cohen and Carl E. Wisler, Variations in Achievement and Motivation by Family Background and Geographic Location at the Individual School Level. USOE Technical Paper Number 9, February 12, 1970. (ERIC ED 045 691) Washington, D.C.

revealed an identical conclusion.

The Michigan Assessment Program gathered data during the 1969-1970 school year from over 320,000 students in approximately 4,000 schools. Schools in core inner city areas scored on an average well below the median on the three assessment measures--attitude toward school, vocabulary, and composite achievement. Schools in more affluent areas scored well above the median on all three measures.[33]

One recent study in four southern states focused upon the educational goals and plans of adolescents. This Office of Education research project examined with particular interest differences between outhern white and black youth. The finding here illustrates that social class membership and especially racial identity were important predictors. For example 40 per cent of the white subsample, but only about 20 per cent of the Negro sub-sample, planned to attend college. Differences of significant proportions also appeared in response to questions concerning intended high school drop out.[34]

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[33] Michigan State Department of Education, Levels of Educational Performance and Related Factors in Michigan (Michigan State Department of Education, Lansing: 1970) Paper presented at the Annual Meeting of the American Education Research Association, New York, New York, February, 1971 (ERIC ED 046 987).

[34] M. Richard Cramer, Charles E. Bowerman, and Ernest C. Campbell, Social Factors in Educational Achievement and Aspirations among Negro Adolescents: Volume II USOE Cooperative Research Project Number 1168 (ERIC ED 010 858) Chapel Hill: University of North Carolina, 1966.

The relationship between family, school, and community as influences on achievement of lower class Negroes were studied in an all Negro suburb of a large northern city. The focus of the study by Robert James Parelius was upon three research variables, (1) family background variables which might support academic achievement; (2) the role of social distance variables in school-family interaction; and (3) the degree to which school community relations and school politics affect achievement. Parelius, who obtained his data through questionnaries, interviews, school records, and informal conversations, concludes that social and demographic variables were the most significant predictors of achievement. Interestingly, the data did not support the popular school-family interaction theory. Here, some educators claim, there is a tendency for higher academic achievement with a more frequent home-school interaction.[35]

While the above four studies and many others clearly point to a direct relationship between social class and educational performance, the case is not entirely closed. The work of Bernard Greenstein and Ralph Scott serve to show that while social class is a very important variable, other variables are well worth study. For example, Greenstein's

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[35] Robert James Parelius, Sociological Influences on the Achievement of Lower Class Negro Children: Final Report. (ERIC ED 016 730) Chicago: University of Chicago Department of Sociology, 1967.

Rutgers group who examined social and cultural factors related to school achievement found very few variables strongly associated with ability. Their sample of 705 sixth through twelfth grade Negro students were interviewed and examined on three measures of reading ability. It was tentatively concluded for this Negro student population that performance is a function of the interactions between personal, peer, family, and school characteristics.[36] Another experiment with kindergarten children was concerned with skill in seriating and reading readiness. The researchers were interested in how much skill was associated with social class, sex identity, and race. Results showed that, although whites scored significantly higher than blacks, no significant social class differences were found.[37]

Janice F. Adams work on the concept of "learning to learn" is another example of research indicating that social background factors do not always yield significantly different results. One hundred and eight students seven to eleven years old were given a six problem concept attainment task not dependent upon verbalization. Certain differences in the

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[36] Bernard Greenstein, Harry C. Bredemeier, William M. Phillips Jr., and Carolie Farlee, Social and Cultural Factors Related to School Achievement: Final Report (ERIC ED 014 763) New Brunswick, New Jersey: Rutgers University Urban Studies Center, 1967.

[37] Ralph Scott, Jerald Nelson, and Ann Dunbar, USOE Cooperative Research Project 6-8526 (ERIC ED 019 712) Cedar Falls, Iowa: State College of Iowa, 1967.

shape of the subject's learning curves according to their socio-economic status were predicted. However, results failed to confirm that the nine and eleven year olds in low socio-economic status groups would have increasing gains on the early problems and decreasing gains on the final problems. In summary, the learning curves on the six problems were curves of decreasing gains for both low and middle socio-economic status children at all ages studied.[38]

A Toronto public school longitudinal study conducted in the years 1960 through 1966 investigated the effects of home environment on school achievement. Pupils were first identified as kindergarteners and their performances on home interviews, achievement, two standardized mental tests, and teacher ratings was analysized through a multiple regression design. The Toronto study revealed that, of the eight home environment variables included in the analysis, only two could be considered as "useful" predictors of achievement. Interestingly the combination of I.Q. and the two home environment variables as predictors provided the best prediction of achievement performance on both the mental aptitude test and the teacher rating questionnaire. These explained about 30 per cent of the achievement variable. Socio-economic status was of no utility in predicting performance on either the mental

[38] Janice F. Adams, Learning to Learn on a Concept Attainment Task as a Function of Age and Socio-economic Level (ERIC ED 045 505) Madison, Wisconsin: University of Wisconsin Research and Development Center for Cognitive Learning, 1970.

abilities test or the teacher rating questionnaire. This Toronto research and its implied rejection of the deterministic social class-achievement syndrome raises the issue of whether Canadian society is significantly different from American society.[39] Is it true that lower socio-economic class children in Canada are not victims of educational ascription? Is the Canadian educational system able to truly lower barriers to mobility?

In an address Frank Riesman of Columbia University urged educators to begin to believe that disadvantaged youth are very educable. He suggested, as Bruner has for all emerging youth, that stress be placed upon the positive aspects of the learning pattern. Awareness, for example, be given to the strength of the child's concrete and physical learning style.[40]

Research on MACOS

A two volume edition called Curiosity, Competence, Community was written by Education Development Center (EDC) researchers in 1970. These unpublished volumes summarize the entire research findings for MACOS based upon results

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[39] Patricia Crawford and Gary Eason, School Achievement: A Preliminary Look at the Effects of the Home (ERIC ED 047 777) Toronto, Ontario: Toronto Board of Education Research Department, 1970.

[40] Frank Riesman, The Significance ofSocially Disadvantaged Status (ERIC ED 016 730) New York, New York: Columbia University, 1963.

from 1967-1969 pilot classes. Later in 1970, a summary of these original volumes was written. Education Development Center results showed that in both sections of the course (Man and Animals and Netsilik Eskimo) children made significant gains in learning.[41] Gains remained significant for sub-samples controlled by such variables as school grade level, sex, and school system. Pre-test results demonstrated that children had more absolute knowledge pertaining to the Animals section than the Nelsilik Eskimo section. Students at higher grade levels also had more knowledge. The amount of learning during the course, however, was not related to grade level. There also appeared to be little relationship between I.Q. and scoring gains. Researchers at EDC found that sex differences traditionally found in school work essentially disappeared in MACOS classes. Boys and girls had similar reactions to the classroom environment and to learning styles and materials.[42]

Through classroom observations, researchers discovered that children in MACOS classes have a grasp on the conceptual and methodological framework of the course as demonstrated through question-posing and follow-up projects. Discernible positive changes in teacher style were also observed in these classes; the authors stated that the changes seemed attributable

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[41] Janet Hanley, Dean Whitla, Eunice Moo, and Arlene Walter, Curiosity, Competence, Community, Education Development Center (Washington, D.C.: Curriculum Development Associates, 1970), p. 22.

[42] Ibid.

to the methods and materials of the course.[43] Teachers changed from the didactic mode of teaching and learning to the interpersonal mode. Comparing teachers prior to and after teaching the course, it was found that teachers moved in the direction of an open, student-centered classroom; they also talked less and were less dominating. Students gave longer responses, were more apt to raise issues for discussion, and engaged in more student-to-student exchanges. When idea- and student-oriented teaching styles were compared,[44] it was decided that both teaching styles can be effective with MACOS, but in a small sample, student-oriented lessons were closer to the MACOS pedagogic model of the student-centered, open classroom.[45]

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[43] Ibid., pp. 28-29.

[44] See APPENDIX B, Notes on Using the Classroom Observation Form, p. 102.

[45] Hanley et.al., Curiosity, Competence, Community, Education Development Center (Washington, D.C.: Curriculum Development Associates, 1970), pp. 28-30.

CHAPTER III

DISCUSSION OF OBSERVATION FINDINGS AND TEACHING AND LEARNING STYLES

Observations of classrooms were designed to determine (1) the typical ways the curriculum was used in the classroom; (2) the major teaching styles and classroom atmospheres; and (3) whether the above change over time. Seven teachers in schools of three different socio-economic areas were observed, and scores were tabulated on the observation form.[46] Observations were divided into "early" and "late" categories in order to delineate any trend in teacher or student behavior as the MACOS experience began and ended. Early observations were conducted from October through January, with two or three observations conducted for each teacher. Late observations, conducted in the same manner, took place from February through May. The total number of early and late observations were the same. Each observation was of approximately one hour duration.

In terms of the teachers' teaching experience, education, and age, there was a moderate amount of variance. Of the seven teachers, five held master of arts degrees and two

[46] See APPENDIX A, pp. 87-97.

held the bachelor of arts degree. All were certified elementary teachers. Two of the teachers had from three to five years of teaching experience; they also were under thirty years of age. The other five teachers had from six to twenty years of teaching experience. Their ages ranged from thirty to forty-five. Two teachers were male, five were female.

Five schools were choosen to provide a cross-section of children from different socio-economic levels. The schools also encorporated a wide variety of school organizations and teaching strategies. The diversity ranged from the more common elementary self-contained classroom, to an open space departmentalized organization, to a single classroom departmentalized organization.

School I was situated in a lower socio-economic, center-city neighborhood. Approximately 99 per cent of the children who attended the school were black. Many came from low income public housing units in the vicinity. Two self-contained classrooms were observed, one a fifth grade class and one a sixth grade class. From thirty to forty students were in each room which resulted in some overcrowding. Some learning centers were utilized, though the teachers conducted most of the classes without the use of centers.

Children attending school II were from lower to lower-middle socio-economic neighborhoods in the center-city.

Most were black. One teacher at this school taught the social studies classes for the fifth grade. Students came to the room at various times according to their schedules. Most of the lessons here were provided through the use of learning centers. Children worked in groups at four or five tables. Overcrowding did not appear to be a problem at this school.

Children attending school III were primarily from upper-middle and upper socio-economic suburban neighborhoods, and the student body was 100 per cent white. An open space design was utilized in this new building. The school is organized along departmental lines, with the social studies specialists teaching all of the fifth and sixth grade students. One hundred children worked through learning centers and moved easily around their pod, going from one activity to another. Ample room was provided for student movement.

School IV was also of the open space design. Here the departmentalized organization was arranged so that MACOS was taught by the social studies teacher to sixth grade children only. Space for independent work was provided for in a large space in the middle. Around the central space were five or six pods with removable partitions. In the beginning of the year the partitions were removed leaving all open space. Later, however, the partitions had been installed. A few learning centers were utilized, though as in school I,

the teacher conducted more of the classes without the use of centers. There was a great deal of overcrowding in this school. Although this building was built only a few years before school III, pods were placed closer together and contained more children in the same space than was true with school III. Children at this school were from middle to upper-middle suburban socio-economic neighborhoods and were primarily white children.

Two self-contained fifth grade classrooms at school V were observed. The school boundary encorporated predominantly white lower-middle to middle rurban socio-economic neighborhoods. There was overcrowding in these classrooms. In both classes teachers occasionally utilized the learning center format of instruction.

All of the teachers using MACOS in the Metropolitan schools previously participated in a four week summer institute. The rationale of the course, appropriate pedagogy for the course, and teaching techniques were studied, and teachers utilized parts of the curriculum through the means of teaching demonstration classes. These teachers, then, received intense training in every phase of MACOS before classes began in September. An interesting question is, given their training, should one expect to see significant changes in teacher behavior over the span of a year?

Education Development Center (EDC), the authors of

this curriculum, had an archetypal teacher in mind to teach MACOS. Their belief is that this curriculum is more student-centered, conceptual in content, and multi-media than other social studies curricula.[47] A teacher is preferred who, because of a student-centered preference, has a respect for children and confidence in their abilities to pursue more independent learning. The student-oriented teacher is warm toward the students and expressive. Although an idea-oriented teacher may also be effective, student-oriented sessions are preferred by the authors of the curriculum.[48] Their teacher's class would have the tone of a cooperative venture, whether or not this was actually true. As students progress in this classroom, they learn to ask more questions, discuss issues among themselves, and respect each others' thoughts. Modes of effective interpersonal relationships would be developed. Through the greater variety of learning situations and the teacher's style, students would develop an ability to use a greater variety of primary sources as evidence from which to develop hypotheses and draw conclusions.[49]

Of interest, then, is how the Metropolitan teachers of MACOS will compare with the archtypal teacher. To what extent will the pedagogical aims of the course be fulfilled?

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[47] Janet Hanley, Dean Whitla, Eunice Moo, and Arlene Walter, Curiosity, Competence, Community, V.II, (preliminary copy), (Cambridge, Massachusetts: Education Development Center, 1970), p.V-13.

[48] Ibid., p.V-29.

[49] Ibid., pp.V-1 to V-31.

The observation form will allow insight into the following questions based upon the pedagogical aims:

(1) Does the teacher initiate and develop in youngsters a process of question-posing (the inquiry method);

(2) Do youngsters develop the ability to use a variety of primary sources as evidence from which to develop hypotheses and draw conclusions;

(3) Do youngsters learn to listen to others as well as express their own views in classroom discussions;

(4) Does the teacher give sanction and support to open-ended discussions where definitive answers to many questions are not found in an effort to legitimize the youngster's search for his own views;

(5) Does the teacher encourage children to reflect on their own experiences;

(6) Does a new teacher role develop, in which he becomes a resource rather than an authority.[50]

The following analysis of data should determine the answers to the above questions which are intricately involved in the general questions of how the curriculum

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[50] Janet Hanley, Dean Whitla, Eunice Moo, and Arlene Walter, Curiosity, Competence, Community, Education Development Center (Washington, D.C.: Curriculum Development Associates, 1970), p.5.

was used; what were the teaching styles and classroom atmospheres; and whether any of these changed over time.

Classroom Lessons

A general perception of the structure of lessons is helpful in determining some of the typical ways in which the curriculum was used. Items included are the way in which grouping was used; the general categories of activities utilized; and the types of objectives employed in lessons.

During initial observations, all classes were grouped at some time during each lesson observed. Although groups of five or six incorporated both sexes, when pairing was necessary for any activity, the pair was invariably composed of the same sex. Grouping was employed for a variety of activities such as arts and crafts; reading of the text and other materials, often with one or two students reading material for the poorer readers; writing; role-play; listening; and simulation games. Earlier in the year more of the activities were conducted sequentially, whereas later activities were conducted simultaneously as often as sequentially.[51]

The type of activity which took place in the classroom also changed, although the type of objectives for lessons did not. Later in the year, the percentage of lessons devoted to arts and crafts declined. This was also true of reading and writing activities. In early lessons a question-

[51] APPENDIX C, p. 108.

answer format was relied upon for much of the discussion. Later lessons showed the gaps left by the decline in arts and crafts, writing, reading, and question-answer filled primarily by a higher quality of discussion. Guided discussion, which was only seen rarely in the early lessons, was observed in 13.5 per cent of the later ones. Similarly, open-ended discussions increased from 0 to 10 per cent. A less difficult method of "discussion" frequently used by many social studies teachers, question-answer, declined from 26 per cent early to 10 per cent in later lessons.[52] Even more enlightening are the respective percentages of only the three types of discussion activities in lessons, or when not considering other types of activities. In this case, 87 per cent of the early lessons contained the question-answer activity, 13 per cent contained the guided discussion, and there were no open-ended discussions. In contrast, later the question-answer format was utilized in only 34 per cent of the lessons, whereas the incidence of guided and open-ended discussions increased to 41 per cent and 25 per cent respectively.[53]

Teachers also used a greater variety of activities later in the year.[54] Although the types of activities changed,

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[52] APPENDIX C, Items 21,25, and 26, p. 107.

[53] Ibid., p. 105.

[54] Ibid., Items 15-28, p. 107.

the types of objectives remained the same. The greatest proportion of objectives pertained to information (44 per cent), fewer to concepts (30 per cent), and the least pertained to skills and interpersonal behavior (13 per cent each).[55]

Another way to look at activities as a whole is through classifications of enactive, or doing, and symbolic, or thinking. These classifications allow one to visualize better the dynamics of a lesson. Most classrooms throughout the observations had an even mixture of symbolic and enactive activities. The early total of 57 per cent of the classrooms with this mixture increased to 62 per cent in later observations. Lessons composed of mostly enactive activities increased from 0 per cent to 13 per cent, while the amount of symbolic activities decreased from 43 to 25 per cent.[56] This verifies the former supposition of a greater variety of activities. A decrease in the symbolic category is explained by the previously mentioned decrease in question-answer, writing, and reading activities. Therefore, much more of the symbolic activity is composed of guided and open-ended discussion. This type of instruction is in the direction hoped for by the developers who seek more independent learners. It also affirms that teachers do sanction, support, and promote open-ended discussions. These type of discussions require

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[55] APPENDIX C, Items C.30-33, p. 108.

[56] Ibid., Item III. B., p. 105.

and exemplify various behaviors which will be discussed below.

Evaluation of Verbal Activities

Other elements comprising verbal activities, in addition to the discussions mentioned above, are reading and writing activities. Discussion activities constituted approximately a quarter of the activities in early lessons and a third later.[57]

In later lessons, the percentage of the lesson devoted to verbal activities was more evenly spread throughout the range, with only 63 per cent of all the sessions having over half of the lesson being composed of verbal activities.

Per cent of lessons devoted to verbal activities (check one):

	Early	Late
25	0%	12%
50	25%	25%
75	12%	38%
100	63%	25%

The accompanying increase in open-ended and guided discussion exemplify that a greater proportion of verbal activities are discussions rather than merely reading and writing activities. Verbal exchanges were also of a slightly higher quality.[58] and [59]

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[57] APPENDIX C, Items 21,25, and 26,p. 107.

[58] Ibid., Item 61, p. 111.

[59] None of the changes in scores on the semantic differential portion were statistically significant at the .05 level.

The shift in the teacher's role is obvious from the above. The effects of objectives aimed at information and concepts were manifested in later lessons. Students referred to materials some or a great deal more in later lessons.

Students references to materials (Use only spaces 1=none, 4=some, 7=many)

$$\frac{(12\%)}{0\%}*:\_\_\_\_:\_\_\_\_:\frac{(63\%)}{38\%}:\_\_\_\_:\_\_\_\_:\frac{(25\%)}{62\%}$$

*Parentheses indicate early scores.

Teachers no longer needed to depend so strongly on questioning. They tended to ask fewer questions in later lessons, whereas students had a slight tendency to ask more.[60] The type of questions asked by teachers also changed from factual questions to those encorporating more opinion. Replies by students entailed longer responses.[61] Later discussions tended to involve more exchanges between students (3.5) than was true earlier (2.1).[62]

Student behavior during verbal activities exhibited a greater tendency for students to listen to each other. They also seemed to relate the subject matter more to their own experiences. With the incorporation of more

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[60] APPENDIX C, Items 48 and 49, p. 109.

[61] Ibid., Items 46 and 47, p. 109.

[62] Ibid., Item 50, p. 110.

		Early	Late
To what extent does the class generalize?	Much or Some	71%	78%
	None	29%	22%
To what extent do students relate content to their own experience?	Much or Some	44%	56%
	None	56%	44%

students use few personal examples (1.8): 2.8 : ____ : ____ : ____ : ____ : ____ students use many personal examples

personal examples and relating the content more to their own experience, as well as generalizing information, this social studies course must be relevant to the students within the classroom as well as outside of it.

There is clearly a movement toward a more student-centered classroom. In early lessons, three-quarters of the teachers were in the role of authority, compared to only 13 per cent in later lessons. With the teacher exercising less total control, however, there is not an increase in the noise level of the classroom during verbal activities. Interestingly,

teacher's role (1.6) authority / ____ guide : 3.3 : ____ : ____ resource : ____ / ____ non-participant

quiet ____ : (2.8) 2.9 : ____ : ____ : ____ : ____ : ____ noisy

	Early	Late
Authority	75%	13%
Guide	12.5%	50%

	Early	Late
Resource	12.5%	25%
Non-participant	0%	13%

with this seemingly greater freedom, neither student interest or participation show much variation, remaining at a fairly high level from the beginning of the year until the end.[63]

Evaluation of Non-verbal Activities

A complete picture of the classroom lesson must include not only verbal, but also the non-verbal activities. Non-verbal activities include items such as participating in arts and crafts, watching films, listening to records, etc. The amount of these activities declined in later lessons. This, perhaps, is explainable in that the Netsilik Unit, which comprises the last half of the course, contains fewer arts and crafts activities, although there are more films. A fuller explanation includes the previously mentioned changes in activities. Later in the year a greater variety of activities were used and discussion activities were more prominent. Interestingly, although such non-verbal activities as a whole declined, the percentage of lessons devoted mostly to these activities increased from 0 to 13 per cent. This could possibly be the utilization of films. Viewing activities increased slightly from 4 per cent of the early lessons, to 7 per cent of the lessons in later observations.[64] Yet, with

[63] APPENDIX C, Items 56,57, p. 110.

[64] Ibid., p. 107.

the later greater variety of activities, the ratio of all activities devoted to non-verbal behavior decreased.

As with the verbal activities, student interest and participation, as well as the amount of noise did not change greatly.[65] Students did seem to be more interested in the non-verbal activities and participate more in them than in the verbal.[66] With so many classes relying heavily on reading, writing, and talking, it is not surprising that students enjoy these less familiar items.

During non-verbal activities the teacher's role changed as it did during the verbal activities. Again, the role assumed moved away from that of an authority figure. Teachers in later lessons were acting more as resources rather than authority figures, leaving more of a chance for students to act as independent learners. Interestingly, as teachers gave less overt direction to the students in both the verbal and non-verbal realms, students tended to have less of a sense of purpose.

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[65] APPENDIX C, Items 37,38,39, p. 108.

[66] Ibid., Items 37,38,56,57, pp. 108, 110.

Non-verbal

teacher's role: authority _____/ (2) guide : 3.6 : _____ : _____ resource : _____ / _____ non-participant

	Early	Late
Authority	43%	25%
Guide	43%	25%
Resource	14%	50%
Non-participant	0%	0%

students have no clear sense of purpose _____ : _____ : _____ : _____ : 5.5 : (6.3) : _____ students have clear sense of purpose

Verbal

students have no clear sense of purpose _____ : _____ : _____ : _____ : (5.9) 5.4 : _____ : _____ students have clear sense of purpose

In both the verbal and non-verbal aspects of lessons, it can be seen that teachers become less dominating in the classroom. The more student-centered lessons later in the year allow for a greater independence for the learner. With the greater freedom in the classroom, the students engage in interpersonal exchanges more frequently. They raise more questions and discuss them using not only the facts and concepts learned, but opinions they have developed. Discussions and other activities become more relevant with the incorporation of personal experiences.

The above gives the reader some of the flavor of the

classroom. A more detailed perspective of the over-all atmosphere of the classrooms is possible through the final section of the observation form.

Classroom Atmosphere

The final section of the observation form dealt with the classroom atmosphere. Items in this section attempt to define a teacher's basic style or approach to the students and the curriculum. For the most part, the teacher's classroom personality did not change. There was little change in the demonstration of pleasure or anger. Voices remained at a moderate tone, teachers remained relaxed, and they seemed to enjoy the lessons. Later in the year, however, there was a tendency to be less expressive and less involved with the subject matter. The teacher's stance in the classroom, as well as the amount of movement, did not change significantly either. In exchanges with students, only a slightly greater effort was made to draw out students. Students, however, were treated with respect and confidence in their abilities. Only rarely were students "talked down to." This respect and, possibly, a greater confidence in the students' abilities was reflected in the tendency for the teacher to become more permissive. The class also had more of a tone of a co-operative venture. Once again, while the teacher became more permissive, student participation did not change very much. Over-all atudent interest increased slightly.[67]

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[67] APPENDIX C, Section H., pp. 111, 112.

As shown in the sections on verbal and non-verbal evaluations, teachers became more student-centered. The developers of the curriculum describe "people"-oriented teachers as more interested in interpersonal relations of

teacher's style							"people" oriented
idea-oriented							

students and behavior; it is used as synonymous with student-oriented. Idea-oriented teachers are primarily concerned with the content--facts or concepts.[68] A student-oriented teacher scores 5 or over on the semantic differential. This researcher's sample definitely was composed of idea-oriented teachers; their score was 3.4 on the semantic differential. Yet they compared in an interesting way to the sample of idea-oriented and student-oriented teachers used by EDC in their research.

In the EDC sample, the researchers found variance on seventeen of thirty-one items in sections G and H. On only six of these seventeen items did this researcher's sample of idea-oriented teachers match that of EDC.[69] These items included questioning from the teacher; student use of personal examples; expressiveness; amount of domination by the teacher; amount of movement by the teacher; and the extent to which

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[68] Curiosity, Competence, Community, V.II, p. V-27.

[69] Ibid., p. V-28., and

APPENDIX C, Items 48,53,63,71,76, pp. 109-112.

the teacher draws out students. On four dimensions, this researcher's sample scored similar to or above the subject-centered teacher sample presented.[70] Three of these measures are the direction of verbal exchange, whether between students or the teacher and a student; the degree of student interest; and the length of student responses. These are important in that, here we see an idea-oriented teacher achieving some of the student-oriented pedagogical aims of the course, contrary to previous research findings.

On the remaining seven of seventeen items, the scores of the Metropolitan Nashville idea-oriented teachers were inbetween those of the idea-oriented and student-oriented teachers found in EDC's sample.[71] Clearly, as the course developers stated, both teaching styles can be effective with the MACOS curriculum. The idea-oriented teacher, however, can be far closer to the pedagogic model of a student-centered, open classroom than was previously hypothesized.[72]

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[70] APPENDIX C, Similar on items 50,56; Higher on 47,70.

[71] Ibid., Items 46,55,49,61,64,67,75, pp. 109-112.

[72] Janet Hanley, Dean Whitla, Eunice Moo, and Arlene Walter, Curiosity, Competence, Community, Education Development Center (Washington, D.C.: Curriculum Development Associates, 1970), p. 30.

CHAPTER IV

ANALYSIS OF PRE-POST TEST RESULTS

Having looked at the elements of the classroom--teaching and learning styles, the atmosphere, structure, and curriculum--and their various interactions, it is now appropriate to determine what variances in learning resulted from the interactions. Considering the entire population, were there learning gains from the pre-test to the post-test? Questions on the Man and Animals Unit test can further be divided into two categories--those pertaining to (1) information and (2) reasoning. The first forty items of the Netsilik Unit test also allow a judgement of attitude changes for the population. A pre-post test analysis of scores for both the Man and Animals and Netsilik Eskimo tests will be conducted to determine: (1) if students differ by the grade in which they are enrolled in the amount of knowledge they possess about course content as they begin the course, and (2) if they differ by grade in the variance in scores from pre- to post-tests; (3) if there is a difference in the amount of knowledge students in differing socio-economic areas within the school system have about the course content as they begin

the course; and (c) if there are differences in the improvement of students' scores according to socio-economic areas.

In this chapter, two statistical procedures were employed for both the Man and Animals and Netsilik tests. First, an item analysis was conducted based on responses from the total population taking each test. For the Man and Animals test, the number of students for the pre- and post-tests were 600 and 602, respectively; total numbers for the Netsilik test pre and post were 603 and 606, respectively.

Second, an analysis of variance was conducted to determine the effect of three variables--grade, socio-economic level (SES), and the treatment--using a total random sample of 168 students.

This chapter is divided into two sections: (1) a discussion of the Man and Animals tests and (2) a discussion of the Netsilik tests. For each section, item analysis discussion will be followed by an examination of the findings derived from the analysis of variance.

Man and Other Animals Unit

Item Analysis

This first unit of the MACOS course was concerned with aspects of the salmon, herring gull, baboon and other animals, and in their comparison and contrast to Man. Test items for this unit may be grouped into three categories of information-related items and three categories related to reasoning.

Those concerning information are:

(1) simple information and definitions, including vocabulary (questions 8, 14, 31-40);
(2) knowledge of human and other animal behavior (questions 4, 10-12, 17-18, 56-57); and
(3) understanding of basic concepts of the course, e.g. innate and learned behavior, adaptation, variation (questions 7, 9, 13, 15, 16, 19, 20-28, 51-55).

Those related to reasoning are:

(4) ability to interpret simple graphs and to draw conclusions concerning the information therein (1-3);
(5) ability to reason from information given (5, 6, 29, 30, 41-50); and
(6) ability to use evidence to predict behavior (5, 6, 29, 30, 41-50).[73]

Information

Judging from category one, "simple information and definitions," students learn a great deal of information and vocabulary. In overall vocabulary competency (questions 31 through 40), the average percentage of correct answers by students increased from 39.9 per cent on the pre-test to 65.1 per cent for the post-test. All twelve items in this category were answered correctly by half or more of the students on the post-test, whereas on the pre-test, only one-fourth of the questions were answered correctly by half of the students.

[73] Hanley et.al., Curiosity, V.I (preliminary copy), p. III-1.

An obvious interest in human and animal behavior, as well as a lack of previous knowledge, were exemplified by the amount of gain by students for questions in the second category. Question ten of this category and question thirty-three of the previous category showed the highest percentage gains from pre- to post-tests for all questions. E.D.C. believes that "media and the message" could be responsible for some learning gains.[74] There is a great deal of reinforcement for some information. Examples of this are questions ten, eleven, twelve, and fifty-seven. Item ten is dealt with in the baboon booklets, films, and an environment board exercise; the other items are also reinforced through films, booklets, discussions, exercises and other media.[75] In all these questions, the percentage gain from pre- to post-test ranges from 19 per cent to 47 per cent.

The items which presented the most difficulty to students were questions twenty through twenty-eight, which comprise part of category three (understanding of basic concepts of course). Within these questions dealing with innate and learned behavior were the only two items on the test for which learning losses occurred.[76] On another item

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[74] Ibid., p. III-12.

[75] Ibid., pp. III-14, III-15.

[76] APPENDIX D, pp. 123-124.

there was no learning gain. The difficulty in differentiating between innate and learned behavior is illustrated by the average percentage correct scores for items twenty through twenty-eight.

Pre		Post	
Learned	Innate	Learned	Innate
77.5%	51.6%	55.5%	60.2%

It is unclear whether the gain in the post score for "innate" is due to increased knowledge concerning innate behavior or increased confusion as to the difference between what is innate and what is learned behavior.

Reasoning

Category four is, perhaps, the most difficult to generalize about, as it only contains three questions. This category concerns the ability to interpret simple graphs and to draw conclusions concerning the information therein. Yet two of these questions possess post-test percentages which illustrate a mastery of some form of interpretation by close to 90 per cent of all the children taking the test. Questions one and two deal with reading a chart and some interpretation. Item three appears to be especially difficult, with only 38 per cent of the students answering correctly on the post-test. Possible explanations are that (1) questions phrased in the negative are usually more difficult and often confusing,

and (2) answer "B" is also logical. If Sections A and B overlapped, the overlapping section would not be the same as either section A or section B.[74] If answer "B" is accepted, the percentage answering correctly increases to 58 per cent. This would be, however, a loss from the pre-test combined percentage of 63, which lends creedence to the possibility of confusion and a poor test item.

Categories six and seven, reasoning from information given and using evidence to predict behavior, contain the same questions. From student scores, one can surmise that many students gained a great deal of ability to reason from information. On only two questions did less that half of the students answer correctly. These scores are more remarkable if one considers that they are difficult both in terms of the directions required for answering and in the skills required. Greater increases are exhibited from the pre- to the post-test on items for which students must reason from information which is essentially congruent with what they had learned in the unit, such as the description of the baboon troop range. Increases are not as great on items which require students not to employ what had been "learned" previously. For example, questions forty-seven and forty-eight require the student to forget that Irven DeVore had become so familiar to a troop of baboons that he was allowed to become a close observer. Students must think of DeVore

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[74] APPENDIX D, p. 114.

in a new situation with a new troop. Percentages of correct answers drop drastically for question forty-eight which incorporates the above phenomenon.[75]

Considering each segment of the Man and Animals Unit as a whole, students performed better on the reasoning than on the information section. The average percentage correct

	Pre	Post	Percentage gain pre- to post-
Information	41.7%	50.4%	+ 8.7%
Reasoning	46.2%	62 %	+15.8%

was not only greater on the pre- and post-tests for the reasoning section, but the percentage gain from pre- to post was almost twice as much for reasoning items than for information items.

Man and Animals Pre-Post Test

Analysis of Three Variables

Previous analysis was of the aggregate scores of approximately 602 students for which there were pre- and post-test answer sheets. The Man and Animals test consisted of items for which there were fifty-one possible correct answers. For an analysis of the effects of the three variables--grade; SES; and the effect of teaching and the course materials, or the treatment effect--a sample of twenty-eight subjects was randomly selected for each of six

[75]This is similar to results obtained by Education Development Center. See Hanley et.al., Curiosity, V.I (preliminary copy), p. III-11.

groups, constituting a total sample of 168. Subjects were selected using a random number table. Groups one, two, and three were composed of fifth grade students of low, middle, and upper socio-economic levels, respectively. Groups four, five, and six were sixth grade students of low, middle, and upper socio-economic levels, respectively. An analysis of variance was conducted to determine if the effects of grade, SES, and treatment were significant at the .05 level.

To be discussed first will be the findings from the analysis of variance across the pre- and post-tests combined. A more sophisticated examination will then be conducted by analyzing each of the three variables, first, in terms of pre-test results and, second, in terms of post-test results.

Pre and Post Combined

The analysis of variance from the combined pre- and post-test reveals significant variances for all three

SOURCE	DF	MS	F	P
Total	335			
Between subjects	167			
Grade	1	2646.56	29.249	0.0000
SES	2	7773.84	85.916	0.0000
Grade X SES	2	4.53	0.050	0.9511
Error (Between)	162	90.48		
Within Subjects	168			
Treatment	1	6248.81	204.251	0.0000
Grade X Treatment	1	22.50	0.735	0.6032
SES X Treatment	2	939.37	30.704	.0000
Grade X SES X Treatment	2	1.62	0.053	0.9481

variables far beyond the .05 level. For the grade variable, the variance between fifth and sixth grade students was significant at the .0000 level. The mean for the combined pre- and post-test results at the fifth grade level was 27.839, while the sixth grade was 33.452. Sixth grade students scored significantly better than fifth grade students.

The SES variable was also significant at the .0000 level. From the means, it is apparent that children in the upper SES group score significantly better than the other

Low SES	Middle SES	Upper SES
21.508	32.607	37.821

two groups, followed by the middle group which scored significantly better than the lower SES group.

Finally, the treatment, or the effect of teaching and the course, was significant at the .0000 level. The mean for the pre-test was 26.333, significantly lower than the post-test figure of 34.958. This is evidence that teaching and the course had a positive effect on achievement. When considering interactions between variables, different results occur. The interaction between the grade and SES variables revealed no significance for this interaction. As shown in the chart on page sixty-one, the same was true for the interaction within the combined cells of grade by treatment by SES group. Interestingly, though, the interaction of SES and treatment was significant at the .0000 level. The

aggregate or total interaction for all three variables was not significant.

In order to determine better the causes effecting the results above, data was divided to investigate on a pre- and post-test basis. In other words, if grade, socio-economic level, and treatment factors were significant across both tests, did the sources of these results lie within the pre-test or within the post-test, and were differences consistent across both tests?

Pre-test Results

On the pre-test, as for the combined tests, the variance between grades was significant at the .0000 level; variance among the three levels of SES was significant at the .0000 level. The interaction of grade and SES, however, was not significant.(P-.9378) Mean scores for the grade

Means for all effects (From 51 possible points)

Grade	5th	6th
	23.833	28.761

SES	Low	Middle	Upper
	19.750	28.750	30.392

variable demonstrate that sixth grade students scored significantly higher than fifth grade students. Also, with significant variance among the SES groups, the upper SES group scored the highest, followed by the middle and

lower groups respectively. Interestingly, fifth grade

Grade by SES

Grade	Low	Middle	Upper
5th	17.571	26.214	27.714
6th	21.928	31.285	33.071

children from the upper SES group achieved a higher mean score than sixth grade students from the low SES group, even though the mean of fifth grade students as a whole was below that of the sixth grade students as a whole.

Post-test Results

On the post-test, the variance for both grade and SES was again significant at the .0001 and .0000 levels, respectively. The interaction of grade and SES, however, was not. (P=.7408) Mean scores revealed directions of significance. As on

Means for all effects

Grade	5th	6th	
	31.761	37.869	
SES	Low	Middle	Upper
	24.321	37.053	43.071

Grade by SES

	Low	Middle	Upper
5th	20.464	34.535	40.285
6th	28.178	39.571	45.857

the pre-test, sixth grade children obtained higher mean scores than fifth grade children; means also progressively increased from 24.321 for the low SES group to a high of 43.071 for the upper SES group. The fifth grade, upper SES children not only had a mean above the lower SES sixth grade children, but also above middle SES sixth grade children.

The final variable is the treatment--or what occurred in the classroom between pre- and post-tests. The treatment variable was significant at the .0000 level. The mean score of 26.333 on the pre-test increased significantly to a mean of 34.958 on the post-test. Learning activities between pre- and post-tests produced a desirable effect on students.

The questions initially raised concerning the Man and Animals test can now be answered. There were significant differences between the pre- and the post-test scores. Learning did differ, however, according to grade, with some exceptions. Sixth grade children as a whole had mean scores on the pre-test which were higher than those of the fifth grade students, demonstrating a greater amount of knowledge as the course began. The variance between pre- and post-test mean scores was also significantly better for sixth grade children than for fifth. The only exception to this was the group of upper SES, fifth grade students whose mean was higher on the pre-test than that of the lower SES sixth grade children, and on the post-test whose mean score was higher than both the lower and middle SES sixth grade students.

Children from differing socio-economic levels also possessed varying levels of knowledge as the course began, as judged by mean scores on the pre-test. Lower SES children possessed the least knowledge, followed by the middle SES children and, finally, the upper SES children who possessed the most knowledge about course content as the course began. This same trend was evident in the difference between pre- and post-test mean scores. Once again the aggregate mean score (including the pre- and post-tests) was highest for the upper SES group, followed by the middle and lower groups respectively.

Netsilik Eskimo Unit

As for the Man and Animals Unit, the discussion of the Netsilik Unit will include, first, an item analysis and, second, an analysis of the findings derived from the analysis of variance. In addition, however, the item analysis for the first forty items of the Netsilik test which were semantic differential items, will also be discussed in light of the results obtained from Chi Square tests of significance performed on these items.

Item Analysis of Semantic Differential Items

The Osgood Semantic Differential format utilized on the first forty questions condisted of four basic key words: ARCTIC, ESKIMO FAMILIES, COOPERATION, and AMERICAN FAMILIES. Under each of these headings were a series of ten juxtaposed

adjectives, such as sharing-selfish, simple-complex, etc. Students then indicated their concept of the key word by checking one of five spaces which divided two juxtaposed adjectives. In this way, changes in attitudes relating to each of the four concepts could be discerned. The authors of the course state that the reasons for the choice of these four concepts are as follows: "Arctic to determine if there develops a new level of understanding of the environment in which the Netsilik must survive; Eskimo and American Families to see what are the commonly perceived qualities of humanness and if the differences in response on the post-test reflect a new sensitivity; Cooperation because it is such a basic ingredient for Netsilik survival and radiates to a total set of values which the curriculum developers hope are transmitted." [76]

The analysis of the items in these four categories will be in terms of results from the entire population participating in the pre- and post-test for the Netsilik Unit. Chi Square tests were conducted to determine if the movement of choices from the pre- to post-test for each of the paired adjectives was significant at the ,05 level. For the first category, Arctic, there was significant movement within eight of the ten pairs.[77] On the second item, changing-changeless,

[76] Hanley et.al., Curiosity V.I (preliminary copy), p. III-41

[77] APPENDIX F, p. 128.

students moved toward the mean, or neutral point, on the post-test. The same was true for the windy-calm and deserted-inhabited dimensions. On the good-bad dimension, there was also a movement toward neutrality on the post-test, but, overall, the Arctic was seen as more "good" than "bad." For explored-unexplored, there was also a movement toward the neutral position. Students thought of the Arctic as being more familiar and more wild on the post-test. They also developed more definite ideas concerning the fierceness or gentleness of the Arctic. Fewer students maintained a neutral position on this dimension, while a significant number moved toward both extremeties. Students, then, did complete the course with a more realistic view of the Arctic.

Eskimo Families, the second category (items eleven through twenty), also contained significant movement within eight of the ten pairs.[78] For the sharing-selfish dimensions, there was a movement toward seeing Eskimo families more in terms of sharing on the post-test. Students also showed significant movement toward seeing the Eskimo family as simpler, happier, richer, wiser, more hardworking, and more primitive. On the kind-cruel dimensions, student movement was away from both extremeties, with some moving toward neutrality and others toward "kind." The light-dark dimensions also revealed student choices moving away from

[78] APPENDIX F , p. 129.

both extremeties. Here choices on the post-test moved toward neutrality and toward the dark dimension.

There was significant movement within eight of the ten pairs in the third category, American Families.[79] Student choices moved from the pre- to the post-test away from the neutral position and toward both dimensions for the simple-complex question. For the sharing-selfish dimensions, movement was toward the neutral position and more selfish position. There was also movement toward neutrality on the lazy-hardworking dimensions and also toward more lazy; on the happy-sad dimensions with a little movement also toward sad; and on the kind-cruel dimensions with the movement also being toward more cruel. For the light-dark dimensions there was a movement only toward neutrality. Students moved away from the extreme positions of ignorant or wise toward the neutral position but not neutral. There was a definite movement toward seeing American families as more advanced. Generally, students tended to move toward a more positive view of Eskimo families and a more neutral, yet somewhat harsher view of American families.

The final category, Cooperation (items thirty-one through forty), showed significant movement within nine of the ten pairs.[80] On the human-animal dimensions, student

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[79] APPENDIX F, pp. 129-130.

[80] APPENDIX F, pp. 130-131.

choices showed significant movement from pre- to post-tests toward the three middle positions, or to a more neutral position. More definite attitudes were formed toward the together-alone aspects of cooperation, with choices moving away from neutrality, a great deal toward "together," and some toward "alone." The movement away from the neutral position was also evidenced on the innate-learned and chosen-forced dimensions, with a greater number of students seeing cooperation as 'innate' on the post-test, fewer neutral choices, and a greater number seeing cooperation as "learned". Overall, cooperation was viewed by more students as learned. Most students also saw cooperation as 'chosen', but some changed to see it as more 'forced'. There was a definite movement toward seeing cooperation as "good" and "necessary." It was also seen as somewhat more "lasting," although much of the movement here was also toward the neutral position. There was also a movement toward seeing cooperation as more "complex," although here, too, the neutral position was chosen with greater frequency. Movements in this category were, generally, toward a neutral or more positive position.

In conclusion, there was a striking change in most of the attitudes concerning the four concepts from the pre- to the post-test.

Netsilik Eskimo Pre- and Post-Test

Analysis of Three Variables

As for the Man and Animals tests, a sample of twenty-eight subjects was randomly selected for each of six groups (two grade variables, three SES, and one treatment variable), constituting a total of 168. Subjects were selected using a random number table. Groups one, two, and three were composed of fifth grade students of low, middle, and upper socio-economic levels, respectively. Groups four, five, and six were sixth grade students of low, middle, and upper socio-economic levels, respectively. An analysis of variance was conducted to determine if the effects of grade, SES, and treatment were significant at the .05 level.

To be discussed first will be the findings from the analysis of variance across the pre- and post-tests combined. A more sophisticated examination will then be conducted by analyzing each of the three variables first, in terms of pre-test results and, second, in terms of post-test results.

Pre and Post Combined

The analysis of variance from the combined pre- and post-tests reveals significant variances for all three variables far beyond the .05 level. For the grade variable, the variance between fifth and sixth grade students was significant at the .0004 level. The mean for the combined pre- and post-tests at the fifth grade level was 23.732,

while the sixth grade was 25.910. Sixth grade children

SOURCE	DF	MS	F	P
Total	335			
Between Subjects	167			
Grade	1	398.68	14.495	0.0004
SES	2	1302.59	47.360	0.0000
Grade X SES	2	13.39	0.486	0.6212
Error (Between)	162	27.50		
Within Subjects	168			
Treatment	1	1360.06	140.845	0.0000
Grade X Treatment	1	24.06	2.491	0.1123
SES X Treatment	2	72.06	7.462	0.0011
Grade X SES X Treatment	2	34.20	3.542	0.0302

scored significantly better than those in the fifth grade.

The SES variable was significant at the .0000 level. As was true in the Man and Animals Unit, it is apparent from the means that children in the higher SES group score significantly better than the other two groups, followed by the middle group which scored significantly better than the lower SES group.[81]

Finally, the treatment, or the effect of teaching and the course, was significant at the .0000 level. The mean for the post-test, 26.833 was significantly higher than the mean of 22.809 for the pre-test. This is evidence that teaching and the course had a positive effect on achievement.

[81] APPENDIX H, p. 142.

Again, similar to the Man and Animals Unit, different results occur when considering interactions between variables. The interaction between the grade and SES variables, and the grade by treatment variables, revealed no significance for these interactions.[82] There were significant interactions, however, between SES and treatment (P=.0011) and between the three variables, or within the combined cells of grade by treatment by SES group. (P=.0302)

Pre-test Results

On the pre-test the variance between grades was significant at the .0071 level; variance among the three levels of SES was significant at the .0000 level. The interaction of grade and SES, however, was not significant. (P=.6867) Mean scores for the grade variable demonstrate that sixth grade students scored significantly higher than

Means for all effects (From 40 possible points)

Grade	5th	6th
	21.988	23.714

SES	Low	Middle	Upper
	19.857	23.821	24.875

fifth grade students. Also, with significant variance among the SES groups, the upper SES group scored the highest, followed by the middle and lower groups respectively.

[82] See Chart, p. 72.

Interestingly, fifth grade children from the upper SES group achieved a higher mean score than sixth grade students

Grade by SES

	Low	Middle	Upper
5th	19.321	22.607	24.035
6th	20.392	25.035	25.714

from the low SES group, even though the mean of fifth grade students as a whole was below that of the sixth grade students as a whole.

Post-test Results

On the post-test, the variance for both grade and SES was significant at the .0040 and .0000 levels, respectively. The interaction of grade and SES, however, was not significant. (P=.0541) Mean scores revealed directions of significance.

Means for all effects

Grade	5th	6th
	25.476	27.797

SES	Low	Middle	Upper
	22.035	28.678	29.196

Grade by SES

	Low	Middle	Upper
5th	19.750	27.428	29.250
6th	24.321	29.928	29.142

As on the pre-test, sixth grade children obtained higher mean scores than fifth grade children; means also progressively increased from 22.035 for the low SES group to a high of 29.196 for the upper SES group. The fifth grade, upper SES children again had a mean above the lower SES sixth grade children.

The final variable, the treatment, was significant at the .0000 level. The mean score of 22.809 on the pre-test increased significantly to a mean of 26.833 on the post-test. Learning activities between pre- and post-tests produced a desirable effect on students.

In summary, there were significant differences between the pre- and the post-test scores for the Netsilik Eskimo test. Learning did differ, however, according to grade, with some exceptions. Sixth grade children as a whole had mean scores on the pre-test which were higher than those of the fifth grade students, demonstrating a greater amount of knowledge as the course began. The variance between pre- and post-test mean scores was also significantly better for sixth grade children than for fifth. The only exception to this was the group of upper SES, fifth grade students whose mean was higher on the pre- and post-tests than that of the lower SES sixth grade children.

Children from differing socio-economic levels also possessed varying levels of knowledge as the course began, as judged by mean scores on the pre-test. Lower SES children possessed the least knowledge, followed by the middle

SES children and, finally, the upper SES children who possessed the most knowledge about course content as the course began. This trend was also evident in the difference between pre- and post-test mean scores. Once again, the aggregate mean score (including the pre- and post-tests) was highest for the upper SES group, followed by the middle and lower groups, respectively.

CHAPTER V

CONCLUSIONS

The conclusions for this study are stated below. They are in response to the original research questions as stated in Chapter I. A complete understanding of these conclusions can only be obtained through a careful reading of the entire study.

Classroom observations were conducted to determine if teaching and learning styles changed within the MACOS classes. The first conclusions relate directly to the following general questions which the observation instrument was designed to determine.

(1) What were the typical ways the curriculum was used in the classroom?

(2) What were the major teaching styles and classroom atmospheres?

(3) Did the above items change over time?

Later in the year there was a greater variety of activities, and there was an even distribution of both simultaneously and sequentially conducted activities. Although the types of objectives utilized remained constant, there was a change in the types of activities undertaken later in the year. Most objectives throughout the year related to information, followed by concepts, and finally, skills and interpersonal behavior. Activities later in the year

incorporated more discussions, which can be considered a student-oriented teaching style. These included guided and open-ended discussion, as oppossed to the question-answer type of "discussion." With the increase in the first two discussion activities, there was a decrease in arts and crafts activities, writing, reading, and question-answer activities.

Considering activities through the classification of enactive (doing) and symbolic (thinking), an increase in classrooms utilizing both in a lesson was evident in later observations. Lessons composed of mostly enactive activities increased from 0 per cent to 13 per cent, while the amount of symbolic activities decreased from 43 to 25 per cent.

Discussions were an important element of the verbal activities. Reading and writing activities are also elements of this category. In later lessons, the percentage of the lesson devoted to verbal activities was more evenly spread throughout the range, with only 63 per cent of all the sessions having over half of the lesson being composed of verbal activities. With the increase in open-ended and guided discussion, reading and writing activities decreased. Verbal exchanges between students were also of a slightly higher quality.

From the above, in addition to other data, a shift in the teacher's role is obvious. Objectives aimed at information and concepts were later manifested in student behavior.

Students referred more to materials and tended to ask more questions. The type of questions asked by teachers also changed from factual questions to those incorporating more opinion, and students replied with longer responses. With students talking and questioning more, there was an increase in the amount of exchanges between students, and in their tendency to listen to other students. They also related the subject matter more to their own experiences.

Once again, a clear movement toward a more student-centered classroom can be seen in relation to verbal activities. In early lessons, three-quarters of the teachers were in the role of authority, compared to only 13 per cent in later lessons. Later observations showed half of the teachers acting as guides, a quarter as resources, and 13 per cent as non-participants in verbal classroom exercises. Interestingly, although the teacher was much less dominating in the classroom, student interest and participation did not change greatly.

The same general trend concerning the teacher's role was true during non-verbal activities. Teachers acted more as guides and resources, yet student participation and interest did not change much.

As may be hypothesized from the above, the classroom atmosphere was characterized by more permissiveness on the part of the teacher later in the year. Teachers also moved toward the "people" oriented pole of the semantic differential

scale. Other than these items, there was not a great deal of change in the overall classroom atmosphere.

How, then, were the pedagogical aims of the course fulfilled?

(4) Does the teacher initiate and develop in youngsters a process of question-posing (the inquiry method)?

Since there was a slight increase in the amount of questions raised by students, teachers did tend to initiate and develop in youngsters a process of question-posing to a slight extent.

(5) Do youngsters develop the ability to use a variety of primary sources as evidence from which to develop hypotheses and draw conclusions?

If the materials supplied by the course developers can be considered primary sources of evidence, as indeed some can such as Irven DeVore's field notes, youngsters did develop the ability to use such sources in their discussions and other classroom activities. Since it was not possible to peruse many student's work, it is difficult to say whether the material was used to develop hypotheses. Discussions, however, disclosed that many conclusions had been drawn by the students and open-ended discussions provided the opportunity for some hypotheses to be aired.

(6) Do youngsters learn to listen to others as well as express their own views in classroom discussions?

The increased incidence of open-ended discussions later

in the year indicates that students were listening to each other. Students drew from their own experiences and utilized concepts and materials from the course in their discussions. Open-ended discussions often involved students' views.

(7) Does the teacher give sanction and support to open-ended discussions where definitive answers to many questions are not found in an effort to legitimize the youngster's search for his own views?

Teachers do sanction, support, and promote open-ended discussions. When considering only the three types of discussion activities in lessons, the amount of open-ended discussions increased greatly in later lessons. Eighty-seven per cent of the early lessons contained the question-answer activity, 13 per cent contained guided discussion, and there were no open-ended discussions. In contrast, later the question-answer format was utilized in only 34 per cent of the lessons, whereas the incidence of guided and open-ended discussions increased to 41 per cent and 25 per cent respectively.

(8) Does the teacher encourage children to reflect on their own experiences?

There was a moderate increase in the extent to which students related content to their own experiences.

(9) Does a new teacher role develop, in which he becomes a resource rather than an authority?

There is clearly a movement toward a more student-centered classroom. In early lessons concerning verbal activities, three-quarters of the teachers were in the role of authority, compared to only 13 per cent in later lessons. The teacher's role also moved away from that of an authority figure during non-verbal activities. Teachers in later lessons were acting more as resources, leaving more of a chance for students to act as independent learners. Interestingly, as teachers gave less overt direction to the students in both the verbal and non-verbal realms, students tended to have less of a sense of purpose.

Pre- and post-testing was conducted to determine what variances in learning occurred as a result of the course. The following questions were designed to determine what changes in achievement were attributable to the variables of grade, socio-economic level, and treatment, and what attitude changes were discernible.

(1) Do students score better on the post-tests than on the pre-tests?

The answer to this crucial question is a resounding yes! On both the Man and Animals and Netsilik Eskimo tests, the gains by students were significant at the .0000 level. This is a clear indication that considerable learning took place during the year.

Included in the pre- and post-test analysis are the results of the information and reasoning segments of the

Man and Animals test. Students performed better on the reasoning than on the information section. The average percentage correct was not only greater on the pre- and post-tests for the reasoning section, but the percentage gain from pre to post was almost twice as much for reasoning items than for information items.

(2) Do students differ by the grade in which they are enrolled, in the amount of knowledge they possess about course content as they begin the course?

Sixth grade students scored significantly better than fifth grade students at the .0001 level on the Man and Animals pre-test and at the .0071 level on the Netsilik Eskimo pre-test. One can conclude that sixth grade students possess a greater amount of knowledge about the course content as the course begins.

(3) Does the grade in which the student is enrolled influence the change in the pre-post test scores?

For the Man and Animals and Netsilik Eskimo tests, sixth grade students scored significantly better on both the pre- and the post-tests than did fifth grade students. When one looks at net gain in mean scores, however, the gains are comparable, with sixth grade students recording a slightly greater gain.

Man and Animals Test--Grade by Treatment

	Pre	Post	Gain
5th	23.785	31.892	8.107
6th	28.880	38.023	9.143

Netsilik Eskimo Test--Grade by Treatment

	Pre	Post	Gain
5th	21.988	25.476	3.488
6th	23.630	28.190	4.560

In summary, although net gain was comparable, sixth grade students exemplified a greater mastery of course material. From this data, the course seems more suitable for and most successful with sixth grade students.

(4) Is there a difference in the amount of knowledge students in differing socio-economic areas within the school system have about the course content as they begin the course? Children from differing socio-economic levels did possess varying levels of knowledge as the course began. Lower SES children possessed the least knowledge, followed by the middle SES children and, finally, the upper SES children who possessed the most knowledge about course content as the course began. These differences were significant at the .0000 level for both the Man and Animals and Netsilik Eskimo pre-tests.

(5) Are there differences in the improvement of students' scores according to socio-economic areas?

For both Man and Animals and Netsilik Eskimo pre- and post-tests, the socio-economic variable was significant. The differences between mean scores were significant on all tests, with the upper SES scoring significantly better than the middle SES and the middle scoring significantly better than the lower SES group. When one looks at the changes

in the pre- to post-test scores according to SES categories there are differing gains. For the Man and Animals tests, gain from the pre- to post-tests was comparable for the middle and lower SES groups. For the upper SES group, however, there was a gain more than twice as large as the gain for either the lower or middle SES groups. For the Netsilik Eskimo tests, gain from pre- to post-tests was comparable for the middle and upper SES groups. The lower SES group, however, recorded only a minimal gain.

Man and Animals Test--SES by Treatment

	Pre	Post	Gain
Low	19.250	23.767	4.517
Middle	29.553	35.660	6.107
Upper	30.196	45.446	15.256

Netsilik Eskimo Test--SES by Treatment

	Pre	Post	Gain
Low	19.857	22.035	2.178
Middle	23.607	28.696	5.089
Upper	24.964	29.767	4.803

(6) In terms of the Netsilik Eskimo section of the course, are there significant changes in attitude?

The Osgood Semantic Differential format was utilized on the first forty questions to determine changes in attitude. There were four key words--Arctic, Eskimo Families, Cooperation, and American Families. Chi Square tests were conducted to

determine if the movement of choices from the pre- to post-test for each of the forty paired adjectives was significant at the .05 level. Thirty-three of the forty pairs were significant. Students completed the course with a more realistic view of the Arctic. Generally, they tended to move toward a more positive view of Eskimo families and a more neutral, yet somewhat harsher view of American families. For cooperation, movements were, generally, toward a neutral or more positive position. In conclusion, there was a striking change in most of the attitudes concerning the four concepts from the pre- to the post-test.

APPENDIX A

CLASSROOM OBSERVATION FORM

APPENDIX A

CLASSROOM OBSERVATION FORM

Teacher:

Topic of Lesson:

Length of Lesson:

Date:

School:

I. Physical description

A. Size of class

B. Room: age, furniture, cheerfulness, student/teacher decorations

C. Seating arrangement, pattern of seats, sex segregation

II. Teacher

A. Age

B. Style

1. Personality (loudness, reserved/vivacious, relaxed, amount and type of movement)

2. Sensitivity (What arouses her pleasure; ire?)

3. What type of student does she aim at (verbal, creative)?

4. Does she draw out students?

5. Stance:

a. Stays in front of room apart from students

b. Is physically part of a student group

C. Participation

Amount (Does teacher talk most of the time: lecture?)

Are exchanges student-to-student or student-to-teacher?

Do most of the questions come from the teacher?

Kinds of questions:

factual/opinion

specific short answer

lengthy response

other (specify)

Lesson:

open-ended discussion

guided discussion

question and answer

Teacher role:

authority

guide

resource

Does teacher seem interested in the material?

D. Attitude toward students:

Will she admit lack of knowledge?

Does she talk down to students?

E. Preparation:

Does she know the material?

III. Methods

A. Content of lesson

B. Kinds of activities which occurred during lesson (indicate if simultaneous)

enactive/symbolic
doing/thinking

verbal/visual (e.g. use of chalkboard)

C. Structure of lesson

What are the objectives of the classroom session?

Any explicit review of previous lesson?

Is there a conclusion or summary?

To what extent does the class generalize?

To what extent do students relate content to their own experience?

Does the teacher encourage this?

Does incidental learning occur?

Digressions?

IV. Students

A. Amount and content of noise

B. Amount of student movement around classroom

C. Amount and kind of non-participation

D. Are whole sections of the class excluded?

Are non-hand raisers ignored?

E. Student participation:

Injecting new ideas or asking questions

Answering teacher's questions

Discussion between students about the material

Group work

General attention level

General interest level

PART II

A. Enter the number of the classroom structure beside each activity that took place.

whole class -- 1
small group -- 2
individual -- 3
other (specify)- 4

15 _____ arts and crafts

16 _____ viewing

17 _____ reading - text

18 _____ reading - other

19 _____ writing

20 _____ lecture by teacher

21 _____ guided discussion (no presumed or wanted answer)

22 _____ role-play

23 _____ listening (records, etc.)

24 _____ student report

25 _____ question-answer

26 _____ open-ended discussion

27 _____ laboratory

28 _____ other (specify)

B. Time sequence of activities:

28a _____ at least some simultaneous

29 _____ one activity at a time

C. Objective of lesson (check no more than two):

30 _____ information

31 _____ concepts

32 _____ skills

33 _____ interpersonal behavior

34 _____ too difficult to decipher

35 _____ other (specify)

36 D.

teacher ignored EDC suggested lesson _____:_____:_____:_____:_____:_____:_____ teacher carefully followed EDC plan

E. Evaluation of non-verbal activity:

37 low student interest _____:_____:_____:_____:_____:_____:_____ high student interest

38 less than 1/3 participation _____:_____:_____:_____:_____:_____:_____ almost all participate

39 quiet _____:_____:_____:_____:_____:_____:_____ noisy

40 students have no clear sense of purpose _____:_____:_____:_____:_____:_____:_____ students have sense of purpose

41 teacher's role: _____/_____:_____:_____:_____:_____/_____ non-participant
authority guide resource

F. Percent of lesson devoted to verbal activities (check one):

42 _____ 25

43 _____ 50

44 _____ 75

45 _____ 100

G. Evaluation of verbal aspects of lesson: (talking, reading, and writing)

46 factual questions ____:____:____:____:____:____:____ opinion questions

47 short answer ____:____:____:____:____:____:____ lengthy response (Complete thought or full explanation)

48 questions mostly from teacher ____:____:____:____:____:____:____ questions mostly from students

49 teacher asks few questions ____:____:____:____:____:____:____ teacher asks many questions

50 exchanges largely student to teacher ____:____:____:____:____:____:____ exchanges largely student to student

51 students ignore each other's statements ____:____:____:____:____:____:____ students listen to each other

52 many irrelevant statements ____:____:____:____:____:____:____ statements relevant to topic

53 students use few personal examples ____:____:____:____:____:____:____ students use many personal examples

54 students references to materials (Use only spaces 1--none, 4--some, 7--many)

1 :____:____:4 :____:____:7

55 teacher sets and controls agenda (topics of discussion) ____:____:____:____:____:____:____ students initiate topics of discussion

56 student interest low ____:____:____:____:____:____:____ student interest high

57 less than 1/3 participate ____:____:____:____:____:____:____ almost all participate

58 quiet ____:____:____:____:____:____:____ noisy

59 students have no clear purpose ____:____:____:____:____:____:____ students have sense of purpose

60 teacher's role: ____/____:____:____:____:____/____ non-participant
authority guide resource

61 quality of verbal activities poor ____:____:____:____:____:____:____ quality excellent

H. Classroom atmosphere (considering the session as a whole):

62 teacher is authoritarian ____:____:____:____:____:____:____ permissive

63 teacher is reserved ____:____:____:____:____:____:____ expressive

64 teacher doesn't show pleasure ____:____:____:____:____:____:____ shows pleasure

65 teacher doesn't show anger ____:____:____:____:____:____:____ shows anger

66 teacher's voice extremely loud ____:____:____:____:____:____:____ extremely soft

67 teacher ill-at-ease ____:____:____:____:____:____:____ relaxed, enjoys lesson

68 teacher is bored ____:____:____:____:____:____:____ involved with subject

69 teacher doesn't draw out students ____:____:____:____:____:____:____ makes obvious effort to draw out students

70 teacher talks down to students
much ____:____:____:____:____:____:____ none

71 class is teacher dominated
____:____:____:____:____:____:____ has tone of co-operative venture

72 teacher's style idea oriented (material, concepts or facts)
____:____:____:____:____:____:____ "people" oriented (behavior, inter personal relatio

73 overall student interest
low ____:____:____:____:____:____:____ high

74 overall student participation-
less than 1/3 ____:____:____:____:____:____:____ nearly all participate

75 teacher's stance:
apart from students ____:____:____:____:____:____:____ physically close to students

76 amount of teacher movement (use only spaces 1--none, 4--some, 7--much

1 :____:____: 4 :____:____: 7

APPENDIX B

NOTES ON USING THE CLASSROOM OBSERVATION FORM

The following are some general guidelines for completing the form:

Items

A. Classroom activity: If a particular activity--for example, open-ended discussion--takes place both in small groups and in the whole class, the observer indicates this by marking the space the first time the activity occurs and checking "other" with written specification for the second version of the activity.

21. Guided discussion: All discussions contain some student-to-student interaction; if the exchanges are solely student-to-teacher, we call this a question and answer activity. In a guided discussion the teacher clearly directs or leads the group. He makes statements or asks questions which clarify certain points, or he encourages certain answers, or he redirects the course of the discussion. He may summarize.

25. Question-answer: Most likely the teacher asks the questions and the students answer them, though it is possible that the session consist of students' questions and the teacher's answers.

26. Open-ended discussion: While the teacher may set up the general topic of discussion or pose the problem for the class to consider, no one answer is sought. The teacher does little, if any, summarizing or directing.

D. Teacher ignored/followed EDC plan: Fill in item after

comparing the observed lesson to the suggestions in the teacher's manual.

39 & 58. Quiet/noisy: Spaces 6 and 7 are reserved for noise which interferes with class work, or for a situation which is out-of-hand or chaotic.

40 & 59. Students have sense of purpose: Judge the class on its own terms. The teacher may not understand EDC's purpose, but may clearly convey HIS purpose to the kids. The latter is what we are looking for.

F. Per cent of lesson devoted to verbal activities: Use the clock.

G. Verbal aspects of the lesson: By "verbal" we mean talking, reading, and writing.

47. Short answer/lengthy response: Just bear in mind that kids are not long-winded, so that even a lengthy response won't be too "long." Lengthy response would indicate the expression of a complete thought or full explanation, etc.

51. Students ignore each other's statements: Are the children <u>who are engaged in discussion</u> talking <u>to</u> each other or <u>past</u> each other?

52. Irrelevant statements: We are trying to look at the class on its own terms--if the kids' statements are relevant to even an irrelevant topic, then check the "relevant to topic" end.

53. Students use personal examples: This means some statement by the kids about their personal life, not merely

an expression of their opinions. We are interested in what they actually say here, not what might be going on in their minds.

54. Students make references to materials: Again, we mean explicit references, such as "In the film I saw..." "Can we look it up in the field notes?" This item is not intended to measure use of EDC vocabulary. Use only spaces 1=none, 4=some, and 7=many.

55. Teacher sets and controls agenda: In the broadest sense the teacher always does so, even if it is to designate a certain amount as "free discussion." What we really mean on this item is the extent to which the teacher sets and controls the topics of discussion. The observer should try to note the origin of topics--whether they are formulated by the teacher or by the students.

60. Teacher's role: This item should be read as a continuum, with "authority" indicated in space 1, "non-participant" in space 7, and the degree of "guide" or "resource" in spaces 2-6.

71. Class is teacher-dominated/has tone of cooperative venture: This item really gets at the overtness of a teacher's control. A teacher may actually exercise tight control but do so in a way which makes the students feel as if this is not the case--if so, the class would "have the tone of a cooperative venture." Of course, the

same tone would exist in a class in which the teacher and students are truly acting as equal partners.

72. Teacher style idea oriented/student oriented: An idea oriented teacher would show primary concern with the material, whether it be facts or concepts. In another sense, he is task oriented. "Student-oriented" refers to a concern with students' behavior or inter-personal relations. For example, a teacher might direct discussion away from the specific EDC content to consideration about how the kids worked together when they were arriving at some answer.

74. Overall student participation: Find the weighted average of items 38 and 57.

Janet Hanley, et.al., Curiosity, Competence, Community, V.II, APPENDIX D.

APPENDIX C

DATA UTILIZED FROM CLASSROOM OBSERVATION FORM

	EARLY		LATE		
	Mostly Teacher Talk	Mostly Student Talk	Mostly Teacher	Mostly Student	Both*
C. Participation amount (Does teacher talk most of the time: lecture?)	72%	28%	33%	45%	22%
	Student-to-student	Student-to-teacher	Student-to-student	Student-to-teacher	Both
Are exchanges student-to-student or student-to-teacher?	42%	58%	33%	45%	22%
	Yes	No	Yes		No
Do most of the questions come from the teacher?	72%	28%	88%		12%
Kinds of questions:					
Factual/opinion		42%		32%	
Specific short answer		32%		23%	
Lengthy response		26%		45%	

	EARLY	LATE
Lesson: (% occurrence of type of discussion)		
open-ended discussion	0%	25%
guided discussion	13%	41%
question and answer	87%	34%

III. Methods

B. Kinds of activities which occurred during lesson (indicate if simultaneous)	Mostly Enactive	Mostly Symbolic	Both	Mostly Enactive	Mostly Symbolic	Both
	0%	43%	57%	13%	25%	62%

C. Structure of lesson

	Much or Some	None	Much or Some	None
To what extent does the class generalize?	71%	29%	78%	22%
To what extent do students relate content to their own experience?	44%	56%	56%	44%

IV. Students

E. Student participation:

	EARLY		LATE	
	Yes	No	Yes	No
Injecting new ideas or asking questions	30%	70%	65.5%	34.5%
Discussion between students about the material	43%	57%	78%	12%

PART II

A. The following is the percentage occurrence of each activity, considering all activities observed during the entire observation period.

		EARLY	LATE
15	arts and crafts	18%	10%
16	viewing	4%	7%
17	reading - text	26%	13.5%
18	reading - other	4%	7%
19	writing	18%	10%
20	lecture by teacher	0%	7%
21	guided discussion (no presumed or wanted answer)	2%	13.5%
22	role-play	3%	3%
23	listening (records, etc.)	0%	3%
24	student report	0%	3%
25	question-answer	26%	10%
26	open-ended discussion	0%	10%
27	laboratory	0%	0%
28	other (simulation game)	0%	3%

		EARLY	LATE
B.	Time sequence of activities:		
28a	at least some simultaneous	38%	50%
29	one activity at a time	62%	50%
C.	Objective of lesson		
30	information	44%	44%
31	concepts	30%	30%
32	skills	13%	13%
33	interpersonal behavior	13%	13%

D.

36 teacher ignored EDC suggested lesson ____:____:____:4.75 :(5.6)*:____:____ teacher carefully followed EDC plan

E. Evaluation of non-verbal activity:

37 low student interest ____:____:____:____: 5.6 : (6) :____ high student interest

38 less than 1/3 participation ____:____:____:____: 5.8 :(6.3):____ almost all participate

39 quiet ____: 2.8 : (3) :____:____:____:____ noisy

* Parentheses indicate early scores.

40	students have no clear sense of purpose	____	____	____	____	5.5	(6.3)	____	students have sense of purpose
41	teacher's role	____/(2) authority guide	3.6	____	____ resource	____	____/____		non-participant
		(43%)/(43%) 25% 25%	____	____	(14%) 50%	____	____/(0%) 0%		

F. Percentage of sessions in which 25 to 100 per cent of the lesson was verbal:

		EARLY	LATE
42	25%	0%	12%
43	50%	25%	25%
44	75%	12%	38%
45	100%	63%	25%

G. Evaluation of verbal aspects of lesson: (talking, reading and writing)

46	factual questions	____	(2.8)	____	4.0	____	____	____	opinion questions
47	short answer	____	____	(3.8)	4.6	____	____	____	lengthy response
48	questions mostly from teacher	____	(2.0) 2.6	____	____	____	____	____	questions mostly from students
49	teacher asks few questions	____	____	____	4.5	(5.5)	____	____	teacher asks many questions

50	exchanges largely student to teacher		(2.1)	3.5				exchanges largely student to student
51	students ignore each other's statements				(4.6)	5.3		students listen to each other
52	many irrelevant statements						(6.6) 6.0	statements relevant to topic
53	students use few personal examples	(1.8)	2.8					students use many personal examples
54	students references to materials (Use only spaces 1--none, 4--some, 7--many)							
		(12%) 0%			(63%) 38%		(25%) 62%	
55	teacher sets and contrcls agenda	(1.4)	2.1					students initiate topics of discussion
56	student interest low					(5.5) 5.5		student interest high
57	less than 1/3 participate					(5.3) 5.8		almost all participate
58	quiet		(2.8) 2.9					noisy
59	students have no clear purpose					(5.9) 5.4		students have sense of purpose

60 teacher's role: (1.6)/ ____ : 3.3 : ____ : ____ : ____ / ____ non-participant
authority guide resource

(75%)/(12.5%) ____ : ____ : (12.5%) ____ / (0%)
13% 50% 25% 13%

61 quality of verbal activities poor ____ : ____ : ____ : (4:0) : ____ : ____ : ____ quality--excellent
4.6

H. Classroom atmosphere (considering the session as a whole):

62 teacher is authoritarian ____ : (2.8) : 3.9 : ____ : ____ : ____ : ____ permissive

63 teacher is reserved ____ : ____ : ____ : 4.2 : (5.3) : ____ : ____ expressive

64 teacher does not show pleasure ____ : ____ : ____ : ____ : (5.0) : ____ : ____ shows pleasure
5.0

65 teacher does not show anger low ____ : (2.0) ____ : ____ : ____ : ____ : ____ shows anger
2.1

66 teacher's voice extremely loud ____ : ____ : (3.9) : 4.2 : ____ : ____ : ____ extremely soft

67 teacher ill-at-ease ____ : ____ : ____ : ____ : (5.6) : ____ : ____ relaxed, enjoys lesson
5.5

68 teacher is bored ____ : ____ : ____ : ____ : 5.6 : (6.3) : ____ involved with subject

69 teacher does not draw out students ____ : ____ : ____ : (4.6) : ____ : ____ : ____ makes obvious effort to draw out students
4.8

70 teacher talks down to students — much ___:___:___:___:___:(6.8) 6.5:___ none

71 class is teacher-dominated ___:(2.1):3.6:___:___:___:___ has tone of co-operative venture

72 teacher's styles idea oriented (material, facts or concepts) ___:(2.4):3.4:___:___:___:___ "people" oriented (behavior, inter-personal relations)

73 overall student interest — low ___:___:___:___:___:(6.0) 5.5:___ high

74 overall student participation--less than 1/3 ___:___:___:___:(5.6) 5.8:___:___ nearly all participate

75 teacher's stance: apart from students ___:___:___:(4.6) 4.8:___:___:___ physically close to students

76 amount of teacher movement (Use only spaces 1--none, 4--some, 7--much)

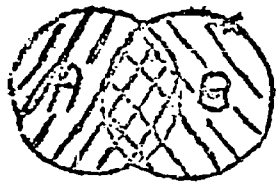
___:___:___:(4.4) 4.3:___:___:___

APPENDIX D

MAN AND ANIMALS TEST AND ACCOMPANYING DATA

Man and Animals

Read the question. Choose one answer and blacken the correct space on the answer sheet. Do not put your answers on the test.



This diagram shows the areas in which two baboon troops live. Troop A lives in Section A. Troop B lives in Section B. Questions 1 through 4 below are about this diagram.

1. Which is the overlapping section?

A. 

B. 

C. 

D. 

2. The overlapping section is one that:

A. none of the animals use

B. both groups use

3. Compared to the other two sections, the overlapping section would NOT be:

A. richer in food and water

B. the same

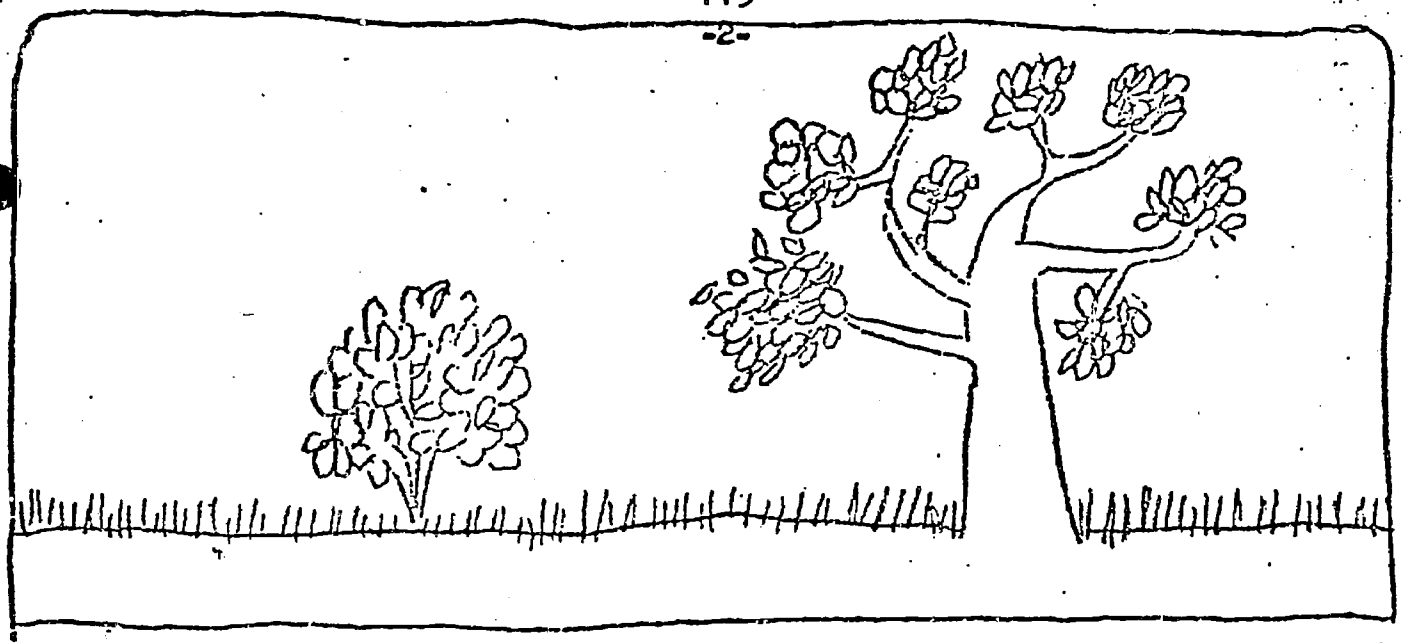
C. poorer in food and water

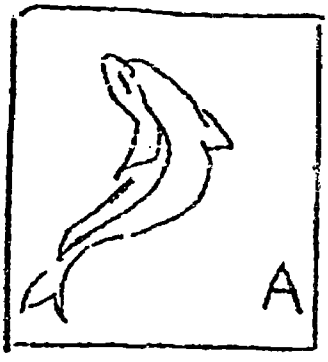
4. When two troops come together:

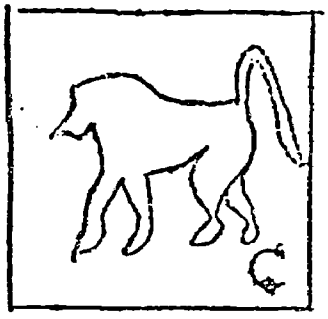
A. the larger troop would share the food and water with the smaller troop

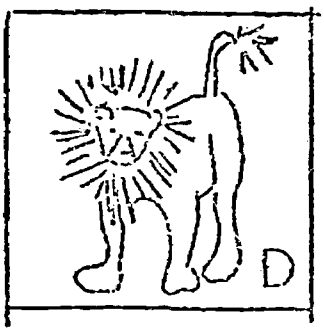
B. the troops might be nervous

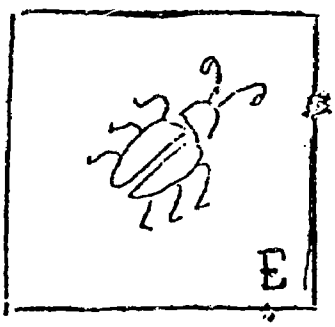
C. young baboons of the two troops would play together











5. Look at the pictures. Then blacken in the space on the answer sheet with the letter of the picture showing an animal you think would <u>not</u> be able to live in the place shown.

6. If all animals like those in picture D died, what would happen to the animals like those in picture B?

   A. nothing would happen

   B. the group would increase in number at first

   C. they would live happily

   D. they would have a bigger food supply

For questions 7 through 19, read each sentence. If you think it is true, blacken in the space on the answer sheet marked A. If you think it is false blacken in the space on the anser sheet under B. If you don't know, blacken in the space under C.

A True
B False
C Don't Know

7. An animal gathers information through its sense organs.

8. In many animal groups more babies die than live.

9. You can see and touch the signals that the brain sends to the body.

10. Male baboons protect their own children better than they protect other young baboons.

11. When a herring gull chick looks hungry, its parents feed it.

12. Baboons care for their young longer than herring gulls care for their young.

13. Information from the environment is necessary for an animal's survival.

14. Human beings are animals.

15. An animal's brain receives information and sends signals to the different parts of the body.

16. When we examine how something is built, we can tell a lot about how it is used.

17. A group of animals might decide to change the way it looks because its environment has changed.

18. Whenever a gull sees sticks, it wants to build a nest.

19. A brown rabbit has a better chance of surviving in a dark forest than a white rabbit.

Directions for questions 20 through 28: During their lifetimes, animals learn to do many things. They are able to do other things without learning. Read each sentence below. Then blacken in the space under A on the answer sheet if you think it is something the animal learns. Blacken in the space under B if you think the animal could do that thing without learning how to do it.

Herring Gull

20. find the edge of its territory

21. peck at the red spot on its parent's beak

22. fly

23. crouch when in danger

24. recognize its chicks by spots on the head

Baboon

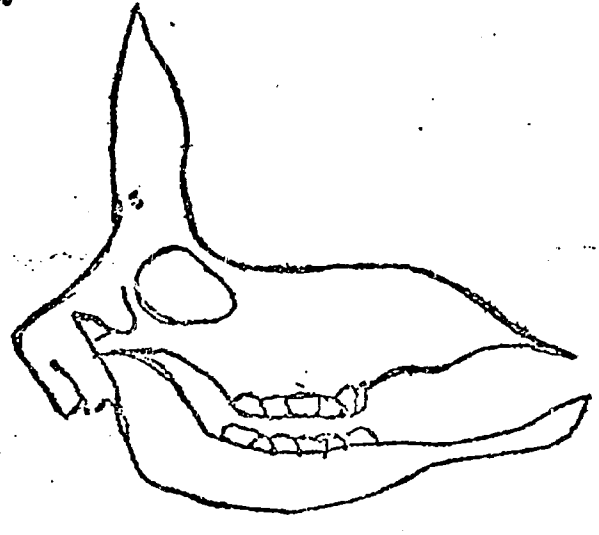
25. know the alarm calls of other animals

26. cling to its mother's chest

27. make sounds

28. give special calls at special times

This is the skull of an animal. By examining its teeth, what would you be able to say about this animal?



29. It would be likely to defend itself by

A. fleeing from enemies

B. attacking and biting

30. It would be likely to

A. eat other animals

B. be eaten by them

Word Meaning

In questions 31 through 40, there are some words used during this course. Please read each one. Then choose the best definition for the word and blacken in that letter in the space on the answer sheet.

31. structure

A. one's surroundings
B. the special way something is built
C. a special way in which something is used
D. not learned
E. the pattern of birth, having babies and dying

32. reproduction

A. a young human or other young animal
B. a special way in which something is used
C. the ways an animal acts
D. the pattern of birth, having babies and dying
E. giving birth to young

33. juvenile

A. a young human or other young animal
B. a baby gorilla
C. good or bad manners
D. a delinquent or bad teenager
E. the ways an animal acts

34. human being

A. the opposite of animal
B. not learned
C. a mammal and a primate
D. the young of any animal
E. the pattern of birth, having babies and dying

35. life cycle

A. one's surroundings
B. jump to one side
C. a young human or other young animal
D. giving birth to young
E. the pattern of birth, having babies and dying

36. environment

A. good or bad manners

B. the ways an animal acts

C. the special way something is built

D. one's surroundings

E. good or bad manners

37. offspring

A. the young of any animal

B. a baby gorilla

C. the opposite of animal

D. jump to one side

E. a hunter of other animals

38. predator

A. the ways an animal acts

B. the opposite of animal

C. a young human or other young animal

D. not learned

E. a hunter of other animals

39. innate

A. good or bad manners

B. a delinquent or bad teenager

C. not learned

D. the special way something is built

E. a special way in which something is used

40. behavior

A. good or bad manners

B. a delinquent or bad teenager

C. a special way in which something is used

D. the ways an animal acts

E. one's surroundings

Directions for items 41 through 50: Some of the paragraphs you will read below give correct information about the way a scientist would work and think. Others are not at all true.

Read the first paragraph. If you think what it says is true, blacken in the space under A on the answer sheet for True. If you think it is false, blacken in the space under B.

A True
B False

After you have done this, read the items A through E under the statement. These are reasons why you answered True or False. Choose the sentence that tells why you decided the paragraph was true or false. Blacken the letter of your reason in the space on the answer sheet.

Do the same thing for each paragraph.

41. It was early morning in Africa and the scientist Irven DeVore started out to continue his study of baboons. As he drove along, he came to an area where he saw a few trees, some low vegetation, a grassy plain and a water hole. He decided this would be a good place to stop.
A True
B False

42. Reasons

A. Baboons are never found where there are only a few trees and some low vegetation.

B. To get the best observations, we should not let baboons become aware that they are being watched.

C. Troops of baboons are found in an area that provides food, water and some trees.

D. By studying one troop of baboons very closely a scientist is able to learn a great deal about all baboons.

E. A scientist can't learn very much by watching only a small group of one type of animal.

43. He was looking for a new troop of baboons if he could find one, because he felt he couldn't learn much by watching the same baboons day after day.
A True
B False

44. Reasons

A. By studying one troop of baboons very closely a scientist is able to learn a great deal about all baboons.

B. All adult baboons are so alike in appearance that we cannot tell them apart.

C. Every baboon in a troop can be identified by the way it looks and acts.

D. Baboons are never found where there are only a few trees and some low vegetation.

E. A scientist can't learn very much by watching only a small group of one type of animal.

45. "I can't tell one from the other anyway. One baboon is just like the next," he laughed to himself.
A True
B False

46. Reasons
A. By studying one troop of baboons very closely a scientist is able to learn a great deal about all baboons.
B. All adult baboons are so alike in appearance that we cannot tell them apart.
C. Every baboon in a troop can be identified by the way it looks and acts.
D. Baboons are not bothered by the presence of human beings.
E. To get the best observations, we should not let baboons become aware that they are being watched.

47. Dr. DeVore did not bring his field glasses with him because he knew baboons are never disturbed by human beings. Any troop would allow him to come very close.
A True
B False

48. Reasons
A. A scientist can't learn very much by watching only a small group of one type of animal.
B. Baboons are not bothered by the presence of human beings.
C. The baboon troop guards infants very closely and would not let a stranger get near one.
D. To get the best observations, we should not let baboons become aware that they are being watched.
E. By studying one troop of baboons very closely a scientist is able to learn a great deal about all baboons.

49. He especially looked forward to playing with the baby baboons.
A True
B False

50. Reasons
A. Baboons are not bothered by the presence of human beings.
B. By studying one troop of baboons very closely a scientist is able to learn a great deal about all baboons.
C. Every baboon in a troop can be identified by the way it looks and acts.
D. To get the best observations, we should not let baboons become aware that they are being watched.
E. The baboon troop guards infants very closely and would not let a stranger get near one.

Both fish live in the same river and both would make a tasty meal for their sharp-eyed enemies. In the space on the answer sheet, blacken in

A if the statement is true

B if the statement if false

C if you don't know

51. Fish Z is more likely to survive in this river than Fish Y.

52. If Fish Y breaks its fin, its offspring will have broken fins.

53. Fish Y and Fish Z may be two varieties of the same species of fish.

54. In 100 years, there are likely to be many more fish like "Y" than like "Z" in the river.

55. If the food supply in the river changes, the fish will decide whether they want to eat the new food or move to another river.

Choose one answer below and blacken in the space on the answer sheet.

56. Baboon troops never leave their home range. This is because:

A. They don't want to leave sick or old baboons too far behind.

B. No one is sure of the reason.

C. They don't want other animals to get the things they have built up.

D. They are able to survive only in that special area.

57. A salmon is able to find its way back to its birthplace because:

A. Some member of the group has made the trip before.

B. The parents tell the way to their young.

C. Each salmon remembers the smell of its river.

D. Salmon learn to do this by trial and error.

ACCOMPANYING DATA FOR THE MAN AND ANIMALS TEST

The results below are based upon the percentage answering the question correctly. Pre-test results are based on a sample of 602 students. The post-test was based on 600 students.

Item	Pre-test	Post-test
1	64%	88%
2	81	92
3	33	38
4	17	60
5	88	92
6	43	56
7	60	74
8	43	53
9	69	78
10	15	62
11	44	82
12	43	68
13	52	72
14	60	75
15	73	80
16	66	77
17	50	66
18	55	71
19	80	86
20	54	60
21	60	74
22	27	37
23	52	52
24	40	50
25	58	57

Item	Pre-test	Post-test
26	62%	73%
27	57	65
28	58	55
29	40	55
30	36	54
31	58	70
32	45	57
33	18	75
34	36	51
35	51	68
36	47	64
37	43	79
38	44	75
39	30	60
40	27	52
41	59	67
42	32	48
43	44	64
44	40	61
45	48	73
46	22	56
47	65	73
48	20	31
49	60	66
50	40	56
51	48	60
52	54	69
53	56	61
54	42	55
55	29	53
56	38	57
57	50	75

APPENDIX E

MAN AND ANIMALS TEST--MEANS FOR ALL EFFECTS (COMBINED TESTS)

APPENDIX E

MAN AND ANIMALS TEST--MEANS FOR ALL EFFECTS (COMBINED TESTS)

Grade	5th	6th
	27.839	33.452

SES	Low	Middle	Upper
	21.508	32.607	37.821

Treatment	Pre	Post
	26.333	34.958

Grade by SES	Low	Middle	Upper
5th	18.928	29.642	34.946
6th	24.089	35.571	40.696

Grade by Treatment	Pre	Post
5th	23.785	31.892
6th	28.880	38.023

SES by Treatment	Pre	Post
Low	19.250	23.767
Middle	29.553	35.660
Upper	30.196	45.446

APPENDIX F

CHI SQUARE TEST ON SEMANTIC DIFFERENTIAL ITEMS

APPENDIX F

CHI SQUARE TEST ON SEMANTIC DIFFERENTIAL ITEMS

Item	Total N	1	2	3	4	5	
1	601	24	52	247	149	129	Pre
		22	73	260	149	120	Post
	P=.1093	for Chi-Square		DF = 4			
2	597	174	113	140	75	95	Pre
		148	157	170	71	59	Post
	P=.0000						
3	602	215	131	176	37	43	Pre
		194	170	188	22	29	Post
	P=.0000						
4	600	195	143	136	70	56	Pre
		116	155	170	89	71	Post
	P=.0000						
5	602	221	91	156	76	58	Pre
		174	124	155	98	55	Post
	P=.0001						
6	599	95	77	170	112	145	Pre
		81	75	188	148	113	Post
	P=.0004						
7	600	131	110	156	59	44	Pre
		102	143	276	52	33	Post
	P=.0004						
8	596	68	95	168	129	136	Pre
		43	95	172	157	129	Post
	P=.0008						
9	597	100	124	233	72	68	Pre
		96	136	205	93	71	Post
	P=.0417						
10	600	198	139	148	61	54	Pre
		214	138	150	64	40	Post
	P=.1794						

Item	Total N	1	2	3	4	5	
11	601	340	118	88	25	30	Pre
		422	104	57	12	11	Post
	P=.0000						
12	601	143	93	81	97	87	Pre
		123	135	182	90	75	Post
	P=.0012						
13	602	30	20	54	73	425	Pre
		23	19	38	90	434	Post
	P=.0154						
14	601	254	131	179	23	14	Pre
		249	185	143	19	10	Post
	P=.0000						
15	602	244	162	124	47	25	Pre
		212	179	143	43	24	Post
	P=.0296						
16	597	176	149	224	28	20	Pre
		153	142	225	63	19	Post
	P=.0002						
17	595	121	138	221	60	55	Pre
		124	167	208	56	46	Post
	P=.0925						
18	599	77	85	199	148	90	Pre
		76	68	213	186	57	Post
	P=.0000						
19	599	41	63	156	152	187	Pre
		42	45	147	190	178	Post
	P=.0037						
20	602	120	106	167	86	123	Pre
		127	122	138	89	130	Post
	P=.0595						
21	601	196	120	196	48	41	Pre
		139	110	128	88	41	Post
	P=.0000						

Item	Total N	1	2	3	4	5	
22	602	99	58	171	117	157	Pre
		62	81	163	136	163	Post
	P=.0000						
23	600	66	57	206	138	133	Pre
		39	82	252	123	107	Post
	P=.0000						
24	602	177	158	222	30	15	Pre
		142	153	261	30	18	Post
	P=.0049						
25	602	119	162	238	54	29	Pre
		99	146	266	66	27	Post
	P=.0259						
26	598	29	51	359	114	45	Pre
		34	47	352	124	45	Post
	P=.7350						
27	595	61	51	155	114	214	Pre
		56	51	127	138	228	Post
	P=.0203						
28	599	157	132	255	28	27	Pre
		96	146	311	23	27	Post
	P=.0000						
29	601	54	51	189	168	139	Pre
		34	62	188	204	115	Post
	P=.0001						
30	600	278	115	129	37	41	Pre
		289	129	103	37	47	Post
	P=.0546						
31	601	253	134	152	26	36	Pre
		188	149	207	35	26	Post
	P=.0000						
32	600	225	163	134	31	47	Pre
		254	166	122	40	21	Post
	P=.0000						

Item	Total N	1	2	3	4	5	
33	600	36	51	237	128	148	Pre
		31	50	214	147	162	Post
	P=.1374						
34	601	227	137	169	27	41	Pre
		265	143	134	26	35	Post
	P=.0036						
35	602	90	124	220	93	75	Pre
		95	122	238	80	68	Post
	P=.3864						
36	601	124	138	216	67	56	Pre
		124	161	218	61	37	Post
	P=.0089						
37	592	47	56	175	137	177	Pre
		69	68	158=	150	155	Post
	P=.0048						
38	592	129	169	197	51	46	Pre
		150	170	181	61	35	Post
	P=.0505						
39	599	101	101	518	94	85	Pre
		81	130	231	83	77	Post
	P=.0065						
40	600	108	57	305	55	75	Pre
		74	48	348	70	63	Post
	P=.0000						

APPENDIX G

NETSILIK ESKIMO TEST AND ACCOMPANYING DATA

NETSILIK ESKIMO *

Look at each set of words below. Choose one space that is your feeling about the subject. On the answer sheet, blacken in the space under the letter that you choose. Blacken only one letter for each set of words.

ARCTIC

(The Arctic is the area near the North Pole.)

		A	B	C	D	E	
1.	ugly	A	B	C	D	E	beautiful
2.	changing	A	B	C	D	E	changeless
3.	windy	A	B	C	D	E	calm
4.	strange	A	B	C	D	E	familiar
5.	explored	A	B	C	D	E	unexplored
6.	tame	A	B	C	D	E	wild
7.	good	A	B	C	D	E	bad
8.	deserted	A	B	C	D	E	inhabited
9.	fierce	A	B	C	D	E	gentle
10.	livable	A	B	C	D	E	not livable

*Raw data for the four semantic differential scales--Artic, Eskimo Families, American Families, and Cooperation--is provided in "Chi Square Test on Semantic Differential Items," APPENDIX

ESKIMO FAMILIES

11..	sharing	: A	: B	: C	: D	: E	: selfish
12.	simple	: A	: B	: C	: D	: E	: complex
13.	lazy	: A	: B	: C	: D	: E	: hardworking
14.	happy	: A	: B	: C	: D	: E	: sad
15.	kind	: A	: B	: C	: D	: E	: cruel
16.	poor	: A	: B	: C	: D	: E	: rich
17.	primitive	: A	: B	: C	: D	: E	: advanced
18.	light	: A	: B	: C	: D	: E	: dark
19.	ignorant	: A	: B	: C	: D	: E	: wise
20.	lawful	: A	: B	: C	: D	: E	: lawless

21.	sharing	A	B	C	D	E	selfish
22.	simple	A	B	C	D	E	complex
23.	lazy	A	B	C	D	E	hardworking
24.	happy	A	B	C	D	E	sad
25.	kind	A	B	C	D	E	cruel
26.	poor	A	B	C	D	E	rich
27.	primitive	A	B	C	D	E	advanced
28.	light	A	B	C	D	E	dark
29.	ignorant	A	B	C	D	E	wise
30.	lawful	A	B	C	D	E	lawless

COOPERATION.

31.	human	A	B	C	D	E	animal
32.	together	A	B	C	D	E	alone
33.	bad	A	B	C	D	E	good
34.	necessary	A	B	C	D	E	not necessary
35.	hard	A	B	C	D	E	easy
36.	lasting	A	B	C	D	E	brief
37.	innate	A	B	C	D	E	learned
38.	chosen	A	B	C	D	E	forced
39.	complex	A	B	C	D	E	simple
40.	male	A	B	C	D	E	female

Questions 41 through 54: Read each sentence. If you agree with what it says, blacken in the space under A on the answer sheet. If you do not agree, blacken in the space under B. If you don't know, blacken in C.

A agree B do not agree C don't know

41. A Netsilik Eskimo mother is just as happy when she gives birth to a girl as she is when she gives birth to a boy.

42. A Netsilik Eskimo woman must have a husband to survive, but a Netsilik man can live very well alone.

43. Through language man and other animals are able to communicate ideas to each other.

44. Using magic words and following old customs make a Netsilik Eskimo feel safe.

45. Four hunters working together at a crossing place can usually kill more caribou than four hunters working alone.

46. There are some people around the world who are not like Americans in any way.

47. A Netsilik Eskimo would be happier living in a warmer climate.

48. If a Netsilik Eskimo were angry, he would probably sing a song.

49. Man and other animals all have beliefs.

50. If a Netsili, Eskimo is not a successful seal hunter, his family will starve.

51. Netsilik Eskimo children learn about Nets'lik beliefs by reading books.

52. Netsilik Eskimos think of hunting as a sport.

53. The differences among people are so great that some people are more like other animals than they are like people.

54. Magic, the Netsilik Eskimos believe, helps them to be good hunters.

55 through 70: Blacken in the space under A on the answer sheet if the item is a tool. Blacken in space B if it is NOT a tool.

A Tool
B NOT a tool

55. hammer

56. pencil

57. eye glasses

58. spoon

59. tree

60. envelope

61. lake

62. lightbulb

63. nail

64. saw

65. insect

66. snowplow

67. door

68. dirt

69. sun

70. camera

71 through 81: If a group of Netsilik Eskimos came to visit us, they would learn some things about our lives that would seem familiar to them. Other things would seem strange and unfamiliar.

For each of the phrases below:

Blacken in the space under A on the answer sheet for those things about us that would seem familiar to an Eskimo.

Blacken in space B for those things about us that would seem strange and unfamiliar.

71.

71. The way we feel about dogs.

72. Young children playing games.

73. The way children and parents feel about each other.

74. The fact that sometimes we move to a new home.

75. The way we feel when we have done something wrong.

76. The way we feel about hunting animals.

77. The fact that we travel to another place just for fun.

78. The way we feel when a friend makes fun of us.

79. The fact that we use words to express our feelings and ideas.

80. The fact that people are punished when they hurt others.

81. The fact that some people want to live alone.

ACCOMPANYING DATA FOR THE NETSILIK ESKIMO TEST

The results below are based upon the percentage answering the question correctly. Pre-test results are based on a sample of 603 students. The post-test was based on 606 students.

Item	Pre-test	Post-test
41	26%	63%
42	42	63
43	55	58
44	52	82
45	52	67
46	23	38
47	49	56
48	13	32
49	29	33
50	50	58
51	68	82
52	45	69
53	35	43
54	43	76
55	89	93
56	72	79
57	48	66
58	72	78
59	83	80
60	29	46
61	80	80
62	57	70
63	90	92
64	91	93
65	88	88

Item	Pre-test	Post-test
66	83	84
67	37	48
68	83	77
69	69	64
70	61	65
71	42	65
72	60	74
73	68	69
74	57	70
75	52	50
76	55	72
77	73	81
78	47	47
79	54	60
80	47	43
81	55	68

APPENDIX H

NETSILIK ESKIMO TEST--MEANS FOR ALL EFFECTS (COMBINED TESTS)

APPENDIX H

NETSILIK ESKIMO TEST--MEANS FOR ALL EFFECTS (COMBINED TESTS)

Grade	5th	6th
	23.732	25.910

SES	Low	Middle	Upper
	20.946	26.151	27.366

Treatment	Pre	Post
	22.809	26.833

Grade By SES	Low	Middle	Upper
5th	19.535	25.017	26.642
6th	22.357	27.285	28.089

Grade by Treatment	Pre	Post
5th	21.988	25.476
6th	23.630	28.190

SES by Treatment	Pre	Post
Low	19.857	22.035
Middle	23.607	28.696
Upper	24.964	29.767

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