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THE ANALYSIS OF CHILDREN'S COMPOSITIONS IN TERMS OF LOGICAL CRITERIA AND COGNITIVE THEORY (GRADES 2-6). FINAL REPORT.

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THE PURPOSE OF THIS STUDY WAS TWOFOLD--(1) TO FIND WHAT LOGICAL HABITS AND ABILITIES POSSESSED BY ELEMENTARY SCHOOL CHILDREN WERE DEMONSTRATED IN THE PERFORMANCE OF COMPOSITIONAL TASKS, AND (2) TO COMPARE THE WRITTEN COMPOSITIONS OF ELEMENTARY SCHOOL CHILDREN WHO HAD STUDIED UNDER THE NEBRASKA CURRICULUM DEVELOPMENT CENTER'S LANGUAGE ARTS PROGRAM FOR A LEAST TWO YEARS WITH THOSE COMPOSITIONS WRITTEN BY CHILDREN IN A TRADITIONAL LANGUAGE ARTS PROGRAM. FIVE DIFFERENT TYPES OF COMPOSITIONS WERE COLLECTED AT EACH GRADE LEVEL (TWO THROUGH SIX) IN ELEMENTARY SCHOOLS USING THE NEBRASKA PROGRAM AND IN OTHERS HAVING A TRADITIONAL LANGUAGE ARTS PROGRAM. INSTANCES OF CERTAIN TYPES OF LANGUAGE BEHAVIOR WERE IDENTIFIED AND MEASURED. RESULTS SHOWED THAT (1) CHILDREN WHO HAD STUDIED UNDER THE NEBRASKA PROGRAM WERE BETTER ABLE TO PERFORM THE WRITING TASKS NECESSARY TO PRODUCE WELL DEVELOPED AND CLEARLY ORGANIZED STORIES THAN WERE CHILDREN IN THE TRADITIONAL PROGRAM, (2) THE VISIBLE FORMS OF WRITTEN EXPRESSION HAD AN EFFECT UPON THE LINGUISTIC FORMS OF THE CHILDREN'S WRITTEN COMPOSITIONS, (3) THE ADAPTATION OF ADULT LANGUAGE EXPRESSIONS BY CHILDREN TO THEIR OWN MODELS AND USES INDICATED THAT THE FORMS OF OUR LANGUAGE PRESENT PROBLEMS FOR CHILDREN IN UNDERSTANDING LANGUAGE AREAS THAT ARE NEW TO THEM, AND (4) WITHIN ANY ELEMENTARY SCHOOL GRADE, CHILDREN MAY BE OF SEVERAL DIFFERENT LEVELS OF COGNITIVE ABILITY BUT THESE LEVELS ARE NOT INDICATED BY STANDARD IQ AND ACHIEVEMENT TESTS. (DL)

FINAL REPORT
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U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

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Elizabeth T. Carpenter, Ph.D.

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The University of Nebraska

Lincoln, Nebraska

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There are many persons in various fields who have in some way or other helped with this study and this report. Space here will not permit me to express my gratitude to each individually. One group of persons do deserve extra thanks, however, for without their interest and cooperation this study would not even have been possible. They are personnel of the Lincoln Public Schools -- both teachers and administrators -- who have allowed us access to the children and have made us feel at home in their schools and classrooms. My greatest wish is that the results of our work may prove useful to them in performing intelligently what is perhaps the most difficult task in our society -- the task of educating the young.

--- E. T. C.

TABLE OF CONTENTS

APPENDIX B

LIST OF TABLES

Table | Page

INTRODUCTION

With the tremendous increase in technology in our civilization, we have felt an increasing need for adults to develop better the ability to write clearly and effectively within a variety of situations and for a multitude of purposes. Yet a considerable percentage of the human products of American school classrooms, secondary-school graduates, are grossly unequipped. Many, having "completed" twelve years under traditional language-arts programs in the schools, emerge unskilled in the crafts of writing, unknowledgable in the literary heritage of their mother-tongue, uninterested in and unappreciative of the abilities shown by recognized craftsmen in the arts of writing.

Within the past few years scholars, school teachers, and teacher educators have finally begun to sit down with one another to find ways to help the situation without merely passing the blame from one to another exclaiming, "The kids can't write!" The suggested solution to the problem lies, at least from the point of view of parleys which began Nebraska's Project English curriculum work, in affecting a change in the school environment so that somehow children may become acquainted with the best of literature, gain a perspective of their language, and be motivated to perform tasks which will develop the habits necessary to writing well themselves.

It is apparent, however, that any attempt to affect such a change successfully must be born out of an increased knowledge with respect to the developmental patterns of children. Thus, there is a basic need for information about (a) what steps the child takes in coming to write effectively, (b) what the child is capable of doing in given situations, and (c) when he is logically and physiologically equipped to take what steps. This study is intended as a step in the direction of satisfying that need for information.

It goes without saying that we believe the problem of producing effective writers in American Public School systems is not insurmountable. For this research we have -- successfully, we think -- taken the attitude that the child in the classroom is not only to be the beneficiary of any results but -- most important -- that it is from studying the child's behavior (linguistic and otherwise) that we may find the key to any useful solution.

We operate, therefore, with an eye to finding in the child's own activities, in his own products, clear indications of the level of his ability to work with given linguistic material, in the hope that by finding these indications the teacher may be helped to find the match for them and so be better equipped to guide the child on.

As a background for this study the researches of Jean Piaget and his associates at the Institut J. J. Rousseau, Geneva, Switzerland, into concept formation and growth promises to be directly relevant. But, as with most comprehensive studies of this type of material, they deal primarily with children's spontaneous oral behavior in situations in which the child is taken either individually or in small groups. They do not as a rule investigate the written works of the child or work with the children in groups as large as those with which the American classroom teacher must work. Thus, with regard to the observations of Piaget, we need to know what parts of them are applicable to children operating in the larger group situation and what parts of them are useful to the teacher concerned with teaching composition.

At this time, we are not particularly concerned with stepping up the child's rate of cognitive growth. Rather our main task is to define the stages of growth with respect to composition writing in the group situation. But we are not only interested in defining the child's compositional habits and abilities while he is operating within the environment of the traditional elementary school language-arts program. We are concerned also with the effects of a different learning environment upon his written products. Thus the children whose works we studied represent students working under (A) the Nebraska Program developed as part of Project English by the Nebraska Curriculum

Development Center, and (B) a more traditional type of language-arts program which is used in most elementary schools in the country.[1]

The Nebraska Curriculum Development Center's program, centered in rhetoric, linguistics and literary theory, by using updated and upgraded curriculum materials, is purportedly designed to provide a broader, more coherent, and more challenging environment for developing young writers than is the traditional language-arts program. If we find that the children under the Nebraska Program do develop certain habits of thinking and/or writing which would be of value over and above those developed under the traditional program, it would indeed be of help for us to know it. And if there are aspects of the children's writing which appear in the products of both Programs, knowing this would provide some further basis for the work of future curriculum planners.

[1]Henceforth in this report, these two programs will be referred to as Program A and Program B, respectively.

METHOD

Procedures. Since we were chiefly concerned with the ways in which children use language in accomplishing different sorts of tasks in various situations, it was necessary for us to construct situations in which the children could respond on paper with as few outside restrictions as possible on their logical and imaginative habits. Thus, we developed four different types of writing assignments, each of which was geared to elicit kinds of language behavior that might reveal the child's ability to work effectively within a given literary genre and to handle given concepts. In addition, some of the children participated in another situation which involved their working discursively in connection with their own written questions.

The four writing assignments, which we shall refer to as "Situations", were given the children in their own schools during the regular school day. (See Appendix A for complete details as to how each assignment was given and how the children's work in each case was used by us.) Compositions from Situation IV were gathered earliest in the school year. In it the young writers might write whatever kind of story they wished. About a month afterward, Situation I followed in which the children heard a folk tale, containing magical elements, and built around a common motif with which Program A children should have been familiar -- i.e., the main character leaves or is taken from a happy, secure home environment out into peril; he survives the difficulties to regain security and happiness. In this case the children were asked to tell the tale on paper making any changes, additions, or omissions they wish.

Then, at least a week later, the children wrote in Situation III, where they were required to think of something they had seen or heard of happening and write a myth to explain it. (Program A children, in their regular classroom lessons, should have been familiar

with myths of this and of other sorts, because at each grade level units on this genre are included in the Nebraska Curriculum. Program B children might have been familiar with myth, too; but as a rule, in the traditional curriculum, there is no systematic treatment of myth as a genre distinct from fairy tale or fantasy.)

Situation V was given at least a week after the children had performed in Situation III. This time a film of a physics experiment was shown them, and their assigned task was to write some kind of an explanation of the outcome of the experiment but they need not concern themselves with whether their written explanation was correct or not, scientific or not -- they were at liberty to offer any kind of explanation they wished. Hence, those children who wished to write a myth to explain the natural phenomena they had viewed might properly opt to do so, and those who wished to offer natural explanations might write their ideas without fear of being penalized for being incorrect.

The small group of children who participated in Situation II (sometime after they had written in Situation V) also orally discussed the filmed experiment with the investigator and with others of their group. In addition to discussing the film, these children discussed a variety of subjects of their own choice at regular intervals during the school year. Tapes of all these discussions along with records of their written questions, which were the take-off points for the discussions, yielded information on their ways of thinking in several kinds of contexts as well as a volume of samples of their oral language behavior which could be compared with their written offerings.

For each child in the study information about his family's socio-economic status (as determined from his father's occupation), his parent's educational level (i.e., years of formal schooling), and his performance in standard tests, including his IQ score based on the California Test of Mental Maturity Short Form, and his grade placement on California Reading and Language Achievement Tests.

All children's compositions were transcribed, by a typist, in such a way as to reproduce the children's

work with the same wording, spelling, spacing and punctuation as appeared in the original. Other than the composition, only the Situation number and a code number assigned the child, appeared on the papers at the time of analysis.

The Sample. The children, from whom works in the four writing situations were gathered, were selected from a larger sample used for a study of syntax supported by the Louis W. and Maud Hill Family Foundation. That project, entitled: "A Longitudinal Study of the Syntax and Content of Children's Compositions (Grades 2-6)," which was begun in the academic year, 1963-64, provided for the gathering of compositions for the on initial year of our study -- 1964-65.

Since our purposes in the study of children's writings would best be served by going into great detail with respect to each child's compositions, rather than by making a more superficial content search of the works of great numbers of children, we elected not to try to use the whole syntax-study sample. Instead, our sample was chosen from the larger sample partly on the basis of closeness of the schools to the investigator's headquarters and partly on the basis of where the largest clusters of syntax-sample children were enrolled at each grade level. Thus, two Program B schools were the sites of our data gathering -- the two schools which contained the largest groups at each grade level. (For exact numbers of the largest Program B samples taken for any writing situation at each grade level, see the chart for Situation III in Appendix A, p. A-75.) Similarly, two Program A schools provided the sample for the first year of the study, in which only children in grades 2, 3, and 4 were available, because the Nebraska Program had not been used in the schools long enough to allow children beyond the fourth grade to have had more than two years of work under the Program.

The samples from each program are comparable in the background factors mentioned above (see p. 5) and also in that at each grade level at least four classrooms are represented during the first and second years of the study. The sample of Program A children used for the third year of the study was taken from only one classroom at each grade level.

Only children of Program A were followed on a longitudinal basis for three consecutive years, each year writing in three of the four different situations. Children of both Programs performed in Situation IV for two consecutive years, while Situations I, III, and V were done in Program B only during the first year of this study.

The sample used for Situation II, the discussion situation, consisted of some of the youngest of the children in the writing-sample. For it we took the largest group of second graders in Program A who were available from one classroom, and we worked with them for three consecutive years -- i.e., through their second, third and fourth grades. Complete details on the Situation II sample, procedures and results will be found in Appendix B of this report.

The following chart shows at what grade levels our children performed in each situation. Arrows connect groups of children followed from year to year.

PROGRAM A

Gr. Levels	2	3	4	5	6
Years					
1964-65 (1st Yr.)	IV,I,III V, II	IV, I III,V	IV, I III,V		
1965-66 (2nd Yr.)		IV,I,III V, II	IV, I III,V	IV, I III,V	
1966-67 (3rd Yr.)			I,III V, II	I,III V	I,III V

PROGRAM B

Gr. Levels	2	3	4	5	6
Years					
1963-64*	IV	IV	IV	IV	
1964-65 (1st Yr.)	IV, I III,V	IV, I III,V	IV, I III,V	IV, I III,V	IV, I III,V

*1963-64 was the year prior to the initiation of this study, thus the only compositions available from that year are from Situation IV. (These were also used for syntax analysis in the Hill Family Study.)

Methods of Analysis. For each of the four writing situations instruments were devised to enable the rater of the children's compositions to glean various kinds of data by noting occurrences of certain types of expressions and by looking for certain logical factors in the organization of the child's writing. In addition to the factors singled out by using the instruments, the investigator made note of instances of thought-jumps which were similar to those found in the language behavior of children in Piaget's studies. The instruments used for each writing situation appear in Appendix A along with a description of their use; Appendix B contains the instrument used for classification of the children's written questions collected in connection with Situation II discussions.

Compositions gathered in Situation IV, in which children were permitted to write any sort of story they wished about anything they wished, were classified according to a Subject-Classification List built expressly for this purpose (See p. A-89 ff.) in order to answer the rather broad question: "What do children elect to write about when free to do any sort of story they wish?" Also each composition was read for the following elements: 1) logical completeness and organizational clarity; 2) the presence of explicit argument; 3) the presence of explicit analogies; and 4) the appearance of logical inconsistencies. Note was kept on: whether the composition had a title; if so, whether the title fit the story; and whether the end of the story was designated by some expression, such as "The End." From these evaluation notes on the Situation IV compositions tally was made of all these factors. Charts and detailed remarks on the results of these tallies are given in Appendix A (p. A-88 ff.) along with sample compositions from that writing situation.

The compositions produced under Situation I, in which the children heard a story and then were asked to tell it but in their own way, were subjected to two phases of analysis. First, by way of a Feedback Instrument, the rater made note of what events and what characters in the taped story appeared in each child's composition. (If there was no feedback, the composition was placed in a separate category which we called "completely creative".) Information gained from using the Feedback Instrument was then used as a

basis from which to make detailed notations on what changes, additions, and omissions were made by the child in the taped "trigger story". These notations were made in a systematic fashion by keying them into an instrument we developed to separate out certain kinds of additions and changes -- see Creative Changes Index, pp. A-26-28. The data gathered from the Index was tallied. The results are given in detailed charts presented in Appendix A.

Since Program A children were to write under Situation I for three consecutive years, it was decided that a different "trigger story" should be used each year so that we might get more spontaneous responses from these children the second and third years they wrote than if they were to work from the same "trigger story" each time. This meant, of course, that a new Feedback Instrument was required for the "trigger stories" used during the second and third years. The Feedback Instruments for all three stories, however, were constructed on such similar lines that the type of results gotten may be compared. For the reader's convenience and in the interest of clarity, Feedback Instruments along with a complete reprint of each "trigger story" used for Situation I are presented in Appendix A (thanks to the kind permission of the publishers of the stories).

When the children were asked to write myths to explain some natural phenomenon (Situation III), the investigator spent some twenty minutes immediately prior to giving the writing instructions presenting a unit on myth. We were partly interested, therefore, in whether or not the children's written responses would contain feedback of materials given them in the unit. Hence, part of the instrument devised for analysis of Situation III compositions was specifically designed to pick up cases of elements fedback. In addition, the instrument (see p. A-73) was made sensitive to 1) the sorts of things the children attempted to explain mythically, and 2) whether the young writer was so ill-equipped to perform within the genre of myth as to give explicit indications that his "explanation" was untrue or outmoded. Situation III compositions were separated into four general groups: first, those containing myth of the type requested -- i.e., explanation of natural phenomenon; second, those presenting myths of other

sorts; third, those which belong in other categories of fiction, such as fairy tale, fable, or fantasy; and fourth, those giving a biographical or otherwise factual account of events. All these compositions were rated on their organizational clarity and their logical completeness; and note was made of cases in which the child indicated the end of his writing by "The End" or some such expression. Charts showing the tallied results of the Situation III Instrument appear in Appendix A (pp. A-75-78).

Explanations the children wrote for Situation V, in which they were asked to write some kind (any kind) of explanation for the phenomenon observed in a filmed physics experiment, were divided into two general groups: those that offered natural explanations and those presenting myths as explanation. Illinois Inquiry Training Films, developed by Richard Suchman, were used to give the children something about which to write. Program A children, who wrote in this sort of situation for three years, were shown a different film each year. Compositions containing natural explanations for the experiment's results were subjected to evaluation according to the instrument we devised for this purpose -- see p. A-108. In this connection the rater noted: 1) what feedback of film events occurs in the child's composition; 2) what mistakes are apparent in the child's perception or in his description of what he viewed; 3) what explanation is presented, if any; 4) whether an analogy is presented in the child's explanation; 5) whether mythical elements appear within the explanation; and 6) whether the explanation given by the child fits the Scientific Explanation Key. As a Scientific Explanation Key we used the list of "necessary conditions" for each experiment presented in the manual accompanying the Illinois Inquiry Training Films. If the child's explanation fit the Key at some point, we counted the explanation as "scientific". Explanations offered by the children which did not fit this Key but which were attempts at natural explanation were grouped into separate categories in which compositions containing similar explanations were placed together. These were then ordered as to the degree of complexity involved in the explanations and the nearness of the explanation to what would be involved in a correct scientific explanation. Results gathered from Situation V compositions are presented in detail in Appendix A, pp. A-107, A-110, and A-114.

Data gathered from the work of a given child was susceptible to comparison on a cross-situational basis, and if the child was part of the Program A sample, longitudinal comparisons within the same situation could be made. Also some comparisons could be made between children of Program A and those of Program B, using as a basis similarity in the individual children's background factors indicated in our records. Also, for those children in the Program A sample who participated in Situation II comparisons of written with spoken expressions were made by means of detailed notes of the investigator on the children's language behavior in various instances recorded in transcripts of Situation II discussions.

RESULTS

Results obtained from analysis of Situation I compositions include the following:

1. Compositions which were incomplete (in that no terminal punctuation was used in the final sentence which was grammatically unfinished) were obtained only from second grade children in the sample. Children of Program A, who turned in incomplete compositions during their first year of writing in Situation I, managed to write Situation I compositions that satisfied our criteria of "completeness" for this situation during their second and third years.

2. a) Almost all compositions that were rated "creative" were sparked by some incident or predicament within the "trigger story". b) "Creative compositions" written in the second and third years of the study were as a rule built around the motif of the "trigger story" used. c) Almost all "creative compositions" gathered in the second and third years were written by children who had written compositions rated as "creative" during the first and second years, respectively.

3. In general compositions gathered from Program A children during the first year contained more feedback of events and characters in the "trigger story" than did those written by children in Program B.

4. In compositions containing feedback a very small portion contained feedback of a middle section of each "trigger story" which served primarily the function of development of plot and main characters.

5. A large proportion of children in both programs whose compositions contained feedback made characters who bore names in the "trigger stories" nameless in their compositions.

6. The words, because, so, since, and for, were the only logical indicators used by the children in their compositions (the first two being the most common), with the occasional exception of the disjunctive indicator, either -- or --, which appeared in cases in which one character in the child's story was presenting another with an ultimatum.

7. Few cases of logical inconsistencies appeared in the children's compositions. Those were apparently the consequence of young writers getting so busy with the succession of events that some points in the succession were neglected.

8. a) With respect to the feedback of magical elements in the "trigger stories", it was very common that the writers would make explicit connections (not given in the "trigger stories") between the magical happenings and the actions of certain characters. b) Most of the children who made explicit such connections in second and third year Situation I compositions were the same children who had done so in the first and second years, respectively.

9. Children in Program A who made changes in linguistic expressions used in the "trigger stories" -- changing ordinary expressions to more modern or slang expressions -- were repeaters, too. Thus, they made this sort of change two or three years in a row.

Our analysis of Situation III compositions showed that Program A children usually had a better sense of genre with respect to myth than did children in Program B. This ability was borne out further in second and third year myth-writing done by Program A children. Program A compositions were generally better, more clearly organized and logically wrapped up than were those from Program B; furthermore, third year compositions from Program A showed considerably greater finesse on the part of their writers in developing characters and plot than first year Situation III compositions.

Situation IV compositions revealed that at least 95% of the children wrote fictional stories, the majority of which were tales of personal adventures in which the

chief character was the writer or some other person. These stories contained no explicit tip-off that they were invented. Approximately 87% of all compositions written in this situation were rated as logically complete. The great proportion of them bore titles that fit the stories; and approximately 10% of them used in their compositions events from the film they saw before writing.

Compositions obtained from Situation V, in which children were asked to explain "Why?" with respect to a filmed physics experiment, in most cases consisted of fragmentary sentences beginning: "Because...". Analysis of these compositions revealed that the only children who elected to write completely mythical explanations of the natural events viewed were fourth and sixth graders; and the number of those children was few. Furthermore, in those compositions attempting natural explanations mythical elements appeared in several from grades 2, and 3; and there, mythical elements were incorporated into a variety of kinds of natural explanations.

When first year natural explanations were grouped and ordered according to increasing logical complexity, statistical calculations showed them to have no significant correlation with their writers' IQ or with their grade level.

During the first and second years, where heat was really a causal factor in the outcome of the viewed experiments, a significant proportion of explanations offered by second, third, and fourth graders contained the notion that the object involved melted.

In second year explanations of the brass ball and ring experiment there was no indication that a notion of heat conduction was involved in any child's view.

Third year explanations of the floating and sinking bl cks of wood revealed that the writers neld the weight of the blocks to be a controlling factor, although few attempted to explain how.

Question Book entries recorded in connection with Situation II children revealed that the most significant changes in the sorts of questions asked were in

Classes I and V of the Instrument -- i.e., in Questions of Causal Explanation and in Questions of Classification, the latter particularly in requests for names. Many entries made during the second year of the study, when the children were in the third grade, apparently arose out of material given the children in their regular classroom lessons. For example, there were questions about the Heffalump in Winnie the Pooh, about American pioneers and indians, and about matters that were included in the classroom teachers presentation on the solar system.

From our analysis of data from Situations I, II, III, and V children in the study showed a pronounced tendency to reproduce expressions they heard or saw and to model their own language after certain expressions, regardless of the fitness of those models from an "adult" point of view.

Where free discussion was allowed, in Situation II, there were numerous attempts on the part of every child in the discussion groups to assimilate new material in terms of a model already familiar to them. The models the children attempted to use in these cases were readily expressed and elaborated on by them.

By detailed analysis of the Situation II discussions we found second and third graders speaking of the sun and moon in personified terms. The most common notion held of the sky involved its being thought of in terms of a blanket or a sheet through which one could pass; further, the moon, in these cases, was spoken of as being "closer to the earth" than the sky. When the children were in the second grade, several of them habitually interchanged the words, steam and smoke. These sorts of conceptual connections are exactly like those Piaget reported as occurring in his encounters with children of the same age group.

The ease with which our Situation II children while in discussion would invent "facts" -- particularly about the solar system -- was outstanding in our middle and low ability groups in the fourth grade (that is, during their third year in the study). All these cases, however, showed the inventors to be shaping new material presented them by fellow group members framed correctly

in one sort of linguistic expression -- shaping the material and the given language in terms of a concrete model, the suggestion of which we found in the terms of the given linguistic expression. A prime example of the facility with which this shaping was accomplished in the children's discussions occurred in a session with the low fourth grade group about midway through this school year: The children were talking about the planets of our solar system. One of them mentioned that some of the planets had more than one moon, and when questioned (wonderingly) by one of our "best inventors" the girl said, "Jupiter has nine moons." Our "inventor" retorted that that couldn't be right because "there is only one moon". He continued with: "The moon is our moon!" Other children in the group expressed difficulty with the idea that another planet had a moon, "because how could the moon shine here for us and be shining for some other planet at the same time." One of the group then remarked that he wished we had more moons, at which our "inventor" then proceeded to supply the earth with more moons: "Well, we have more than one moon. There's the great big full moon, and the half moon, and a little moon and a little sliver skinny moon." Then another child took up the progression by offering: "And there's the harvest moon, too."

In this case one may see, behind the children's inventions, ordinary language expressions which are of help to him in suggesting the direction to take in his inventing. Expressions in which various common phenomenon observed of the earth's satellite are characterized with the definite article "the" preceding "moon" -- we speak, for instance, of "the moon," "the harvest moon," "the full moon," etc., etc.

Furthermore, in the instances of such inventions the child inventor readily proceeds to use gestures to describe how he pictures the whole thing -- in the case of the moons, mentioned above, our "inventor" designated a spot on the table as the earth and other spots encircling it as the moons, explaining that they all go around the earth, three being hidden from view at any given point on the earth on any given night.

Caution on the part of any adult who attempts to interpret children's questions is definitely necessary,

for just as Piaget reports with respect to spontaneous oral questions we found children's written Question Book entries quite deceptively framed. It was quite common among our children's work to find that although questions may be written in the same linguistic form, they might well be intended quite differently by the child. Only through the oral activities (in the discussion sessions) did the children make clear their intended queries.

By the end of their fourth grade, it was noted that children of the high reading ability group had well begun to formulate hypotheses during the discussion sessions and to imagine out loud methods of experimentally testing them. This occurred only with respect to certain kinds of materials which happened to be manipulatable. The role of probability as it is involved in adult scientific considerations was completely absent from all our children's verbalized procedures, even though the word, probably, very frequently occurred in their remarks.

The results of a sociogram questionnaire administered to our Situation II children revealed that in third grade their spontaneous reactions of approval and disapproval of a group member's contributions were not related to what a child was saying. They were instead the expressions of "buddy" or "rival" relationships toward the contributing child. During fourth grade, however, children's spontaneous reactions toward their fellow's contributions began to show a much closer relationship to what the speaker said than to who was speaking.

Note: Complete details of the results of writing situations and sample writings are presented in Appendix A of this report. Results of Situation II discussions and Question Book entries are given in Appendix B.

DISCUSSION

The overall effect of the great bulk of results from this three year study of children's writing and speaking performances should be stated in terms of the increase in the number of questions it has served to prompt. For much of what we have noted about the language behavior of children in our five situations provides a background against which answers to more specific questions might be sought through further research.

Our search in the children's remarks for instances of behavior similar to those reported by Piaget and his associates proved interesting and showed us that these instances would occur in their written expressions as well as in their oral speech. How to relate such behavioral instances to the theory of cognitive growth formulated by the Piaget group with respect to certain types of concepts becomes a problem for us, however, since in many cases the children whose products we searched were available to us only for the writing situations. We have attempted to compare those cases with others for which we have both writing and oral products. And by so doing several parts of the Piagetian theory are apparently relevant. We will, therefore, offer as suggestions the following remarks on relationships of verbal and written performance shown by our data to Piaget's cognitive stages. Only further research may establish the validity and the usefulness of suggestions.

The egocentrism which Piaget says characterizes the language behavior of young children may be taken to be manifested in the habits of writing we found prevalent in our children up into the fourth grade. The sparseness of explanation of what the children intended by their questions and often in their oral discussion of the questions, in their responses to the Situation V film, and in the extent to which many of them (especially in Program B) failed to develop

the threads of events and interactions of characters in their written stories -- these may be due to a childish habit of acting as though the writer assumes his reader knows what is intended and understands fully.

The fact that our Program A children, as they progressed from year to year, had apparently begun to develop some of the habits necessary to clearly developing their stories may well mean that the Program had some effect on the child's tendency toward egocentrism to the extent that this childish attitude began to be broken down, dissipated, with respect to the writing task at hand. We note, though, that this could not be shown in all our writing situations, because Situation V compositions were almost as sparsely explained at the higher grade levels as they were at grades two and three, for the most part. Where we found the apparent growth in techniques of story development was within the framework of the myth writing and the fairy tale or fantasy writing products.

Whether or not this has to do with the child's supposed egocentrism may be debatable, however, since one can also say that the children of Program A learned better than did those of Program B what counts as "storytelling". In that case it would seem at least that the Nebraska Program must be an influencing factor in the children's learning the game of storytelling and the game of mythwriting.

In the language habits of our children in Situations I, II, III, and V, we found numerous instances of children using expressions which Piaget took as manifestations of the child's viewing the world in mythical terms. Such instances were found in the early grades in both Programs, and in Situation V compositions their frequency dropped considerably as grade level increased. In Program B compositions a similar drop in the incidence of myth creations occured in responses to Situation III, except for a very few very able writers. In Program A, however, second and third year Situation III products showed no similar drop in frequency of myths created at the higher grade levels. This would seem to indicate that the Nebraska Program's continued work with myth as a genre in each grade level as the children advance through elementary school acts as a reinforcement of the habits of mythically viewing the natural world.

A check of Program A children's writing in Situation V revealed that those who were able to write myth in Situation III were usually the same children who offered natural explanations containing no mythical elements in Situation V. This would indicate that the myth work included in the regular classroom activities under the Nebraska Program did not operate so as to inhibit the child's normal tendency to grow away from looking at the natural world in mythical terms.

Our Situation II discussions with the children through their second and third grades contained so many instances of expressions exactly similar to those recorded by Piaget and interpreted by him as indications of the "mythical" view that we find no reason to question his remarks on this matter. What we need to define is the possible effects of this childish view of the child's ability to grasp new material and to do specific kinds of compositional tasks. If by giving the child a regular dose of myth as a part of his curriculum at the elementary school grade levels, one might be able to take advantage of his childish view in such a way as to make him better able to perform within certain literary genre it would, of course, be most helpful to know this. As far as our data goes, it would seem to suggest that the Nebraska Program does effectively take such an advantage. We must express caution, though, for ours is a fairly small sample of children on whose performance to base the establishment of an area of curriculum planning.

In connection with the child's tendency to view the world in mythical terms, as per the Piaget reports, we were interested to see whether the child's growth away from that mythical view might include a tendency to omit magical elements from our Situation I "trigger stories". That the tendency did not show up as significant in our children's writings might be seen as a case for their having learned what counts as "fairy tale" telling, which is really no surprise in view of the fact that it is this type of story to which children are continually exposed in their literary life. What is interesting in the results of their work with the magical elements in the "trigger stories" is the fact that such a proportion of the children made the magical happenings explicitly connected with a character's actions. In many of our children's compositions this explicating took on the character of almost doting on the magic involved.

The change in interests of the Situation II children reflected in the sorts of questions they were moved to enter in their Question Books shows some similarity to the trends reported in Piaget's study of children's spontaneous oral questions. The differences may be accounted for by the difference in the operations involved when our children made entries; one would certainly expect that having to write down one's queries amid the usual activities of a classroom would have something of a artificializing effect on the written products. In this connection, we were happy to note the increase in frequency during the three years of questions arising out of materials and activities of the class lessons. It is with that in mind that we suggest that the Question Book activity provided a legitimate way of the children's expressing their difficulties, satisfactions, and wonders that might not have found approval otherwise in the busy classroom.

In the children's compositions in Situation V and more so in their discussions in Situation II, the extent of the importance in the child's thinking of analogies became particularly evident. In the discussions of natural phenomenon in which scientific methods might have been applicable, if adults had been our participants, we found that the children's working analogies were always concrete, and always seemed to govern the way in which material was assimilated by them. This suggests to us that many of these analogies and the manner in which they were offered and explained, and the points to which they were made applicable by the children may be used as clear indications of the offerers' being, with respect to a given concept, at the stage of "concrete operations" in the Piaget scheme. We did not administer to these children any of the activity oriented "tests" devised by Piaget to discern whether or not these children would fall into what he describes as the stage of "concrete operations". Therefore, our suggestion that the children's analogies might prove fruitful as an indication of this stage of cognitive growth is made subject to verification by way of using them in connection with children's performance on the "tests" used by Piaget.

In compositions and remarks from every situation in which we gathered children's responses in this study, there are many indications that the forms

in which adult language is expressed in certain contexts operate so as to present to the child, just becoming familiar with those expressions, suggestions as to how he may proceed to use them. Further, the use of certain written forms as models for others was clearly indicated in cases when several Question Book entries were made at one sitting. These facts exemplify the magnitude of the task of language learning, which is due not only to the nature of language using, but also to the circumstances of language learning in which the child must operate within a classroom shared by often as many as thirty other children. In such a situation his time is limited severely for trying out his language in contexts new to him. He apparently picks up a large part of it from hearing it in connection with the overt activities that ordinarily occur with it. He assimilates the new in terms of the language he already used and in connection with models he is reminded of from the areas he knows directly, and/or can represent graphically.

The Situation II discussions on various topics contain a great many accounts of children's notions with respect to various concepts. These discussions were done, however, only with one group of children who were followed for three years. As with any longitudinal study concerned to define growth over a period of time, we are unable to make valid conclusions about what constitutes "growth" without some reference point other than just "adult usage". Thus, proper interpretation of that part of our data is possible only through further data gathered from children who have not participated in this situation and who range in age from younger than our children to older. Furthermore, we have obtained through this study no evidence with regard to the possible influence on our children's behavior in the discussions of the training that they may have experienced either in the discussions themselves or in the classroom under Program A. In order to supply answers to these questions, the investigator has gathered data from additional groups of children in pursuance of another contract with the U. S. Office of Education. (See Final Report of Project No. 6-8713.)

The compositions gathered in connection with the first year's work in Situation V, where the children were shown the Suchman Film of the varnish can experiment,

the great number of children who wrote that the can melted struck us as interesting. We found in our discussions with the Situation II children that there were, among them as second graders, several who said the same thing -- the can melted. It occurred to us that perhaps the children would not be so inclined to say this if they were able to directly view the can, rather than seeing it on film. To check this, Mrs. Margaret Overton, teacher in a Program A third grade classroom with which we had not previously worked, conducted the experiment in the room and then asked the children to write their explanations of "Why the can collapsed?" She did the experiment exactly as it was shown on the film except that she used an electric burner rather than a bunson burner. The resulting written explanations showed that exactly one third of the class of thirty children put "melting" in their explanations. This proportion is just slightly higher than what we had gotten from third graders in our Situation V first year compositions. This would seem to indicate that "melting" was used not as a way of characterizing the softening and disintegration of the material of the can, but rather as a way of saying merely that the shape of the can changed. Here, too, more data on the child's conception of melting is needed to place this in proper perspective.

CONCLUSIONS

If we have done nothing else by this study, we have shown the relevance of the studies of Jean Piaget and his group in Geneva to the language behavior of children who operate within the classroom. We have found that in some areas habits of thought and speech that he described have made themselves apparent in the children's writing under our Situations. We have been unable to place the individual children who were our subjects upon Piaget's scale of development, because we have not had access to them in other than group situations and thus have not administered to them the sorts of "tests" Piaget uses to discern in what stage or substage they are operating. Our observations of the Situation II sample children, however, strongly indicate that their written work contains many of the same kinds of verbal works that are contained within their oral behavior and that may be used as clues or indications of the writer's logical habits and abilities.

Our work within the school environment stands as strong evidence that even there the child, if given a chance, will provide the trained observer with a multitude of information about how he looks at the world, the activities he is expected to perform and the notions of others; and thus the child will show you where he is conceptually or logically in the long path toward what we might call "adult" logic. But the observer must look at the child's language as an integral part of his overt behavior within given situations and must present the child with content materials within situations in which he can operate at whatever level his capabilities allow him to.

Further, the performance of the child on short form written IQ tests, such as we had administered to our sample, may be no indication of his conceptual ability with respect to certain materials or within certain situations. Our comparisons of children's

CTMM scores with their conceptual abilities as measured by ranking their verbal products according to the degree of logical complexity they represent turned up enough cases of children having the same IQ score and being at the same grade level but falling at a variety of levels on our ranking scale to make us question whether such an IQ test may be said to measure the sorts of logical ability we were interested in. More work must be done to answer this question.

With regard to their performance in the writing situations which demanded an ability to work out the organization and development problems that are part of storywriting, we conclude that apparently the children who have had two to four years of work under the Nebraska Program are more at home in such situations than our Program B children. That part of the Nebraska Program which involves the children in working from motifs and rhetorical devices given in model-writings may well have been the single greatest influencing factor effecting our writing products.

We have here mentioned some of the broad conclusions which may be drawn from the results of our study. All are framed in tentative statements because with respect to each further information must be gathered in order to provide surer footing.

IMPLICATIONS

We will assume for the moment that the conclusions stated above are correct. How is this relevant to the problems and tasks of educators and curriculum planners?

First, it would be of great value to teachers to gain a thorough working knowledge of the works of Jean Piaget and of others working on cognitive development research. And by a "working" knowledge, we do not mean merely an acquaintance with the words which comprise the reports of those researches. The teacher would best be helped by those works if his familiarity with their findings and procedures were complemented by his own use of them with real children in real situations. Thus, as a classroom teacher, he has at his disposal the materials (that is, the children) with which he can bring the content of cognitive research studies into proper focus, and so give the words in their reports real meaning for him.

Second, in order to do this properly, the teacher must train himself to observe and note what may often have been overlooked by him as commonplace in the behavior of his child-subjects. And in order to get at the children's natural and often automatic language behavior, he must train himself to exercise patience -- the utmost patience -- when children are in the process of getting out their ideas. In this connection it is absolutely essential that the teacher-observer refrain from putting words in the child's mouth.

Third, if the teacher is to "find the match" for a given child's conceptual equipment, he must always be conscious of the child's natural habit of shaping new material in his own way. Thus the teacher must exercise care that he does not interpret the child's expressions as he would, perhaps more properly, interpret the expressions of an adult.

Fourth, one who takes on the task of teaching -- particularly in elementary schools -- should gain sufficient perspective of his own language behavior and of his task in the classroom to bring home to his own classroom planning methods the fact that a room-ful of thirty children probably represents several cognitive levels with respect to each material and concept that arises. Therefore, it is essential that he realize that teaching is <u>not</u> a matter of filling little tanks; and further, that effective teaching is not a case of plugging the leaks while one fills the tank.

Fifth, classroom discussion may be extremely valuable for both the child and the teacher. In unhurried and open discussion sessions the child has the opportunity to wrestle with the language of new language-games -- that is, with the tasks to which we put language in connection with given materials and activities that are new to him. The teacher, in such sessions, has the opportunity of finding out how the child attacks his problem, what he makes of the new areas of language-using, where he has his difficulties, and how he comes to have those difficulties.

Sixth, if the teacher is to understand the child's ways of understanding him, he must guard against constantly excluding open discussion from his daily plans in favor of placing the child in a situation in which his only means of satisfying the teacher is by regurgitating the linguistic expressions fed him by the teacher. This sort of situation, though it is often called "discussion", serves primarily to develop the memory skills of the child and not the child's reasoning abilities. Our work with the children of this study in both writing and speaking situations has uncovered a great number of cases of children reproducing adult expressions -- given them in stories and in other forms -- in their own productions whether or not they happen to be fitting in the context at hand.

Last, but by no means least, the exposure given children in the Nebraska Program to interesting and well-written examples of children's literature evidently provides useful key to motivating the children to write and to appreciate and develop the writing

techniques and skills used by literary craftsmen. The ability of these children to work well with certain aspects of the genres of myth and of fairy tale has shown up well in their compositions.

RECOMMENDATIONS

In contemplating how best the findings of this study and others like it, which have attempted to gain a perspective of the child's language (written and oral) behavior in the light of theories of cognitive development, might be implemented on the American education scene, the following suggestions are offered as paramount at this point.

To begin with more research needs to be done in this and allied areas, especially in connection with children's language behavior in such tasks as factual report writing, note taking, and giving of instructions or directions. These tasks are not usually taken up in connection with classroom lessons in language-arts. They are, nevertheless, important parts of the child's development of skill in language using. It would accomplish a twofold healthy effect on the field, if teachers were encouraged to engage in research in their classrooms. This would not only aid in their own development of the skills and techniques that make for effective teaching but it would also help to supply us with more information about child development. Of course, in order to accomplish this properly, teacher training institutions should see to it that solid courses in the field of cognitive theory and development are among those required of future teachers. At present teachers of elementary schools emerge from their training institutions with some background in physiological and emotional developmental work but with very little knowledge of the studies of cognitive development that have been undertaken by reputable scholars and clinicians, in spite of the fact that there is now available, in English translation in reasonably inexpensive editions, volumes of information from such studies.

Teachers and administrators of our schools should be encouraged to take a fresh look at the ways in which children are rated and graded in their school work.

They should be made to consider the real possibility exists that using "adult" measures to decide whether a child has performed well a given conceptual task is not a profitable way to evaluate the child's ability. It may prove more helpful for the child to be judged instead on what steps he has taken. Teachers, then, must come to view the child's way of looking at the world and of expressing his notions not as a case of "misunderstanding" or getting it "wrong", but rather as another way (different from the "adult" way) of <u>understanding</u> what is before him.

We must wholeheartedly recommend that curriculum planners for the elementary schools incorporate in their plans for every grade level the best of scholarly information on literature and linguistics in such a way as to provide the children with examples of the best in literary language after which to model their own products. Further, our work here with children's oral expressions in relation to their written work leads us to suggest that, since in the child's life his oral expressive skills precede and complement his skills in writing, this may profitably be brought to bear in the classroom by giving the child opportunity to get clear his ideas in oral discussion in order to get clear what he should write.

SUMMARY

This study was undertaken: 1) in order to find out what logical habits and abilities possessed by children of elementary school age (grades 2 through 6) are shown in the ways in which they perform compositional tasks, and 2) in order to evaluate the writing products of children who have spent at least two years under the Nebraska Curriculum Development Center's Project English Program.

Compositions were gathered in five different sorts of situations at each grade level in public elementary schools having the Nebraska Program and in those having a good, traditional type of language-arts program. Instruments devised expressly for our purposes were used to pick out instances of certain types of language behavior. Children's works from the two programs were compared with one another on the basis of information on the similarity of their writers in certain background factors, including scores on standard written tests.

Among the things that our analysis of the data revealed was evidence that children of the Nebraska Program were better able to perform the writing tasks necessary to development and clear organization of stories produced than were children of the traditional program. Children's high ability to perform well within the genre of myth or that of fairy tale did not seem to go along with any impairment of their ability to conceive of the natural world in non-mythical terms.

We found strong evidence that the visible forms of written expressions has an effect upon the linguistic forms of the child's written offerings, at least when he is engaged in putting down questions in a series. Further, numerous cases gathered of the child's adaptation of expressions to his own models for his own use indicate that the forms of our language present a problem for the child in understanding areas of his mother-tongue which are new to him.

With regard to cognitive levels represented within a group of children of the same grade level, our data suggests that at any given grade level within the elementary school there may be children of several different levels of cognitive ability, and that these levels are not shown up by the standard IQ or achievement tests we administered.

A definite check on our interpretation of the data which suggests this great variation in cognitive levels was not made as part of this study, due to the lack of accessibility to fresh groups under the scope of this study. Further data which would help in this interpretation was gathered, however, in connection with a supplimentary study. The report of its findings are given in the Final Report of Project No. 6-8713, supported by the U. S. Office of Education.

For the implications and recommendations arising out of this research we will refer the reader to the preceding sections of this report bearing those headings respectively.

APPENDIX A

The Four Writing Situations

The conclusions and recommendations stated in the body of this report are partly based upon data gathered from four different writing assignments, each structured differently and each evaluated according to instruments built specifically for the situation. In order that the reader may have ready access to as much information about the procedures and results of our work as is possible and feasible, we are presenting in the following pages: a full resume of each writing situation, its rationale and structure, a copy of each instrument, charts showing data gathered from the compositions, as well as sample compositions illustrating certain aspects of children's writing.

All materials were gathered in the public schools during the school day. Unless it was absolutely necessary, the children's recess, physical education, music, art, or library schedules were not upset. In those cases in which children were taken out of their classrooms into another room to write, they were permitted to return to their regular rooms as soon as they felt they had finished their compositions. This was done in the hope that our demands on their skills and attention should create as little disturbance as possible in their school routine. In those cases in which the children were worked with in their regular classrooms, their teachers had left assignments for them to pursue if they finished their compositions before our allotted time was up.

At all times during the composition writing periods both the investigator and an assistant were present to aid the children in spelling, if they asked for it. Many children, particularly fifth and sixth graders, did not ask and, of course, many who did ask made spelling errors anyway. All samples of compositions

reprinted herein are just as they are in the child's original draft and as they were in the copies we used for evaluation. If the reader is repelled by the number of errors in spelling and mechanics present in our sample compositions, we must draw his attention to the fact that these children were busy trying to get something said -- which is no mean feat, indeed. We preferred to have them concentrate on getting down what they had to say rather than on spelling and punctuation.

Briefly, the writing situations differ as follows:

Situation I -- an assignment in which the child may feedback as much or as little as he likes of a taped story;

Situation III[1] -- the child is asked to write a myth to explain some natural phenomenon;

Situation IV -- the child may write any kind of story about anything he wishes;

Situation V -- the child must write some kind of explanation of what he saw happen in an Illinois Inquiry Training Film.

During the first two years of the study, Situation IV compositions were gathered before any of the others -- the children were not required to write in Situation IV during the third year at all. The other writing situations were given in consecutive order over a period not exceeding two months for any group within the sample. Each year almost all compositions were gathered from mid-January through April, the time lapse between writings was usually two weeks, although in some cases it was as little as one week. No child or group of children was asked to write more often than once a week.

Teachers were requested not to give extended writing assignments in their classrooms on the day before or the day after we were to work with the children. And as far as we can tell teachers were very conscientious in cooperating with us on this matter. Occasionally, children were absent at the time we were scheduled to have their group write. Since we did not make effort to pick up absentees at another time, the number of compositions gathered may differ from situation to situation at the same grade level.

[1]Situation II is not a writing situation; see Appendix B.

Situation I

Rationale. A great deal of research has already been done into children's ability to retain and feedback information given them in writing and orally. Many of these are worthwhile projects which may provide teachers with some bases for judging how much one can expect a child to retain out of given reading or listening assignments. Since our concern in this study was not primarily in how much the child can be expected to feedback, we elected not to duplicate those studies but rather to build a situation in which we might get the child to reveal his logical habits and abilities without penalizing unduly those with poor retentive abilities. This is exactly what we seem to have accomplished with this writing assignment. In it the children may feedback if they wish and what they wish; their compositions are read for the changes that are made in the original, as well as for the kinds of things that are retained from the original.

This situation was attempted as a kind of feeler. We had no clear idea beforehand what sort of results would be forthcoming. Even now after the data is in, we must advise our readers that we find much of it significant only on a tentative basis. For there may be important factors influencing our results which we have not been able to isolate. Before accepting or rejecting them, more research of this nature needs to be done. We feel, however, that through this writing situation we shall be able, with the help of such psychologists and educators as the Piaget group, to gain some sort of perspective on the sorts of habits children must work with in mastering some techniques of creative writing. If there is any lesson to be learned from the work of these psychologists by teachers of the language arts, it must be built around a view of the child's position as a shaper of what he assimilates. Hence, one would expect some sort of pattern to emerge in the sorts of things children tend to change or omit in a given passage, in the replacements they make, and in their additions, all within a storytelling framework.

In addition we must report that this means of getting children to write has been very successful. We found the children, every one of them, excited

and eager to perform, as well as interested and attentive to our "trigger story" each time we met them.

For this situation we selected from published children's literature three stories[2] with which our children were not likely to be acquainted through school readers or other curriculum materials. They were chosen on the basis of length (not to exceed ten minutes of tape), interest for children ranging from 7 to 12 years of age, possible levels of interpretation, suitability of vocabulary, clarity of organization, character and plot delineation, and the presence of magical elements. Although the investigator read the stories into the tape recorder microphone, it happens that they each belong to the oral tradition, so their charm is enhanced in a listening situation more so than in a reading one.

Structure. At the beginning of the session, children are told that they will hear a tape recording of a story, to which they are to listen carefully so that they will be able to remember everything they think important in the story. At that time they are told nothing specific about their writing assignment, only that they will be asked to write.

The first year the story of Sati was played. By way of introduction to it the children were told that the tale comes from ancient India and were reminded in what part of the world that country lies. The second year's story was The Love of Kenelinda, and in this case children were told not only that the story was old but also that it comes from Zululand, where the climate is usually hot and dry, foliage is difficult to grow and, thus, livestock is dear. In the third year, as introduction to Adventures of Bull Turns Round, the children were shown on a map of the United States the area frequented by the Blackfeet Indians, and in particular the eastern slopes of the Rocky Mountains near the United States-Canada border. In this connection, mention was made of the nomadic character of these Indians and of the fact that they had no written language. The term, "ston-i-tap-i,"

[2]The three stories are reprinted below, see pp. A-6 thru 9, A-12 thru 16, A-19 thru 23.

was written on the blackboard and its meaning explained to the children.[3]

After hearing the taped story the children were instructed: "Tell the story again on paper, but tell it in any way you wish, making any changes you wish, adding anything or leaving out anything you wish." Forty (40) minutes was the allotted writing time.

The three stories have similar motifs. In each the chief character leaves or is taken from the safety and happiness of his home surroundings out into peril and then in the end is restored to happy and safe future. The perils through which these characters must survive are brought about through no fault or misdeed of their own but are the results either of unhappy circumstance or of evil works of other characters. Magical elements occur in the ways in which the chief characters come to surmount their difficulties.

The compositions gathered in this writing situation were separated into two groups: one, those in which there was no feedback of the taped story; and two, those in which there was some feedback. The first of these we have called "completely creative compositions." In addition, we noted compositions which were "incomplete" in that the child did not use final terminal punctuation and did not grammatically complete his last written sentence.[4] Yet, in these "incomplete" compositions, if the child had written enough to apply the Feedback Instrument, we did apply it -- this occurred with only a handful of compositions.

[3]See note, below, p. A-22.

[4]Thus, our measure of completeness in this situation is <u>not</u> the same as that used in Situation III, where we are concerned with the logical wrapping up of the events of the story.

THE STORY OF SATI

A great king once went out into the forest to hunt wild animals. As he walked along the edge of a river, he came upon a large clump of reeds.

*A sound came to the king's ears; it sounded like a baby crying. Amazed, he waded into the reeds and saw a basket. In it a baby boy and a baby girl kicked and cried.

He carried them to shore with care, then sent them with an escort home to his palace. When he too came home, he adopted the children. They grew strong and handsome. The king and queen loved them as if they were their own.

However, as time went by, they noticed a strange thing. The girl, who was very pretty and in excellent health, had a strong fishy smell. It grew worse and worse. Baths, perfumes, medicines, diets--nothing helped. The strange odor spread throughout the palace, more and more overpowering.

Finally the king saw he would have to do something. His courtiers had left. Now his queen was so ill she too would have to be sent away from the dreadful odor. Rather than lose his queen, the king decided to take the girl back into the forest and leave her there.

The birds came to see the pretty child. They stayed to guard her when they saw how sweetly she smiled and waved at them, her black eyes gleaming with intelligence.

The next day a fisherman found her. He gladly brought her home, for his own little girl had died

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and his house was empty. He called her Sati, and did all he could to bring her up properly.

She grew into a thoughtful, obedient young woman. More beautiful than ever, she still smelled of fish. But it did not bother her or her stepfather. Her life was full of quiet delights. She loved to wander in the forest while her stepfather worked, ferrying passengers across the river nearby. The trees were soft with flowers and brilliant with fruit in their seasons. The ground was carpeted with a million different mosses and grasses, each exquisite in itself. Wood flowers pushed up from the soil made rich by leaves of years gone by. Bees came to the flowers and went humming home to their hives. Sati knew the ways and places of all the forest creatures. Wild things had no fear of her. Birds sang for her as they flashed overhead among the leaves. The very stones she found along the water's edge showed her their infinitely varied beauty. Sati was happy. Her smile was like the sun, dazzling and warm.

As time passed, the fisherman grew older and more easily tired. It was hard for him to shove his heavy boat, laden with passengers, away from the shore. Sati was glad to help him with his work. She ran when he called for her. His passengers always gazed at her amazing beauty with pleasure, but when she was close they frowned in disgust and turned their heads. The odor of fish, sharp and choking, was too much for them.

Sati was grieved. She wanted to help others, but could not approach them without giving offense.

A Brahmin came by. He was a famous man of penance and understood the worth of virtue. He could not stand the odor, and turned aside his head.

A warrior came by. He was a hero, brave as a lion, fearless before danger. He could not stand the odor, and turned aside his head.

A prince passed by. He was nobly bred, strong and generous. He could not stand the odor and turned aside his head.

The birds in the forest saw, and chattered as they sang, wondering why the gentle Sati had to bear such suffering through no fault of her own. The tigers were indignant and roared against such cruelty. The fish thrust their snub heads out of the water and sorrowed over Sati's sorrow.

The rainy season came. The sun was seen no more in the forest at the heart of India. An infinite softness of gray cloud veiled the sky overhead. Mist and fog drifted through the trees and along the river. Regularly, clouds and mist and fog condensed to rain that soaked the land. The rivers swelled and rose, threatening to overflow their banks. Meadows and fields grew green with lush grass.

One morning Sati heard someone calling for a boat from the other side of the river. A noble lord stood there. Sati recognized him, for he was famous. It was Parasara, known for his holy humility and his great power, wisely used.

She quickly pushed off from the bank. As her boat neared the other shore she felt her throat tighten and her heart beat fast. She was watching Parasara, dreading the moment when he too would turn aside in disgust.

Parasara knew the goodness of the girl. He gazed gratefully at her beauty as she came toward him, because her outward loveliness was a fitting garment for the radiant virtue of her heart.

Parasara knew, too, of her long suffering borne in silence. He was moved with deep pity when he saw that she timidly expected to see his admiration turn to disgust when she came near. He was filled with a powerful desire to do justice to this girl who was excellence itself, in spite of a cruel affliction.

So he took her hand as she leaped ashore, and steadied her beside him. Not only did he show no sign of disgust, he smiled gently and said, "Sati of the gentle glance, I want you to marry me this very day. If you will, I shall take you to my palace; I shall give you twenty gowns embroidered in gold and a

Hundred fine skins of softest antelope and golden earrings set with precious pearls."

And as he spoke, a marvelous thing happened. The odor of fish left the air, and from Sati's lovely body rose perfume of the greatest sweetness, rare and delicate.

So the patience of Sati and the love of justice of Parasara were both rewarded at once. They were married that day, and all remarked on the flawless perfection of the bride.

They lived happily together for years and years and years. Their happiness and their virtues were handed down to their son, Viasa. He became even wiser than his father, for he was a poet as well as a sage.

The Feedback Instrument for Sati, as for the other two stories, is arranged so that the sequence in which the child feeds back events may be noted. Characters and events are each grouped so that the appearance in the child's story of characters and events serving a function of embellishment, or of necessary development, may be easily noted. After the rater filled in the feedback instrument for a composition, she mapped the sequence of events used in the child's story, inserting at the appropriate points in it, by way of a color code, notes on changes and additions the child made in his story, and note of any break he made in the sequence. After this was completed the Creative Index blank was filled in in which detailed and complete notes were made of the kinds of changes, omissions, and additions the child had made, each keyed into the Creative Changes Index built for this purpose.[5]

Following is the Feedback Instrument for the story of Sati. The Feedback Instruments for each of the other two stories used in this writing situation will appear immediately after the reprints of their respective stories. Detailed information gathered from the children's compositions appears below, after the Creative Changes Index, as well as samples of the children's works.

[5]See below, p. A-26 ff.

FEEDBACK INSTRUMENT

For The Story of Sati

CHARACTERS -- check off those appearing.[6]

Group A. Sati, Parasara Group B. King, Fisherman
Group C. Queen, Sati's brother, Animals (tigers, birds, fish)
Group D. Brahmin, Prince, Warrior
Group E. Escort, Courtiers, Servants, Passengers, Viasa

EVENTS -- check those appearing and order of appearance.

Group a.
1.+ Finding of S by K.
2.+ Adopting of S by K & Q.
3. S grows - pretty, excellent health.

Group b.
4.+ Fishy smell of S - becomes overpowering.
5. S tries to get rid of smell.
6.+ Q becomes ill - from odor.

Group c.
7. K decides to get rid of S.
8.+ K abandons S - in forest.

Group d.
9.+ S is found by F.
10.+ F adopts S.
11. F names S.

Group e.
12. F grows older and more easily tired.
13.+ S helps F ferry passengers.
14.+ Trials of S - people turning away in disgust.

Group f.
15. Appearance of P.
16.+ P proposes marriage to S.
17.+ S is released from affliction - fishy smell leaves.

Group g.
18.+ S and P marry and are happy.
19.+ V is born to S and P.
20.+ V becomes wise --because he is both poet and sage.

Key: S = Sati, K = King, Q = Queen, F = Fisherman, P = Parasara, V = Viasa.

[6]Since children often changed names or roles of characters in their stories, the rater made a set of criteria to tell whether given characters in the list appeared in children's composition. Those criteria are not reprinted here.

THE LOVE OF KENELINDA*

In a golden valley in the heart of Zululand there lived a man called Thulwane, who had a herd of many cows. Next to his only son, Fana, they were nearest to his heart of all his possessions. Among them there was one more precious than the rest. Her name was Kenelinda.

Her sleek coat shone like gold in the sunshine. Her horns, as long as a man's arm, rose in graceful curves from her pretty head, and two great soft eyes looked out with love upon the world.

No matter how dry the grass, or fierce the winter, she remained fat and glossy, and her milk gushed forth at milking time, so that all around her had their fill. Never had a cow of such size and beauty been known in all the land.

The meat from such a cow, thought all the tribes around, could not fail to be both soft and good. Also to eat the flesh of such a cow would, in turn, make them both strong and good to look upon.

Many had tried to buy Kenelinda by honest means, but Thulwane would not part with her, and daily little Fana took her with the rest of the herd to eat the rich grasses on a nearby hill.

Fana loved Kenelinda with all his little heart. Had she not saved him in his early childhood when the Big Drought struck, and there was no food for man or beast? Always then there had been milk from Kenelinda's never-failing bag, so that the Great Hunger

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Note: On the tape recording the children heard, the reader chanted the songs of Fana.

had passed lightly over him. During the years a deep love and understanding had grown between the cow and boy.

Daily, as he took the herd to graze, they walked together, he caressing her from time to time--or when tired, riding on her strong broad back. He also sang to her and she grew to love his voice, and would acknowledge no other master.

Now one day, when two fierce warriors with cruel eyes and gleaming spears came to Fana on the faraway grazing lands, and demanded his beloved Kenelinda, he knew that resistance would be useless. What could a small defenceless boy do against two such wicked spears?

"Take her," he said after a pause; "you have greater strength than I." And he sat on an anthill to watch them try to take away their prize.

With exclamations of wicked glee, the two men went up to Kenelinda, and hit her on the rump with the flat of their spears, saying, "Hup, hup," to drive her away.

But she would not move.

In anger they turned to Fana and cried, "Your cow is possessed by the Evil One. You who know her make her move, or it will be the worse for you!" Fana replied, "I will make her move." Whereupon he went up to her, and with his arms about her neck sang softly in her ear.

"Kenelinda, Kenelinda, Kenelinda let us go.
See, they want to kill us, oh, Kenelinda!"

With a sorrowful look at her little master, she allowed the thieves to drive her away.

"The voice she obeys must go with her," they laughed, prodding Fana with their sharp spears as they drove him behind the cow.

About three miles beyond they reached a deep and swiftly flowing river, a raging torrent from bank to bank, and the cow stood still. They could not drive her on.

"Drive your cow across," the wicked thieves threatened, "or our spears will taste your blood." Again Fana's young voice rose, clear and strong this time:

"Kenelinda, Kenelinda, Kenelinda, go into the water.
See they want to kill us, oh, Kenelinda!"

As the last word left his lips the cow stepped into the river, and the waters parted. Then they all walked through the river bed to the other side and on into the hills beyond.

In time they reached their captors' home. There they tied Kenelinda to a tree, and together raised their spears to stab her to the heart.

To their bewilderment their freshly sharpered spears refused to pierce the skin, so they turned to Fana in anger, and he sang.

"Kenelinda, Kenelinda, Kenelinda, soften your skin
See they want to kill us, oh, Kenelinda!"

The spears went in, and the cow fell down and died.

Sharp knives were then produced and they prepared to skin her for their feast, but the knives refused to cut the skin, and this time Fana had to sing to the dead cow before the knives would go in. So Kenelinda was skinned, and all the meat cut up for roasting.

When all was ready, the thieves and their kin gathered around to eat, but they could not bite the meat because it stuck on their teeth like steel. In great anger now, they turned on Fana to kill him.

Just in time his clear young voice rose once more,

"Kenelinda, Kenelinda, Kenelinda, soften your flesh
See, they want to eat you, oh, Kenelinda!"

At this the flesh became as tender as newborn lamb, whereupon they all ate to their hearts' content.

When there was nothing left but the skin and well-picked bones, all settled down to sleep.

When she knew the others slept, an old, old woman drew Fana aside and whispered in his ear, "My child, you are young. I once had one like you, and I would not have you die. These men are cannibals, and when hunger strikes again, you will be their meat. Go now with haste while yet they sleep!"

Silently Fana arose, and slipped outside the hut. Carefully he stretched out Kenelinda's lovely skin, with the hair side down. One by one he gathered up her clean-picked bones, and arranged them on the bloody skin, as the full moon shone over the silent night.

When all was done, he folded the skin in place, and lightly tapped it with his herd boy's staff, singing softly as he did so.

"Kenelinda, Kenelinda, Kenelinda, wake up,
We will go to our home, oh, Kenelinda!"

At first the big skin shuddered as he struck it. Then one by one the limbs jerked back to life. As each new move took place, Fana clapped his hands for joy to see his beloved Kenelinda obey his greatest command of all.

Slowly and with care she raised herself, and, with a gentle "moo" as the first breath escaped her lungs, the two slipped through the moonlight into the forest, and were gone.

KENELINDA (continued)

Next morning, as the sun shed his early brilliance over the awakening countryside, Thulwane, standing in the doorway of his hut, searched the distance with sad and troubled eyes.

At last he gave a shout of joy as he saw, picking their way down the hillside, two figures side by side, and heard Fana's clear young voice, breaking onto the early morning stillness, singing as his father had never heard him sing before.

"Kenelinda, Kenelinda, Kenelinda,
See, we are home, oh, Kenelinda!"

FEEDBACK INSTRUMENT

For The Love of Kenelinda

CHARACTERS -- check off those appearing.[7]

Group A. Fana, Kenelinda
Group B. Warriors (2)
Group C. Thulwane
Group D. Old Woman
Group E. Herd of cows, other cannibals

EVENTS -- check those appearing and order of appearance.

Group a.
1.+ W's come and demand K of F.
2. F tells W's to take K.
3.+ W's can't get K to move.
4. W's tell F to make K move.
5.+ F sings to K.
6.+ K moves.

Group b.
7. W's make F come along.
8.+ K stops at river's bank -- will not move.
9. W's tell F to get K to cross river.
10.+ F sings to K.
11.+ K steps in and waters part.

Group c.
12. All walk thru river bed.
13.+ (At W's home) Cannibals try to but can't pierce K's skin.
14. W's turn to F (are angry).
15.+ F sings to K.
16.+ W's kill K.

Group d.
17.+ W's knives can't cut K's skin.
18.+ F sings to (dead) K.

(Continued on next page)

[7]See above n. 6, p. A-11.

Feedback Instrument (Continued)

19.+ W's skin K and cut up meat (for roasting).

Group e. 20.+ W's and other cannibals can't bite meat -- it stuck to their teeth.
21. W's turn on F to kill him.
22.+ F sings to K (meat).
23.+ Meat becomes tender.
24. Cannibals eat.

Group f. 25. Cannibals settle down and sleep.
26. Old woman tells F to leave.
27.+ F stretches out K's skin, arranges bones on it, folds skin over.
28.+ F taps K's remains with his staff.
29.+ F sings to K.
30.+ K comes back to life.

Group g. 31.+ K and F leave cannibal's camp -- walk home.
32. T looks for F and K (from his doorway).
33. T shouts with joy on seeing them coming home.
34. F sings to K (as he comes closer).

Key: W = Warriors, K = Kenelinda, F = Fana, T = Thulwane.

2

ADVENTURES OF BULL TURNS ROUND*

Once the camp moved, but one lodge stayed. It belonged to Wolf Tail; and Wolf Tail's younger brother, Bull Turns Round, lived with him. Now their father loved both his sons, but he loved the younger one most, and when he went away with the big camp, he said to Wolf Tail: "Take care of your young brother; he is not yet a strong person. Watch him that nothing befall him."

One day Wolf Tail was out hunting, and Bull Turns Round sat in front of the lodge making arrows, and a beautiful strange bird lit on the ground before him. Then cried one of Wolf Tail's wives, "Oh, brother, shoot that little bird." "Don't bother me, sister," he replied, "I am making arrows." Again the woman said, "Oh, brother, shoot that bird for me." Then Bull Turns Round fitted an arrow to his bow and shot the bird, and the woman went and picked it up and stroked her face with it, and her face swelled up so big that her eyes and nose could not be seen. But when Bull Turns Round had shot the bird, he went off hunting and did not know what had happened to the woman's face.

Now when Wolf Tail came home and saw his wife's face, he said, "What is the matter?" and his wife replied: "Your brother has pounded me so that I cannot see. Go now and kill him." But Wolf Tail said, "No, I love my brother; I cannot kill him." Then his wife cried and said: "I know you do not love me; you are glad your brother has beaten me. If you loved me, you would go and kill him."

Then Wolf Tail went out and looked for his brother, and when he had found him, he said: "Come, let us get some feathers. I know where there is an

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eagle's nest;" and he took him to a high cliff, which overhung the river, and on the edge of this cliff was a dead tree, in the top of which the eagles had built their nest. Then said Wolf Tail, "Climb up, brother, and kill the eagles;" and when Bull Turns Round had climbed nearly to the top, Wolf Tail called out, "I am going to push the tree over the cliff, and you will be killed."

"Oh, brother! oh, brother! pity me; do not kill me," said Bull Turns Round.

"Why did you beat my wife's face so?" said Wolf Tail.

"I didn't," cried the boy; "I don't know what you are talking about."

"You lie," said Wolf Tail, and he pushed the tree over the cliff. He looked over and saw his brother fall into the water, and he did not come up again. Then Wolf Tail went home and took down his lodge, and went to the main camp. When his father saw him coming with only his wives, he said to him, "Where is your young brother?" And Wolf Tail replied: "He went hunting and did not come back. We waited four days for him. I think the bears must have killed him."

II

Now when Bull Turns Round fell into the river, he was stunned, and the water carried him a long way down the stream and finally lodged him on a sand shoal. Near this shoal was a lodge of Under Water People, an old man, his wife, and two daughters. This old man was very rich: he had great flocks of geese, swans, ducks, and other water fowl, and a big herd of buffalo which were tame. These buffalo always fed near by, and the old man called them every evening to come and drink. But he and his family ate none of these. Their only food was the bloodsucker.

Now the old man's daughters were swimming about in the evening, and they found Bull Turns Round lying on the shoal, dead, and they went home and told their

father, and begged him to bring the person to life, and give him to them for a husband. "Go, my daughters," he said, "and make four sweat lodges, and I will bring the person." He went and got Bull Turns Round, and when the sweat lodges were finished, the old man took him into one of them, and when he had sprinkled water on the hot rocks, he scraped a great quantity of sand off Bull Turns Round. Then he took him into another lodge and did the same thing, and when he had taken him into the fourth sweat lodge and scraped all the sand off him, Bull Turns Round came to life, and the old man led him out and gave him to his daughters. And the old man gave his son-in-law a new lodge and bows and arrows, and many good presents.

Then the women cooked some bloodsuckers, and gave them to their husband, but when he smelled of them he could not eat, and he threw them in the fire. Then his wives asked him what he would eat. "Buffalo," he replied, "is the only meat for men."

"Oh, father!" cried the girls, running to the old man's lodge, "our husband will not eat our food. He says buffalo is the only meat for men."

"Go then, my daughters," said the old man, "and tell your husband to kill a buffalo, but do not take nor break any bones, for I will make it alive again." Then the old man called the buffalo to come and drink, and Bull Turns Round shot a fat cow and took all the meat. And when he had roasted the tongue, he gave each of his wives a small piece of it, and they liked it, and they roasted and ate plenty of the meat.

III

One day Bull Turns Round went to the old man and said, "I mourn for my father."

"How did you come to be dead on the sand shoal?" asked the old man. Then Bull Turns Round told what his brother had done to him.

"Take this piece of sinew," said the old man. "Go and see your father. When you throw this sinew on the fire, your brother and his wife will roll, and twist up and die." Then the old man gave him a herd of buffalo, and many dogs to pack the lodge, and other things; and Bull Turns Round took his wives, and went to find his father.

One day, just after sunset, they came in sight of the big camp, and they went and pitched the lodge on the top of a very high butte; and the buffalo fed close by, and there were so many of them that they covered the whole hill.

Now the people were starving, and some had died, for they had no buffalo. In the morning, early, a man arose whose son had starved to death, and when he went out and saw this lodge on the top of the hill, and all the buffalo feeding by it, he cried out in a loud voice; and the people all came out and looked at it, and they were afraid, for they thought it was Ston-i-tap-i*. Then said the man whose son had died: "I am no longer glad to live. I will go up to this lodge, and find out what this is." Now when he said this, all the men grasped their bows and arrows and followed him, and when they went up the hill, the buffalo just moved out of their path and kept on feeding; and just as they came to the lodge, Bull Turns Round came out, and all the people said, "Here is the one whom we thought the bears had killed." Wolf Tail ran up, and said, "Oh, brother, you are not dead. You went to get feathers, but we thought you had been killed." Then Bull Turns Round called his brother into the lodge, and he threw the sinew on the fire; and Wolf Tail, and his wife, who was standing outside, twisted up and died.

Then Bull Turns Round told his father all that had happened to him; and when he learned that the people

*There is no word in English which corresponds to this. It is used when speaking of things wonderful or supernatural.

were starving, he filled his mouth with feathers and blew them out, and the buffalo ran off in every direction, and he said to the people, "There is food, go chase it." Then the people were very glad, and they came each one and gave him a present. They gave him war shirts, bows and arrows, shields, spears, white robes, and many curious things.

FEEDBACK INSTRUMENT

For Adventures of Bull Turns Round

CHARACTERS -- check off those appearing.[8]

Group A. Bull Turns Round, Wolf Tail
Group B. Wolf Tail's wife #1, BTR's father-in-law
Group C. BTR's wives #1 and #2, BTR's father, the bird
Group D. Wolf Tail's wife #2, man willing to risk going to BTR's lodge
Group E. Other members of BTR's tribe, animals (buffalo, swans, ducks, etc.)

EVENTS -- check those appearing and order of appearance.

Group a.
1.+ F charges W to care for B in his absence.
2. W-1 begs B to shoot bird.
3. B shoots bird.
4. W-1 fondles dead bird.
5.+ W-1 face swells.
6.+ W-1 tells W that B beat her.
7.+ W-1 tells W to kill B.

Group b.
8. W finds B.
9. B climbs tree.
10.+ W pushes B and tree over cliff into water.
11.+ W & W-1 and 2 go to F.
12.+ W lies to F about B.

Group c.
13. B, stunned, is carried downstream to sand-shoal.
14.+ B is found dead by B-1 and 2.
15. B-1 and 2 beg L to bring B to life.
16. L gives B-1 and 2 instructions.
17. B-1 and 2 make preparations.

(Continued on next page)

[8]See above, n. 6, p. A-11.

Feedback Instrument (Continued)

18.+ L brings B and goes thru procedure to bring B to life.
19.+ B comes to life.

Group d.
20. B is given to B-1 and 2 by L.
21. B receives gifts from L.
22. B refuses food offered him.
23.+ B requests buffalo meat.
24. L instructs B-1 and 2 on preparation of buffalo.
25.+ They eat buffalo meat.
26.+ L brings buffalo back to life.

Group e.
27. B expresses wish to return to F.
28. B tells L what had happened to him.
29.+ L gives B sinew and instructions.
30. B and B-1 and 2 go to find F.
31.+ B sets up lodge near big camp.

Group f.
32. M sees lodge and buffalo, summons other tribe members.
33. M decides to go to B's lodge.
34.+ Men of tribe arm and follow M.
35. B is identified and greeted.
36.+ B calls W into lodge and uses sinew.
37.+ W and W-1 die.

Group g.
38.+ B tells F what happened to him.
39. B runs off buffalo.
40.+ B tells people to chase buffalo for food.
41. B receives presents from people.

Key: F = Bull Turns Round's Father, W - Wolf Tail, B - Bull Turns Round, W-1 and W-2 = Wives of W., B-1 and B-2 = Wives of B., L = B's Father-in-law, M = Unnamed Man.

SITUATION I — CREATIVE CHANGES INDEX

I. SEQUENCE (cf. Events Feedback list)

a. Sequence of events changed.
b. Point at which added material is given.
c. Point at which sequence-progression is broken.

II. OMISSION OF EVENTS AND CHARACTERS (cf. Events and Character Feedback lists)

a. Event-group(s) omitted completely.
b. Event-group(s) omitted partially - which parts?
c. Character-group(s) omitted completely.
d. Character-group(s) omitted partially - which parts?

III. CHARACTER CHANGE

a. Type of characters changed; e.g., sex; human to animal.

IV. NAMES

a. Names of characters changed.
b. Names of characters provided.
c. Named characters become nameless.

V. LINGUISTIC EXPRESSIONS

a. Modern expression (incl. slang) used in place of original expressions.
b. Emotive expressions (not slang) used in place of neutral expressions.
c. Added progression-comparatives;
e.g., 1. the closer---the noisier---;
2. the older---the more tired---.
d. Analogies added or changed;
e.g., similes, metaphors, etc.

(Continued on next page)

Situation I Instrument (Continued)

VI. LOGIC

a. Types of "logical indicators" used?
   1. reason
   2. conclusion
   3. disjunctive
   4. conditional
b. Number of times "logical-indicators" are added.
c. Number of times "logical-indicators" are changed.
d. Logical inconsistencies appearing.
e. Reasons or explanation supplied when none are given in original.
f. Reasons or explanation given in original but changed or added to.
f. Reasons or explanations given in original but omitted.

VII. TIME AND PLACE

a. Place or setting of incident changed.
b. Time references changed.
c. Time references added.

VIII. PROBLEM (For The Story of Sati only)

a. Type of affliction changed.
b. 1. Problems resulting from affliction changed.
b. 2. Problems resulting from affliction added to.
c. 1. Manner of cure from affliction changed.
c. 2. Manner of cure from affliction added to.
d. 1. Magical character of affliction changed.
d. 2. Magical character of affliction omitted.

PROBLEM (For The Love of Kenelinda only)

a. Type of difficulty changed.
b. 1. Problems arising from difficulty changed.
b. 2. Problems arising from difficulty added to.
c. 1. Manner of solution of difficulty changed.
c. 2. Manner of solution of difficulty added to.
d. 1. Magical character of solution changed.
d. 2. Magical character of solution omitted.

(Continued on next page)

PROBLEM (For Adventures of Bull Turns Round only)

a. Type of misdeed changed.
b. 1. Events following the misdeed (up to but not including revenge) changed.
b. 2. Events following the misdeed added to.
c. 1. Manner of getting revenge changed.
c. 2. Manner of getting revenge added to.
d. 1. Magical character involved in the revenge-sequence changed.
d. 2. Magical character involved in the revenge-sequence omitted.

IX. ENDING

a. Changed.
b. Added to.

X. ADDITIONS OF:

a. Events
b. Characters

XI. CHANGING OF EVENTS

All the charts presenting data from the writing situations have compositions by children in the sample broken down into two general groups: Program A are those under the Nebraska Program, while Program B is the designation given to those under a good, conventional language-arts program. Only children in Program A were followed for three years. Since arrangements made with the school system under the original design of this study were such that we were obligated to withdraw from data collecting in Program B schools after the first year of the study was completed, no compositions were obtained from Program B children in the writing situations using as "trigger stories" The Love of Kenelinda or Adventures of Bull Turns Round.

In spite of the similarities between these stories and the Story of Sati, from which all sample children wrote, they are different enough to allow no valid comparisons to be drawn between results from second and third year stories written by Program A children and Program B compositions from the same grade level. Nevertheless, some of the second and third year results, particularly in feedback areas, do suggest that logical patterns are present which may bear some similarity to those of the first year and, as such, may provide future researchers with something rather specific to look for. Since our Program A sample was followed through the three years, we will attempt comparisons of third with second and with first year results on a longitudinal basis from children in that Program where the sample remains of comparable size.

The chart on the next page (see Table 1) shows the total number of compositions gathered in Situation I and the portion of these which fell into our "completely creative" and "incomplete" categories. Neither the proportion of compositions that were incomplete nor the grade level at which they appear is surprising. Second graders, regardless of the Program under which they received their language-arts work, exhibited difficulty in getting much down on paper. We attribute this largely to the fact that children at this grade level are just beginning to develop the degree of small muscle coordination necessary to writing with any speed. Until this coordination is considerably developed, the child cannot be expected to perform sufficiently well in a writing situation to complete what he has to say.

TABLE 1

SITUATION I COMPOSITIONS

GRADE LEVEL	2		3		4		5		6	
	#	%	#	%	#	%	#	%	#	%
Program B Total	11		11		12		11		12	
Creative	2	18.2	1	9.0	--	--	--	--	2	16.7
Incomplete	1	9.0	--	--	--	--	--	--	--	--
Program A Total First Year	30		27		16					
Creative	7	23.3	2	7.4	4	25.0				
Incomplete	4	13.3	--	--	--	--				
Program A Total Second Year			23		23		14			
Creative			7	30.4	4	17.4	1	7.1		
Incomplete			--	--	--	--	--	--		
Program A Total Third Year					8		11		13	
Creative					3	37.5	3	27.3	4	30.8
Incomplete					--	--	--	--	--	--

Thus, that he can tell a story -- i.e., that he has something to say -- is best shown at this grade level in oral assignments rather than in writing.

Among the "completely creative compositions" from Program A, there are enough repeaters in the second and third years to suggest that some children, given this sort of assignment, tend to opt not to feedback. A check of the background information we have on these children reveals no striking similarities between them. So, if one were to try to account for it, we suggest he look elsewhere than to parental occupation or educational level or to the child's CTMM score or California Reading and Language Achievement Tests scores. Six of the ten children, who wrote "completely creative compositions" during the third year, had written compositions falling into that category in the previous year; and two of those six had done so for the third consecutive year.

Tables 2, 3, and 4 show the amount of feedback appearing in Situation I compositions where our "trigger" was the Story of Sati. Table 5 gives similar information for the Kenelinda story and Table 6 for Bull Turns Round. This information was tallied from the rater's notes on Section II of the Creative Changes Index, with the following exception. The instrument required that <u>omissions</u> be noted, whereas the charts show just the opposite -- what is <u>retained</u> by the child.

Since we were interested in making the instrument sensitive to the use of events, as well as characters, of varying degrees of importance for the development of the story, it was necessary to designate certain events in each group as required in order to count the group as "completely used". If all the required events[9] in a given event group appeared in the child's composition, the group was called "completely used," whether other events in the group appeared or not. And if only some of the required events in a group appeared, the group was called "partially used".

[9]These required events are designated by the subscript "+" appearing after the numbers of the events on the Events section of each Feedback Instrument. See p. A-11, for Sati; pp. A-17-18, for Kenelinda; and pp. A-24-25, for Bull Turns Round.

By grouping the characters, not in order of their appearance in the story, but in order of their importance for the development of the story, the Character section of the Feedback Instrument was made similarly sensitive. In rating the child's feedback of character groups, a group was considered "completely used" if a certain number of characters in the group appeared in the child's composition. When only one or two characters comprise a group, each character in the group must appear; when four or five are included in one group, at least three must appear in the child's composition in order to count the group as "completely used".

Material gathered from Sections III, XI, X, IX, Ia, and Ic is shown in that order in Tables 7 through 10, while in Tables 11 through 14 are shown data from Sections III and V[10] of the Creative Changes Index. Sections VId through g, and VII provided material for Tables 15 through 18; and Section VIII for Tables 19 through 22.

Charts for Program A compositions that bear a "Three Year Sequence Number" are drawn up so as to show data gathered from the same group of children as they progressed from one grade level to the next. For example, a chart for Three Year Sequence No. 1 shows: in the first set of figures data from children in Program A in the second grade; in the second set of figures data from the same children while in the third grade; and in the third set from the same children, when they were in the fourth grade. In all charts for Situation I that are arranged for a Three Year Sequence, the first year columns contain data from the Sati products, the second year columns from Kenelinda, and the third year columns from Bull Turns Round.

On each of these charts, the total number of children in each sequence is seen to decrease from year to year. This is due largely to the fact that families whose children were in our sample moved out of the school district. In some cases, though, members were dropped from the sample because they had been returned to the same grade level for an extra year.

[10]See below, p. A-56 ff., for samples of the kinds of linguistic expressions occurring in the children's compositions.

TABLE 2

SITUATION I COMPOSITIONS — FEEDBACK INFORMATION — PROGRAM B

EVENTS GROUPS

GR: LEVEL	2		3		4		5		6		
	#	%	#	%	#	%	#	%	#	%	
a	6	54.5	10	90.9	11	91.7	10	90.9	9	75.0	a
b	0	--	3	27.3	3	25.0	3	27.3	3	25.0	b
c	0	--	9	80.9	11	91.7	10	90.9	9	75.0	c
d	0	--	5	45.5	5	41.7	10	90.9	5	41.7	d
e	0	--	0	--	0	--	5	45.5	5	41.7	e
f	0	--	2	18.2	4	33.3	7	63.6	5	41.7	f
g	0	--	0	--	4	33.3	3	27.3	4	33.3	g
Comp'ly used											
a	2	18.2	0	--	1	8.3	1	9.0	0	--	a
b	0	--	6	54.5	7	58.3	7	63.6	6	50.0	b
c	0	--	0	--	0	--	0	--	0	--	c
d	0	--	2	18.2	0	--	0	--	3	25.0	d
e	0	--	4	36.4	3	25.0	4	36.4	1	8.3	e
f	0	--	2	18.2	3	25.0	3	27.3	1	8.3	f
g	0	--	4	36.4	3	25.0	6	54.5	6	50.0	g
Partly used											
TOTALS IN EACH GRADE LEVEL	11		11		12		11		12		

TABLE 3

SITUATION I COMPOSITIONS FEEDBACK INFORMATION PROGRAM B

GRADE LEVEL	2 #	2 %	3 #	3 %	4 #	4 %	5 #	5 %	6 #	6 %		CHARACTER GROUPS
A	0	--	5	45.5	7	58.3	10	90.9	10	83.3	A	Comp'ly used
B	0	--	7	63.6	6	50.0	10	90.9	7	58.3	B	
C	0	--	1	9.0	0	--	4	36.4	1	8.3	C	
D	0	--	0	--	0	--	1	9.0	0	--	D	
E	0	--	0	--	0	--	1	9.0	0	--	E	
A	8	72.7	5	45.5	5	41.7	1	9.0	0	--	A	Part'ly used
B	8	72.7	3	27.3	6	50.0	1	9.0	3	25.0	B	
C	8	72.7	9	80.9	11	91.7	7	63.6	6	50.0	C	
D	0	--	0	--	0	--	1	9.0	1	8.3	D	
E	0	--	3	27.3	3	25.0	7	63.6	5	41.7	E	
TOTALS IN EACH GRADE LEVEL	11		11		12		11		12			

TABLE 4

SITUATION I COMPOSITIONS — PROGRAM A

FEEDBACK INFORMATION — FIRST YEAR

Gr. Level		2 #	2 %	3 #	3 %	4 #	4 %	
EVENTS GROUPS	a	14	46.7	23	85.2	8	50.0	a
	b	1	3.3	9	33.3	2	12.5	b
	c	13	43.3	21	77.8	9	56.3	c
	d	4	13.3	16	59.3	2	12.5	d
	e	1	3.3	9	33.3	4	25.0	e
	f	3	10.0	15	55.6	6	37.5	f
	g	1	3.3	3	11.1	1	6.3	g
	a	4	13.3	2	7.4	4	25.0	a
	b	14	46.7	16	59.3	10	62.5	b
	c	0	--	0	--	2	12.5	c
	d	4	13.3	4	14.8	6	37.5	d
	e	1	3.3	10	37.0	4	25.0	e
	f	4	13.3	7	25.9	4	25.0	f
	g	6	20.0	19	70.4	9	56.3	g
CHARACTER GROUPS	A	5	16.7	23	85.2	10	62.5	A
	B	8	26.7	21	77.8	7	43.8	B
	C	1	3.3	4	14.8	2	12.5	C
	D	0	--	1	3.7	1	6.3	D
	E	0	--	2	7.4	0	--	E
	A	14	46.7	2	7.4	2	12.5	A
	B	10	6.7	4	14.8	3	18.8	B
	C	10	6.7	19	70.4	8	50.0	C
	D	0	--	4	14.8	2	12.5	D
	E	1	3.3	8	29.6	3	18.8	E
TOTALS IN EACH GRADE LEVEL		30		27		16		

TABLE 5

SITUATION I COMPOSITIONS — PROGRAM A

FEEDBACK INFORMATION — SECOND YEAR

Gr. Level	3 #	3 %	4 #	4 %	5 #	5 %	EVENTS GROUPS
a	5	21.7	8	34.8	5	35.7	a
b	4	17.4	4	17.4	4	28.6	b
c	3	13.0	6	26.1	3	21.4	c
d	2	8.7	3	13.0	1	7.1	d
e	2	8.7	7	30.4	4	28.6	e
f	0	--	0	--	1	7.1	f
g	7	30.4	15	65.2	7	50.0	g
a	10	43.5	10	43.5	6	42.9	a
b	2	8.7	3	13.0	2	14.3	b
c	6	26.1	7	30.4	3	21.4	c
d	3	13.0	5	21.7	4	28.6	d
e	0	--	1	4.3	1	7.1	e
f	8	34.8	12	52.2	7	50.0	f
g	0	--	0	--	0	--	g
A	17	73.9	19	82.6	13	92.9	AA
B	15	65.2	18	78.3	13	92.9	BB
C	3	13.0	10	43.5	7	50.0	CC
D	3	13.0	8	34.8	5	35.7	DD
E	0	--	3	13.0	1	7.1	EE
A	0	--	0	--	0	--	AA
B	1	4.3	0	--	0	--	BB
C	0	--	0	--	0	--	CC
D	0	--	0	--	0	--	DD
E	6	26.1	6	26.1	6	42.9	EE
TOTALS IN EACH GRADE LEVEL	23		23		14		

CHARACTER GROUPS

TABLE 6

SITUATION I COMPOSITIONS — PROGRAM A

FEEDBACK INFORMATION — THIRD YEAR

Gr. Level	4		5		6		
	#	%	#	%	#	%	
a	1	12.5	0	--	2	15.4	a
b	1	12.5	1	9.0	1	7.7	b
c	0	--	1	9.0	0	--	c
d	0	--	0	--	0	--	d
e	0	--	0	--	2	15.4	e
f	0	--	0	--	2	15.4	f
g	0	--	0	--	0	--	g
a	2	25.0	8	72.7	6	46.2	a
b	1	12.5	4	36.4	5	38.5	b
c	0	--	3	27.3	2	15.4	c
d	0	--	0	--	0	--	d
e	1	12.5	2	18.2	1	7.7	e
f	1	12.5	4	36.4	2	15.4	f
g	0	--	1	9.0	0	--	g

EVENTS GROUPS

A	4	50.0	8	72.7	8	61.5	A
B	0	--	4	36.4	4	30.8	B
C	0	--	2	18.2	1	7.7	C
D	0	--	0	--	0	--	D
E	0	--	2	18.2	2	15.4	E
A	0	--	0	--	0	--	A
B	4	50.0	4	36.4	4	30.8	B
C	4	50.0	6	54.5	5	38.5	C
D	0	--	0	--	0	--	D
E	1	12.5	3	27.3	5	38.5	E

CHARACTER GROUPS

TOTALS IN EACH GRADE LEVEL	8	11	13

TABLE 7

SITUATION I COMPOSITIONS — PROGRAM B

GRADE LEVEL	2		3		4		5		6	
	#	%	#	%	#	%	#	%	#	%
Changed Characters	0	--	1	9.0	0	--	0	--	0	--
Changed Events	5	45.5	10	90.0	7	58.3	9	80.9	7	58.3
Added Characters	0	--	2	18.2	5	41.7	4	36.4	2	16.7
Added Events	5	45.5	9	80.9	12	100.0	10	90.9	9	75.0
Changed End	7	63.6	7	63.6	4	33.3	7	63.6	3	25.0
Added to End	2	18.2	3	27.3	4	33.3	2	18.2	3	25.0
Changed Sequ.	0	--	3	27.3	6	50.0	0	--	2	16.7
Broken Sequence	0	--	1	9.0	4	33.3	1	9.0	0	--
TOTALS IN EACH GRADE LEVEL	11		11		12		11		12	

TABLE 8

SITUATION I

Program A Compositions — Three Year Sequence No. 1

GRADE LEVEL	2 (1st Yr.) #	2 (1st Yr.) %	3 (2nd Yr.) #	3 (2nd Yr.) %	4 (3rd Yr.) #	4 (3rd Yr.) %
Changed Characters	4	13.3	7	30.4	3	37.5
Changed Events	14	46.7	15	65.2	3	37.5
Added Characters	8	26.7	1	4.3	0	--
Added Events	13	43.3	13	56.5	3	37.5
Changed Ending	15	50.0	12	52.2	2	25.0
Added to Ending	4	13.3	3	13.0	2	25.0
Changed Sequence	8	26.7	0	--	0	--
Broken Sequence	3	10.0	2	8.7	0	--
TOTALS IN EACH GRADE LEVEL	30		23		8	

TABLE 9

SITUATION I

Program A Compositions — Three Year Sequence No. 2

GRADE LEVEL	3 (1st Yr.) #	3 (1st Yr.) %	4 (2nd Yr.) #	4 (2nd Yr.) %	5 (3rd Yr.) #	5 (3rd Yr.) %
Changed Characters	4	14.8	3	13.0	2	18.2
Changed Events	17	62.9	19	82.6	7	63.6
Added Characters	7	25.9	2	8.7	0	--
Added Events	19	70.4	17	73.9	5	45.5
Changed Ending	20	74.0	14	60.9	5	45.5
Added to Ending	4	14.8	3	13.0	2	18.2
Changed Sequence	9	33.3	0	--	1	9.0
Broken Sequence	2	7.4	1	4.3	0	--
TOTALS IN EACH GRADE LEVEL	27		23		11	

TABLE 10

SITUATION I

Program A Compositions — Three Year Sequence No. 3

GRADE LEVEL	4 (1st Yr.) #	4 (1st Yr.) %	5 (2nd Yr.) #	5 (2nd Yr.) %	6 (3rd Yr.) #	6 (3rd Yr.) %
Changed Characters	2	12.5	6	42.9	2	15.4
Changed Events	8	50.0	12	85.7	7	53.8
Added Characters	2	12.5	0	--	2	15.4
Added Events	9	56.3	12	85.7	6	46.2
Changed Ending	5	31.3	8	57.1	4	30.8
Added to Ending	1	6.3	5	35.7	5	38.5
Changed Sequence	5	31.3	0	--	0	--
Broken Sequence	1	6.3	0	--	0	--
TOTALS IN EACH GRADE LEVEL	16		14		13	

TABLE 11

SITUATION I COMPOSITIONS — PROGRAM B

GRADE LEVEL	2		3		4		5		6	
	#	%	#	%	#	%	#	%	#	%
Changed Names	0	--	2	18.2	4	33.3	5	45.5	2	16.7
Supplied Names	1	9.0	1	9.0	1	8.3	0	--	1	8.3
Omitted Names	5	45.5	7	63.6	10	83.3	8	72.7	6	50.0
Linguistic Exp.* Modern	0	--	4	36.4	3	25.0	0	--	5	41.7
Emotive	0	--	-	--	0	--	0	--	1	8.3
Comparatives	1	9.0	0	--	0	--	0	--	1	8.3
Analogies	0	--	1	9.0	1	8.3	4	36.4	4	33.3
TOTALS IN EACH GRADE LEVEL	11		11		12		11		12	

*See Ins ument Sections Va, b, c and d, p. A-26.

TABLE 12

SITUATION I

Program A Compositions — Three Year Sequence No. 1

GRADE LEVEL	2 (1st Yr.) #	2 (1st Yr.) %	3 (2nd Yr.) #	3 (2nd Yr.) %	4 (3rd Yr.) #	4 (3rd Yr.) %
Changed Names	8	26.7	6	26.1	2	25.0
Supplied Names	2	6.7	2	8.7	1	12.5
Omitted Names	18	60.0	3	13.0	0	--
Linguistic Expressions						
Modern	4	13.3	3	13.0	0	--
Emotive	0	--	2	8.7	0	--
Comparatives	0	--	0	--	0	--
Analogies	2	6.7	0	--	0	--
TOTALS IN EACH GRADE LEVEL	30		23		8	

TABLE 13

SITUATION I

Program A Compositions — Three Year Sequence No. 2

GRADE LEVEL	3 (1st Yr.) #	3 (1st Yr.) %	4 (2nd Yr.) #	4 (2nd Yr.) %	5 (3rd Yr.) #	5 (3rd Yr.) %
Changed Names	6	22.2	1	4.3	2	18.2
Supplied Names	2	7.4	1	4.3	0	--
Omitted Names	22	81.5	7	30.4	4	36.4
Linguistic Expressions Modern	5	18.5	4	17.4	1	9.0
Emotive	5	18.5	7	30.4	0	--
Comparatives	2	7.4	2	8.7	0	--
Analogies	2	7.4	1	4.3	0	--
TOTALS IN EACH GRADE LEVEL	27		23		11	

TABLE 14

SITUATION I

Program A Compositions — Three Year Sequence No. 3

GRADE LEVEL	4 (1st Yr.) #	4 (1st Yr.) %	5 (2nd Yr.) #	5 (2nd Yr.) %	6 (3rd Yr.) #	6 (3rd Yr.) %
Changed Names	3	18.8	7	50.0	2	15.4
Supplied Names	3	18.8	0	--	2	15.4
Omitted Names	9	56.3	4	28.6	0	--
Linguistic Expressions						
Modern	5	31.3	5	35.7	4	30.8
Emotive	2	12.5	2	14.3	0	--
Comparatives	0	--	2	14.3	0	--
Analogies	1	6.3	1	7.1	1	7.7
TOTALS IN EACH GRADE LEVEL	16		14		13	

TABLE 15

SITUATION I COMPOSITIONS — PROGRAM B

GRADE LEVEL	2		3		4		5		6	
	#	%	#	%	#	%	#	%	#	%
Logic*										
d	0	--	0	--	0	--	2	18.2	0	--
e	0	--	1	9.0	1	8.3	4	36.4	5	41.7
f	0	--	4	36.4	5	41.7	8	72.7	3	25.0
g	1	9.0	7	63.6	4	33.3	5	45.5	6	50.0
Changed Place or Setting	5	45.5	3	27.3	0	--	1	9.0	1	8.3
Time Ref'ces. Changed	0	--	0	--	0	--	0	--	0	--
Added	2	18.2	7	63.6	7	58.3	3	27.3	2	16.7
TOTALS IN EACH GRADE LEVEL	11		11		12		11		12	

*See Instrument Sections VId, e, f, g, p. A-27.

TABLE 16

SITUATION I

Program A Compositions — Three Year Sequence No. 1

GRADE LEVEL		2 (1st Yr.) #	2 (1st Yr.) %	3 (2nd Yr.) #	3 (2nd Yr.) %	4 (3rd Yr.) #	4 (3rd Yr.) %
Logic*	d	1	3.3	2	8.7	0	--
	e	4	13.3	2	8.7	3	37.5
	f	12	40.0	1	4.3	2	25.0
	g	3	10.0	13	56.5	0	--
Changed Place or Setting	a	9	30.0	9	39.1	0	--
Time References Changed	b	2	6.7	0	--	1	12.5
Added	c	11	36.7	2	8.7	2	25.0
TOTALS IN EACH GRADE LEVEL		30		23		8	

*See Instrument Sections VId, e, f, g, p. A-27.

TABLE 17

SITUATION I

Program A Compositions — Three Year Sequence No. 2

GRADE LEVEL		3 (1st Yr.) #	3 (1st Yr.) %	4 (2nd Yr.) #	4 (2nd Yr.) %	5 (3rd Yr.) #	5 (3rd Yr.) %
Logic*	d	2	7.4	0	--	0	--
	e	7	25.9	0	--	1	9.0
	f	8	29.6	2	8.7	1	9.0
	g	17	62.9	14	60.9	0	--
Changed Place or Setting	a	13	48.1	8	34.8	0	--
Time References Changed	b	9	33.3	1	4.3	0	--
Added	c	18	66.7	3	13.0	3	27.3
TOTALS IN EACH GRADE LEVEL		27		23		11	

*See Instrument Sections VId, e, f, g, p. A-27.

TABLE 18

SITUATION I

Program A Compositions — Three Year Sequence No. 3

GRADE LEVEL		4 (1st Yr.) #	4 (1st Yr.) %	5 (2nd Yr.) #	5 (2nd Yr.) %	6 (3rd Yr.) #	6 (3rd Yr.) %
Logic*	d	1	6.3	0	--	0	--
	e	9	56.3	2	14.3	2	15.4
	f	7	43.8	2	14.3	1	7.7
	g	2	12.5	9	64.3	0	--
Changed Place or Setting	a	8	50.0	3	21.4	0	--
Time References Changed	b	6	37.5	1	7.1	0	--
Added	c	5	31.3	4	28.6	3	23.1
TOTALS IN EACH GRADE LEVEL		16		14		13	

*See Instrument Sections VId, e, f, g, p. A-27.

TABLE 19

SITUATION I COMPOSITIONS — PROGRAM B

GRADE LEVEL	2		3		4		5		6	
	#	%	#	%	#	%	#	%	#	%
Problem* a	7	63.6	1	9.0	3	25.0	0	--	0	--
b1	0	--	1	9.0	1	8.3	1	9.0	1	8.3
b2	0	--	0	--	0	--	0	--	0	--
c1	0	--	10	90.9	10	83.3	5	45.5	6	50.0
c2	0	--	0	--	0	--	0	--	1	8.3
d1	0	--	3	27.3	1	8.3	2	18.2	2	16.7
d2	0	--	0	--	0	--	0	--	1	8.3
TOTALS IN EACH GRADE LEVEL	11		11		12		11		12	

*See Instrument, Section VIII, pp. A-27 -28.

TABLE 20

SITUATION I

Program A Compositions — Three Year Sequence No. 1

GRADE LEVEL	2 (1st Yr.) #	2 (1st Yr.) %	3 (2nd Yr.) #	3 (2nd Yr.) %	4 (3rd Yr.) #	4 (3rd Yr.) %
Problem* a	3	10.0	4	17.4	3	37.5
b1	8	26.7	10	43.5	3	37.5
b2	2	6.7	1	4.3	0	--
c1	16	53.3	13	56.5	3	37.5
c2	0	--	0	--	0	--
d1	12	40.0	5	21.7	0	--
d2	1	3.3	3	13.0	3	37.5
TOTALS IN EACH GRADE LEVEL	30		23		8	

*See Instrument, Section VIII, pp. A-27 -28.

TABLE 21

SITUATION I

Program A Compositions — Three Year Sequence No. 2

GRADE LEVEL	3 (1st Yr.) #	3 (1st Yr.) %	4 (2nd Yr.) #	4 (2nd Yr.) %	5 (3rd Yr.) #	5 (3rd Yr.) %
Problem* a	1	3.7	2	8.7	5	45.5
b1	7	25.9	13	56.5	4	36.4
b2	2	7.4	1	4.3	0	--
c1	15	55.6	10	43.5	5	45.5
c2	2	7.4	0	--	0	--
d1	12	44.4	1	4.3	0	--
d2	0	--	3	13.0	3	27.3
TOTALS IN EACH GRADE LEVEL	27		23		11	

*See Instrument Section VIII, pp. A-27 -28.

TABLE 22

SITUATION I

Program A Compositions — Three Year Sequence No. 3

GRADE LEVEL	4 (1st Yr.) #	4 (1st Yr.) %	5 (2nd Yr.) #	5 (2nd Yr.) %	6 (3rd Yr.) #	6 (3rd Yr.) %
Problem* a	1	6.3	3	21.4	6	46.2
b1	5	31.3	11	78.6	3	23.1
b2	1	6.3	0	--	0	--
c1	5	31.3	10	71.4	6	46.2
c2	0	--	0	--	0	--
d1	3	18.8	1	7.1	1	7.7
d2	2	12.5	6	42.9	2	15.4
TOTALS IN EACH GRADE LEVEL	16		14		13	

*See Instrument, Section VIII, pp. A-27 -28.

Re: First Year Compositions -- Sati, "trigger story"

In general, Program A compositions contained more feedback of events than did compositions of children in Program B. This may in part be due to the influence of the Nebraska Project English Curriculum to which Program A children were subject, since under that program it is common for students to be given an assignment in which they are required to write a story of their own using the same motif or the same sort of rhetorical device as in a given model. Whether the Nebraska Program has in fact been the influencing factor on this part of our data cannot be definitely established within the scope of this study, however, because the size of our sample from Program B is too small to warrant such a conclusion. This is one area, upon which we have touched, that might well yield valuable information if data from Situation I were gathered from a larger and fresh sample.

Of particular interest is the number of children at each grade level who used either completely or partially all other events-groups but did not use group e. The characters-groups (D and E) which include characters appearing in that part of the story consequently show a similar situation. A check of the points in the story at which children made changes or additions reveals relatively few instances of changes or of additions in or around events-group e. Therefore, it appears that a considerable proportion of the sample included in their compositions nothing corresponding to the role played by the events of group e. Furthermore, the outstanding feature of this group of events in the Story of Sati is its function as development of the problems arising for the chief character from her strange affliction. For it is here that the reader is to become aware of the nature and extent to which the affliction has effected the happiness of the girl. Also what development there is of the character of Sati is accomplished through these events, while a background is drawn against which the character of Parasara is to enter as something more than a "good fairy". In this connection, it is well to note that not one composition showed the deliverer as having been led to propose marriage through anything more than an appreciation of the girl's beauty and a feeling of pity for

her. The sense of justice which is brought out in the original story as part of the character of Parasara is completely absent in the children's deliverers.

That these factors were lacking in the feedback of such a proportion of our children's compositions would suggest, perhaps, that the children saw the Story of Sati, not as a tale having some moral lesson to convey, but as just another Cinderella story.

Approximately half of the children in our entire sample made changes in the events of the story. The most common points at which such changes were made were at the very beginning of the story -- i.e., the events leading up to the King's finding Sati -- and within events-group f, where Parasara appears and Sati's burden is lifted. In spite of the frequency of changes at these points, the type of changes made there were not drastic -- at the opening of the story children substituted minor things in the setting, for instance, a lake for a river or bushes for reeds; whereas in closing the story one happy ending was usually substituted for another.

Another change was common among the children's compositions which was unimportant in the development of the story but which is nevertheless interesting. More than half of the children left Sati unnamed throughout the whole story, but not a half dozen leave the naming until the second finding of the girl -- i.e., until events-group d. The rest either portrayed the King and Queen as giving the girl the name that is to remain with her through the entire story or have the child already named at the time she is first discovered by the King. If and when the child is named, of course, makes a difference in the way in which the writer speaks of the girl in unfolding the events of the story. Without a doubt the greatest proportion of stories with which elementary school children are familiar from their readers have the central character being given a name early in the story or already having a name at the time of his introduction. In this connection we might mention that the characters whose names were so commonly omitted by the children -- shown in Tables 11 through 14 -- necessarily central to the story, since in the Story of Sati and in the other two "trigger stories" as

well, only the main characters were named, with the exception of Viasa, who was the son of Sati and Parasara.

As the reader will remember, in the Story of Sati the fishy smell, which is to be her affliction, descends upon her out of the blue, as it were, unannounced and with no apparent explanation. It leaves her in the same way -- for there is no explicit connection made between Parasara's proposal of marriage and the lifting of the smell. It came and went magically. We were interested to see whether the children would change either the magical character of the girl's affliction or the manner in which it was cured or lifted. We thought that perhaps as the children grew older they would tend to drop out the magical elements in the story just as they lose the tendency to explain natural phenomena in mythical terms. The results from Section VIII of the Creative Changes Index (see Tables 19 through 22) indicate that the magical element was retained in most of the children's composition. It was often changed, however, and the most common changes made involved making the magic more explicitly connected with the actions of Parasara and of Sati. For instance, a smell or some annoying trait was levied by a magician or witch as punishment for something the girl did; in turn the spell was lifted by Parasara as payment for the girl's promise to marry. Changes such as these were also reflected in the results obtained in e and f of the Logic section of the Index (see Tables 15 through 18).

Following are samples of expressions the children used (as noted in Section V of the Index) during the first year:

(a) Modern or slang expressions

Re: King heard a sound "like a baby crying" Grade 6 -- children "scream bloody murder"

Re: Search for the source of the sound Grade 3 -- King "goes into the water robe and all" Grade 4 -- "he wasn't going to fool around"

Re: Sending the babies to his palace Grade 6 -- King takes Sati "to his joint"

Re: Sati's odor: Grade 2 -- "skunky" Grade 3 -- "bad breath" "the odor was terrific" Grade 4 -- "p.u." Grade 6 -- she "stunk"

Re: Reactions to the odor Grade 2 -- "stay out you rats" the queen "put the cat [Sati] out" Grade 3 -- "finely the queen got it" (became ill) Grade 4 -- Prospective husbands "ran for their lives" Grade 6 -- "brother, something fishy about you" King "dumped her out in the middle of the forest" "Queen turns over in her gravy because she was chicken" King leaves Sati "so she could stink up the forest"

Re: Parasara Grade 4 -- "had strange powers" Grade 6 -- "a guy came along"

Re: The fisherman Grade 3 -- "grabbed her and made off"

(b) Emotive expressions

Grade 3 -- King and Queen "couldn't stand her odor" "dreadful awful odor" "terrible odor" Grade 4 -- King heard "curious noises" Grade 6 -- passengers were "customers"

(d) Analogies -- Sati smelled: Grade 2 -- "like a snake....like a hippopotomus" "like a skunk" Grade 3 -- "like fish" "like a rotten bird" Grade 4 -- "like an old dirter tuna sand" Grade 5 -- "like perfume" "like a pig" Grade 6 -- "like a rose" "stunk like fish"
The Warrior: Grade 3 -- "was tuff as an elephant"

Re: Second and Third Year Compositions -- Kenelinda and Bull Turns Round, respectively, as "trigger stories".

The data gathered from second and third year compositions seem to indicate the same sorts of changes were made in the "trigger stories" as were made in Sati. But the longitudinal aspect of the study reveals what may be valuable information to the teacher of creative writing. For instance, changes in the kinds of linguistic expressions we looked for occurred in nearly the same proportion as in the first year when just the Program A sample was considered. A check of

our second and third year compositions for cases of children, who, for example, had used "modern expressions" two or more years in a row, showed that almost all of those who did so in the second or in the third years were indeed repeaters. This would suggest that use of such expressions is not relative to age or grade level but is perhaps relative to the particular habits of speech of the individual child.

Following are samples of expressions noted in our second and third year compositions from Program A:

Second Year - Kenelinda

(a) Modern or slang expressions -- Grade 4 -- Kenelinda says to warriors, "yowe, you kill me." Kenelinda "would not move an inch of the way." Grade 5 -- Kenelinda "wouldn't budge." Cannibals came "right smack in the middle of dinner." Grade 6 -- boy and horse are "jumped" by indians and indian leader says "let's move out." Cannibals get so mad they "almost blow their tops."

(b) Emotive expressions -- Grade 4 -- Re: Kenelinda -- "the best cow in the world." Grade 5 -- one native ran "with his tail between his legs." Grade 6 -- the cannibals "growl their commands." Re: Kenelinda -- "so beautiful was she, she was a treasure."

(d) Analogies -- Grade 5 -- Kenelinda's "meat was like steel." Grade 6 -- she had a "coat like silk" and was "big as a lion."

Interesting comparatives used: "grass was at its driest." and Kenelinda "travelled her fastest amble."

Third Year - Bull Turns Round

(a) Modern or slang expressions -- Grade 6 -- Wolf Tail's wife's complaint -- "He beat my face in." Sinew is called "stuff"

(d) Analogies -- Grade 6 -- the bird made her "face like big balloons."

In the results from Section VIII (Problem) of the Index we found repeaters similarly coloring our data. For example, in the Three Year Sequence No. 2, four of

the five entries in c-1 for the third year represent the same children included in c-1 entries for the previous two years. Exactly the same situation holds for c-1 entries in the third year for children of Three Year Sequence No. 3. Similarly two of the six entries in d-2 for the second year were the same two represented in that category the first year, within Sequence No. 3. (They did not repeat during the third year, however.)

With respect to feedback of events in the Kenelinda compositions, it is striking that the first magical element appearing in the story is left out by some two-thirds of the writers. I am referring to events-group b, which involves the waters of the river parting at the step of the cow. And as the story progresses, we note a considerable proportion of the children partially leaving out events-groups which involve repetition of earlier activities. In this connection, we would hope that in the future more research might be done into the children's opting not to use repetition as a rhetorical device. Under the Nebraska Program, our second and third year sample had received classroom work at each grade level in repetitive patterns in storytelling. Yet these children elected not to retain the repetitive element in the Kenelinda story.

In the third year, we note that none of the children used character-group D in their stories, while all other character-groups were fairly well represented. This group, however, consists only of characters who play a distinctly minor role in the story -- so minor that one might call them extras. Our children used no reference to a tribe member offering to investigate the strange lodge on the hill. Indeed any strangeness of the overnight appearance of Bull Turns Round's lodge was left out of most of the children's compositions.

In events-group d the magical returning of life to the buffalo was omitted along with the events immediately prior to it so that that events-group is not used at all by any of the children. This is striking as a parallel to the sorts of events left out of the children's stories during the previous two years. For this events-group contains the activities which give what development there is to the character of Bull Turns Round's father-in-law. In the majority of the children's compositions, however, the character serves only to supply Bull Turns Round with the instrument for his revenge.

Of the children who wrote "completely creative compositions" during the third year, about half built them on a revenge motif; and about the same proportion of first year "creative compositions" contained a character having to deal with some personal oddity.

The next few pages are devoted to samples of the children's compositions which illustrate certain aspects of the results obtained from Situation I.

Sample 1, below, is an example of those "creative" compositions written the first year, obviously sparked by the "smell which created such a problem for Sati.

Sample 1, Program A; Grade 6

PHEW!

About 1 million, billion, trillion, zillion, killion, nillion years ago, Ah, heck with it! I tried to start this story without "Once upon a time," but it just can't be done . . .

Once upon a time there was a man. He was a keeper of Santy Clause's elephunks (elephants). You see, S. Clause doesn't really drive reindeer. He drives elephants. I mean funks. Anyway, All the mail S.C. recieved concerning his steeds was sent to the Kepper of the elephunks.

On day Botzo, the Keeper of the elephunks recieved this letter from a worried parent:

Dear K.O. the E:

My son wants to become a K.O.E. Would you please send us a little information about your job.

PARENT

Dear PARENT

He can have it! Just tell him to go to S. Clause's residence, N. Pole.

K.O.E.

Ps-s-s-s-s: I might remind you that shoveling out the stables isn't much fun.

So the old K.O.E. (Keeper of the ELEPHUNKS, STUPID!) packed his clothes and left.

Man! He had been isolated at the N. POLE for so long that he hadn't seen a person for a long time.

While roaming the streets one time, He realized that he hadn't seen a person closer than 50 feet. Everyone seemed to shy away from him.

Then one day he caught some poor, unsespecting joker in a elevater slowly the guy sank to the floor, clutching his nose. This gave the ex-KOE an idea. He took a whiff of his clothes

Heavens! a faint odor of elephank you know what! He was almost completely immune to his own stink! Hunerds an Hunerds of years past. You see, KOE's last forever. Then one day he met this middle-aged K.O.R. Brother he smelled like you guess it. Reindeer you know what.

"Wait a minute--" said the old KOE to the KOR, " Exept S.C. switched to reindeers"

" "I think I'll take my old job back," said the KOE.

"You got it!" screamed the KOR.*

So the old KOE went back to a similar job and didn't have to live with people dropping like flies around him all the time.

TAEENT (PHEW!)

*BUT I HAD BETTER WARD YOU--SHOVELING OUT THOSE STABLES ISN'T MUCH FUN!

In Sample 2 we have a case in which the magic in the leaving of the girl's fishy smell is explicitly connected with Parasara's proposal. The ending, then, is typically fairy tale; no moral lesson is to be drawn.

Sample 2, Program B, First Year; Grade 4

There once was a king, how was hunting in the woods. All of a suden he heard a baby crying, the sound came frome the reeds he walked in and saw a basket in it was tow babies the king took them home and rased them intile they were in ten-age. But his beautiful datter smeld like an old derter tuna sandwich. The smell got wers, and the Queen got sick and instead of loosing his wife he took his datter into the woods and left hear there.

The next day a fishermen came and took her home he did not mind the smell but when he cald her to help him sell fish, peapil just ternd up there there nose to her. Noone liked hear, she was beautiful but smelling.

One day a grate magician came to by some fish, he noticed the beauty of the girl and said, "if you come to live and marry me I will take away the smell. So she went with him and the smell went away.

Sample 3, another "creative" work, takes off on the unusual abilities of Kenelinda, but changes the cow to a mule. The expression, "infinite resource and sagacity," must surely have stuck in the child's mind from hearing Kipling's "Just So" story about how the whale got his throat. But how the child understands the expression and how he happened to put it in this story is anyone's guess.

Sample 3, Program B, Second Year; Grade 3

Kaffas and the talking mule

Kaffas lived in a place called Keenan. Now Kaffas had a talking mule and the poeple

did't know this. And one day Kaffas named his mule Caanan. And they did't know this secret thing. And this is it he was infinite-resource-and sagacity. So Kaffas rode his mule to town every day. Now one day as Kaffas was riding to town pne of the poeple found that the mule could talk and that man told every person in the town. So every day when Kaffas rode in to town the poeple ran Kaffas and kill the mule and then Kaffas took the home and sang a song Caanan Caanan please come back. Caanan Caanan please come back that very moment Cannan came back to life and Caanan said to Kaffas I thank thee for singing that song to put me to life.

Samples 4 and 5 are both written by the same child. Both use expressions very similar to those in the "trigger stories". The first changes the way in which Fana brings Kenelinda to life as well as the setting for this happening. It also omits any reference to the parting of the waters at Kenelinda's stepping into the river. The second changes the events after Bull Turns Round's fall from the cliff so that the revenge motif becomes central.

Sample 4, Second Year; Grade 5

Once there was a boy who's father own a cow. The cows name was Kenelinda, this cow was very beautiful and even if times were bad she still would be as beautifil as ever. Now the boy which name was Fana loved this cow very much.

One day when the boy and cow very sitting on the ground two Indians very fierce looking came and told the boy that they were going to take the cow, but the cow would'nt move the men grew very angry.

"Make your cow come with us or we will kill you." So he went up to the cow and sang,

"Kenelinda walk with them, for they will kill us." and she did move, but the men said you will come with us to. So

Fana who was just a boy and against those men that was to much! As they walked they came to a river a mighty river but Kenelinda wouldn't cross.

"Make that cow move or we will kill you." So Fana sang softly in his ear.

"Kenelinda go into the river or the will kill us." So they cow moved and went into the river.

As they approached the village of the Indian Kenelinda stopped

"Make your cow go or we will kill you."

"Kenelinda please go on in to the village as he sang softly the cow began to move. When the got to the village the men tied up Kenelinda to a tree and they were going to kill but the arrows wouldn't go in so again the men told Fana to tell the cow and he did and Kenelinda soften her skin and the spears went in to her and she fell down dead. They skinned the cow and try to eat the meat but they couldn't eat it so again he had to sing but this time to a dead cow! After a while the men threw the bones and skin of the cow into a river near by which flowed into a larger river farther away then the went to sleep. In the night a old women came and told Fana that these people were cannibals and when the meat was low they would kill you so leave she told him. But before he left he went to the river and sang.

"Kenelinda come alive again." At these words the river began to move and the cow walked out of the water and the boy and the cow went home.

Sample 5, Program B, Third Year; Grade 6

Bull Turns Round

Once there was an indian and he had two sons. One day he left his older som and his wife to take care of the little son, while the rest of the indian camp went on. It was about three day after the indians left, and little Bull Turns Round was making a bow when a beautiful

butterfly landed next to him.

"Oh please Bull Turns Round catch that beautiful butterfly for me". said Wolf Tail's wife. But Bull Turns Round wouldn't do it and went off hunting. Now Wolf Tail's wife wanted the butterfly very much, as she came nearer the butterfly became an wolf and attacked her, then the wolf slowly turn back to a lovely butterfly it said, "You have tried to catch me for this I have punished you as for your little brother he will have anything he wishes". and with that it disapeered.

In a few hours Wolf Tail came back, and asked his wife what happened "Oh your brother he would not kill a ugly wolf and he ran away, it attacked me, go now and kill your brother or I will die." With this Wolf Tail ran and found Bull Turns Round and said ",Let's go get some beautiful feather for my wife, up on the mountain there is some, let us go."

A few hours later Wolf Tail and his brother were at the top of the mountain. Wolf Tail said, "Brother climb that tree and get the feathers". Slowly and steddily Bull Turns Round climbed. As he reached the top his brother said ",You have almost killed my wife with your foolishness for this you die".

"But Wolf Tail." cried Bull Turns Round. And down he went to the water below.

The next day Wolf Tail and his wife went back to the big camp and said.

"Father, Bull Turns Round never came back from his hunting and we waited 4 days for him".

Now Bull Turns Round had been washed down stream and a old man found him and said.

"Is your name Bull Turns Round" and Bull Turn Round answered

"Yes, it is."

"You are granted one wish and that might be what?" the old man asked.

"I wish for one thing, that is that I might returne to my father's camp and

my brother and sister would die, and my people have plenty of food." Bull Turns Round said.

"So be it," and with that Bull Turns Round was at his father's camp and Wolf Tail and his wife were dead and all the people had plenty of food.

The End

The Program A compcsition, Sample 6, was written by a child matched exactly in our background factors with the writer of Samples 4 and 5. It too shows the use of expressions very similar to those in the "trigger story". Here the vanishing of the fishy smell is not explicitly made the effect of Parasara's proposal.

Sample 6, Program A; Grade 6

One day a king was taking a walk through a forest. He heard a strange sound coming from the reeds. by the river. He looked in the reeds and found a basket. He lifted the cloth and saw a baby boy and girl. He took the basket home and kept the children for his own.

The girl grew to be very lovely, but she had an odd smell of fish. No perfumes or baths could help her.

One day the queen became very ill because of the smell. The king decided he would take the girl back to the forest.

In the forest a fisherman found her. He asked her to live with him because his own daughter had died. He named her Sati.

She lived happily with the fisherman for many years. But the fisherman was getting old. When she helped him with his work, all the people would frown and turn their heads, because of the odor.

One day she heard someone calling for a boat. She went to help him. When she came close she saw it was Parasarra, a famous man. He smiled at her beauty. She came closer, and waited for him to turn

away in disgust. But he did not, he only smiled at her and asked her to marry him. The fish smell vanished from the air.

They were wed and lived happily at his palace.

Sample 7, which was written by the author of Sample 3, weaves a whole new story by changing some of the "trigger story's" events, putting them in a new setting, and making the jealousy of brother by brother the motive for actions. Several children made additions in the "trigger story" which bring jealousy into the relationship between Bull Turns Round and Wolf Tail. Sample 7 makes explicit the reason behind the jealousy.

Sample 7, Program B, Third Year; Grade 4

Once ages ago their lived a boy named Miro.

He was a boy that was like a god. And in some ways he was a plain boy. One day Miro and his brother Marg were going the school. Now his father Margert love the bigger one better now that made Marg mad. So one day Marg said to his father, "Dad why do you like Miro better then me," "Well because you are getting into so much trouble that I-I-I just can't say it." So Marg went out to kill his brother. Marg said, "Come on Miro lets go to Mareo hill to look at the fall". So they did. They look and they look. until Marg pushed Miro off the clif. Miro full in the water and floated down the stream. Now Marg ran home and told what happened to Miro. His father ran to the stream and yelled for his son Miro! Miro! no answer came. Now Miro was on the sand and he saw a man and the man fed him and gave him and drink and gave and pill and told him to do. Give him this pill and he will die. And so he did and Marg die and Margert and Miro live for a long time.

Situation III - Myth Writing:

Rationale. Piaget, in his books: The Language and Thought of the Child,[11] The Child's Conception of the World,[12] The Child's Conception of Physical Causality,[13] The Growth of Logical Thinking from Childhood to Adolescence;[14] has reported that usually from age seven on children are growing away from a view of nature which involves mythical elements -- taking on gradually the type of empirical approach to natural phenomenon needed to work with scientific principles. As a rule, this step in conceptual growth takes place by fits and starts, here and there, until it is generalized to all natural phenomenon. Thus, the child may seem to oscillate back and forth between the mythical and the empirical views for several years. These years usually happen to be coincident with the years the child is in elementary school.

In view of this, it would seem that in first and second grades children are often of the habit of mind which makes it easy for them to indulge in myth-making -- but as they advance up through sixth grade, the loss of a mythical view of nature makes it less natural for them to indulge in myth-making. Thus, one would guess that only by making their work with myth, a genre, a conscious effort would they be able to produce and develop myths of sufficiently high quality to be helpful for them to understand and appreciate the body of myth literature handed down to us by ancient civilizations.

[11]Jean Piaget, The Language and Thought of the Child (Cleveland: The World Publishing Company, Meridian Books, 1955)

[12]Jean Piaget, The Child's Conception of the World (Paterson, New Jersey: Littlefield, Adams & Co., 1963)

[13]Jean Piaget, The Child's Conception of Physical Causality (Totowa, New Jersey: Littlefield, Adams & Co., 1965)

[14]Jean Piaget, The Growth of Logical Thinking from Childhood to Adolescence (New York: Basic Book, Inc., Publishers, 1958)

The Nebraska Program, developed as part of Project English, includes work with myth as a genre at each grade level from kindergarten onward. Situation III was conceived as a possible measure of the effect on children's writing that that part of the curriculum might have. Theoretically, its appearance in the curriculum at each grade level should act as reinforcement and development of the child's natural ability to mythologize. Further, one would expect that children under the Nebraska Program (our Program A group) would be better able to compose well-organized myths, that is, if that part of the program is effective.

It must be emphasized here that from our standpoint the child's penchant for myth-making is not to be considered per se valuable. We do not hope that future reporters and researchers in science come to express themselves only in mythical terms! Rather we see a child's ability to compose well-organized myth and to understand that genre, which blossomed in pre-technological civilizations, as a foundation on which to build a thorough understanding of the history and literature of ancient and remote peoples.

Structure. The investigator taught a unit on "myth" in which myth was treated as a type of story that gives a supernatural explanation for some natural phenomenon. A tape recording of the story of Narcissus and Echo[15] was played and then discussed as a way of explaining, "Why are there echoes?" and "Where did the Narcissus flower come from?" After the presentation of the unit by the investigator, which was limited to twenty (20) minutes, the children were given thirty (30) minutes to write and spelling-aid was offered them.

Since the instrument (see below) is built to separate feedback of unit materials from other materials brought into their compositions by the children themselves, and since the Program A groups were asked to write myth in three consecutive years and in each year the unit was slightly varied, outlines of each year's presentation may be useful to the reader.

[15]Robert Graves, Myths of Ancient Greece Retold for Young People (London: Cassell and Co., Ltd., 1960), pp. 153-155.

First Year Outline:

Myth -- an ancient type of story which came down to us via word-of-mouth telling for many years before ever put in written form.

Ancient myth-makers were unacquainted with the kind of explanation we might give in science; pre-scientific age.

Questions which probably prompted myths were much like questions the children themselves probably have asked their parents about the things that are (and happen) around them.

Narcissus-Echo Myth -- Echo explanation emphasized.

Samples of phenomena for which ancient myths have presented explanations:

> Earthquakes, volcano eruptions, rainbows, rain, thunder, lightning, sun and moon traveling, seasons, flowers, sea animals' remains on high ground.

Samples of explanations suggested from ancient myths:

> Gods' punishment ⟶ earthquakes, volcano eruptions, and lightning; gods' warning people --→ thunder; sun-moon travels, thunder --→ gods' playing among themselves; gods' bridge to their home --→ rainbow.

Names mentioned:

> Zeus, Wotan, Hera, Apollo, Athena, Pluto, Narcissus, Echo, Leda, Bacchus, Venus, Saturn, Cronos.

Second Year Outline:

Echo-Narcissus Myth -- Echo explanation reviewed.

Narcissus explanation emphasized:

Greek Narcissus flower differs from our Narcissus flower -- purple and silver and somewhat larger. Greek Narcissus shaped like ours though. It grew at edge of pools of water that commonly formed around mountain springs. Greek countryside is craggy, rocky, rough. Common wild flowers: reds and yellows. Purple and silver flower would be striking in such surroundings. Flower seems to nod toward the pool of water -- like looking at self. (Mirror and Narcissus in glass stem bud-vase presented to simulate flower and reflection in pool with flower nodding downward.) Striking difference and beauty of this flower may have prompted the need for an explanation.

Central point of unit: The unusual, the strange, the special things and the important things are fair field for myth-explanations. They would need something unusual, strange, special and/or important to explain them. Hence, the occurrence in ancient myths of extraordinary characters doing extraordinary things, viz., gods, godesses, etc.

Third Year Outline:

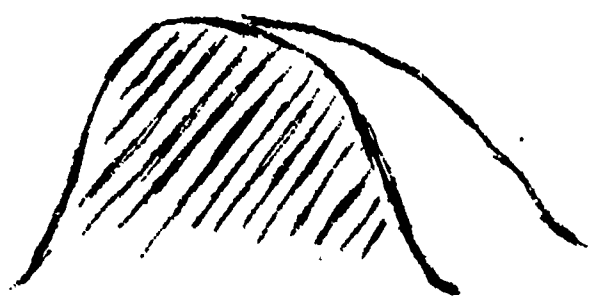
Reviewed: Myth or explanation of Echo; and of Narcissus flower; unusual thing to be explained by use of unusual characters; powerful characters.

New Material - In myths of Greece and of American Indians you find these extraordinary characters very closely connected to ordinary characters. The ancient myth-makers felt very close to their gods. They believed the gods watched over them and intervened in ordinary affairs -- e.g., Apollo turned Narcissus into flower and Hera made Echo invisible and unable to say anything but what others said.

Swans in forest with Narcissus and Echo -- one might have been Zeus.

This time instructions for writing were given which limited the phenomena children were to explain.

The investigator sketched three mountains on the blackboard: Long's Peak, Mount Moran, and Half-Dome. Similar sketches appear below. They were told also where each mountain is in the United States and that American Indian lore probably contains myths about them. Children were asked to "write myth to explain something about one of these mountains".



SITUATION III INSTRUMENT

1. Is the child's composition a myth of the type asked for (i.e., explanation of natural phenomenon)?

   Yes No

If Yes:

2. Is it the same as the "model myth" children heard?

   Exactly Not at all
   Partially Only some names

3. Is it sparked by material given in unit by investigator?

   Yes No

4. What phenomenon is supposed to be explained?

5. Is there any tip-off given: (a) that mythical explanation given is untrue?

   Yes No

   (b) that mythical explanation given is outmoded?

   Yes No

If No:

6. Is it a myth of another type?

7. Is it a fairy tale, fable, or fantasy?

8. Is it a factual or biographical story?

9. Is the organization of the story clear?

10. Is the child done (i.e., has he indicated in some way <u>in his writing</u> that he has finished, e.g., "The End")?

11. Is the story complete (i.e., has it been wrapped up logically)?

Compositions were sorted out on the basis of data picked out via the above instrument into three general categories: A.) Compositions containing myth of the type requested, i.e., mythical explanations of natural phenomena; B.) Compositions containing other types of stories; and C.) Compositions which were either too incomplete or too ambiguous to classify in A or B above or which were not story-telling endeavors at all. Writings in each of these general categories were divided into subcategories, as follows:

A. 1. Myths containing no feedback of materials from the investigator's presentation.

2. Myths containing feedback of materials from the Narcissus-Echo story only.

3. Myths containing feedback of materials from investigator's presentation but not from Narcissus-Echo story.

B. 4. Other types of myth: a.) origins of the gods, etc., b.) god-man relationships.

5. Stories containing fantastic elements: a.) fairy tales; b.) fables; c.) fantasies.

6. Other types of story-telling; a.) factual accounts of events; b.) biographical or autobiographical accounts of events or adventures not included in any slot above.

C. 7. Compositions too ambiguous to apply instrument, and blank papers.

8. No story, just questions.

9. Compositions too incomplete to place but if completed would probably be in Category A or in B, above.

TABLE 23

SITUATION III

Program B Compositions — School Year: 1964-65

GRADE LEVEL	2		3		4		5		6	
	#	%	#	%	#	%	#	%	#	%
Tip-offs	0	--	2	11.1	0	--	0	--	0	--
Unclear Organization	5	26.3	5	27.8	12	54.5	6	26.1	5	26.3
Logically Incomplete	9	47.4	8	44.4	12	54.5	7	34.3	6	31.6
A Compo's.[1]	8	42.1	11	61.1	12	54.5	10	43.5	6	31.6
A-1*	0	--	4	22.2	7	31.8	2	8.7	2	10.5
A-2	1	5.1	6	33.3	0	--	2	8.7	0	--
A-3	7	36.8	1	5.6	5	22.7	6	26.1	4	21.1
B Compo's.[2]	10	52.6	7	38.9	8	36.4	13	56.5	13	68.4
B-4	0	--	0	--	3	13.6	8	34.7	2	10.5
B-5	4	21.1	3	16.7	3	13.6	5	21.7	8	42.1
B-6	6	31.6	4	22.2	2	9.0	0	--	3	15.7
C Compo's.[3]	1	5.1	0	--	2	9.0	0	--	0	--
C-7	1	5.1	0	--	1	4.5	0	--	0	--
C-8	0	--	0	--	0	--	0	--	0	--
C-9	0	--	0	--	1	4.5	0	--	0	--
B + C	11	57.9	7	38.9	10	45.5	13	56.5	13	68.4
TOTAL IN EACH GRADE LEVEL	19		18		22		23		19	

[1]Myth of type asked for. [2]Other types of stories.
[3]Compositions unclassifiable as A or B.
*For subcategory designation key, see

TABLE 24

SITUATION III

Program A Compositions — Three Year Sequence No. 1

GRADE LEVEL	2 (1st Yr.) #	2 (1st Yr.) %	3 (2nd Yr.) #	3 (2nd Yr.) %	4 (3rd Yr.) #	4 (3rd Yr.) %
Tap-offs	2	6.3	0	--	0	--
Unclear Organization	21	62.5	3	16.7	1	16.7
Logically Incomplete	23	71.9	8	44.4	1	16.7
A Compositions[1]	15	46.9	8	44.4	2	33.3
A-1*	4	12.5	5	27.7	0	--
A-2	2	6.3	3	16.7	2	33.3
A-3	9	28.1	0	--	0	--
B Compositions[2]	15	46.9	10	55.5	4	66.7
B-4	1	3.1	1	5.5	0	--
B-5	8	25.0	5	27.7	2	33.3
B-6	6	18.7	4	22.2	2	33.3
C Compositions[3]	2	6.3	0	--	0	--
C-7	0	--	0	--	0	--
C-8	2	6.3	0	--	0	--
C-9	0	--	0	--	0	--
B + C	17	53.1	10	55.5	4	66.7
TOTAL IN EACH GRADE LEVEL	32		18		6	

[1]Myth of type asked for.
[2]Other types of stories.
[3]Compositions unclassifiable as A or B
*For subcategory designation key, see

TABLE 25

SITUATION III

Program A Compositions — Three Year Sequence No. 2

GRADE LEVEL	3 (1st Yr.) #	3 (1st Yr.) %	4 (2nd Yr.) #	4 (2nd Yr.) %	5 (3rd Yr.) #	5 (3rd Yr.) %
Tip-offs	1	3.2	0	--	1	6.7
Unclear Organization	6	19.4	2	7.4	1	6.7
Logically Incomplete	6	19.4	4	14.8	1	6.7
A Compositions[1]	15	48.4	22	81.5	12	80.0
A-1*	8	25.8	14	51.9	2	13.3
A-2	1	3.2	8	29.6	2	13.3
A-3	6	19.4	0	--	8	53.3
B Compositions[2]	16	51.6	4	14.8	3	20.0
B-4	2	6.5	1	3.7	1	6.7
B-5	9	29.0	3	11.1	1	6.7
B-6	5	16.1	0	--	1	6.7
C Compositions[3]	0	--	1	3.7	0	--
C-7	0	--	0	--	0	--
C-8	0	--	0	--	0	--
C-9	0	--	1	3.7	0	--
B + C	16	51.6	5	18.5	3	20.0
TOTAL IN EACH GRADE LEVEL	31		27		15	

[1]Myth of type asked for.
[2]Other types of stories.
[3]Compositions unclassifiable as A or B.
*For subcategory designation key, see

TABLE 26

SITUATION III

Program A Compositions — Three Year Sequence No. 3

GRADE LEVEL	4 (1st Yr.) #	4 (1st Yr.) %	5 (2nd Yr.) #	5 (2nd Yr.) %	6 (3rd Yr.) #	6 (3rd Yr.) %
Tip-offs	0	--	0	--	1	7.0
Unclear Organization	5	26.3	1	5.9	0	--
Logically Incomplete	2	10.5	4	23.5	0	--
A Compositions[1]	13	68.4	9	52.9	9	64.3
A-1*	1	5.2	6	35.3	1	7.0
A-2	0	--	2	11.8	6	42.9
A-3	12	63.2	1	5.9	2	14.3
B Compositions[2]	6	31.6	8	47.0	5	35.7
B-4	1	5.2	1	5.9	0	--
B-5	4	21.0	6	35.3	4	28.6
B-6	1	5.2	1	5.9	1	7.0
C Compositions[3]	0	--	0	--	0	--
C-7	0	--	0	--	0	--
C-8	0	--	0	--	0	--
C-9	0	--	0	--	0	--
B + C	6	31.6	8	47.0	5	35.7
TOTAL IN EACH GRADE LEVEL	19		17		14	

[1]Myth of type asked for.
[2]Other types of stories.
[3]Compositions unclassifiable as A or B.
*For subcategory designation key, see

With regard to the use and significance of certain parts of the instrument, it may be helpful for the reader to bear in mind the following points:

1.) If a child in his fiction explicitly indicates that the story is untrue or outmoded, he has not sufficiently grasped the working requirements of the genre of the fiction. Interestingly, such indicators occurred with greater frequency among myth-writing endeavors than they do among fairy-tale, fable, or fantasy writings of the children who participated in this writing situation. Examples of what we classified as tip-offs are: "This is what they used to think," "We know better now, but a long time ago...." Expressions of the form, "Once upon a time_____ (happened)...," were not taken as "tip-offs" for our purposes.

2.) The organizational clarity of compositions was rated solely on the basis of whether the rater could tell what was going on in the story as far as the sequence of events and the cross references (e.g., pronoun antecedants) within were concerned. The logical completeness of compositions was rated on the basis of whether the writer had tied up the threads of the events-sequences in such a way as to make the story self-contained and self-explanatory. If, after reading the child's composition, the rater could ask questions of the form "So what happened with _____?" or "How did _____ happen?" and not find clear answers within the child's writing, the composition was rated "logically incomplete."

The matters of clear organization and logical completeness are necessary concerns in the training of a writer. They are of importance whether the writing is in the nature of fiction or fact, myth or science. In order to develop the writing habits necessary to producing clear and complete writings, the child must break down the tendency -- common at pre-school ages -- to act as though he assumes others completely understands them. This sort of behavior is included in what Piaget calls "egocentrism", I believe. It is involved in the child, having said something, proceeds as though the adult were not there or as though the adult should understand immediately what he means. The breakdown of this presumptive behavior is sometimes shown when the child, instead of becoming disgusted with

the adult who does not respond "properly", begins to worry over his own way of expressing himself.

Only when this worry is directed toward his writing can the child develop the objectivity toward his own language-behavior to produce and to appreciate well-written compositions. As these concerns are consistently directed toward the literary efforts with which the children of Program A are acquainted through the Nebraska Curriculum, one would hope that one may see the results in organizational clarity and logical completeness within the writings of those children to a greater extent than they are exemplified in Program B children.

3.) Question No. 10 of the instrument is of no great significance with respect to children's logical growth. It operates merely as a feeler to see whether the convention of ending a story with an explicit indication that the writer is finished is used by any particular segment of the sample more than by others. We obtained no great earth-shaking information by way of this question. It is interesting, however, that among second graders who wrote "The End" before handing in their compositions, there were some told the investigator that they didn't get finished and asked if they might finish "tomorrow".

Following are some sample compositions gathered in the myth-writing situation. It is readily apparent from them, as from the whole group of compositions gathered in this study, that mechanics and spelling of children under the Nebraska Program (i.e., Program A) are no better than of children under the conventional language-arts program (Program B). We must add, however, that neither are they any worse. These samples are not revised or otherwise edited, but are reprinted here exactly as the children wrote them.

Sample 1, Program A, Second Year; Grade 4

Indian Corn

One day Pohanabaybebuhscone, an Indian girl got marryed to a South American who had dark, dark, dark, dark scin. Pohanabaybebuhscone had a baby, part of

her was red and part of her was dark, dark, dark, dark black, her name was Pube. When Pube grew up she got marryed to an american, she had a very unusual baby he had red scin like her mother dark scin like her father and white scin like her husband. Pube's unusual baby lived one hundred years and in there religion they berryed every body with a pice of corn in there mouth, this corn grew and it was the colers of his scin and the indians used it and called it Indian corn.

Sample 2, Program B; Grade 4

Once there was a goddess named Nimbus, she was sailing through the sky when she met her brother which was 31. His name was Stratus, and did not like her a bit. They always faught. Then one day Nimbus stumbled on a knife and turned into a tree, and Stratus broke his leg and turned into a flower. They lived by one another and didn't fight any more.

These are the products of two children who are closely matched in background and test scores. Both have parents who have completed high school and two to four years beyond, and who are employed in clerical, skilled trade, or retail business occupations. Both have scores on the CTMM between 120 and 124 and, on the achievement tests, have placed 1-1/2 grade levels above their actual grade.

In comparing the two compositions we see that the point of Sample 1 is clear, while it is not so clear in Sample 2 -- indeed, the reader wonders just what Sample 2 is supposed to explain or if it is supposed to explain any natural phenomenon. It may be that the names used in Sample 2 are purposely chosen to make the connection and relationship between the characters. Yet these connections if they are intended by the child are not drawn in Sample 2. Also in Sample 1, repetition is used effectively. We cannot with sureness attribute this to the effect of parts of the Nebraska Curriculum, since even though it did not occur at all in Program B

compositions, neither did it occur often enough among the Program A compositions to warrant that conclusion.

Sample 3, Program A, Third Year; Grade 4

How Long's Peak got its cleft.

One day there was a fight between Opollo and Zeus. Zeus was just about to hit Opollo when Opollo ducked and Zeus missed and his hit put a big dent in the roof of the cave.

He hit it so hard that it pushed up a mountain. Opollo threw his trident, he missed, it went out of the cave. And Opollo went raceing after it.

It finaly landed he grabed it and hurdled it at Zeus on the way it hit the mountain and put a slit in it and thats how Long's Peak got its cleft.

Sample 4, Program B; Grade 4

Godess of Wind

Eake was the godess of the wind. Evey time he blew things out on the street. He was always a trouble maker. Everyone nos who he is because of his sound. Nobody has seen him because evil godess put a spell on him. From then on nobody has seen the wind you can't feel him until he's blowing. And then on he started hurricanes and thats his revenge. He is just a trouble maker because hex makes people run after things to get them. He's killed people and ruin's people's houses.

The writers of Samples 3 and 4 scored between 120 and 124 on the CTMM, placed one grade level above their actual grade on the achievement tests, have parents who completed high school and who differ in that the occupation of the father of the author of Sample 3 is of the clerical, skilled or retail business nature while that of Sample 4's author is of the semi-professional or managerial type.

The outstanding difference between Samples 3 and 4 lies in the extent to which the mythical explanation given is developed. Sample 3 shows much more ability to work within a storytelling framework, whereas Sample 4 presents little more than the gist of a myth. In this respect, Sample 3 is typical of our Program A compositions at this grade level but not typical of Program B compositions at Grade 4. We must note, however, that Sample 3 represents the myth writing of children in their third year of working within this sort of situation; while Sample 4's author performed only once within this situation.

Sample 5, Program A, Third Year; Grade 5

How Longs peak became to have a dent in it.

It was a bright spring day. Lorendo who was one of the prettiest peaks in the valley was looking at his reflection in Madame Graderro, the clear blue pond on the foot of the mountain.

"Ah -- Lorendo signed, what a buetiful day.

"It is so true about me, I' am the most buetiful peak in the valley."

God Crientine who looked over this valley wich was called Valley of the sweet smelling flowers", was helping a poor peasant who was very sick.

God Crientine was known as the kindest of all god's but he just detested concieted things. He was known for a short temper also. While he was strolling trough the valley he heard nagging and someone bossing someone else around. So he started a trot and finally came upon Lorendo screaming at Madame Graderro.

"You stop letting those swans in the water," said Lorendo in a harsh voice "I can't see myself."

Madame Graderro was very much scared of Lorendo so she did not say a word.

But God Crientine was very much in Love with Madame Graderro so he blew himself up into a enormous man and sliced a huge slice into Lorendo and made him ugly.

Sample 6, Program B; Grade 5

> Once upon a time there was a God with the name of Fire and he was always ~~kking~~ being chased by girls. But he didn't like girls. So one named Stuped was a Goddes she liked him more than any others. He went to a Mountain God to tell him to get her off his back. Or to lie or anything. So he told her he was disguised as a moose. And she went to look for some. But while in another part of the country he was comeing to a stream. At the stream he was going to get a drink. He saw ~~a~~ his refeltion and fell in love with him--self. He couldn't even eat. And he died. One God turned him to a flower. The flower multapled and grew.

The above compositions were written by Fifth Graders: who placed on achievement tests 1-1/2 grade levels above their actual grade, who scored on the CTMM between 110 and 114, whose parents' formal educational level was high school, and whose fathers' occupations were in the clerical, skilled, or retail business category and in the semi-professional or managerial category, respectively.

Two things are apparent in these samples which are typical of differences between the products from the two programs in this writing situation. One is the use of dialogue in the storytelling of (Sample 5) children in Program A. This device shows up in quantity in the compositions of sixth graders of Program B, but not in the earlier grades. The other difference is in the degree to which the storytelling is developed. Sample 6 shows little internal organization of the threads of the story. The Narcissus model is used; a character appears which would seem to correspond to Echo but nothing is done with her; the punishment or revenge motifs are not used -- indeed the characters are not developed into living things at all. On the other hand, Sample 5 shows a great deal of sophistication in the use of these elements for a fifth grader.

Sample 7, Program A, Third Year; Grade 6

Mt. Moran

One day a crimnal God, named Moran, had stole some very vabluable jewls from the king of Gods, Zuse.

When he got to his hide out he looked down to the earth and saw a great mountian. He looked at the mountian for a long time and said to him self, "The day I die, I wish to be burried upon that mountian below me on earth.

Zues who knew where his hide-out was, sent five of the strongest God-policemen to bring him back. When he was broght back Zues sentenes him to a stoning. After he was stoned and killed, he was thrown over the edge of the sky onto the mountian where where he wanted to be burried.

Since everything about him was bad, the place where he was burried was marked with a black stripe. And becaus he was burried there the mountian was mamed after him. And thats how the mountian got the black stripe and its name.

Sample 8, Program B; Grade 6

Long ago before there were any scientists, the people of Ogee always were wondering why the water on a mountain ran down instead of up. They thought there might be a gaint shattered the earth and made the water run down. Some thought there might be a gairt at the top who blew the water down.

These people also wondered why it snowed. They thought there might be ~~a bad~~ an invisable gaint that had a bad case of dandrof and he was always scratting his head.

They also wondered why it rained they thought this same gaints mother was always spanking him so was always crying.

The writers of Samples 7 and 8 are matched in parents' occupation category, in parent educational

level, and in their placement on achievement tests. They differ in that the author of Sample 8 scored between 105 and 109 on the CTMM, while Sample 7's writer scored between 110 and 114 on the same test.

The difference between these two compositions as evidence of the sixth grader's ability to work within the genre of myth is typical of the sixth grade products from this situation. Sample 8 is an example of the kind of "tip-offs" found in a fair number of fourth through sixth grade Program B compositions.

Sample 9, Program A, Third Year; Grade 6

> Long ago there was a very large mountain. This mountain was in the land of the giants. The giants used this as a bridge. One day it started to crumble. The largest giant took his knife and cut it in half, so the rest wouldn't crumble. And now they use it as a mirror because it is so shiney.

Sample 10, Program B; Grade 6

> Once upon a time, there was this big ole' volcanoe. Ordinary people called it a flycatcher.
>
> You see, clouds aren't really clouds. They are giant flies, exept that they are invisible. Every once in a while they let people see them. They have races, too: Black Clouds, GREYCLOUDS, RED clouds Yellow clouds. Most clouds come out white.
>
> Anyway, back to the fly catchers. Every once and a while, the flycatchers reach out thier fier tongs and lick up into the clouds and bring back one of the invisible flys. We call this action the erupting of a volcanoe.

These compositions are products of two sixth grade children having CTMM scores between 125 and 129, achievement test grade placement at 3 years above their actual grade level. Their parents, both professional persons, completed 17 to 20 years of formal schooling.

Sample 10, which gives more in the way of development of the story than does its Program A counterpart, is in this respect an example of the most sophisticated sixth grade compositions from Program B. Sample 9 is not typical of Program A sixth graders' myth writing. It is shown here as a case in point against those who might think that the higher the IQ the more capable a child must be in such a writing situation at this. Both Sample 9 and Sample 10 may serve as reminders that individual children differ in creative ability, regardless of their likenesses in background factors and in standard test scores.

Situation IV

Rationale and Structure. The products of this writing situation were gathered for syntax analysis as part of the Hill Family Foundation study. They were included in this study of content and logic primarily because they represent the writing habits of the children of our sample in a different sort of situation than were the other compositions we gathered. In Situation IV the children were to write any sort of story they wished, true or make-believe, about anything they wished and from any point of view they wished. Children were given these instructions and then were shown a silent film "to give them time to think" about what they would write. The first year the film shown was about a baby fox; the second year about a hunter in the forest. Thirty minutes were allowed for writing and spelling aid was available for the raising of a hand.

These compositions are of interest in connection with a concern for what children write about when they are given freedom to select their own subject matter. Also we were anxious to see how many compositions were representations of some incident or incidents in the film.

In addition to their subject matter, for which the Subject-Classification List (see next page), the compositions were read for the following information: 1) logical completeness and organizational clarity -- these were evaluated on the same basis as were Situation III compositions; 2) the presence of explicit argument; 3) the presence of explicit analogies -- i.e., similes and metaphors; and 4) the appearance of logical inconsistencies. We noted, too: whether the composition had a title, and if the title fit the story; and whether the end of the story was designated by some expression, such as "The End".

SITUATION IV SUBJECT CLASSIFICATIONS

I. SCIENCE

A. Physics

1. Natural Phenomenon
e.g., wind, floods, earthquakes, mountains, oceans, etc.

2. Mechanical Processes
e.g., how a mechanical object works, how a chemical experiment or process takes place, etc.

B. Biology

1. Physiological Processes
e.g., human bodily processes or animal bodily processes.

2. Biological Processes
e.g., birth, death, growth, regeneration of plants, animals, and man.

C. Manufacturing

1. How to make an object or mechanical device.

2. Construction of or ingredients of some natural object -- e.g., moon, stars, sun, etc.

II. MATHEMATICS - LOGIC - LANGUAGE

A. Calculations
e.g., methods of calculating, estimating, with numbers or with units of measure.

B. Formal Relationships
e.g., logical-relations; mathematical relations, linguistic relationships.

(Continued on next page)

Situation IV Instrument (Continued)

C. Classificatory Names
e.g., whole-part-singular classificatory systems.

III. HISTORY -- (Facts, events) -- including "adventures" and "mystery stories".

A. Actual Personal History -- (no explicit tip-off given in composition that story is invented)

1. Biographical -- (using second or third person) about:

(a) animal*
(b) human*
(c) toy or object

2. Autobiographical -- (using first person, only where age of person in story is within elementary school age group) from point of view of:

(a) human*

B. Invented Personal History -- (explicit tip-off -- given in composition -- that story is invented)

1. Biographical -- (using second or third person) about:

(a) animal*
(b) human*
(c) toy or object

(Continued on next page)

*Note: If (1) a baby fox, or (2) a hunter and a deer, make specific note.

2. Autobiographical -- (using first person) from point of view of:

   (a) animal*
   (b) human* -- (take as human -- if age of person in story is older than elementary school age children)
   (c) toy or object

C. Actual Historical Events

D. Invented Historical Events

1. Mythical event explaining actual phenomena -- involving situations of supernatural powers or happenings.

2. Non-mythical but fictional event explaining actual phenomena -- not involving supernatural powers or happenings.

3. Fairy tales, fables, fantasies.

*Note: If (1) a baby fox, or (2) a hunter and a deer, make specific note.

Of the 142 compositions gathered in Situation IV the first year: 2.1% fell within Class I of the Subject-Classification List, 1.4% within Class II, 95.6% in Class III, and .7% were poems which did not fit into any of the other classifications. The second year there were 118 compositions of which: .8% were placed in Class I, none in Class II, 98.3% in Class III, and .8% were poems. Thus, what the vast majority of our children wrote about when they could write about anything they wished turned out to be pretty much what one would expect -- indeed, what most people would take to be "a story". See the charts following this page for a further breakdown, by Class and Subclass and by Program and Grade Level.

In the first year 15 of the 142 compositions used the subject of the film they saw. 12 of these were Second Graders'. The second year, there were 12 of the 118 compositions which used subject matter from the film -- 6 from Third Grade; 4 from Fourth Grade and 2 from Sixth Grade.

Other information about the first year Situation IV compositions follows:

123 out of the 142 gathered were logically complete and clearly organized. The 19 remaining consisted of 13 Second Graders', 2 Third Graders', 2 Fourth Graders', and 1 Fifth Grader's compositions plus one poem. 108 compositions had a title, only 5 of which did not fit the story. 36 designated the end of their compositions. Only 14 contained explicit argument: 5 from Second Grade, 3 from Third, 5 from Fourth, and 1 from Fifth. "Because," "since," and "so" were the only words used to make explicit these arguments. 3 compositions contained logical inconsistencies -- one of which was also included in those who made explicit argument above. None of the compositions contained explicit analogies.

Compositions from this writing situation in the second year were as follows:

104 out of the 118 compositions gathered were logically complete and clearly organized. The remaining 14 included 5 from Third Grade, 6 from Fourth Grade and 2 from Sixth Grade and one poem. 66 compositions had titles, only one of which didn't fit the story. 30

used ending designations. 10 made explicit argument -- including 2 from Third Grade; 6 from Fourth Grade; 1 from Fifth Grade and 1 from Sixth Grade. Here again, the only logical indicators used by the children were "because," "since," and "so." 9 compositions contained logical inconsistencies -- 6 of which were from Fourth Grade and 3 from Fifth Grade. One Third Grade and one Fourth Grade composition contained explicit analogies.

TABLE 27

SITUATION IV COMPOSITIONS — PROGRAM B

First Year

GRADE LEVEL	2		3		4		5		Total	
	#	%	#	%	#	%	#	%	#	%
Class'n.*										
IB	--	--	--	--	1	10.0	--	--	1	1.8
IIC	1	4.5	--	--	--	--	--	--	1	1.8
IIIA	17	77.3	5	41.7	3	30.0	4	33.3	29	51.8
IIIB	4	18.2	5	41.7	5	50.0	6	50.0	20	35.7
IIIC	--	--	1	8.3	1	10.0	--	--	2	3.6
IIID	--	--	1	8.3	--	--	2	16.7	3	5.4
TOTAL	22		12		10		12		56	

Second Year

GRADE LEVEL	3		4		5		6		Total	
	#	%	#	%	#	%	#	%	#	%
Class'n.*										
IIIA	10	90.9	3	25.0	6	54.5	6	50.0	25	54.3
IIIB	1	9.1	7	58.3	1	9.1	4	33.3	13	28.3
IIIC	--	--	--	--	2	18.2	--	--	2	4.3
IIID	--	--	2	16.7	2	18.2	2	16.7	6	13.0
TOTAL	11		12		11		12		46	

*See Subject-Classification List, p. A-89 ff.

TABLE 28

SITUATION IV COMPOSITIONS — PROGRAM A

First Year

GR. LEVEL	2		3		4		Total	
	#	%	#	%	#	%	#	%
Class'n.*								
IA	2	5.9	--	--	--	--	2	2.3
IIC	1	2.9	--	--	--	--	1	1.2
IIIA	14	41.2	13	41.9	11	52.4	38	44.2
IIIB	16	47.1	14	45.2	9	42.9	39	45.3
IIIC	--	--	1	3.2	--	--	1	1.2
IIID	--	--	3	9.7	1	4.8	4	4.7
Poems	1	2.9	--	--	--	--	1	1.2
TOTAL IN EACH GRADE LEVEL	34		31		21		86	

Second Year

GR. LEVEL	3		4		5		Total	
	#	%	#	%	#	%	#	%
Class'n.*								
IB	1	3.7	--	--	--	--	1	1.4
IIIA	8	29.6	9	33.3	14	77.8	31	43.1
IIIB	9	33.3	10	37.0	3	16.7	22	30.1
IIIC	--	--	1	3.7	--	--	1	1.4
IIID	9	33.3	6	22.2	1	5.6	16	22.2
Poems	--	--	1	3.7	--	--	1	1.4
TOTAL IN EACH GRADE LEVEL	27		27		18		72	

*See Subject Classification List, p. A-89 ff.

TABLE 29

SITUATION IV

Breakdown of all Class III* Compositions
Showing % of Subclass at Each Grade Level

First Year

Subclass	A	B	C	D	TOTAL
Grade Level					
2	46.3	33.9	--	--	56
3	26.9	32.2	66.7	57.1	43
4	20.9	23.7	33.3	14.3	31
5	6.0	10.1	--	28.6	12
					142

Second Year

Subclass	A	B	C	D	TOTAL
Grade Level					
3	32.1	28.6	--	40.9	38
4	21.4	48.6	33.3	36.4	39
5	35.7	11.4	66.7	13.6	29
6	10.7	11.4	--	9.1	12
					118

*See Subject-Classification List, p. A-89 ff.

The following are samples of compositions that were gathered from Situation IV.

Sample 1, Program A, Second Year; Grade 3

> Once there was a man named Mr. Wright. and his neighbors name was Mr. wrong. but they looked alike, there house and car and everything looked alike. and thats why nobody could tell Wright from Wrong.

Sample 1 might be taken to be precocious, especially if one reads into it the sort of philosophical symbolism that traditionally goes with discussions of ethical matters. However, caution is needed on the part of the teacher whose third grader might produce such a writing. What the child has in mind is probably considerably less sophisticated than any deliberate allegory in which two characters in the story are treated as the embodiment of two separate and opposing moral forces, the actions and visible characteristics of each working as temptations upon other unwitting characters within the composition.

Sample 2, Program A, Second Year; Grade 3

> Once there was a castle a gloomy old castle. And a goat and a moat and a funny old float lived there. But the moat was STUPID! do you know how that moat is well he eats like a hog on top of a log. Well once he went out in the woods and he found a M O N S T E R and he looked like broom on a foom loom stoom fit on a sit and it lit will this go on all day it just might.

Sample 2 represents something unusual in the compositions we gathered from any of our writing situations -- that is, the play with word-sounds that is going on. There is very little story involved and what threads one picks up seem to proceed on the basis of where the child's play with the sounds leads him, rather than

the other way around. The rhyming sounds used are much like those one often finds in the oral word-play of children up through Grade Three. The rhyming sounds occur in small sets in which a rhythm is involved, and the child makes up "words" to fit the rhyme and rhythm of the occasion. Thus, interspersed with word patterns which contain no outstanding sound-play, we see: "foom loom stoom," along with rhythmic rhyme patterns such as,

"...and a goat
and a moat
and a funny old float..."

and,

"...he eats like a hog
on top of a log."

Sample 3, Program A, Second Year; Grade 4

My Baby Sister

Yesterday March 17; There was a big surprise.
My mother had a baby,
And now we have relies
That we don't have a name.
Now is that about the same? "no"
My father went to the hospital
And saw my mom and sister
I guess when she grows up,
I guess she'll be a twister. "no, Mister"
My family is glad its over
But we wish that they were home.
SOME ONE HAS TO COMB MY HAIR! "Hush, you rome."

Sample 3 shows a rather successful attempt to integrate a play of sounds (namely, rhyming sounds) into the telling of an event which, incidentally, was an actual happening in this child's life. Here, in contrast with Sample 2, the sounds are worked into the story instead of vice versa.

Sample 4, Program A, Second Year; Grade 4

Once a fairly long time ago there was a cow named Hymie a very well mannered cow. And Hymie had a friend, a dog, name American the Trueful. Hymie and Trueful had plombles. Hymie's family had a this plomble for almost a 100 years. And Trueful was tying to help her with it. Hymias great, great, great grandpa cow was the cow that jumped over the moon. And Hymie's great, great, great, grandpa cow said that his daughter's brother's mother in law's mother's son after son to another daughter and, that was none other. then Hymie! And Hymie was going to have to jump over the moon. Trueful was in the space programph and he had a plan! Two men were going in a rocket past the moon and Trueful said, "Maybe we can get in the rocket and when the rocket go pasted the moon they could jump out over the moon and fall down in the boat the men were going to fall in. Hymie said this was a good plan and wanted to do it. So Saturday afternoon Hymie and Trueful sneaked in the rocket hat was going to take off in 1 hour. Time pasted by and finely to rocket took off. And in 3 days Hymie sighted the moon! Trueful and Hymie got ready to jump Hymie held her nose and Trueful shut his eyes and jumped. They were falling over the moon! and fell, fell, fell, untill they fell in the boat. Hymie was so glad she kissed Trueful and mooed. MOOOooooooo!

Sample 4 is one of the most graphic characterizations among our Situation IV compositions. In comparison with other writings by Grade 4 children it is outstanding in intricacy of development as well as length. The child has in the story shown how the problem felt by one character arose and then is solved with the help of another character whose regular occupation is such that it would logically place him in a position to help. At the end the solution is accomplished to the "glad"

satisfaction of the chief character. Such expressions as "Trueful shut his eyes and jumped" are used showing, by describing thei: behavior, the beginnings of depth in character portrayal.

Sample 5, Program B, Second Year; Grade 6

The Last Trip

One day it was raining very hard and I was very board. Then I invited my friend Mark over to play. Since we both imagened a lot of things, Mark said, "Let's build a rocket ship and go to the moon." I said, "ok," and we began to build a rocket in my workshop. First we got an old barrel and began to fix it up. We put a carton of pop in it, some candy bars, and some ice cream. For an engine we used an old washing-machine. After this was all in place we decided to test it. The washing machine motor started up and a way we went. To our surprise we were on our way to the moon. Since it was raining it to us about half an hour to get out of the earths gravity pull. Within the next two hours the moon was in sight. In a few minutes we were on the moon. The total trip took 2½ hr. 3 min. Now that we were there we decided to explore a little. Then all of a sudden hundreds of little men came at us. We ran for the ship and got in as fast as we could. We put some new Tide in the motor and we were off, just in time. The little men just reached us. The return trip was quicker because there was no rain. We had enough for that and we decided to let some astonut to go there first before we would ever go again. Besides I got in trouble for missing supper, so you won't catch me going there again.

Sample 6, Program B, Second Year; Grade 6

ADDICT

He dashed into the doorway, which was pitch-black. The door was open, as he had expected. He moved quickly down the darkened hallway of the abandoned office building, which was scheduled to be wrecked in a couple of weeks. Producing a rusted skeleton key from his pocket he unlocked the door to the room on his right and entered. As a mustty reek of rotting wood reached his nostrils, he spied the small, brown package carefully hidden in the N.E. corner of the room. He placed the small box in the left-hand pocket of his black leather jacket. He had found what he had come for, and was now ready to leave. The sound of footsteps reached his ears. the cops? Hardly a chance. Who could have tipped them off? True, here in the slums of Harlem there were many drug addicts and peddlers, but most people played mum if they knew anything, for squealers were usually tracked down by the gangs. He ditched down a stairway as a beam of light came through the open door of the main entrance and was reflected upon the carcked tile floor. "He's got to be here somewhere, boys — let's circle around and frisk this joint!" boomed a voice and the clatter of running feet resounded through the halls. He soft-footed amongst the stacks of boxes and boards, and found a suitable hiding place. Knowing to be found would mean death, he covered himself with old newspapers. "Clackety, Clackety Clackety," sang the shoes as they skipped down the stairs!! Brother! what a rat's nest. It'le take an hour to search this dump, and curfew is in 15 min!

Samples 5 and 6 are examples of the best in development from Program B compositions. They differ from each other strikingly in the degree of seriousness of the stories. Also Sample 6 represents the best

of relatively few compositions from Program B which use a form of storytelling appearing primarily in written rather than in oral work.

Situation V -- Writing about Natural Phenomena

Rationale. Since, through the other writing assignments, we could hope for no definite insights into the children's notions of physical causality, this situation was concocted to draw the children's attention to specific natural events and to elicit their ideas as to how they happened to occur. When we decided to add this writing situation, we were sure that even the youngest children in the sample (our second graders) could articulate their notions orally, for Situation II discussions had already proved successful in getting them to express their ideas on such subjects. Thus, we were particularly interested in how much and what parts of their notions they would manage to get down in writing, what they would take to be "an explanation" of natural events, whether mythical elements would appear in their explanations, and how many would opt just to write a myth.

Professor Joseph McVicker Hunt, one of our consultants, suggested the use of Illinois Inquiry Training Films as a basis for the children's assignment. The three films we used proved successful.

Structure. Having informed them that they would be shown a short silent film of a science experiment, the children were asked to "keep their ideas about it to themselves" until afterward, when they would be given a chance to write. After the film showing, the investigator reviewed the film for the children, drawing diagrams of the events of the experiment on the blackboard.[16] The children were instructed, then, to write "some kind of explanation of what happened." Assurance was given them, too, that they did not have to write an explanation that adults would consider "right," since we were interested in any kind of explanation they wished to give. Forty minutes were allowed for writing time.

The first year, Illinois Inquiry Training Film Number 7 was shown and the children were asked to

[16]The diagrams drawn were merely reproductions of those appearing in the Idea Book accompanying the Illinois Inquiry Training Films in Physics.

explain: "Why did the can collapse?" The second year Number 16 was shown and the children were asked: "Why did the ball stick in the ring? and then later why did it fall through?" The third year's film was Number 20 and the question asked was "Why does one object float while the other object sinks?"

Situation V Instrument

A. What feedback of film events occurs in composition?
B. What mistakes are apparent in child's perception or in child's description of what he saw?
C. Is any explanation of events presented? -- i.e., other than feedback of visible film events.
D. Is an analogy presented in explanation?
E. Do mythical elements appear within child's explanation?
F. If explanation presented does not fit into Scientific Explanation Key, what explanation is given by child?

After the compositions were evaluated according to the above instrument, they were separated into groups as follows: a) those attempting no explanation and containing no feedback of events -- e.g., "it just collapsed;" b) those giving no explanation but containing feedback of some events, and thus suggesting the child thought certain factors were especially relevant; c) those attempting natural explanations; and d) those giving completely mythical explanations. Information from the compositions in groups a, b, and c is lumped together in the charts showing results from this writing situation. Compositions of group c were further grouped according to the factors children thought were causal and according to the complexity with which they arranged these factors.

Those presenting explanations involving the use of scientific principles were included as a subgroup of group c. In order to distinguish those containing their correct use from others offering natural explanations, the guidelines for each film given in the Inquiry Training Idea Book under the heading, "Necessary Conditions," were used as our bases. If the child's explanation hit one or more points on the list of necessary conditions, it was considered a "Scientific Explanation". The lists of necessary conditions for each filmed experiment appear below, labelled: "Scientific Explanation Key".

SCIENTIFIC EXPLANATION KEY

FOR VARNISH CAN EXPERIMENT

1. For the can to collapse the way it did, it was necessary that the forces pushing inward become greater than the forces pushing outward.

2. The force pushing inward came entirely from the pressure of the atmosphere which remained constant during the experiment.

3. Thus the forces pushing outward had to be decreased.

4. One of the outward forces was the resistance of the can itself. This was constant until the can collapsed.

5. The other outward forces were produced by changes in the contents of the can.

6. The pressure of the gases inside the can had to be sharply reduced to cause the outside pressure to overcome the resistance of the can itself.

7. This sudden pressure reduction inside the can was caused by rapid condensation of water vapor into liquid water, thus decreasing its volume and (in a closed rigid container) its pressure as well.

8. The large proportion of water vapor inside the can was produced by pouring some water into the can and heating the can.

9. The water vapor produced eventually displaced most of the air inside the can, but the pressure inside the can remained the same.

10. The condensation of the water vapor inside the can could cause a reduction in pressure inside only if no outside air could come into the can to take up the volume evacuated by the condensing vapor.

(Continued on next page)

Scientific Explanation Key (Continued)

11. Therefore it was necessary that the mouth of the can be corked <u>after the vapor had displaced most of the air and before the vapor was condensed</u>.

12. Rapid condensation requires rapid cooling.

13. To produce rapid cooling it was necessary to pour cold water over the can.

Since several children's explanations contained the word, <u>pressure</u>, it was necessary to set up criteria to distinguish cases in which the child's use of the word fit the concept needed for the scientific explanation from those in which the child's use was not "scientific".

In order to consider the use of <u>pressure</u> as scientific we required that the following <u>three</u> things appear in the composition:

1. an indication that the amount of pressure exerted is changeable;
2. the pressure spoken of is said to be either pressure of steam or pressure of air;
3. some relationship is indicated between "pressure" and "volume," and/or between "pressure" and "temperature".

The results gathered from this writing situation showed up no differences between the compositions of Program A children and those of Program B children. Therefore, charts are arranged to present data by grade level only, and not by Program.

TABLE 30

Situation V — First Year — Varnish Can Experiment Compo's.

Gr. Level Expl. Nos.*	2 #	2 %	3 #	3 %	4 #	4 %	5 #	5 %	6 #	6 %	# and % of Totals #	# and % of Totals %
0	9	20.9	2	4.8	--	--	--	--	1	8.3	12	8.5
1	10	23.3	12	28.6	2	6.1	3	27.3	3	25.0	30	21.3
2	2	4.7	--	--	1	3.3	1	9.1	--	--	4	2.8
3	--	--	1	2.4	4	12.1	2	18.2	--	--	7	5.0
4	3	7.0	--	--	--	--	--	--	--	--	3	2.1
5	--	--	2	4.8	1	3.3	1	9.1	--	--	8	5.7
6	2	4.7	9	21.4	5	15.2	--	--	--	--	16	11.3
7	2	4.7	3	7.1	2	6.1	2	18.2	--	--	9	6.4
8	3	7.0	5	11.4	--	--	1	9.1	--	--	9	6.4
9	4	9.3	2	4.8	13	39.4	--	--	1	8.3	20	14.2
10	3	7.0	--	--	2	6.1	--	--	1	8.3	6	4.3
11	1	2.3	6	14.3	1	3.3	1	9.1	4	33.3	13	9.2
TOTAL IN EA. GRADE LEVEL	43	30.5	42	29.8	33	23.4	11	7.8	12	8.5	TOTAL 137	
Completely Mythical:	--	--	--	--	2	6.1	--	--	2	16.7	4	2.8
Having myth. elements:**	1	2.3	3	7.1	4	12.1	1	9.1	--	--	9	6.4
											TOTAL 141	

*For the type of explanation designated by each number here see the key on the next page.

**The compositions containing mythical elements are included also in the figures for explanations in numbered designations 1 thru 11 above, because they were attempts at natural explanations and not merely presentations of myths.

Key to Explanation Numbers on Table 30

0 = no explanation offered.

1 = the can melted or the can got all soft either from the fire, the steam, or the water.

2 = separate elements mixed together -- e.g., smoke and water; or "hot and cold don't go together."

3 = elements were kept separate -- e.g., hot water inside and cold water outside; or steam or hot air was kept trapped inside and cold water was kept outside.

4 = short expressions in which scientific terms occur but are not used clearly enough to determine how the child understands them.

5 = a specific element within the experiment is singled out but how it is taken to be relevant is not clear.

6 = opposing elements meet -- e.g., warm against cold; cold water on hot can; cold water and steam met and pressure "sucked up" the can.

7 = there was a lack of air within the can and either "suction" from inside or "suction" from outside.

8 = pressure is singled out as causal but notion of pressure is either incorrect or incomplete.

9 = there was a change in the can itself -- e.g., "heat made the can stand straighter, then cold water on it made it collapse;" "heat made the can weak and cold water on a weak can makes it collapse;" "the can was hot and then cold." The latter explanations often included an analogy with glass breaking due to quick and extreme changes in temperature of water poured on it.

10 = three steps in the child's procedure are discernable which are necessary to his coming to use the scientific principles involved in a formal understanding of the experiment. However, the child has not hit the Scientific Explanation Key.

11 = explanation hits the Scientific Explanation Key on at least one point.

SCIENTIFIC EXPLANATION KEY

FOR THE BALL AND RING EXPERIMENT

A. For the ball to get stuck in the ring:

1. The diameter of the ball must be larger than the inner diameter of the ring.

2. Since the ball slipped through the ring in the beginning of the demonstration, one of two changes must have occurred to cause the ball to "get stuck".

   a. The inner diameter of the ring got smaller.
   b. The diameter of the ball got larger.

3. In this case, the ball was heated, which caused it to expand and have a larger diameter.

4. The ring was not heated and maintained its original diameter.

B. For the ball to slip through again:

1. The diameter of the ball had to become less than the inner diameter of the ring.

2. The ball, placed in the ring, conveyed heat energy by conduction to the ring, causing the ring to expand as it became warmer and the ball to contract as it gave up heat to the ring and thus became cooler.

3. When the ball and the ring were approximately the same temperature, the hole in the ring was large enough for the ball to slip through.

None of the compositions about the brass ball and ring experiment contained mythical elements at all -- thus there were no myths among them.

TABLE 31

Situation V — Brass Ball and Ring Compo's.

Second Year

Gr. Level Expl.Nos.*	3 #	3 %	4 #	4 %	5 #	5 %	# and % of Totals #	# and % of Totals %
0	1	3.7	--	--	--	--	1	1.4
1	3	11.1	--	--	--	--	3	4.1
2	3	11.1	9	32.1	7	38.9	19	26.0
3	3	11.1	2	7.1	--	--	5	6.8
4	2	7.4	2	7.1	1	5.6	5	6.8
5	1	3.7	4	14.3	1	5.6	6	8.2
6	2	7.4	1	3.6	1	5.6	4	5.5
7	2	7.4	2	7.1	1	5.6	5	6.8
8	3	11.1	2	7.1	1	5.6	6	8.2
9	7	25.9	6	21.4	6	33.3	19	26.0
TOTAL IN GR. LEVEL	27	37.0	28	38.4	18	24.7	TOTAL 73	

*For the type of explanation designated by each number here see the key on the next page.

Key to Explanation Numbers on Table 31

0 = gave no explanation at all, and no feedback.

1 = explanation not clear but indicates relevance of simple factor, e.g., hot, cold, fire, etc.

2 = ball melted and got sticky (gooey) and stuck to the ring; and ball cooled, dried and/or hardened and fell through the ring.

3 = importance of kind of metal is indicated and of gravity -- "sticks to" ring appears.

4 = simple explanations like "it got hot" --> stuck; and "cooled off" --> went through. (Change in temperature is supposed to be the only causal factor.)

5 = like 4 above but including an analogy between "stuck to" ring and "stuck to a magnet" therefore: heat --> ball becomes magnet --> stuck; and cooling --> magnet wore off --> fell through.

6 = simple explanations, short, somewhat unclear, but containing indication of change in size of ball due to heat or fire. (Not enough written to warrant rating as fitting the SE Key.)

7 = change in size of ball due to temperature change -- containing analogy with balloon "puffing up" (and "puffing down").

8 = fits Scientific Explanation Key at some point, but are on one question or the other either unclear or incomplete. (All have included temperature and size of ball relationship.)

9 = clear scientific explanation with respect to ball.
Note: NO children mentioned possibility of ring changing diameter after contact with hot ball. Therefore, concept of "conduction of heat" is inoperative among these children according to their writing in this situation.

SCIENTIFIC EXPLANATION KEY

FOR THE WOOD FLOATING - SINKING EXPERIMENT

Block A

1. For an object to stay at rest at the surface of a liquid the downward forces must equal the upward forces.

2. In this case the downward force was equal to the gravitational pull on the block (its weight) plus the downward force of air pressure.

3. The upward force was the pressure of the water exerted on the under side of the block.

4. The block sank into the water <u>until</u> its bottom surface reached the depth at which the upward pressure just equalled the downward force.

5. At this point the block <u>stopped</u> <u>sinking</u> and <u>started</u> <u>floating</u>.

Block B

1. For an object to sink beneath the surface of a liquid the downward forces on the object must exceed the upward forces.

2. In this case the downward force on the block after it was completely submerged was equal to the weight of the block plus the pressure of the water pushing downward on it.

3. The upward force was the pressure of the water exerted on the under side of the block.

4. The block sank to the bottom of the tank because the downward forces were greater.

(Continued on next page)

Scientific Explanation Key (Continued)

5. The weight of the block itself exceeded the difference between the upward and downward water pressure on the block.

6. Since the downward force was greater the block moved downward until it reached the bottom of the tank.

Of the 38 compositions gathered in response to this filmed experiment, none contained explanations that hit the Scientific Explanation Key. (See the chart on the following page for breakdown of types of explanations given.)

TABLE 32

Situation V — Wood Floats and Sinks Compo's.

Third Year

Gr. Level Expl.Nos.*	4 #	4 %	5 #	5 %	6 #	6 %	# and % of Totals #	# and % of Totals %
1	1	10.0	2	11.8	--	--	3	7.5
2	--	--	4	23.5	4	36.4	8	20.0
3	--	--	--	--	1	9.1	1	2.5
4	2	20.0	5	29.4	--	--	7	17.5
5	1	10.0	1	5.9	1	9.1	3	7.5
6	1	10.0	--	--	1	9.1	2	5.0
7	1	10.0	--	--	3	27.3	4	10.0
8	4	40.0	1	5.9	--	--	5	12.5
9	--	--	2	11.8	--	--	2	5.0
10	--	--	1	5.9	1	9.1	2	5.0
11	--	--	1	5.9	--	--	1	2.5
TOTAL IN GR. LEVEL	10	25.0	17	42.5	11	27.5	38	95.0
Myths	--	--	--	--	2	18.2	2	5.0
							TOTAL 40	

*For the type of explanation designated by each number here see the key on the next page.

Key to Explanation Numbers on Table 32

1 = holes in block fill with water --→block sinks. (Some contain analogy with boat filling up.)

2 = shape and size of blocks important: blocks contain air bubbles or water bubbles. (Some contain analogy with balloon.)

3 = holes fills with water --> sink; and air inside --> float. (Boat analogy and balloon analogy)

4 = shape and size, water gets on top of thin block --→ sinks it.

5 = some sort of substance or chemical in one block and not in the other.

6 = kind of wood different -- one is soft and one is hard; and ebony tree originally grew in water.

7 = kind of wood -- weight + hardness.

8 = short unexplained expressions -- e.g., "density;" "pressure;" "weight."

9 = weight and size.

10 = weight + size + shape (includes analogy with paper sinking).

11 = shape + weight.

Myths written by the children in response to the films of the varnish can experiment and the wood floating and sinking experiment are in themselves interesting, so we are reprinting them here.

Grade 4, First Year; Program A

Why does the can collapse?

The can collapsed because there was a spirt in the can who didn't like to be hot in fact he hated it. So when they put the water in and heated it he had gotten so mad he made the can collapse.

Grade 4, First Year; Program A

Why does the can callapse?

Because when the lady had put about half of the cup of water in the can and then heated. the the can then she poored gas over it it started to wrinkle up because the can liked the smell of gas and then it sniffed and sniffed and blew the can. Thats my whole picture of it.

Grade 6, First Year; Program A

Why Did the Can Collapse?

Well, where should I begin, okay I'll start here. As the can was being filled with water they for got to let it breathe so the thing almost drowned. As it was placed over the bunsen burner it got so hot that it blew its top. Then after being through such a torture, well you can imagine what a cold pail of water on the head do. The can got so cold that it sneezed. This is the only scientifical way it could happen.

Grade 6, First Year; Program A

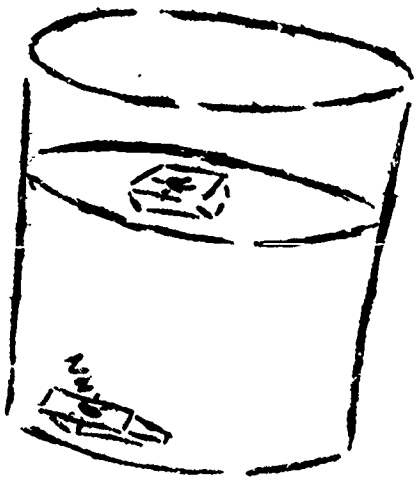
Why Does The Can Collapse?

The can collaped for there was a invisible demon was trying to get away from the heat of the flame. He was running around the room, looking for a place to get away from the peircing rays of heat, coming from the flame. So when the lady took the can off the flame, she probably turned off the flame, stopping the rays.

The demon, tired by this time, was looking for a place to sit down and rest. He most likely spotted the can first, from the reflection of light on it. After the lady poured the water on the can, the demon sat on it. But the can was so hot that the demon got up again. If he hadn't, the can would've been thoughly squashed!

Grade 6, Third Year; Program B

The reason the pine floated is because there was a little tiny animal in it and it could tred water. The ebony block had an other tiny animal in it but it couldn't tred water but it could breath like a fish. So while the pine animal was tredding warter so it wouldn't drown, the ebony animal wasn't trying to learn how to tred water so it went to the bottom and went to sleep.



Why the Beautiful Ebony sinks and the Pine stay afoat.

One time long ago there lived a old man with two beautiful daughters. The one daughter the eldest was tall and beautiful and her name was Karen and the other was Bonnie. One day as Bonnie and Karen were out swimming one of the gods came along dressed as a old man and a goddess dressed as a old womem. They were planning to see which of the daughters were the most capable of doing anything. "Dear children would you be kind enough to show us to town? they asked. "Surely, Bonnie stepped out and took the old women and man by the hand. But Karen, who was very vain and selfish didn't The gods saw this and took it against her.

"Karen, come help this febble man to town." Bonnie's voice rang.

"No, I will not help any beggers, besides I have to get my beauty tan, and for you are sopposed to be back and scrub the floor." Karen sank into the sea, and went playing by her self.

The Gods watched Karen her hair as black as ebony, as discovered that she beat her sister. And Bonnie with hair as fair as pine, just loved her sister even more.

The Gods dissided to punish Karen for her wrongs as as they were out swimming one day something happen, Bonnie went right into the water but Karen stayed out. Soon Bonnie became tired and went home, Karen immediately got up and went in, she then swam clear out and she drowned.

Some say that she drowned because a sea-monster attacked her, but Bonnie knows why., that Karen drouned and she didnt because that ebon's beautiful color is like Karen's beauty, and the pine is like Bonnie. and because Karen was so vain about her beauty she was omitted.

From compositions that we rated "scientific explanations" we have selected (see below) one from each grade level about the two filmed experiments: the varnish can experiment and the brass ball and ring experiment. The reader may properly assume from these sample compositions that it would be rare, indeed, for a child at any grade level covered in this study to present on paper a complete explanation of these experimental phenomena under the terms of the assignment given for Situation V in the time allotted. Such complete explanations are more apt to arise in response to an assignment in which oral explanations are expected. But even then, we seriously question whether children (ages 7 to 12) are ordinarily equipped with sufficient logical abilities to organize their perception and language skills, within the context of physical causality, so as to give a complete explanation without prodding and guidance from others.

Grade 2, First Year

Why did the can collapse?

When the can with the water in it got hot it steamed a then when it was taken of some of the steam was left inside and then when the the steam was cooled off it was turned into cold air and cold air sinks so the air from side pushe it in.

Grade 3, First Year

When she put the can on the flame the cold water became hot and formed steam. The steam excaped out the top But when she corked up the can the steam could not excape and when she poured the cold water on it the steam turn to cold water a it collapsed.

Grade 4, First Year

Why did the can collapse?

The water all turned to steam and came out. When the cork was put on it trapped the hot

air inside. The hot air was holding up the can because the can was half melted. When the cold water was poured on it cooled the hot air that was holding up the can, so the can collapsed.

Grade 5, First Year

Why Does the Can Collapse

The water inside the can pushed out all the air when it was over the fire. The water boiled and heated up the sides of the can. When taken off fire, she put a cork in it so no air could come in. She poured the last of the water on it, which cooled it. Since it had no air inside, it collapsed under the water coming down on the top and sides.

Grade 6, First Year

Why Does the Can Collapse?

1. Water was placed in the can.
2. The can with the water was placed open over the heat.
3. Vapor ~~a~~ rose from the can.
4. Hot Air inside the can expanded and gushed out the opening. Hot Air occupies more space than cold air
5. The can was capped
6. Cold water was poured over the can, cooling the air inside.
7. The cold air contracted, leaving a partial vacuum.
8. Since there was almost no air in the can, outside air pressure pushed in the can, because there was no air inside to equallize the pressure

Grade 3, Second Year

1. Why did the ball get stuck?
   because the ball got bigger when it was put over the Bunson burner because the Bunson burner was hot.
2. Why did the ball fall through?
   because when it cooled the ball went back to its original size and fell through.

Grade 4, Second Year

1. When most things get hot they exspand. Thats why the ball stuck.
2. And when the ball cooled off it contracked.

Grade 5, Second Year

I think the ball stuck, because when it was heated the heat made the ball bigger. Then when she took the ball out it cooled, when it was done cooling, the ball was back to its normal size and went through the hole.

APPENDIX B

Oral Discussion -- Situation II

Rationale. There is good reason to believe that in the early grades the ability of the child to communicate his thoughts orally is greater than his ability to communicate them in writing. Through his second grade and even into the third grade, the child is experiencing the adjustment and coordination problems that go with gaining the mechanical skills and memory necessary to getting his thoughts into readable, written words. Until these necessary skills are developed, the child experiences frustration in getting his thoughts on paper--- frustration which is not so prevalent in expressing those thoughts orally.

The taped discussions by groups of children in Situation II are primarily designed to allow each child the opportunity to express himself orally on subjects that are within his range of interests and that, therefore, may appear in his written compositions. Children are taken in groups coincident with the reading ability groups of their classroom, in order to provide a situation in which there is opportunity for them to react orally to what others in the group have to say. Further, the discussion sessions are run in such a way as to allow the child to say what he wishes without fear of "being corrected" by the adult in charge. Thus, if he has gotten material in the classroom wrong or mixed up, he may express his idea as it is -- his main challenge being, then, to get it out so that others may understand it.

The materials given by the child in the discussions may then be used as a basis of comparison for notions the child expresses in his written situations, I, III, IV, and V.

Structure. Discussion sessions are held six times during the school year with each group of children, each session lasting from 20 to 40 minutes, depending on the size of the group. Since there are ordinarily three reading groups within the classroom, children in our study sample are taken together with others in their reading group into Situation II discussion sessions. Question Books are assigned to the children to provide (1) a take-off point for discussions, and (2) an indication of what children are moved to ask questions about during the course of their three years in the study.

The investigator's procedure in five of the sessions each year is as follows: (1) A child is called on to select from his written questions one that he would like to talk about; (2) when the child has stated his question, he is asked how he happened to ask that question -- in order to get some background for the child's concern with that question; (3) the child is then asked how he might go about finding out for himself the answer to his question -- this gives the investigator some notion of how the child understands his question and what he finds relevant to its answer; finally, (4) other children in the group are asked to give their suggestions as to the way they might find out the answer to the same question. In one discussion session each year, after the children have written Situation V compositions, the investigator reviews the Suchman Film the children saw and asks each of them to explain why the experiment shown in the film turned out the way it did. In none of these sessions does the investigator answer the child's question for him.

The Sample. During the first year of the study, participants for Situation II were chosen from our second grade Program A writing-sample. We selected the one classroom to which the largest portion of our second graders was assigned. Since other children (about whom we had not gathered background information for the writing study) were also assigned to that classroom, we elected to include the whole classroom in the discussions and gather background data on the non-writing-sample children from the school records. By including every child in the room, it was possible to create the least disruption in regular class activities while disguising the fact that we were primarily interested in the behavior of only certain members of the class.

For the second and third years of the study these children were kept together, for the most part, so that we could follow them in the discussion situation through their third and fourth grades. Because of the mobility of families within the school district the number of children from the writing-sample that we were able to follow for three consecutive years was only eleven (out of the twenty-nine participants at Grade 4 level.) Changes from year to year are as follows:

	Number of children in:		
	Sample	Non-Sample	Total
First Year	20	11	31
Second Year	17	14	31
Third Year	11	18	29

Question Books

About two weeks before the first discussion of the year the children's classroom teacher provided them with construction and writing paper for a folder. She instructed them to write down in their folders any questions they wanted to ask and to date them. They were told to do this during their spare time in school, and not to interrupt their school assignments by doing so. On the school day prior to each discussion the children's folders -- their Question Books -- were collected, entries were recorded, and at the beginning of the session they were returned to their owners who kept them in their school desks until the next collection time. After the last discussion session of each school year the children were permitted to take them home.

Question Book entries for each year were classified according to the Instrument on the next page. Samples of entries gathered in each category appear after the Instrument as well as charts showing the frequency of category and subcategory entries for each year.

INSTRUMENT FOR CLASSIFICATION
QUESTION BOOK ENTRIES

(Adapted for our purposes from classification system used by Jean Piaget[1])

I. QUESTIONS OF CAUSAL EXPLANATION

- a. Physics
- b. Plants
- c. Animals
- d. Human Body
- e. Manufacture
- f. Other

II. QUESTIONS OF REALITY AND HISTORY

- a. Facts and Events
- b. Place
- c. Time
- d. Modality
- e. Invented History
- f. Other

III. QUESTIONS ON ACTIONS AND INTENTIONS

- a. Actions
- b. Intentions

IV. QUESTIONS ON RULES

- a. Social Rules
- b. School Rules
- c. Other Rules or Customs

V. QUESTIONS OF CLASSIFICATION

- a. Name
- b. Logical Reason
- c. Classification
- d. Other

VI. QUESTIONS OF CALCULATION

VII. AMBIGUOUS, ILLEGIBLE AND NON-QUESTION FORM ENTRIES

[1]Jean Piaget, The Language and Thought of the Child; (Meridian Books, 1955), pp. 221-222.

SAMPLE ENTRIES FROM QUESTION BOOKS

I. QUESTIONS OF CAUSAL EXPLANATION

a. Physics:
How was the universe formed? What makes the world go around? What is the wind made of? What is lightning? Why do we have snow? How does electricity run? How was Helium made?

b. Plants:
How can trees grow from a seed? How was the pumkin made? How come trees change colors along with the seasons?

c. Animals:
How can a caterpillar turn into a butterfly? How did people get here? Why do penguins live at the North Pole?

d. Human Body:
Why do our brains tell our parts of our bodies to move? Why do we need food? What are teeth made out of?

e. Manufacture:
How do they make chalk? What is paint made of? How do they make magnets? What is glass made of?

f. Other:
How do we eat eggs and chickens come from them? Why are we white? What makes you sneeze?

II. QUESTIONS OF REALITY AND HISTORY

a. Facts and Events:
Which is colder, the North or the South Pole? Do you like to count? How do birds get fed in winter when people don't put out food? Is earth the only planet with air on it? How many stars are on the flag?

b. Place:
What state do the Monarch butterflies go (to) in the fall? How far is the planet Mars? Where do they make money?

c. Time:
Why do we have months of the year? When was the war?

Sample Entries (Continued)

d. Modality:
Could we live on bread and water? Do man-eating plants really eat men? Would elephants be strong? What will I be when I grow up?

e. Invented History:
Who was the first one to go to the moon? What do heffalumps look like?

f. Other:
How does God hear our prayers? How did God make people? Where does the butterfly go at night? Was the Indians the first one who discovered America?

III. QUESTIONS ON ACTIONS AND INTENTIONS

a. Actions:
If you were lost, how could you find your way home? When we make a nuisance of ourselves, what can we do? How did the Japs surrender? How did we get the film (of the "Chinese" bombing Pearl Harbor)?

b. Intentions:
How come it's so important to go to school? Why did the pilgrims come to America? Why do bees sting? (....and wasps sting?) Why do we have a war?

IV. QUESTIONS ON RULES

a. Social Rules:
Why is there a law?

b. School Rules:
Why do we have to go to school?

c. Other Rules or Customs:
Why do we have Easter? Why do women wear high heels?

V. QUESTIONS OF CLASSIFICATION

a. Name:
Who invented words? Who named the planets? Which man is the most famous man?

(Continued on next page)

b. Logical Reasoh:
Why didn't the pioneers have the same thing that we have today? Why is there folk tales?

c. Classification:
Would it be foolish to fall down? Are peanuts nuts? What is the difference between warm blood and cold blood? Why am I human?

d. Other:
How come a nest is made of hay and leaves?

VI. QUESTIONS OF CALCULATION
Is 4 x 5 = 20, 5 x 4 = 20? What is 300 + 3000 = ?
When do numbers stop?

TABLE 33

QUESTION BOOK ENTRIES - WHOLE CLASSROOM

GRADE LEVEL		2 (1st Yr.)			3 (2nd Yr.)			4 (3rd Yr.)		
Classification*		#	% of Ttl.	% of Class'n.	#	% of Ttl.	% of Class'n.	#	% of Ttl.	% of Class'n.
I.	a	23	6.0	31.9	91	16.8	42.5	38	32.2	50.7
	b	4	1.0	5.6	14	2.6	6.5	5	4.2	6.7
	c	24	6.3	33.3	45	8.3	21.0	12	10.2	16.0
	d	7	1.8	9.7	17	3.1	7.9	4	3.4	5.3
	e	9	2.3	12.5	28	5.2	13.1	12	10.2	16.0
	f	5	1.3	6.9	19	3.5	8.8	4	3.4	5.3
	Ttl.	72	18.8		214	39.56		75	63.56	
II.	a	30	7.8	33.3	23	4.3	29.5	11	9.3	39.3
	b	6	1.6	6.7	7	1.3	9.0	3	2.5	10.7
	c	12	3.1	13.3	5	.9	6.4	2	1.7	7.1
	d	7	1.8	7.8	11	2.0	14.1	3	2.5	10.7
	e	1	.3	1.1	3	.6	3.8	0	--	--
	f	34	8.9	37.8	29	5.4	37.2	9	7.6	32.1
	Ttl.	90	23.5		78	14.42		28	23.64	
III.	a	21	5.5	31.5	8	1.5	8.3	2	1.7	9.1
	b	46	12.0	68.6	88	16.3	91.7	20	16.9	90.9
	Ttl.	67	17.49		96	17.76		22	18.64	

*See Instrument, p. B-4.

(Continued on next page)

TABLE 33 (Continued)

GRADE LEVEL Classification*		2 (1st Yr.) #	2 (1st Yr.) % of Ttl.	2 (1st Yr.) % of Class'n.	3 (2nd Yr.) #	3 (2nd Yr.) % of Ttl.	3 (2nd Yr.) % of Class'n.	4 (3rd Yr.) #	4 (3rd Yr.) % of Ttl.	4 (3rd Yr.) % of Class'n.
IV.	a	2	.5	3.4	2	.4	4.8	5	4.2	26.3
	b	50	13.1	84.7	23	4.3	54.8	9	7.6	47.4
	c	7	1.8	11.9	17	3.1	40.5	5	4.2	26.3
	Ttl.	59	15.40		42	7.76		19	16.10	
V.	a	20	5.2	55.6	45	8.3	65.2	24	20.3	85.7
	b	11	2.9	30.6	5	.9	7.2	2	1.7	7.1
	c	2	.5	5.6	17	3.1	24.5	1	.8	3.6
	d	3	.8	8.3	2	.4	2.9	1	.8	3.6
	Ttl.	36	9.40		69	12.75		28	23.73	
VI.		16	4.18		20	3.70		10	8.47	
VII.		43	11.23		22	4.07		6	5.08	
TOTAL		383			541			188		
Number of Children		31			31			29		

*See Instrument, p. B-4.

TABLE 34

QUESTION BOOK ENTRIES - SAMPLE CHILDREN

GRADE LEVEL		2 (1st Yr.)			3 (2nd Yr.)			4 (3rd Yr.)		
Classification*		#	% of Ttl.	% of Class'n.	#	% of Ttl.	% of Class'n.	#	% of Ttl.	% of Class'n.
I.	a	15	5.9	39.5	50	15.6	40.0	11	17.2	52.4
	b	2	.8	5.3	8	2.5	6.4	1	1.6	4.8
	c	8	3.1	21.1	27	8.4	21.6	2	3.1	9.5
	d	4	1.6	10.5	13	4.1	10.4	2	3.1	9.5
	e	5	2.0	13.2	15	4.7	12.0	4	6.3	19.0
	f	4	1.6	10.5	12	3.8	9.6	1	1.6	4.8
	Ttl.	38	14.96		125	39.06		21	32.81	
II.	a	17	6.7	30.9	6	1.9	14.3	2	3.1	22.2
	b	5	2.0	9.1	3	.9	7.1	3	4.7	33.3
	c	4	1.6	7.3	4	1.3	9.5	2	3.1	22.2
	d	5	2.0	9.1	6	1.9	14.3	1	1.6	11.1
	e	0	--	--	2	.6	4.8	0	--	--
	f	24	9.4	43.6	21	6.6	50.0	1	1.6	11.1
	Ttl.	55	21.65		42	13.13		9	14.06	
III.	a	17	6.7	30.9	6	1.9	9.5	0	--	--
	b	38	15.0	69.1	59	18.4	93.1	14	21.9	--
	Ttl.	55	21.65		65	20.31		14	21.88	

*See Instrument, p. B-4.

(Continued on next page)

TABLE 34 (Continued)

GRADE LEVEL Classification*	2 (1st Yr.) #	% of Ttl.	% of Class'n.	3 (2nd Yr.) #	% of Ttl.	% of Class'n.	4 (3rd Yr.) #	% of Ttl.	% of Class'n.
IV. a	0	--	--	1	.3	3.6	0	--	--
b	37	14.6	84.1	16	5.0	57.1	6	9.4	75.0
c	7	2.8	15.9	11	3.4	39.3	2	3.1	25.0
Ttl.	44	17.32		28	8.75		8	12.5	
V. a	10	3.9	62.5	20	6.3	55.6	6	9.4	66.7
b	2	.8	12.5	4	1.3	11.1	1	1.6	11.1
c	2	.8	12.5	11	3.4	30.6	1	1.6	11.1
d	2	.8	12.5	1	.3	2.8	1	1.6	11.1
Ttl.	16	6.3		36	11.25		9	14.06	
VI.	11	4.33		7	2.19		1	1.56	
VII.	35	13.78		17	5.31		2	3.13	
TOTAL	254			320			64		
Number of Children	20			17			11		

*See Instrument, p. B-4.

We must remind the reader that the task of classifying children's written questions into kinds presents difficulties for one who is concerned with what the child is asking about, rather that the syntax of his entries. There is some question in our mind, for instance, as to whether the child's -- particularly the second grader's -- memory for what he meant by his question is dependable in such a situation as ours, where there was often a lapse of as much as two weeks between the time the child made the entry and the time the investigator talked to him about it. It was what the child said at the later time that we used to decide how to classify the question. But we were not able to question every child about every one of his entries. Perhaps, we would not have had any entries in Class VII, if we had been able to do so. Our interpretation of unquestioned entries (which amount to less than one quarter of all entries) was based, then, upon our familiarity with each child, his ways of expressing himself, and his range of interests and conceptual understanding.

With regard to our adaptation of Piaget's classification list, we have used as best we could the guidelines of his study of children's questions to place our Question Book entries under a general class heading. But to further sort out questions of a given class into subclasses, we found it helpful in several cases to add another subclass to the list given by Piaget -- this serving as a box in which to put those entries which belong within the class but which differ significantly from those in other established subclasses. The list of sample entries (see above) following the instrument should help the reader to see what sorts of entries were placed where.

Although there are quite a number of different sorts of questions entered by our children, the type of situation in which those questions were elicited surely plays some part in influencing the proportion of those in certain classes. For instance, once the children became aware that their teacher would not be their interviewer in the discussions, those who had made entries which were personal questions for the teacher made no more entries of that sort during the remaining time in the study. Also, those that had asked personal questions of the interviewer did not continue to ask them, and in some cases refused to offer them for discussion, after the first discussion session.

The fact that the children became aware that discussions would be taped (at the time of the first session) may also have played an influencing role in the sorts of questions entered in their Question Books. Of this we have no clear evidence, however, since all work with the children in discussion was done in the presence of the tape recorder until they had participated in six sessions each year for three years. The only discussion held with these children without a tape recorder was done in mid-May, 1967, in the children's regular fourth grade classroom with their teacher and others present as observers. We noted no particular change in the sorts of questions entered for this last discussion, even though the children were aware that there would be no tape recorder but that there would be observers. From this we conclude only that the lack of tape recording activity and the presence of observers were not influencing factors in the types of entries this group of fourth graders -- many of whom had participated for three years in Situation II -- made in their Question Books.[2]

Further, the fact that our children's questions were to be written down by them, rather than asked orally as was the case with the children from whom Piaget got his questions, probably affects to some extent not only the sorts of questions asked but also the linguistic forms of the questions. In this connection our attention is drawn to the entries of five of our children (who were part of our writing-sample as well as participants in Situation II). The dates given in these children's Question Books showed that characteristically several questions were entered on the same day and that those questions bearing the same date usually took the same form. Investigation into what the child meant by each question in a series revealed that in spite of the fact that he put them in the same linguistic form, he offered them as quite different sorts of questions according to our instrument. It was not unusual to find these children in explaining their questions orally

Question Book entries for this demonstration discussion were <u>not</u> tallied in with those used for the taped discussion sessions and which were counted for the charts on pp. B-8 - B-11, above.

actually restating them in other forms -- forms which bore greater resemblance to those the class of questions intended.

The following example may serve to show this phenomenon in the children's writing behavior:

A child's Question Book has these entries bearing the same date and appearing in this order:

1. Why is there a sun? 2. Why is there people?
3. Why is there chalk? 4. Why is there school work?
5. Why is there maneaters? 6. Why is there a flag?

When the investigator talked with the child about his questions, they were reformulated as follows:

1. How does the sun help us? 2. How did the first person get here? 3. How do you make chalk? 4. Why do we have to do workbooks in school? 5. Why would a tiger eat a man? /that is, would the tiger eat him because he's hungry, because he's mad, or because he's scared?/ 6. What do we use /national/ flags for?

The fact that this sort of continued use of the same linguistic form appeared repeatedly in the Question Books of five children in our Situation II group and also appeared occasionally in others of the group suggests that perhaps the children tended to take the visible form of the first written question in the series as a model for succeeding questions. If this is so, teachers and researchers into the writing behavior of children (ages 7 to 9) must seek an answer to the question: "To what extent can the written work of children be said to express their thoughts?" And certainly the validity of testing procedures requiring children to write short sentences or even phrases in answer to a variety of questions should be open to question, if the children's performance on such tests is to be taken as a measure of their understanding.

The Discussions

Question Book discussion sessions were held with our Situation II children on a regular basis. During the first year they began in March and were carried on through the middle of May so that each group of children were met about every two weeks. The second year, they began at the first of December and ran at four week intervals for the first five sessions, the sixth session being held in mid-May, only two weeks after the fifth session. There were two week intervals between the first five sessions during the third year, with about six weeks between the fifth and sixth discussion sessions. The change in time intervals between the fifth and sixth sessions during the last two years was due to the fact that the sixth session was reserved for discussion of the Illinois Inquiry Training film shown the children as part of Situation V. Hence, the last session for each year was scheduled to take place as soon after the children wrote Situation V compositions as was feasible in the teachers' schedules.

The average size of our discussion groups was ten, although there were times during the three years in which as few as five and as many as fourteen participated together in a session. In general the groups differed from each other in reading ability -- that is, according to norms reported by the publishers of the readers used at each grade level, here, our high group placed on the readers tests at least 6 to 8 months beyond the average for their grade level, the middle group from 3 months below to 5 months above the average, and the low group at least 4 months below average for their actual grade level. Differences between the discussion groups were not so pronounced or clear-cut in IQ scores (based on the CTMM). Our high group represented IQ scores ranging from 110 to 132; the middle group ranging from 98 to 115, and the low group ranging from 87 to 110.

We made no effort to freeze any participant in the group in which he began the year. If a child began the year's discussions with the middle group, for example, he may have ended it as a member of our high group for discussions. However, any such shifts were made to fit in with the way in which the regular classroom teacher worked with the children on their reading lessons. Only three of our children were affected in this way (none from our writing-sample) and then only during the second year of discussions -- i.e., the third grade.

There was considerable shifting of group members between the end of our second year and the beginning of our third year. This was primarily due to the fact that members of the low group in third grade were retained in third grade rooms or sent to other fourth grade rooms for the third year of our study. As a consequence, some of the children who had previously been in the high and middle groups, were placed in middle and low groups within their fourth grade classroom. We were permitted, in addition to holding discussion sessions with the fourth grade classroom to which the bulk of our Situation II sample were assigned, to have discussion sessions with four of the children who had been retained or reassigned and who had been in the low group during the second year of the study. The success of our discussions with this low low group is dubious. We shall discuss it later.

The presence of the tape recorder and microphone seemed not to inhibit the children's behavior greatly after the first couple of discussions. At least we cannot imagine what the children's uninhibited behavior would have been like as different from what they actually did do in the sessions. At the first session, as second graders, most of them expressed interest in the tape machine and wonder at the playback of their own voices. During the first year's sessions, the investigator let each group listen to the playback for a minute or so before returning them to their classroom. During the second and third years, however, there were very few requests for playback.

Keeping sufficient order within a group during a session sometimes became a problem for the investigator, for children (particularly during their second and third grades) would get excited and all try to talk at the same time -- the result being that none could be understood on the tape. In these cases it was usually enough for the investigator to quiet everyone down and then quickly give the talkers a chance to explain themselves one after another. In any case, a child was returned to his classroom during a session only when he had repeatedly disturbed the attention of the group by carrying on a giggling spree or a talking spree with another child which was not related to what the rest of the children were talking about. Even in these cases the child was always asked not to continue his disturbing behavior and was sent out of the room only when he continued after the warning.

As a matter of practice the investigator did not report children's misbehavior to their classroom teacher unless it was essential that the teacher know -- as in the case of a child being returned to the classroom before the end of a discussion session.

Perhaps the most striking contrast between the children's discussion behavior in the three years of the study occurred between the second grade and the third grade. We noted that the time that the children would willingly stay on one question before asking to go on to another had more than doubled between the last discussion at Grade Two and the first discussion at Grade Three.

During the sessions with the children at Grade Four they showed a definite increase in the use of gestures and facial expressions along with their verbalizing. In Grade Three only three or four children used gesture in connection with their talk, whereas by the second session of Grade Four discussions almost all children did so. Also during Grade Four sessions, several children requested permission to draw pictures and diagrams to help "show what I mean".

We noted about halfway through the second year that certain kinds of responses were often made to the comments and questions contributed by some children in each group. Since these seemed not to have anything to do with what the contributors said, it occurred to us that these responses were actually social reactions to the persons who were contributing. In this connection, the responses we were particularly interested in would best be characterized as cases of the heckling of one child by another or by others. In order to get some other kind of data to account for this, and perhaps to see if the children had begun to appreciate contributions to our discussions on some basis other than whether the contributor was a "buddy" or a "rival," we administered a sociogram questionnaire to the group. The questionnaire contained such questions as "Who do you think made the best suggestions during our discussions?, "Who.....the silliest?" and who asked the best, and the silliest questions, along with questions, such as "If you were capt-in of the ball team, who would be your first choice for team member?", who would be your last?, and who is your best friend? etc.

By comparing the results of the sociogram with the giggles and heckling instances which were reproduced of the tapes of children's discussions, we found that, in about two-thirds of the instances of responses to certain children's remarks, the child being giggled at or heckled was the child "Who asked the silliest questions" -- regardless of what the child had to say on these occasions. Further, the sociogram revealed that he who asked "the silliest questions" was usually he who was "last choice for the team." The extent to which the social relationships between the children colored their responses on the questionnaire was most striking among the girls of the group in which there was a girl who had a speech defect and who said nothing aloud during the first five sessions of the year. (In the last session of the year the girl had made brief comment on the question under consideration. Her contribution amounted to some ten words.) Three out of the five girls in this group had filled her name in to answer "Who asked the best questions?"

To see if similar reactions would occur among other children at this grade level, a similar questionnaire was administered to two other third grade classes in the same school. This questionnaire was worded so as to refer to questions asked and suggestions made in the classroom (since these classrooms had not participated in our Question Book discussions), and it included the same questions about team choosing, etc., as had appeared on the one given our Situation II sample. The results from these classrooms, too, showed a correspondence between he who was best liked and he who asked the best questions, etc., etc.

During the third year of the discussion sessions, we were on the lookout for this pattern of behavior, although we did not administer a sociogram questionnaire. In general we did not find it after the first session of the year, except in the low fourth grade group and the low low group (oonsisting of children who were retained or assigned to another classroom). In these low groups some heckling and giggling continued through the six sessions regardless of what the contributors said. In the sessions with the high and middle fourth grade groups, the heckling and giggling did not disappear but it occurred usually only when the heckler, etc., was ready to voice disagreement with what the heckled child had said.

When the children were asked by the investigator how they might find out the answer to the question under discussion, they were at first hesitant about using their imagination on such matters. But during the second year, for some questions, they became less hesitant in responding to the question often coming up with quite complicated proposals of procedures. During the third year, however, this ease in responding imaginatively to this question was usually replaced by an answer of the form: "Look in an encyclopaedia." In order to prompt the children to use their imagination, the investigator would characteristically ask the children to "suppose they were going to write the encyclopaedia", then how would they try to find out, etc. This sort of procedure usually worked with the high group, but with the other groups it sometimes was successful and sometimes was not, and with the low low group (the third year) it was usually met with silence.

Once the discussion had entered the "how would you find out" stage the talk was allowed to proceed openly on whatever track it might take -- only occasionally returned to the original concern by the investigator if the children had not made clear as best they could how they got to where they were from where they'd just been. A non-directive interviewing technique was used as much as possible. By the end of the third year, children of the high group were able to keep the discussion going successfully without the intercession of the investigator, and when it seemed to them that the discussion was getting away from the original question they would remind the wanderers of it.

Since only by allowing the participants to bring in whatever matters they felt relevant to a given question could we hope to get a clear indication of the ways in which the children were thinking, the investigator gave the child speaking her undivided attention. Even when the discussion was carried into what may be considered in the public schools as "tricky ground" -- e.g., prayer, or birth of babies -- it was treated with seriousness. Under just these sorts of conditions, we found second graders describing "the sack breaking" (before mother went to the hospital) in terms of a plastic sack full of water that the baby punches a hole into when it's ready to be born; and other second graders assuring one of their

group that "God must hear our prayers, because He's everywhere and that means He's standing right beside you, so anybody that close could hear what you're saying!"

Analysis of the taped discussions revealed that many of the notions reported in the various works of Piaget and associates in Geneva were operative in the minds of our school children too. For example, in various discussions some second graders spoke of "air" in terms of wind or breath; some even up into fourth grade referred to clouds and steam as "smoke"; third graders referred to the sun and the moon occasionally as "he" and used terms such as "wants" and "likes" in descriptions of the causes of observed motions of these bodies. A working conception of scientific experimentation and hypothesis testing has only begun to be shown in the suggestions of two or three children and has become rather well established in the suggested procedures of only one of the children, and then only with respect to certain materials. By third grade when the subject of discussion had to do with the origin or the properties of some sort of material object, it was the general habit of all the children to answer the question about finding out the answer with some form of description of looking at the object -- i.e., one could find out by inspection. As their familiarity with magnifying glasses, telescopes, microscopes, etc., grew they would add "through a microscope". But usually "finding out" was a matter of "looking closely" and "looking closely" was synonymous with "studying," even though few children on very few occasions were able to give some kind of indication of what they were looking for -- other than just "for the answer".

When children were concerned with questions which arose out of religious contexts, we note that several of them (those who obviously had had some sort of religious instruction) were hesitant at proceding when the question, "how would you find out?", was asked. This hesitation is indeed a healthy sign in these cases, for it is linked as far as we can tell with a sense of the use of "finding out" as not fitting in the context of religious beliefs.

We noted, in the course of the three years, that the children's concept of distance as verbalized in connection with specific problems or questions has gradually developed with respect to relative geographic distances. At second grade they could work well with relative distances within their immediate field -- school, home, the immediate neighborhood -- but by mid-year of their third grade they came to work adequately within the framework of the part of the city in which they lived, went to school, church, etc., and with respect to cities in which relatives lived. By the end of their fourth grade, however, they had well begun to show an elementary acquaintance with larger geographic areas within this country and their relative distances away from their homes. They have for the most part not developed the objectivity with respect to their geography to judge relative differences from a point which does not represent their own location.

During the third grade relative distance in time past began to be descriminated to a point within their own memory span which was hardly more than three years for any of them. All happenings which antedated that point were more or less undifferentiated with the exception that they were counted as happening either after the time of the cavemen or during that time. During grade four some before and after ordering of events in American history began to emerge.

In the second grade discussions having to do with language and the meaning of words brought out indications that all the children assumed that language originated by way of an inventive ancestor -- usually a caveman -- and that additions and changes were made along the way by invention of other people. Such inventions were thought to have grown out of some fairly specific need felt by the inventor.

When it became apparent in discussions that the children had been exposed to certain material in their regular class lessons or in their non-school activities that they had not been able to digest, we tried to search for some indication of why the children had experienced the trouble. In such cases it seems that the child was limited in his ability to grasp the new material properly because of a conceptual model or analogy in terms of which he was thinking. Often in

discussions the troubled child would make explicit his model. This served as a clue to the investigator in analyzing the root of the child's confusion. In searching the child's language on the occasion it also became apparent that the model he used could have been suggested to him by the language in which the new material was given to him. Perhaps, our most striking case of this occurred in a discussion with second graders about numbers.

The children were considering whether, in counting to find the answer to an addition problem in which there were five-place numbers, they would run out of numbers. One of the children said, "No. Numbers don't stop. They don't stop 'til infinity." When asked to tell what infinity was, he proceeded to explain that, when you were counting, it was like having a big box full of cards and on each card was a number. After you counted (flipped over the cards) for a long, long time, you'd get to the last card (number) in the box. Then you said the number that was on that last card and then said infinity. When the investigator asked whether "infinity" was a name for a last number, the child replied, "No, it's just a word you say after you've said the last number."

Here the child's notion of the number series is concrete, his use of "infinity" operates like the period at the end of a sentence -- like a sign that you're finished. We note that the expression, "numbers don't stop 'til infinity," works for him as "Numbers stop at infinity" might. And this is a natural result of his confusing the expression, "Numbers go on to infinity," with the use of an expression such as, "We'll go on to Chicago" when it occurs in response to a querie as to whether "we" will stop on the way.

Following is a list of the children's questions discussed during each year of the study. They reveal a variety of interests on the part of the children. Discussions of the Inquiry Training Films are not included in the list -- they are discussed immediately afterward.

Catalogue of Questions Discussed in Situation II Sessions - First Year

High Group

How come March comes before April?
How does God hear our prayers?
How many stars are there in the sky?
What did the first man look like?
What makes the world go around?
Why are things spelled the same and they don't mean the same?
Why can't we see the air?
Why is Cindy quiet?

Middle Group

How come a bear hibernate? And how come a deer don't hibernate?
How come all animals are not alike?
How did the Japanese surrender?
How many children are there in Prescott School?
How many people are there?
How many trees are there?
It would be foolish to fall down?
Is there a last number in the world?
What can we do when we are foolish?
What can we do when we are sleepy?
What is the sun made of?
What would it have been like a hundred years ago?
Where does the butterfly go when it rains?
Why do crabs bite us sometimes?
Why don't we have one reading group?

Low Group

How come the cavemen can kill dinosaurs?
How did the first dog get here?
How did we make a school?
How far is the moon?
What color is it?
What does the earth look like?
What do stars look like?
What is 300 + 3000?'
What star is it?
When is Mars red?

Why did Jack jump over the candlestick?
Why didn't I put any questions in my question book?
Why do cavemen live in caves?
Why do we have to come to school every day?
Why do we have to work all the time?
Why do we have winter?

Catalogue of Questions Discussed in Situation II Sessions - Second Year

High Group

How do people move?
What is the moon made of?
Why are Indians redskin?
Why do birds fly south in winter?
Why is the sky so blue?

Middle Group

Why are there flags?
Why are there man-eaters?
Why do penguins live at the North Pole?
Why is Christmas a holiday?
Why is there a sun?

Low Group

How did they (the pioneers) make clothes?
What is a star?
Where are the buffalos?
Why does Gary suck his thumb all the time?
Why does Kyle take off his boots in school

Catalogue of Questions Discussed in Situation II Sessions - Third Year

High Group

How do trees change colors along with the seasons?
How was helium made?
Once I saw a movie of China bombing Pearl Harbour, I saw the inside of a Chinese airplane, how did we get the film, who took the picture?

What makes the wind blow?
What's Mars made out of?

Middle Group

How come people like to eat lobster?
How do you sneeze?
How was the earth made?
What state does the Monarch (butterfly) go to in the fall?
Who started Modern Math?

Low Group

Which is colder, the North or the South Pole?
Why do we have flags?
Why do we have stars?
Why is the earth round?
Why is there a moon?

Low Low Group

How many stars are in the sky?
How was it like about 50,000 years ago?
What is in cars?
What is sapphire made of?
When will we be able to live in the sea?
Why are we playing Bugman?

Discussions of the Science Films. Discussions of the films shown in Situation V were held each year within two weeks of the time the children had written about that year's film. The session was begun with the investigator reviewing the film-events and restating the question about which the children had written. Each child in the group was then given the opportunity to tell what he thought was the explanation.

Later, comparison of each child's writing in Situation V with the explanation he first offered in the discussion session showed that, in every case, these children first expressed orally exactly what they had written, but in the discussion situation went on to explain further many of them using analogies to make

certain parts of their notions clear. When children, who had used the word, "pressure," incorrectly or ambiguously in their writings, used the word in their first oral offering in the same unconnected fashion, the investigator asked them to explain what they meant. These children could not explain in other words but would say, "just pressure" and shrug their shoulders. Then, when they went on to talk more, the word was conspicuously absent from their expressions.

Particularly interesting were the verbal reactions of members of the high group (the first year) to the remarks of the one second grader who offered an explanation fitting the Scientific Explanation Key for the varnish can experiment. It became evident that those who could not see how the air outside could have pushed the can in were conceiving of "air" only in terms of "wind" (i.e., moving air). Of course, with this limitation built into their notion of air, the possibility of atmosphere and atmospheric pressure is not even imaginable.

In second year discussions of the brass ball and ring experiment, even when probed by the investigator, the children showed no signs of using a notion of "heat conduction" to explain how the ball came to fall through the ring after sitting in it for a while. Several thought the ring would have gotten warm from being next to the heated ball, but none considered it possible for the inner diameter of the ring to have changed as a consequence.

The film of the two blocks of wood (one floats and one sinks) proved generally baffling to all the children in that, after each offered his own notion and had listened to those of others, they became unsettled with their own ideas. They would say then only that they thought this [their own offering] had something to do with why one thing floats while the other sinks, but they weren't sure. Since the discussion showed that the children were thinking solely in terms of these two blocks of wood and not trying to formulate general notions of floating and sinking of objects, the investigator attempted to draw the children into more general consideration by encouraging them to think of the blocks as just any two objects. In what followed, children centered on the combination of weight, size, and shape as being controlling factors. None referred

to the types of forces operating on the objects that were outlined in the Scientific Explanation Key.

Some Further Questions

Several questions arise from the data gathered in Situation II which make felt the need for further study.

1. Since the comparisons possible from this situation are longitudinal only, we have no definite key to what particular changes in the children's verbal behavior constitute growth. Thus, in order to interpret much of our data on a developmental scale, similar groups must be taken in a set of Situation II discussions -- groups ranging in grade level from One to Six, at least.

2. We are unable from just these discussions to tell whether training in this kind of situation is an influencing factor in the children's linguistic or their overt behavior. Neither can we tell whether the fact that these children are also regularly working under the Nebraska English Program is contributing to their behavior. At least two new control discussion groups are necessary to give some clue as to whether these are influencing the data from Situation II -- one group from a classroom of children under Program A and one from a classroom of children under Program B.

3. If training in this type of discussion situation has taken place to a considerable degree, it would be extremely valuable to know whether it would carry over into other types of group situations. Our demonstration session in mid-May, after third year data gathering was completed, indicates that these children as fourth graders carry on in the presence of the whole classroom and observers substantially the same way as they do in the small group with tape recorder present. But would they do so in the classroom with their regular teacher as interviewer? Or in a larger group with a stranger as interviewer?

The Final Report of Project No. 6-8713 under Contract Number OEC-3-7-068713-0277 from the U. S. Office of Education may help to answer some of these questions.