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Class size relationship to recall

Jacqueline Metz Preciado

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California State College

San Bernardino

CLASS SIZE

RELATIONSHIP TO RECALL

A Project Submitted to
The Faculty of the School of Education
In Partial Fulfillment of the Requirements of the Degree of
Master of Arts
In

Education: Elementary Option

By

Jacqueline Metz Preciado,

December 1979

San Bernardino, California

APPROVED BY:

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Advisor

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Committee Member

SUMMARY

The writer of this project has been a primary teacher since 1954 and a reading specialist since 1969. Knowing some of the problems in teaching basic skills to many children with various needs, hearing other teachers stating frustrations in working with large groups, and reading articles, books, and studies that discuss class size, the author believes that there exists a real need to study the facts and arguments, pro and con, about class size. Many teachers strongly support the value of having small class sizes. Many principals and administrators and others believe the cost is too great and studies do not support this value. For example the July 1979 issue of Education U.S.A. (published by the National School Public Relations Association) tells of a three-year study which found that classes of 25-35 pupils made more reading growth than pupils in smaller classes. However, the article further states that this study was done with fourth grade students only. Many believe that by fourth grade most beginning reading skills have been introduced and many habits have already been formed.

Thus, this paper includes much of the past and some current research done in class size. Findings seem to indicate that most research has been done from the fourth grade on--very little has been accomplished at the primary level. Research disagrees, but more research seem to be available which supports the value of smaller class size.

This paper also includes a small project of thirty first grade students who were selected from four first grade classes. First grade readiness was determined the first week of school with the use of the Wide Range Achievement Test. These thirty chosen students were then given three first grade tests(recall of eight words taught, auditory recall test, and a visual memory test of pictures). These children were taught in two class-size settings. The tests used were comparable, not the same test used twice. The reading teacher frequently works

with kindergarten children, so she was not new to these first graders. Moreover, the reading specialist tested and taught all thirty children in both settings. Two monitors checked observations from a specific monitor sheet each time a group was tested. Tabulations and findings were accomplished by the reading teacher and monitors after the entire testing period.

Findings of this small research project suggested that there was a significant difference in small group recall over the large group. Monitors found and listed other factors which might have affected learning recall. These findings are included in the paper.

Last, the paper suggests some future studies which might be conducted in class size.

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1979

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Statement of the Problem

Before effective teaching and learning can take place, four essential ingredients must be present: a dedicated teacher, supportive parents, a needed maturity level in beginning first grade instruction, and a small(1-25), manageable class size. Class size is one element that might be arranged for teachers; yet, too often, school boards and administrators believe that funds are not available and research does not show the value of small classes over large classes--enough, at least, to merit the added expense. Consequently, class size remains the one "program" not tried. Every year class size remains the top demand by all teacher organizations. Each year newspapers show low reading and math scores and constantly berate school systems and educators. Each year the taxpayers pour thousands of dollars into new programs, systems, and salaries of remedial teachers and aides.

Through readings of articles and research, the writer seeks to find if class size is an important factor to the outcome of learning, especially if large class size(30 or more) has an effect on learning rate and recall. Moreover, if there is a difference between learning and class size, what are some other conditions which may affect the learning process? Also, since basic skills in reading, math, and language arts are introduced and reinforced in grades one, two, and three, what does research tell us about class size and learning success in the primary grades?

Then, a project will be conducted with thirty first

grade students selected from four first grades to study recall of learning in two different-sized settings. Monitors will be carefully observant of other conditions which might affect learning.

INTRODUCTION

Class size is not a new problem nor a new point of discussion. Early scholars such as Greek historian Herodotus (424) B.C.), Czech educator Comenius(1658), and English theorist John Locke(1690) have been quoted with varying viewpoints. For example, John Locke believed that children learned by doing and experiencing--knowledge came by way of perception. He would not have approved classes of fifty or more where book instruction was the only method of obtaining knowledge. Class size is a constant concern today; this concern is for two reasons. First, educators and laymen desire to seek optimum learning conditions. Second, class size has trememdous impact on school finances. For example, if a medium-sized school system enrolling 15,000 pupils, and the average class size is thirty pupils, wanted to reduce the average class size from thirty to twenty-nine pupils, it would be required to hire seventeen additional teachers. The budget would increase by the "thousands".

We shall now look at some of the existing conditions today and some of the facts concerning class size. It is a fact that class size is a matter of concern to teachers. In 1960 the National Education Association found that the median elementary school class contained thirty students; and in 1961 the National Education Association survey showed that two-thirds of both teachers and elementary school principals believed that if elementary school teachers were to do their best teaching, class loads should not exceed more than twenty-four pupils.[1] It is a fact that smaller class size frequently contributes to better teacher morale. Research in this direction appeared in studies by Lundberg

and Baker (1936).[2] In 1947 Lundberg suggested that classes of smaller size fostered better study attendance, student behavior, and teacher morale. He also concluded that teachers in small classes were more likely to design new instructional approaches and innovative practices.[3] But then, it is also a fact that research indicates that superior achievement in mathematics occurs more often in large classes. In 1964, Menniti compared classes in the Dioceses of Harrisburg and Evansville. His findings indicate mathematics achievement favoring large classes.[4] Additional support for large classes can be found in a study by Madden(1968) of class size and its effect upon the achievement of ninth grade students in general mathematics at mid-range ability. Madden concluded that student achievement in mathematics is significantly higher when students are taught in large groups.[5] To the contrary, it is a fact that achievement in reading improves in small classes, mainly for low I.Q. white children and for all non-white children. Perhaps the most impressive study of the relationship of class size to pupil achievement was that conducted in 1964 by Furno and Collins over a five year period (1959-1964) in the Baltimore Public Schools. Their purpose was to determine what relationship of class size to pupil achievement existed in reading and arithmetic, together with the relationship of class size to certain home factors and faculty factors. The sample was comprised of 16,449 students who were in grade three in 1959 and were subsequently followed over a five year period until students were distributed in 1965 between grade five and grade ten. By and large, the findings of this longitudinal study reportedly favored small sized classes for maximum gains in pupil achievement in both reading and arithmetic. They judged the advantages of the smallest class size to be considerably more productive for non-white students than for white students. Non-white students in smaller classes made greater gains in sixty-six percent of the comparisons

as against greater gains favoring larger sized classes in only three percent of the comparisons.[6] Moreover, it is a fact that research on the effects of class size on pupil achievement is contradictory and inconclusive. Contrary to common assumption some studies have found that differences in class size have either no relationship to pupil achievement or a relationship favoring large size classes. In an early study of achievement in English, Smith(1930) reported no difference in the achievement of ninth grade students in classes of twenty students or of fifty students. Because the larger classes produced superior work in several categories, Smith concluded that variables other than class size were significantly more important.[7] Research on the question of class size dates back to the very beginning of empirical research in educational social science in the early 1920s. There has scarcely been a year since without several dissertations, theses, or studies on this topic. The latest study was done by James Coleman under the Civil Rights Act of 1964. Results? By and large, class size had no effect on learning by students, with the possible exception of the language arts. In studying one of Coleman's enrollment charts, it appears that the average pupil-teacher ratio was thirty-one in the elementary grades.[8] Commenting on the Coleman report, Christopher Jencks said, "There is no evidence that cutting class size would narrow the gap between advantaged and disadvantaged pupils. I conclude that while reductions in class size can often be justified in terms of teachers' sanity and pleasant classroom atmosphere, they are hard to justify in terms of test scores."[9] On the other hand, Peter Coleman said, "Teachers have maintained that even small variations in the ratio of students to teacher have a significant effect on ability to teach, and thus on the learning which takes place."[10] Few people would deny that having lower pupil-teacher ratios improve the working conditions of the teachers and make their lives more pleasant. The

other side of the issue is argued by governments and school boards, largely on financial grounds. What is the benefit, and can it be considered equal to or greater than the cost? In studying the migrant child, Alfred Potts discovered that classes beyond fifteen did not allow for individualization of needs.[11] In an educational journal, Bruce Mitchell stated:

> Shane indicated that fifty years of research on class size did not support the premise that there must be a fixed student-teacher ratio. He also found that students did as well on examinations, and in many cases better, if taught in larger classes by superior teachers. Past research merely has shown that the answer depended on grade level, subject area, I.Q., teacher ability, and other variables.[12]

It is interesting to notice that most research on class size has been done beyond the primary grades. One of the strongest advocates of small class size, especially in the lower grades, is Alice Keliher. She believes that surveys consistently reveal that the larger the school system, the larger the classes. For an example, in its 1965 report, the NEA stated that forty-one percent of the kindergarten classes had over fifty children. As many as 32.1 percent were in classes larger than thirty. Add to these figures that in 1965 the median high school class size was twenty-nine, and we face the strange fact that the young children are the ones most consistently cheated of the individual attention they most need. Keliher believes common sense should dictate that the younger the child, the nearer he is to his school beginnings, the more intimate should be his relationship to his teacher.[13]

Thus, the argument of class size continues. Some predict that because of the many, and often, unmeasurable variables present in the learning environment, we probably shall never be able to determine even a desirable maximum class size. Others believe that with new classroom manage-

ment techniques, aides, electronic teaching devices, the question of class size is becoming irrelevant. Nevertheless, class size continues to be of concern (beyond financial implications) to several interested groups--to citizens, who expect and demand the best return for their tax dollar; to the parents, who want the best education for their children; to the school administrator who must allocate funds; to the teachers, who are directly affected by class size; and most of all, to the children, who will be the future of our country and who will exhibit the results of our labors. Therefore, let us look further into more research, articles, and books to see if there is evidence that class size does, indeed, merit attention in accomplishing the overall goals of education.

REVIEW OF THE LITERATURE

In reviewing research concerning class size, the reader should be reminded that much of the past research has been done in the intermediate and upper grade levels, even some at the college level. Then too, some of that research might not even be accurate or good. After all, experiments are designed and carried out by fallible individuals; they have as many pitfalls as other human efforts. Nevertheless, as Anderson stated, "Most commentators and researchers agree that the optimal number of pupils per teacher for most educational purposes in the United States, given our gereral system, is found between twenty and thirty."[14] In 1959, a committee was formed by the California Elementary School Administrators. Twenty-two statistically acceptable studies of class size were analyzed quantitatively. The results were as follows:

1. Sixteen studies favored small class size.(72%)
2. Three studies favored large class size.(14%)
3. Three studies were inconclusive.(14%)[15]

Also, the writer would like to caution the reader against research that considers achievement scores as the only means of comparison. It is wise to remember that our educational goals must include the social and emotional growth of a child, not just the intellectual. Are our classrooms providing experiences to develop good deportment, creativity, healthy attitudes, good self-concepts, social awareness, and good thinking skills? Can a teacher attain her best results with little time, noise, and possible low morale? Will not the attitudes of the teacher be reflected in the attitudes and actions of the

child? Bruce Mitchell stated:

> One area of concern which has been largely neglected has been the problem of pupil morale. Shane(1961) pointed out that for purposes of developing human values and developing each individual to his fullest potential, small classes were imperative. His criteria for small classes were twenty-five at the primary level and thirty at the intermediate or senior high level. According to research conducted by Hubbard(1963), student relationships in large classes were exceptionally abundant. The study also showed that student relationships were quite varied, and also considerably intense. Large classes frequently increases behavior problems.[16]

Certainly, it stands to reason that when class sizes are low, the teacher is free to provide varied learning experiences. With a happier, less frustrated teacher, would not the child, too, be happier in a freer learning setting? Would not this situation contribute to better pupil morale? In a report prepared for the National Council of Teachers of English in Illinois, Hollie Smith found that fifty-one percent of studies favor small classes. She also found that smaller classes allowed the teacher to be innovative. Moreover, this same Council of Teachers of English recommended a ratio of twenty-five pupils.[17] In a review of research, Mitchell said:

> Shane(1961) felt that small classes fostered more innovations, greater individual attention to pupils, and better teaching methods than commonly found in large classes. The same study also demonstrated that elementary school classes exceeding thirty had an adverse effect on teacher's attempts to individualize the instruction.
>
> Pugh(1965) made a number of significant findings in a study of the performance of pupils and teachers in small classes. He discovered that a greater number of activities were ob-

> served in small (1-20) classes than in large ones.
>
> Hubbard(1963) found that classroom teachers felt that the breaking point was reached when classes got to be over thirty students. He also found that tea chers of large classes frequently reported that sheer numbers made them depressed and frustrated.[18]

Would not this same feeling of frustration and depression permeate the classroom? Obviously the feeling would not aid in motivating children to learn. In 1972, a national sample of elementary teachers recommended a mean of twenty-two pupils as the best size for optimum learning in the elementary school.[19]

Now, let us look at one of the most basic subjects taught in the elementary school--reading. Reading is considered so important most people assume that if children do not lea rn to read during these early years, the school has failed. Yet, many forces operate which affect a child while he is attempting to learn to read. Class size is another force which may affect any given youngster in his efforts to develop skill in reading. Since reading is such a personal individual activity, logic would suggest that if a tea cher has few students, she would be able to give each child more individual attention and personalized instruction. Further, it would seem reasonable to suppose that in leaving the security of their own homes, children would also experience less frustration and make better adjustment to school if they did not become lost in an exceptionally large group. Jack Frymier shared:

> Most of the previous research on the effect of class size upon academic achievement indicates that other factors are more important than the number of students in each class. However,

> most of these studies have typically concerned themselves with the academic achievement of older students; many in fact, are students of college groups. Increasing size of a secondary or college class did not materially influence the achievement of these students. This does not mean, however, that six-year-olds would necessarily react in the same way.[20]

Simply stated, the effect of class size upon achievement in reading of first grade students is not known. Frymier said one short study was made in Florida. Twelve first grades were administered the Metropolitan Readiness Test. Results indicated that students enrolled in the large classes had a distinct advantage in actually being more "ready". Yet, the youngsters in small classes overcame a distinct disadvantage and actually overtook their fellow students who were enrolled in larger classes. The first grade students in small classes achieved at a significantly higher level than students in larger classes.[21]

Then too, the elementary school endeavors to build the "whole" child--the mind, the body, the emotional well-being, and the social development. In building a home, it would be senseless to construct the walls without the establishment of a firm well-built foundation. How then, can youngsters be educated without the proper setting in which to build a firm foundation for learning? In 1965, forty-one thousand Head Start teachers met to evaluate their summer project. As Doherty wrote, "For years educators have theorized that the answer to many preprimary and primary school problems was one more teacher working with smaller classes. Head Start, with its ratio of one teacher to fifteen children, proved this assumption valid."[22] In 1955, Cannon studied the effect of class size on kindergarten groups. More aggressive acts were found and recorded in the large group than in the small group. The teacher had few opportunities to guide children individually in order

to minimize negative action. Without the teacher's influence, conduct generally became more aggressive. Children in small groups made friends more easily, responding to the more relaxed and permissive atmosphere. The teacher had more time to listen to small groups. The teacher became a more significant person in the life of the child. Questions were asked and answers given and experiences shared. Also, more variety and creativity in the play of the small group was evident.[23]

Several studies suggested and reiterated that small classes provided a more relaxed atmosphere, where talking and sharing of ideas could be expressed. Richard Cheatham did a study on 240 college speech students. He observed:

> It is significant to note that speech grades were higher in the sections where lectures were delivered by one faculty member to a group of no more than twenty students. It is possible that students in the smaller sections were able to ask more questions.[24]

In 1969, Robert Somner did a study on 144 high school students. He found that there was greater amount of total discussion and participation in the seminar room where classes were small. He thought that one interpretation of these results was that students in the large class-sized laboratory setting were unable to lean back and relax.[25]

The preceding studies have been written with the intent to share some of the research findings favoring small class size, especially in the primary grades. Yet, there is much research to indicate that size has little effect on student learning, especially from the intermediate grade level up to the college level. Therefore, perhaps some of the findings of a 1978 Research Brief by the Educational Research Service would be helpful in relating some current studies and recent conclusions. Some of these summations

might be considered:

1. Research findings on class size to this point document repeatedly that the relationship between pupil achievement and class size is highly complex.
2. There is general consensus that the research findings on the effects of class size on pupil achievement across all grade levels are contradictory and inconclusive.
3. There is research evidence that small classes are important to increased pupil achievement in reading and mathematics in the early primary grades.
4. There is also some evidence of a positive relationship between small class size and pupil achievement when primary grade pupils are taught in small classes for two or more consecutive years.
5. There is evidence that pupils with lower academic ability tend to benefit more from smaller classes than do pupils with average ability.
6. Some research indicates that smaller classes can positively affect the scholastic achievement of economically or socially disadvantaged pupils.
7. Research on class size suggests the importance of an emphasis on the methods and quality of instruction in the classroom rather than on the quantity of pupils in the classroom.
8. Few if any pupil benefits can be expected from reducing class size if teachers continue

to use the same instructional methods and procedures in the smaller classes that they used in the larger classes.

9. Smaller classes appear to have a positive effect on pupil behavior in the elementary grades. At the secondary school level, some studies, but not others, have indicated that smaller classes influence student perceptions about their courses and their satisfactions with them.

10. There is considerable and consistent research evidence that certain teaching procedures and practices perceived by some educators as conducive to a productive learning environment occur more frequently in smaller classes than in larger classes. But not enough research has been done to validate the presumed superiority of these activities in terms of pupil achievement.

11. Opinion polls have consistently indicated that most teachers perceive large classes as a major factor negatively influencing teacher morale and job satisfaction plus the academic performance, personal development, and social development of pupils.

12. Opinion polls show that the majority of the public perceives small classes as being of major importance to pupil achievement and progress.

13. Existing research findings do not support the contention that smaller classes will of themselves result in greater achievement gains for pupils. The evidence is that within the

mid-range of about 25-34 pupils, class size seems to have little if any decisive impact on the academic achievement of most pupils in most subjects above the primary grades.

14. Class size is a major determinant of school system budgets. Even small system-wide changes of one or two pupils per class can have major impact on a school system's budget.[26]

In his review, George Sitkei best sums the implications of class size research. He said, "Although the research studies of class size are not conclusive, there are twice as many studies in favor of smaller classes over larger classes."[27]

RESEARCH DESIGN

Procedure:

The writer believes that the first few grades are extremely crucial in laying the successful foundation for basic skills of learning. Yet, as stated previously, most of the research on class size has been done in the intermediate and upper grades. Unfortunately, most of the reading skills, especially, have been established by this late time, feelings of defeat have taken place, and most study habits have been set. Thus, perhaps there is a real need for further study to be done at the early primary level. Consequently, a project was planned for the study of the relationship of class size to learning rate and memory recall of first grade children. Although the project was limited in size and number of participants, perhaps it will give direction for more detailed research in all the early grades. For ease in reading, the project design was written in outline form. Because the testing was done in a short period of time, rather than over a period of months or years, and the group contained several subjects (thirty first grade students in the selected group), the traditional experimental design was employed.

I. Hypothesis--There is no significant difference in the learning rate and recall of first grade children in relation to classroom size.

II. Description of the design
   A. Population was thirty children taken from four first grade classes. Students were screened for

ability level with the Wide Range Achievement Test, administered the first week of school by the reading teacher. Thirty children were drawn from these classes who had scores of 1.0-1.2. There were other students in these four classes who also scored 1.2 and they served as a "pool" for lost students or for substitutes in cases of testing interruptions. Thus, there were enough children held in reserve in case of pitfalls in mortality or history.

B. Independent variable--class size
   1. Small sized group constituted six students. Large sized group constituted 30-34 students.
   2. The large group activity was conducted in the regular classroom. The small group was held in the small service room for the reading specialist.

C. The criterion measure, or dependent variable--the following:
   1. Learning rate or recall test. (The children were taught a specified number of words; the students were tested for recall of these words after a period of one hour.)
   2. Story recall. (Recall of a short story was accomplished through a picture test after a period of one hour.)
   3. Visual memory--recall test of pictures were shown at the beginning of the class lesson. (The worksheet was marked by the students at the end of the lesson.)

D. The reading specialist, same teacher, did administer to both different-sized groups. Two trained aides monitored teacher-student responses and watched for indications of teacher bias in the

presentation of the lesson. They also looked for other teacher, student, or room conditions which could have affected learning.

E. The lessons, or testing sessions, were conducted during the second and third weeks of school in conjunction with pre-screening readiness activities. These lessons were accomplished during the first hour of the day, the usual reading time, when children often seem to be fresh and ready for learning new tasks. The tests were not timed; one hour block of time was sufficient.

III. Some variables held constant

A. Same teacher--reading specialist

B. Same manner and wording of the teacher. (Directions of the tests were written out.) Two monitors calibrated teacher responses, eye contact, individualizing responses, and interruptions to the teaching lesson.

C. Selected population. (All children in the chosen group had a WRAT score of 1.0-1.2 indicating some degree of readiness for first grade learning.

D. Calibration and instrumentation (These tests, or readiness learning tasks, lended themselves to an objective count of total correct responses. Tabulation of correct responses were monitored and discussed only when all first grade students had been tested. Monitors also calibrated any subjective responses which suggested any teacher bias during the task-taking period.

E. Mortality (Since the tests were conducted during the second and third weeks of school, the time was too short for much moving. However, in case of

drastic mortality within a class, children with scores of 1.0-1.2 could have been drawn form the reserve group which was composed of students with these scores and children from all four first grade rooms. (Group E)

F. History (In case of fire drills or sudden interruptions to the testing period, the other Group E children, not tested, could have been substituted for the class who was "test contaminated".)

G. Hawthorne effect (Since the reading teacher had brought many of these students to her small reading room for testing purposes in kindergarten and had worked with some of these students before, the children were comfortable and familiar with her presence. Moreover, the reading teacher was testing within the first grade rooms the first week which allowed many students to get acquainted with her. Because the reading teacher often did pre-reading screening activities in every first grade room and took groups of children to the reading room to work in small numbers, there was little likelihood of a Hawthorne effect.)

H. Statistical regression (Since the administration of the same test in both large and small groups to the same children might have caused a variable, there were two forms of each task, or test, for the same children. Groups took alternate forms of the tests. For example, some had form one in large groups. Some had form two in small groups and others had form two in large groups.

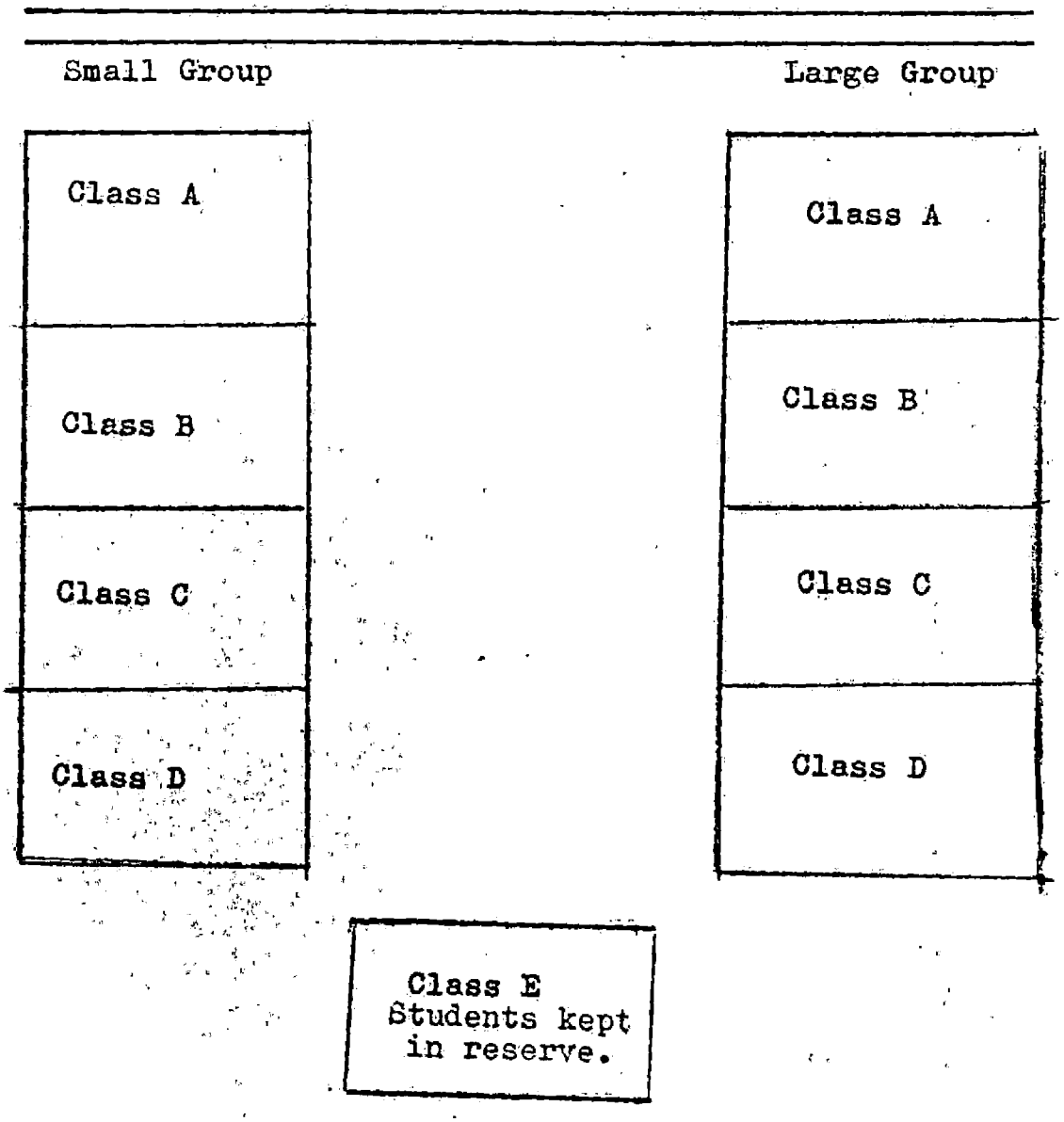
IV. Data collection--Results of task response tabulation was conducted by the teacher and two aides. The responses taken by the monitors during the testing

sessions. There was no discussion of data collection until every room had completed both group sessions.

V. Inference--Careful study of the task and response results was done by the teacher and the two consulting monitors. The Wilcoxen Sign Test was used to show if there was any indication of significant difference. This non-parametric test was used because the first grade group was a captive group from one school and the size of the group was not very large. The groups were related because they were the same subjects being compared in two-sized groups. The results suggested an impact on the criterion and indicated some degree of influence a group size might have on learning rate and recall for some first grade children. The monitoring suggested some difference in the teacher-student relationship between different sized groups or some difference in classroom conditions. Perhaps some of these differences suggested conditions that might affect learning in different-sized learning groups. Nevertheless, the reader must be reminded that this project was based on a very small population of first grade children with an average ability level. It attempted to test one small area of learning in two different sized groups. It was designed to give direction where much needed research might take place.

TABLE 1

CLASS SIZE
COMPARISON



RESEARCH FINDINGS

The project began as scheduled. The reading teacher did the pre-screening WRAT tests for all first grade students the first week of school. This testing was accomplished within the first grade classroom setting, taking one child aside at a time. One classroom involved in the project began the school year with a substitute teacher. (Later, this same class had another substitute teacher.)

Class enrollment in first grade began to increase. There was also a need for more than two lunch times which caused a change in recess schedules. Finally, the principal stated that there would definitely be changes in the first grades. A new teacher would be added to lower the enrollment and a combination grade would be necessary. As a result of these changing conditions, the actual group testing for this project had to be completed by the end of the second week in order to keep the research design and students together. Thus, there were some deviations from the anticipated planned research design. Some modifications were:

1. Testing took place during the second week of school, rather than the second and third weeks. Consequently, all groups were not tested the same first hour. Two classes were tested early comprising the early groups; two classes were tested later in the day comprising the late groups. Six students taken from each first grade class, called the combination group, was tested early in the small group setting.

2. One first grade class required two substitute teachers during this testing time. (Both had never taught first grade before.)
3. Teachers and students knew there would be a room change and move for some total classes and for some students from other classes.
4. Changes in schedules caused undue noise outside the special reading room, creating a different testing situation in some sessions. (The reading room is off the playground area.)

Nevertheless, testing continued in the second week. The two aides monitored each lesson; counting a session for the different sized group in each classroom and the sessions after each waiting period, there was a total of eighteen monitoring sessions. At the end of the entire testing time, the aides tabulated their findings and impressions of classroom conditions. They gave one check for each duplicated notation. The monitors used the same form of the monitoring sheet during each of the eighteen observations. They kept this information to themselves and did not report any notes to the reading teacher. The following week, third week of school, the aides and the reading teacher met to tabulate test scores and discuss those major impressions that had received checks during the monitoring sessions. The tabulations of the selected group student' scores and the monitoring sheet form will be included in the appendix. Some of the findings were:

Small Group

I. Student--peers

A. Noise-The level of noise was down.(16 checks)

B. Physical movement-There was no unnecessary movement.(15 checks)

C. Non-verbal expressions, like face making, laughing. There were no occasions of un-

necessary laughing or expressions of disinterest.(18 checks)

II. Teacher

A. Voice tone seemed to remain the same for each lesson.(18 checks)

B. Teaching time for small group seemed to average 40-45 minutes.(18 checks)

C. Pausing for attention and/or disipline did not seem to be necessary. The group was small; teacher knew when and where to pause. (18 checks)

D. Eye contact-There were occasions of eye contact noted.(8 checks)

E. Verbal individualization-The names of students was noted. Questions were asked by the students and the teacher answered. There seemed to be an atmosphere of informality where conversation could take place.(18 checks)

F. Repetitions- The teacher did not have to repeat directions.(15 checks)

III. Room

A. Seating-The children were close to the teacher and seemed to be very attentive.(18 checks)

B. Room environment seemed to well-organized. (18 checks)

C. Noise-Usually, the noise level was down, except during the time when there was a recess. Generally, however, it was very quiet.(18 checks)

D. Interruptions-none.(18 checks)

E. Outside distractions-There was the noise from the playground. Some of the children feared they were missing playtime.(12 checks)

IV. Added observations

A. Students seemed more controlled and attentive;

teacher seemed to have excellent control and seemed to be relaxed. (6 checks)

B. Children seemed to respond more and were involved with the lesson. There was conversation with the teacher. (18 checks)

C. Students and student papers were close to the teacher. Occasions of praise were noticed. (16 checks)

D. There was no outward sign of student stress, even in the room where there was a teacher change. (4 checks)

E. The group with the two substitutes seemed to be distracted most by outdoor noise and other room distractions. However, even they seemed to quiet down more in a small group and showed less signs of stress and distracting of others in the small group. (5 checks)

F. Some children did talk about missing play when they heard children outside for recess. (7 checks)

Large Group

I. Student--peers

A. Noise--There was evidence of noise.(dropping of articles,playing with items, gum chewing, crayon popping, pencil tapping, and talking.) (18 checks)

B. Physical movement-Some hitting, poking with pencils, tapping, paper snatching, moving of pencils and papers were noticed.(7 checks)

C. Non-verbal expressions-Some children were smiling at neighbors. Many children made glances on neighbors' papers. Some child- showed signs of inattention, especially those children who were seated away from

the teacher.

II. Teacher

A. Voice tone seemed to remain the same.(18 checks)

B. Teaching time for large group took the entire hour.(18 checks)

C. Pausing for attention and/or discipline was frequently noticed during each large group lesson. (18 checks)

D. Eye contact-There seemed to be very little eye contact noticed,except with those students asking questions or requiring disipline.(3 ch.)

E. Verbal individualization-This was infrequent. (3 checks)

F. Repetitions-There were many repetitions needed for individual students.(18 checks)

III. Room

A. Seating-The children closer to the teacher seemed more interested and attentive.(7 checks)

B. Room environment--Children seemed calm and happy in rooms that were arranged in an orderly way and that had well-planned displays. Children seemed to be unsettled in cluttered rooms. (2 checks)

C. Noise-There was noise and movement evident. (18 checks)

D. Interruptions-There were frequent interruptions such as door openings, messenger buzzes, office bells, parents with notes or lunches, aides and other students. (18 checks)

E. Outside distractions-Several outside distractions were noted such as bells, other students seen from windows, lawn mower sounds, and door openings. (5 checks)

IV. Other observations noted in large groups

A. The early morning groups seemed calmer than the afternoon groups.(8 checks)
B. The children seemed tired on Monday.(2 checks)
C. Later testing times in the afternoon seemed to contribute to shorter attention spans.(8 checks)

Basically, the monitors seemed to agree from impressions and from observations made on their sheets that the small group situation provided more opportunities for careful monitoring, opportunities for praise, opportunities for more discussions and student participation, and conditions where less noise, distractions, repetitions prevailed. In the comment section of their sheets, they had stated that the same active children who had been disturbing factors in the large group could also be troublesome in the small group, but that the reading teacher had been able to readily catch the problem early and change the situation. Moreover, testing time was shorter in small group situations; there were fewer interruptions and fewer repetitions needed.(This fact was true in every session when a class's group sizes were compared.) The teacher, they observed, could quickly see when to continue on to the next question. The monitors especially seemed to agree that their sheets had frequently noted that the children seemed less restless, more attentive in the early group testing sessions. In small groups, they noticed more instances of interest and attentiveness and less restlessness in waiting for slower students to complete assigned tasks.

The reading teacher and the monitors then tallied all three test scores for each child in both large and small group situations. These scores gave total correct responses for all three readiness tests for each child in the small group situation and then again the total scores for each child in the large group situation. It was shared that three students who had been gum chewing had improved

in scores when they were not chewing.(Students E and K in the late group and student F in the early group) The reading teacher compiled these large and small group tabulations and computed the difference. A rank score was given for each student. The Wilcoxon Sign Test was used to compare differences between the related samples.

Late Group

Number of Subjects(n')=10
Negative numbers=4
Positive numbers=22
Critical value at p=.05 is 8
Obtained value was 4. Since four is less that eight, there is a significant difference.

Early Group

Number of Subjects(n')=15
Negative numbers=4
Positive numbers=33
Critical value at p=.05 is 25
Obtained value was 4. Since four is much less than twenty-five, there is an even greater significant difference in the early group.

TABLE 2

TEST SCORE COMPARISONS

Late Subject	Total Scores Large	Total Scores Small	Difference	Rank
A	10	12	2	2
B	8	10	2	2
C	14	16	2	2
D	17	17		
E	8	13	5	5
F	13	13		
G	10	11	1	1
H	12	15	3	3
I	9	13	4	4
J	15	13	-2	2
K	10	13	3	3
L	14	13	-1	1
Early Subject	**Total Scores Large**	**Total Scores Small**	**Difference**	**Rank**
A	10	13	3	3
B	13	11	-2	2
C	12	14	2	2
D	8	9	1	1
E	12	16	4	4
F	13	16	3	3
G	6	7	1	1
H	10	14	4	4
I	13	16	3	3
J	9	9		
K	10	11	1	1
L	16	16		
M	15	16	1	1
N	11	11		
O	16	14	-2	2
P	11	13	2	2
Q	11	14	3	3
R	10	13	3	3

TABLE 3

CRITICAL VALUES OF WILCOXON'S T STATISTIC FOR THE MATCHED-PAIRS SIGNED-RANKS TEST

n'	Level of Significance .05
6	1
7	2
8	4
9	6
10	8
11	11
12	14
13	17
14	21
15	25
16	30
17	35
18	40
19	46
20	52
21	59
22	66
23	73
24	81
25	90

Note: n' is number of matched pairs.

Source: Computational Handbook of Statistics, James L. Bruning, Scott, Foresman and Company(1977)

When computations were completed, it was found that both smaller ranked sums were much less than numbers shown at the level of significant difference for a two-tailed test at the .05 level. The early groups had shown that there was a significant difference when tested in a small setting; the late groups had shown there was a significant difference also when they were taught in a small group. It is to be noted that there was a greater significant difference in the early group.

CONCLUSION

At the onset of this project, the reading teacher was resigned to the probability that class size made very little change in learning recall. Some educational leaders even had said that most research had already "proved" that class size made little difference in learning. But, being a primary teacher for many years and daily seeing the frustrations of primary teachers and the results of learning failures, the author persisted with plans for this study project. It was found that very little meaningful research,indeed, had been done at the primary level. Most of it has begun at the fourth grade through college level. Now, perhaps it would seem logical to stress more in-depth research projects at beginning levels where the basics of learning, where the skills for learning, and where the habits for studying are first begun.

The final reports from this small research project reinforced the convictions of many primary teachers. The monitors showed more interruptions, more distractions, more repetitions, more needed monitoring and direction time in large groups. Realistically, a large group would, by its nature, provide more opportunities for distractions. The final test results indicated that it took more time to teach the same tests in a larger group--and with less final success. This finding in itself might give some further direction for later study. With primary children, what is the relationship of the time it takes to give directions to attending to the given task?

Then too, the reader is reminded how often the monitors found more eye contact, more pupil interest in talking and

asking questions, more student participation, and more teacher individualization. Most educators believe these are all conditions that would help build language and vocabulary, as well as building self concepts--motivation for further learning.

So, perhaps it would seem practical and wise for classes at kindergarten and first grade levels, especially, to have small groups(not more than twenty-five) where these language, readiness, and reading skills are first established. Class size does not guarantee an enthusiastic teacher nor does it promise one-hundred percent student progress. But even this project illustrated the difference in student interest and less distractive movement in small-sized settings. All children might not be ready to meet every grade level goal; but if that teacher can provide conditions that will keep the student's feeling of self-worth and that will set the stage for later learning, much might be accomplished. Children can accomplish and remember much when they are ready, especially if they have liked someone or something. In finding more instances of interest and participation, the monitors suggested that the children seemed happier, calmer in the small group setting. Today many schools are providing kits, materials, and people to rush the process of maturation and keep the learning environment interesting; but perhaps we are not providing the best conditions for the "whole" child to learn, develop, and grow. Students need to think creatively, question intelligently, and work successfully with their peers. The monitors found more opportunities of questioning and discussing in small groups.

Yes, although the bulk of research indicates a superiority of small classes over large, although common sense tells us children get more individualized help in

small classes, although teachers plead yearly for a class reduction, although our reading and math scores continue to fall, school districts continue to maintain large classrooms. School boards tell us that the hiring of more teachers would be too expensive. However, we dole out hundreds of tax dollars in expensive state and federal programs, hire needed remedial teachers, and numerous aides. Often this added personnel have no special areas to work, so must operate in the already crowded classroom. We buy expensive new kits and remedial programs and jump on every new "bandwagon" system, hoping that these aids will be the panacea for all our ills. As Hebert said, "Extensive research is available which indicates that students in smaller classes make significantly greater gains than children in crowded classrooms, yet arguments to the contrary are very fashionable today."[28] Again, the reader is reminded that this project with thirty first grade students did show a significant difference in learning recall.

Above all, the monitors found more questioning and conversing with the teacher in the small group situation. There was less movement and more calmness. Many children today come from homes where both parents must work, where there is frequently a separation, where there is overprogramming, and the classroom might offer the only stable element of the day. If there is no stability in the lives of our youth, no time for listening, for speaking, for helping the slow learner, or for encouraging the gifted, how can we expect to have calm, thinking, productive citizens who will be capable to express themselves and will work successfully with others?

Thus, there needs to be better and more research done in the area of class size, especially in the elementary grades. Frymier suggested some of the problems

observing further attention might be:

1. What is the cost of reteaching youngsters who are retained or who are behind in classwork as the result of an experience in too large a class?
2. Is there a difference in the effect of class size upon the achievement of students at various grade levels?
3. What is the effect of class size upon reading achievement in classes of less than twenty and more than thirty?[29]

Varner believes that research to date has not been comprehensive. Many variables are present in the classroom environment--the pupils, the teacher, the subject matter, and the teaching methods, to name a few. Research thus far has used a single variable approach.[30]

With her usual but common-sense approach, Helen Heffernan said:

> Simple arithmetic demonstrates that in large classes, teachers are unable to give the indivdual help which may mean to a pupil the difference between success and failure. Obviously, children cannot be treated as individuals in classes that have thirty-five to forty-five members. In such monstrous groups the inevitable outcome is conformity, limited diagnosis of pupil needs, lack of individualized instruction, decline in teacher knowledge of the facts about individual pupils, and absense of instruction that emphasizes problem solving.[31]

APPENDIX 1

STUDENT PROJECT PARPICIPANTS
MONITOR'S SHEET

Selected Group

Group E (The group which was kept in reserve in case of testing problems, absences, or moves.)

Name	WRAT Score	Teacher
1. D.M.	1.1	H.
2. R.Y.	1.2	H.
3. L.C.	1.2	L.
4. Y.C.	1.2	R.
5. C.D.	1.2	R.
6. C.E.	1.2	R.
7. S.K.	1.2	R.
8. C.O.	1.2	R.
9. R.B.	1.2	V.

Selected Groups--Late testing 4 3 10

H. (teacher) Name	WRAT	Picture test lg.	Picture test sm.	Story test lg	Story test sm	Word Recall lg.	Word Recall sm.
A. T.W.	1.0	3	4	1	3	6	5
B. B.F.	1.2	3	3	2	2	3	5
C. G.S.	1.2	2	4	3	3	9	9
D. E.W.	1.2	4	4	3	3	10	10
E. M.C.	1.2	3	4	2	2	3	7
F. R.M.	1.2	4	4	1	3	8	6
L. (teacher)							
G. J.Y.	1.0	3	4	3	3	4	4
H. D.G.	1.1	4	4	2	3	6	8
I. G.S.	1.2	3	4	2	3	4	6
J. A.F.	1.2	4	2	2	3	9	8
K. K.R.	1.2	4	4	1	3	5	6
L. C.B.	1.2	4	3	3	3	7	7

Selected Groups--early testing

R. (teacher) Name	WRAT	4 Picture Test lg	4 Picture Test sm	3 Story test lg	3 Story test sm	10 Word Recall lg	10 Word Recall sm
A. C.L.	1.0	4	4	2	2	4	7
B. R.C.	1.1	4	3	2	2	7	6
C. E.F.	1.1	3	3	2	3	7	8
D. T.S.	1.2	0	2	0	3	8	4
E. D.M.	1.2	2	4	2	3	8	9
F. M.T.	1.2	3	4	3	3	7	9
V. (teacher)							
G. B.A.	1.0	2	3	2	1	2	3
H. A.R.	1.0	2	3	1	3	7	8
I. C.B.	1.1	4	4	1	3	8	9
J. A.F.	1.1	4	3	1	3	4	3
K. J.O.	1.1	3	2	0	1	7	8
L. E.B.	1.2	4	4	3	3	9	9
Combination Group							
M. H.V.(H)	1.2	4	4	2	3	9	9
N. S.M.(R)	1.2	4	4	1	3	6	4
O. M.L.(V)	1.2	4	4	2	2	10	8
P. A.M.(V)	1.2	2	4	3	2	8	7
Q. J.N.(V)	1.2	2	3	3	3	6	8
R. J.S.(L)	1.2	3	3	2	2	5	8
	Totals	95	105	56	79	196	208

Monitors' Check Sheet

I. Student--Peers:
   - A. Noise
   - B. Physical movement (hitting, pushing)
   - C. Non-verbal expressions (face-making, laughing)

II. Teacher:
   - A. Voice tone
   - B. Teaching time
   - C. Pausing for attention and/or discipline
   - D. Eye contact
   - E. Verbal individualization (naming of students, etc.)
   - F. Repetitions

III. Room:
   - A. Seating
   - B. Room environment (bulletin boards, displays)
   - C. Noise
   - D. Interruptions
   - E. Outside distractions

APPENDIX 2

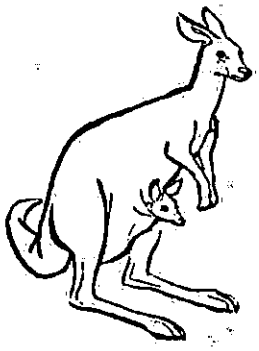
READINESS TESTS PREPARED FOR PROJECT

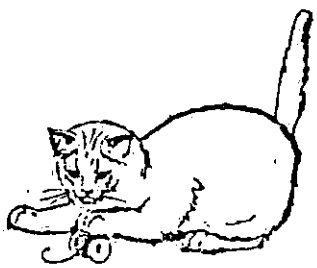
The following three readiness tests were prepared by the writer of this project. There are two forms for each test so that the selected student will not become familiar with the same test given in a different-sized room setting. The three tests consist of:

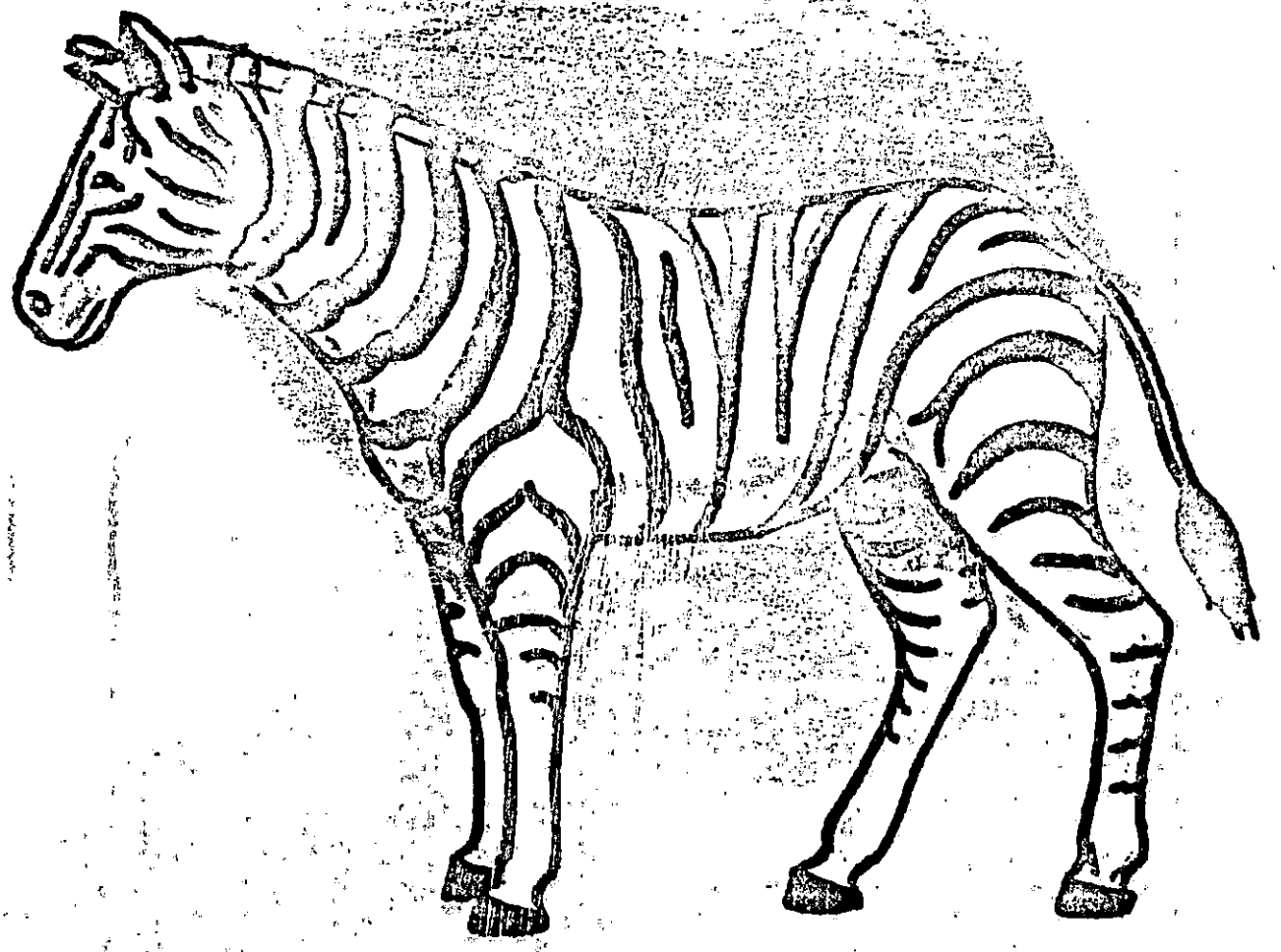
A. Picture Recall test--four pictures are shown. (Form 1 has four animal pictures and Form 2 has four transportation pictures) At the close of the testing lesson, the teacher gives each student the corresponding worksheet, and the children mark the pictures that were shown earlier in the lesson.

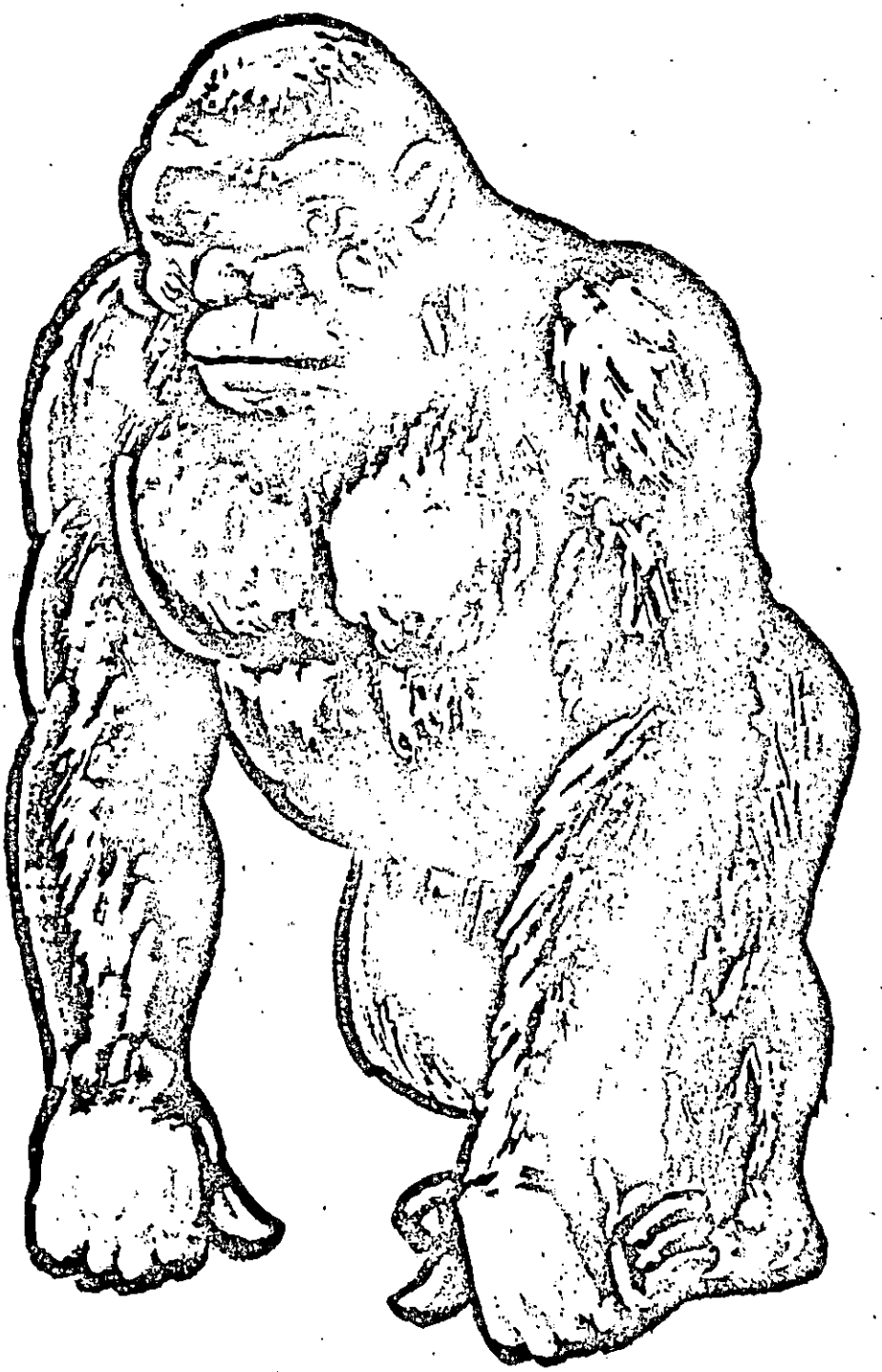
B. Story Recall test--a short story is read to the students. The children are to mark a picture worksheet in answer to questions given about the story after a waiting period of one hour. (Two corresponding stories about Little Bear.)

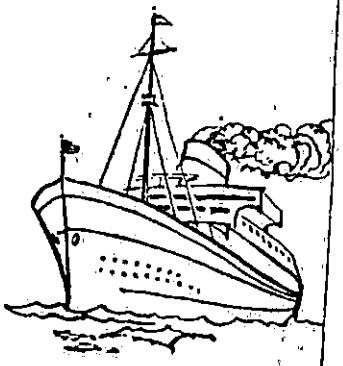
C. Learning Recall test(Word Recall)-- words are taught to the children and they are to mark the sample test. After an hour's waiting period, the teacher tests the recall of these words. (Form 1 and Form 2 of these tests teach similiar kinds of words. Exact wording and administration sheets accompany each form. These tests are very much like the Learning Rate tests in the old Murphy Durrell Reading Readiness Test)

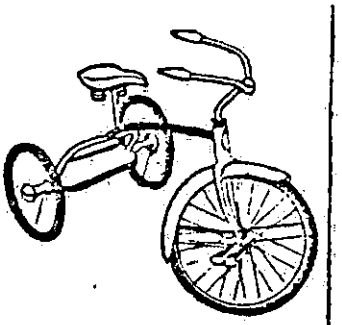


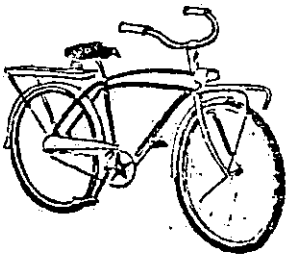


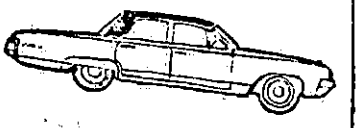


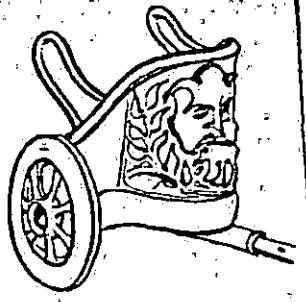


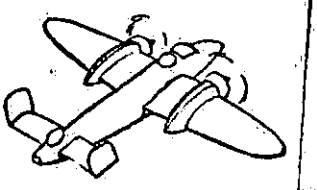




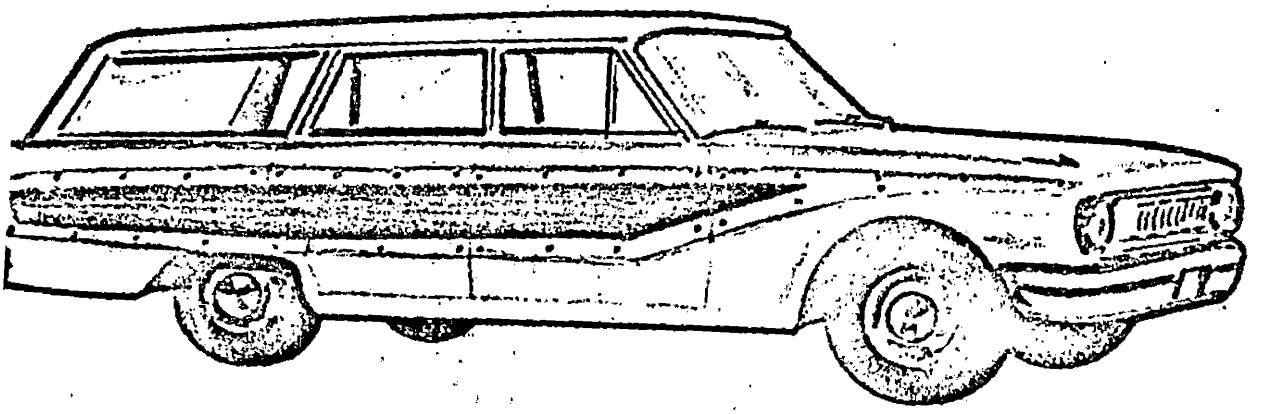


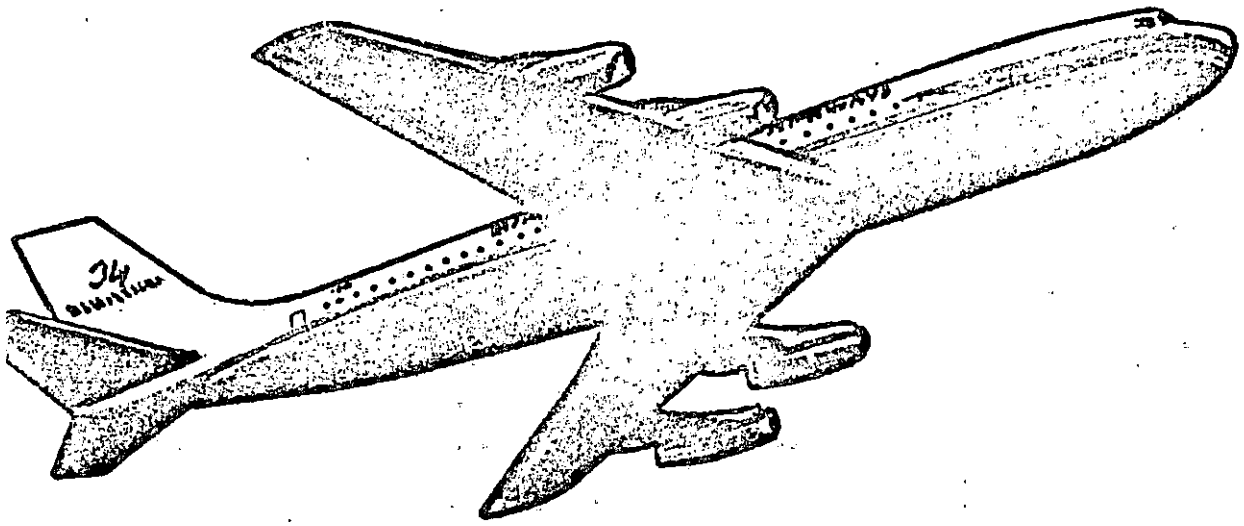


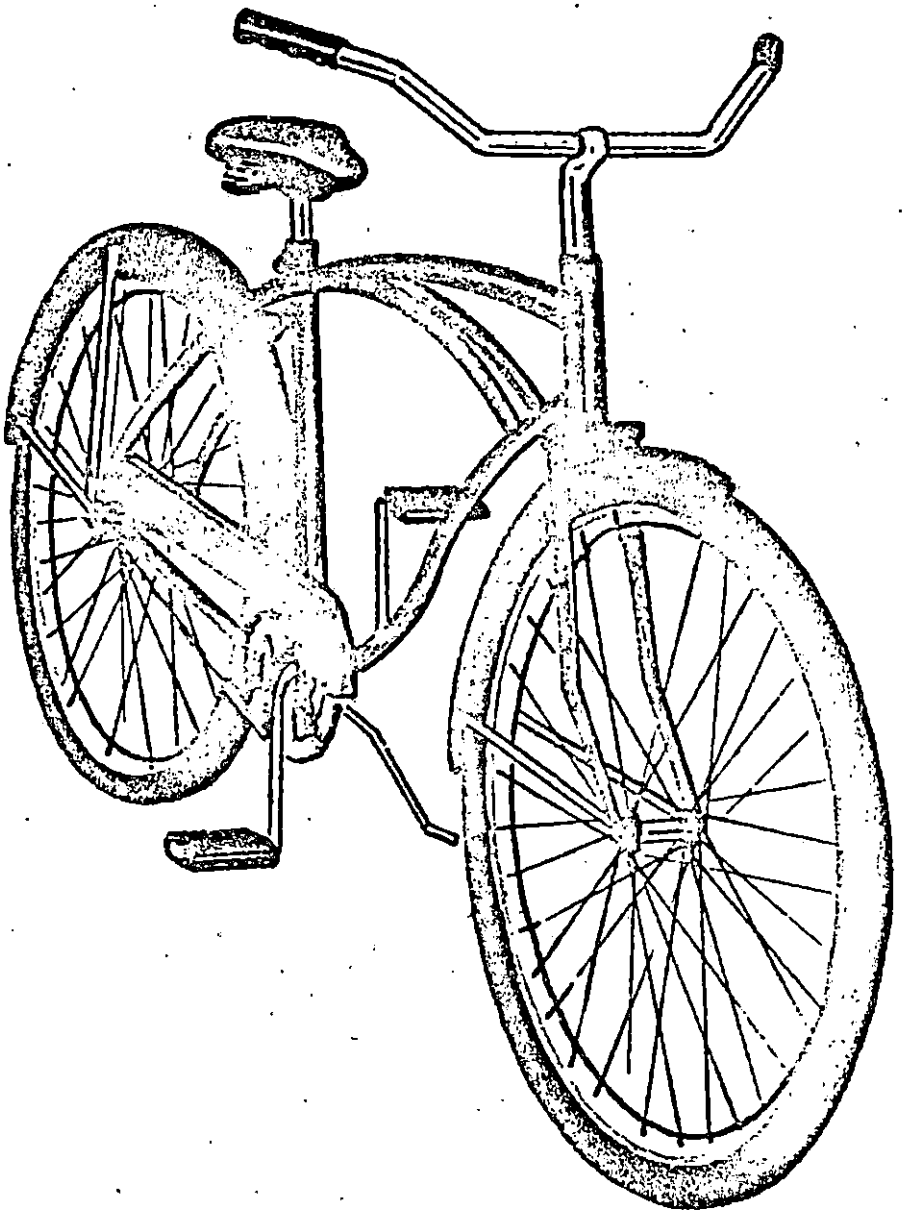


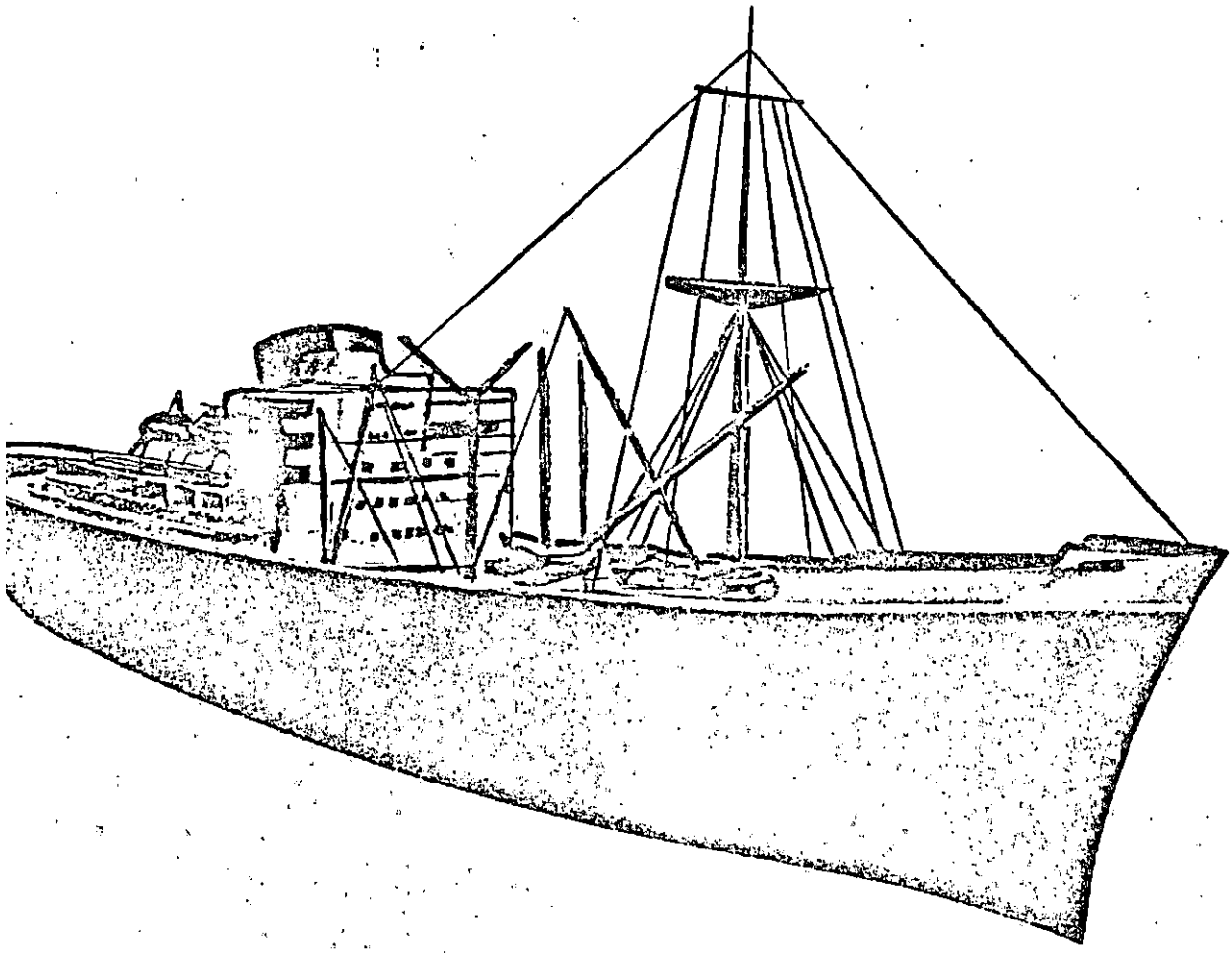


J. Preciado









Learning Rate Test (sample)

1.	nose	cold	hand
2.	away	hot	chin
3.	she	arm	with
4.	track	swing	buy
5.	work	boy	fire
6.	help	must	fly

Learning Rate Test (Wait 1 hour.)

1.	chin	work	rough
2.	cut	nose	fly
3.	arm	swing	dirty
4.	work	heavy	nose
5.	rough	fly	arm
6.	chin	heavy	swing
7.	bite	father	fly
8.	hand	arm	apple
9.	table	cheese	chin
10.	swing	her	sky

LEARNING RATE TEST

Test 1

fore starting, print the following words on the board in three rows:

in	arm	nose
rk	fly	swing

teach the first row of words: chin, arm, nose
y to students:

THESE ARE NAMES OF THINGS WE ALL HAVE.

int to words on board each time you name them.

THE WORDS ARE CHIN, ARM, NOSE. SAY THEM AFTER ME WHILE I POINT TO THEM: CHIN, ARM, NOSE. SAY THEM AGAIN: CHIN, ARM, NOSE.

POINT TO THIS.

int to word - chin - then point to your chin.

GOOD. EVERYBODY HAS A CHIN. WHAT IS THE WORD?

int to chin.

CHIN. YES.

PUT YOUR HAND ON YOUR ARM.

int to word arm on board and hold up your arm.

YES, YOU HAVE AN ARM. WHAT IS THE WORD?

int to arm

YES, ARM. AND WHAT IS THIS WORD?

int to chin.

YES, CHIN.

PINCH YOUR NOSE.

int to nose on the board and pinch your nose again.

NOW, PINCH YOUR NOSE AGAIN. WHAT IS THIS WORD?

int to nose.

2 Learning Rate Test I continued:

YES, NOSE. AND THIS ONE?

t to arm.

YES, ARM. AND THIS ONE?

t to chin.

YES, CHIN. NOW, READ THE WORDS FROM THE BOARD AGAIN.

it to each word; then repeat chin, arm, nose.

use the flashcards and say:

NOW, I'LL SHOW YOU THE WORDS ON CARDS.

card for arm; hold it below arm on board.

WHAT IS THIS WORD? YES, ARM. SEE ARM.

eard for nose; hold it below nose on the board.

WHAT IS THIS WORD? YES, NOSE.
SEE NOSE.

w card for chin; hold it below chin on the board.

WHAT IS THIS WORE? YES, CHIN. SEE CHIN.

NOW, LET'S CHECK TO SEE IF YOU KNOW ALL THE WORDS ON THE CARDS.

w each card in turn, away from board.

THIS WORD IS .....NOSE.

THIS WORD IS.....CHIN.

THIS WORE IS.....ARM.

NOW, I'M GOING TO ASK YOU SOME QUESTIONS ABOUT THESE WORDS.

nt to your nose. Show card.

DOES A DOG HAVE THIS?

YES, A DOG DOES HAVE A NOSE.

DOES A CAT HAVE ONE OF THESE?

ow card with arm.

NO, A CAT DOESN'T HAVE ONE ARM.

ow chin card.

Print this surface

Print this surface

DO YOU HAVE THIS? YES, YOU HAVE A CHIN.

NOW, LET'S SEE IF YOU CAN FIND THESE WORDS ON YOUR PAPER. PUT YOUR MARKERS UNDER THE WORDS IN THE FIRST BOX. (Sample - Test 1)

ake sure markers are in right place. Show card with nose.

IN THE FIRST ROW, PUT A CROSS ON THIS WORD.....NOSE.

how card with chin.

IN THE NEXT ROW, PUT A CROSS ON THIS WORD.....CHIN.

how card with arm.

IN THE NEXT ROW, PUT A CROSS ON THIS WORD.....ARM.

o teach the second row of words: work, swing, fly
ay:

. THESE ARE "DOING" WORDS - THINGS YOU CAN DO.

oint to board.

THEY ARE WORK, SWING, FLY. SAY THEM AFTER ME: WORK, SWING, FLY.

. HERE IS WORK.

oint to work.

PEOPLE CAN WORK. DADDIES AND MOMMIES WORK. YOU WORK AT SCHOOL. CAN A HOUSE WORK? A BABY CAN'T WORK BECAUSE HE IS TOO LITTLE. THIS WORD ALWAYS SAYS WORK. WHAT IS THE WORD? YES, WORK.

. HERE IS SWING.

oint to swing.

MONKEYS SWING FROM THE TREES. BOYS AND GIRLS CAN SWING. PEARS CAN SWING FROM THE FRUIT TREE. THIS WORD IS ALWAYS SWING. WHAT IS THE WORD?

oint to work.

YES, WORK.

. THIS WORD IS FLY. AIRPLANES FLY. A BLUEBIRD CAN FLY. PEOPLE CAN FLY IN AIRPLANES. THIS WORD IS ALWAYS FLY. WHAT IS THE WORD? YES, FLY. AND THIS ONE?

oint to swing.

YES, SWING. AND THIS ONE?

oint to work.

YES, WORK.

Print this surface Print this surface

Now, use the flashcards and say:

5. HERE ARE THE SAME WORDS ON FLASHCARDS.

Show - swing. Hold it below swing and say swing.

WHAT IS THE WORD? YES, SWING. SEE THE TWO ARE ALIKE, SWING.

Show work. Hold it below work on the board.

WHAT IS THIS WORD? YES, WORK. SEE IT IS WORK.

Show fly; hold it below fly on the board.

WHAT IS THIS WORD? YES, FLY. SEE IT IS FLY.

6. NOW, LET'S SEE IF YOU CAN REMEMBER ALL THESE WORDS ON THE CARDS.

Show each one: fly, work, swing.

THIS WORD IS.....FLY.

AND THIS ONE IS .....WORK.

AND THIS ONE IS .....SWING.

7. NOW, I'LL ASK YOU QUESTIONS ABOUT THESE WORDS.

Show work.

CAN YOU DO THIS?.....YES, YOU CAN WORK. I HOPE YOU CAN WORK IN FIRST GRADE.

Show fly.

CAN A CAT DO THIS?.....NO, A CAT CAN'T FLY.

Show swing.

CAN A FISH SWING?.....

NO, A FISH CAN'T SWING.

CAN A GIRL SWING FROM A BAR?.....

YES, A GIRL CAN SWING FROM A BAR.

8. NOW, LET'S SEE IF YOU CAN FIND THESE WORDS ON YOUR PAPER. PUT YOUR MARKERS UNDER THE WORDS IN THE NEXT BOX.

See that each pupil has the right place. Show card with swing.

FIND SWING AND PUT A CROSS ON IT.

Show card with work.

MOVE YOUR MARKER DOWN TO THE NEXT ROW, AND FIND WORK. PUT A CROSS ON WORK.

Show card with fly.

MOVE YOUR MARKER DOWN TO THE NEXT ROW AND FIND FLY. PUTT A CROSS ON FLY.

To review words; Say:

1. LET'S SEE IF YOU KNOW THE WORDS IN THE FIRST ROW ON THE BOARD.

Place flashcards below words on board.

THIS WORD IS.....CHIN. HERE IS YOHR CHIN.

THIS WORD IS.....NOSE. YOU SMELL WITH YOUR NOSE.

THIS WORD IS.....ARM. HOLD UP YOUR ARM.

2. LET'S SEE IF YOU REMEMBER THE WORDS IN THE SECOND ROW.

Place flashcards below words on the board.

THIS WORD IS.....WORK. FATHER GOES TOWORK.

THIS WORD IS.....FLY. A BIRD CAN FLY.

THIS WORD IS.....SWING. THERE ARE SWINGS IN THE PARK.

Erase board. Wait ONE HOUR. Then test recall of words.

To test, be sure that children have marker and crayola, or pencil. Say:

PUT YOUR MARKER UNDER THE FIRST ROW OF WORDS.

Check.

1. IN THIS ROW, FIND CHIN AND PUT A CROSS ON IT.

2. MOVE YOUR MARKER DOWN TO ROW 2. PUT A CROSS ON NOSE.

3. MOVE YOUR MARKER DOWN TO ROW 3. PUT A CROSS ONARRM.

4. MOVE YOUR MARKER DOWN TO ROW 4. PUT A CROSS ON WORK.

5. MOVE YOUR MARKER DOWN TO ROW55. PUT A CROSS ON FLY.

6. MOVE YOUR MARKER DOWN TO ROW 6. PUT A CROSS ON SWING.

7. MOVE YOUR MARKER DOWN TO ROW 7. PUT A CROSS ON FLY.

8. MOVE YOUR MARKER DOWN TO ROW 8. PUT A CROSS ON ARM.

9. MOVE YOUR MARKER DOWN TO ROW 9. PUT A CROSS ON CHIN.

0. MOVE YOUR MARKER DOWN TO ROW 10. PUT A CROSS ON SWING.

Collect tests.

Learning Rate Test (sample)

1.	stop	think	rough
2.	ate	dirty	water
3.	heavy	drop	fry
4.	laugh	jump	bounc
5.	brother	farm	shon
6.	bank	trick	pain

1.	fly	rough	work
2.	dirty	chin	arm
3.	swing	heavy	nose
4.	found	red	rough
5.	hard	heavy	try
6.	close	do	dirty
7.	show	work	we
8.	loose	laugh	chin
9.	trick	took	rock
10.	like	swing	laugh

Test 2

Before starting to administer this test, print the following words on the board in two rows.

Rough	Dirty	Heavy
Laugh	Show	Trick

To teach the first row of words: rough, dirty, heavy
Say to students:

1. *THESE ARE WORDS THAT TELL ABOUT THINGS WE KNOW.*

Point to Board.

THEY ARE ROUGH, DIRTY, HEAVY. SAY THEM AFTER ME: ROUGH, DIRTY, HEAVY. SAY THEM AGAIN: ROUGH, DIRTY, HEAVY.

2. *THIS WORD IS ROUGH.*

Point to rough.

LOTS OF THINGS ARE ROUGH. A BRUSH IS ROUGH. SANDPAPER IS ROUGH. A BARK OF A TREE IS ROUGH. WHAT IS THE WORD? YES, ROUGH.

3. *AND THIS WORD IS DIRTY.*

Point to dirty.

Look at your hands! Are they dirty? If you play in the mud, they would be dirty. Sometimes your mother has to clean because the house is dirty. This word always says dirty. What is the word? Yes, dirty.

4. *THIS WORD SAYS HEAVY.*

Point to heavy.

A BAG OF ROCKS IS HEAVY. A BOX OF BOOKS IS HEAVY. A PAIL OF WATER IS HEAVY. WHAT IS THE WORD? YES, HEAVY.

Now, use the flashcards. Say:

5. *LET'S SEE THESE WORDS ON CARDS.*

Show dirty; hold it under dirty on board.

THIS WORD IS.....DIRTY. YES, DIRTY.

Show rough. Hold it under rough.

THIS WORD IS.....ROUGH. YES, ROUGH.

Show heavy. Hold it under heavy on board.

THIS WORD IS.....HEAVY. YES, HEAVY.

6. NOW LET'S SEE IF YOU KNOW THESE WORDS ON CARDS.

Show each one -- heavy, dirty, rough.

WHAT IS THIS WORD? .....YES, HEAVY.

AND THIS WORD?.....YES, ROUGH.

AND THIS ONE IS.....DIRTY. GOOD.

7. NOW, LET'S SEE IF YOU CAN ANSWER SOME QUESTIONS ABOUT MY WORDS.

Wait for yes or no answer. Show rough.

IS A WINDOWPANE (THE GLASS) LIKE THIS? NO, GLASS IS NOT ROUGH. IT IS SMOOTH. IS YOUR DADDY'S FACE LIKE THIS BEFORE HE SHAVES? YES, YOUR DADDY'S FACE FEELS ROUGH BEFORE HE SHAVES OFF HIS BEARD.

Show heavy.

IS A LEAF LIKE THIS? NO, A LEAF ISN'T.....HEAVY.

Show dirty.

ARE CLEAN HANDS LIKE THIS? NO, CLEAN HANDS ARE NOT.....DIRTY.

8. NOW, LET'S SEE IF YOU CAN FIND THESE WORDS ON YOUR PAPER. PUT YOUR MARKERS UNDER THE BOX IN THE FIRST ROW.

Show card with rough.

FIND ROUGH AND PUT A CROSS ON IT.

Show card with dirty.

MOVE YOUR MARKER DOWN TO ROW 2. FIND DIRTY AND PUT A CROSS ON IT.

Show heavy.

MOVE YOUR MARKER DOWN TO ROW 3. FIND HEAVY AND PUT A CROSS ON IT.

To teach the second row of words: laugh, show, trick Say:

These are doing words.
THESE ARE DOING WORDS

Page 3 Learning Rate Test continued:

These are doing words.

1. THESE ARE DOING WORDS.

Point to board.

THEY ARE LAUGH, SHOW, TRICK. SAY THEM AFTER ME: LAUGH, SHOW, TRICK.

2. HERE IS LAUGH.

Point to laugh.

WHEN SOMETHING IS FUNNY, YOU LAUGH. WHEN YOUR DOG DOES A FUNNY TRICK, YOU LAUGH. YOU LAUGH AT FUNNY CLOWNS. THIS WORD ALWAYS SAYS LAUGH. WHAT IS THE WORD?

YES, LAUGH.

3. HERE IS SHOW.

Point to show.

TEACHERS CAN SHOW YOU HOW TO READ. A DENTIST CAN SHOW YOU HOW TO BRUSH YOUR TEETH. YOU CAN SHOW YOUR MOTHER HOW WELL YOU DO IN SCHOOL . THIS WORD ALWAYS SAYS SHOW. WHAT IS THE WORD? YES, SHOW. AND WHAT IS THIS WORD?

4. YES, TRICK.

Point to trick.

YOU CAN TRICK YOUR LITTLE BROTHER. I WILL TRY NOT TO TRICK YOU WITH THESE WORDS. YOU MUST LISTEN AND WATCH CAREFULLY, OR ELSE I WILL TRICK YOU!!

THIS WORD ALWAYS SAYS TRICK. AND THIS WORD? YES, LAUGH. AND THIS WORD SAYS.....SHOW.

Point to trick.

YES TRICK.

Point to laugh.

YES LAUGH.

Point to show.

YES SHOW.

Now, use flashcards with these words. Say:

5. NOW, LET'S SEE IF WE CAN SAY THESE WORDS ON FLASHCARDS.

Show laugh. Hold it under laugh.

WHAT IS THIS WORD? YES, SHOW.

Show trick. Hold it under trick.

WHAT IS THIS WORD? YES, TRICK.

6. NOW LET'S SEE IF I CAN ""TRICK" YOU WITH THESE WORDS ON FLASHCARDS.

Show each one: Laugh, show, trick

THIS WORD IS.....LAUGH.

THIS WORD IS.....SHOW.

THIS WORD IS.....TRICK. GOOD.

7. NOW I'LL ASK YOU QUESTIONS ABOUT THESE WORDS.

Shwwwlaugh.

CAN YOU DO THIS? YES, YOU CAN LAUGH.

Show show.

COULD A MONKEY DO THIS WITH A TRICK? YES, A MONKEY COULD SHOW YOU A TRICK.

Show trick.

CAN A CLOWN DO THIS?
YES, A CLOWN CAN DO A TRICK.

8. NOW, LETSS SEE IF YOU CAN FIND THESE WORDS ON YOUR PAPER. PUT YOUR MARKER UNDER ROW 4.

Show card with laugh on it.

FIND LAUGH AND PUT A CROSS ON IT.

Show card with show on it.

MOVE YOUR MARKDR DOWN TO ROW 5 AND FIND SHOW. PUT A CROSS ON IT.

Show card with trick on it.

MOVE YOUR MARKER DOWN TO ROW 6 AND FIND TRICK. PUT A CROSS ON IT.

To review words Say:

1. SEE IF YOU KNOW THE WORDS IN ROW ONE ON THE BOARD.

Place flashcards below the words.

THIS WORD IS .....ROUGH. IF THINGS ARE BUMPY, THEY FEEL ROUGH.

THIS WORD IS .....DIRTY. THE HAT FELL OFF IN THE ROAD. IT IS

THIS WORD IS.....DIRTY. THE HAT FELL OFF IN THE ROAD. IT IS DIRTY.

THIS WOBD IS.....HEAVY. THE WOMAN IS FAT. SHE IS HEAVY.

2. LET'S SEE IF YOU REMEMBER THE WORDS IN ROW 2.

Place flashcards below the words in row two.

THIS WORD IS.....LAUGH. WHEN THINGS ARE FUNNY, YOU LAUGH.

THIS WORD IS.....SHOW. I WILL SHØW YOU THE WORD "SHOW".

THIS WORD IS.....TRICK. I WILL TRY NOT TO TRICK YOU.

Erase words on board. After one hour, test for recall of words. (test2)

PUT YOUR MARKERS UNDER THE FIRST ROW OF WRODS ON THIS PAPER.

1. IN THIS ROW, FIND ROUGH AND PUT A CROSS ON IT.
2. MOVE YOUR MARKER DOWN TO ROW 2. PUT A CROSS ON DIRTY.
3. MOVE YOUR MARKER DOWN TO ROW 3. PUT A CROSS ON HEAVY.
4. MOVE YOUR MARKER DOWN. PUT A CROSS ON ROUGH.
5. MOVE YOUR MARKER DOWN. PUT A CROSS ON HEAVY.
6. MOVE YOUR MARKER DOWN TO ROW66. PUT A C ROSS ON DIRTY.
7. MOVE YOUR MARKER DOWN. PUT A CROSS ON SHOW.
8. MOVE YOUR MARKER DOWN. PUT A CROSS ONLHHGHH.
9. MOVE YOUR MARKER DOWN TO ROW 9. PUT A CROSS ON TRICK.
10. MOVE YOUR MARKER DOWN TO THE BOTTOM ROW. PUT A CROSS ON LAUGH.

Thank you boys and girls. Our game is ended. Collect tests.

LITTLE BROWN BEAR AND HIS FRIENDS

By Eliz Upham (Platt & Munk Pub.)

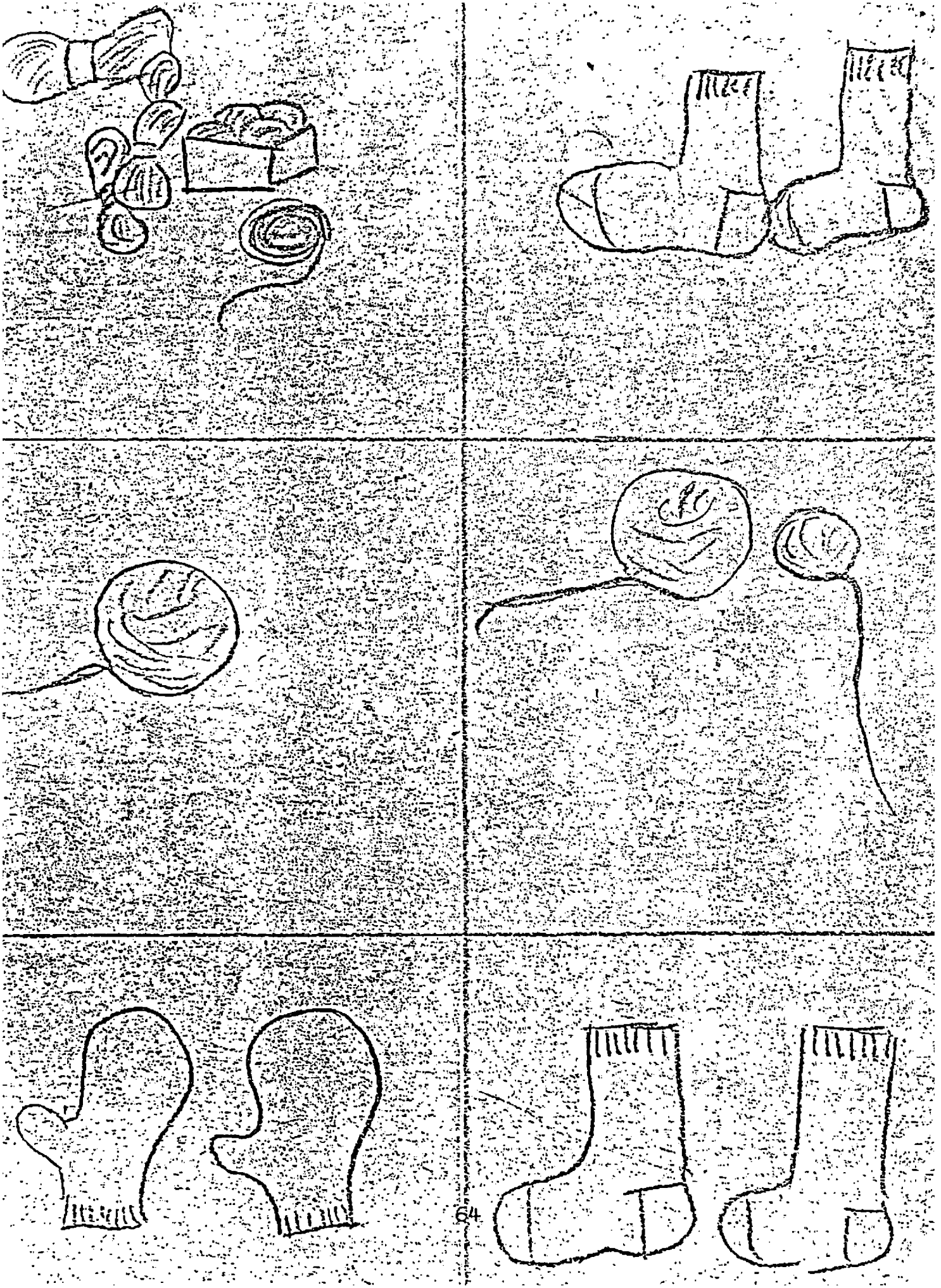
"LITTLE BROWN BEAR AND THE KITTENS"

Test 1

1. Put an X on what Little Brown Bear must get from the store.
2. Put an X on the number of balls of yarn mother needed.
3. Color the box that tells what Mother Bear made for Little Brown Bear. Color them the same as in the story.

Directions:

Read the story. Give each child a picture sheet and ask the three questions. (Wait until the next day to ask questions.)



LITTLE BROWN BEAR AND HIS FRIENDS

By Eliz Upham (Platt & Munk Co. Pub)

"LITTLE BROWN BEAR AND THE BAR MUFFS"
Test 2

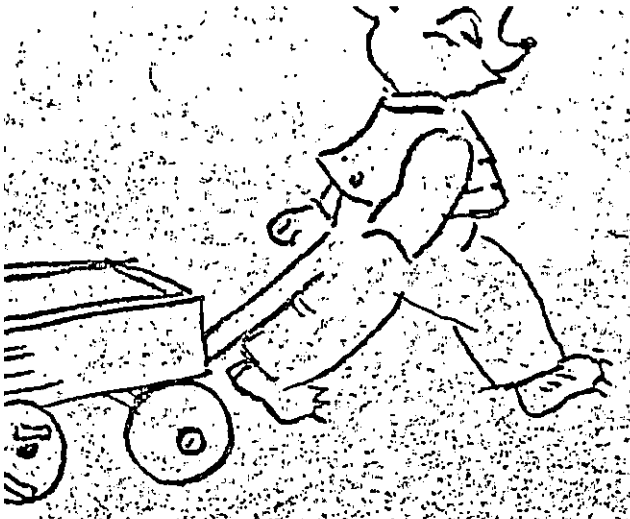
1. Put an X on the box that tells what they were doing or playing in the story.

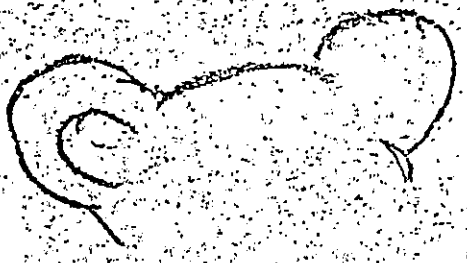
2. What on Little Brown Bear was getting cold? Put an X on them.

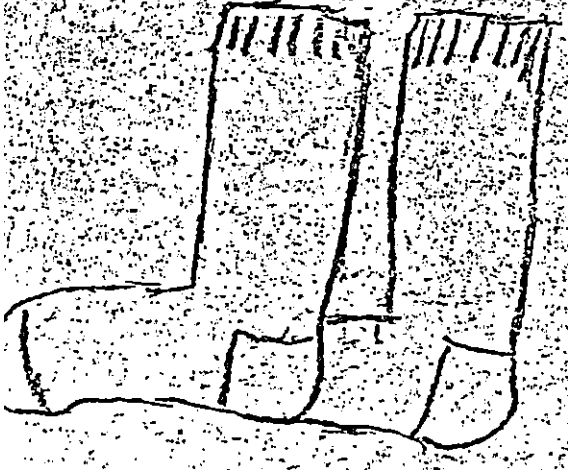
3. What did White Rabbit get from Mr. Big Bear to keep warm? Put an X on them.

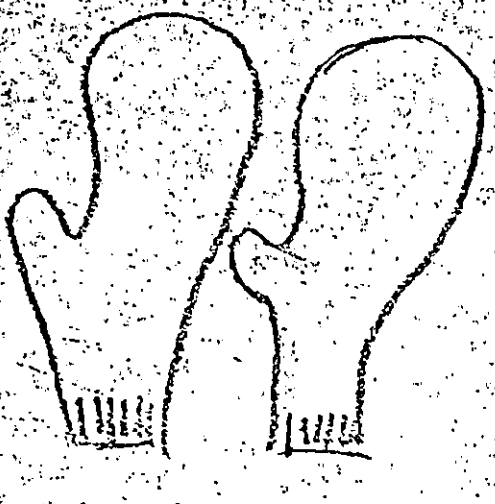
Directions:

Read the story. Give each child a picture sheet and ask the three questions. (Wait until next day to ask questions.









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