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A COMPARISON OF ANSWER SHEET AND TEST BOOKLET
RESPONSE FORMATS WITH THIRD AND FOURTH GRADERS

by

NANCY LOUISE FRY

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Major Professor

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Chapter 1

INTRODUCTION

Testing has become an extremely important phase of the total educational program in the elementary school. Yet, elementary teachers often display disfavor with standardized tests. Various reasons exist for this disfavor such as the amount of time required to grade, interpret scores, and figure percentiles that these tests require. Thus, the introduction of separate machine scorable answer sheets to be used with paper and pencil standardized tests was certainly a landmark in the field of testing (Cashen, 1969). Little research, though, has been done to determine their effect upon test performance.

The Problem

Statement of the problem. The purpose of this study was to investigate the effect of separate answer sheets versus test booklet marking format on the test performance of third and fourth graders.

The following questions were formulated to serve as research hypotheses for the investigation:

1. Does answer format effect performance on a standardized test of mental ability?
2. Does grade level of the students effect performance?

3. Is there an interaction between grade level of the student and answer format employed?

The Importance of the Problem

The goal of the testing program in the elementary school is to help the child by helping the teachers, administrators, and counselors better understand him and his abilities. This is accomplished by using the data obtained from the test in a manner beneficial to the student.

If the goal of the testing program is to help the child, then the results of the test data should accurately reflect his true abilities. Separate answer sheets and other response formats are used widely in the schools today because of their low cost and time saving characteristics. Yet, despite the obvious importance of the goals of the testing program, little empirical evidence exists to determine what effect scoring procedures, answer format, and grade level of the students has on test performance.

Administrators and test publishers feel that separate answer sheets cannot be used below the fourth grade because students lack coordination and long attention spans (Findley, 1961). Little has been done to prove this position correct or incorrect which means primary grade teachers are not reaping the benefits of separate answer sheets.

Tests should give accurate reflections of student abilities which creates a real need in this area. If

separate answer sheets lower actual test performance their use should be discontinued, but if separate answer sheets can be used effectively by students in grades below the fourth grade, this should be determined as their use could conserve time and money for schools and teachers. It was hoped that this study would provide empirical evidence that younger children can use separate answer sheets effectively.

Limitations of the Study

Intelligence tests measure the individual child's capacity for learning at a specific point in time. This does not allow for illness, anxiety, lack of interest or motivation, or other problems that the child may be having on a particular day. The score is final and does not take these things into consideration. Thus, the scores obtained in this study on the two separate days of test administration do not allow for individual student problems.

The investigator was also limited in the design of the study to certain classroom aspects such as size of the room in which the tests were administered.

Chapter 2

REVIEW OF THE LITERATURE

Literature pertaining to the problem presented in this study may be grouped into three major categories: (1) literature concerning the value of standardized tests and separate answer sheets; (2) literature concerning the effect of grade level on test performance; and (3) literature concerning the effect of answering format on test performance.

Literature Concerning the Value of Standardized Tests and Separate Answer Sheets

Standardized tests of intelligence can be valuable tools for educators, especially in the elementary grades. Findley (1961) said that the purpose of testing is to help teachers help children to learn. Standardized intelligence tests measure an individual's capacity to learn. Harsh (1961) stated that variation in performance on intelligence tests may be expected and is helpful because these variations point up a profile of abilities in the individual student. These scores can then be used to help diagnose difficulties in the elementary classroom and for homogenous grouping purposes (Goslin, 1967). Standardized tests are especially valuable because they are standardized. There are a great number and variety

of items, objective instructions and scoring procedures, norms for interpreting scores, and various mechanical features (alternate forms, record sheets, etc.). The tests have also been demonstrated to be valid, reliable, practical, and comparable. Standardized intelligence tests save time and effort on the part of the instructor and measure a variety of mental functions which can help teachers help children learn.

The introduction of separate answer sheets to be used with standardized tests was a major break-through in testing. Teachers could now give standardized tests repeatedly using the same test booklet. This greatly reduced the cost of the elementary school testing program. Later, machine scorable answer sheets were introduced which not only reduced the cost of the testing program even more, but also cut down the time involved in scoring the test items. Thus, as Cashen and Ramseyer (1969) stated, so long as a child's performance is not impaired, the adoption of a separate answering format in the elementary school is highly desirable.

Literature Concerning the Effect of Grade Level on Test Performance

Most educators and test publishers are of the opinion that elementary, especially primary-aged children cannot use separate answer sheets effectively. Findley (1961)

stated, for example, that separate answer sheets should not be used before the fourth grade because students will have trouble cross-referencing between test questions and answer spaces. Unfortunately though, little research exists to substantiate this belief or to determine what effect grade level has on performance on a standardized test with a separate answer sheet.

Cashen and Ramseyer (1969) noted the lack of literature concerning the lower limit at which separate answer sheets may be used effectively by elementary students. They conducted a study to determine the possible effects on primary grade children. The standardized test employed was the California Test of Mental Maturity, Short Form, Level 1. The test was administered twice to each of three grade groups (first, second, and third; $N=117$), once using the test booklet marking format, and once using a separate answer sheet. A counterbalanced design was employed in which one class from each grade group employed the answer book format first while the other class employed the answer sheet first. The two classes then switched answering format the following week. The results of the test showed that test booklet marking format resulted in significantly ($P<.01$) higher performance than the answer sheet format at grades one and two. The means for grade one were 74.85 (booklet) - 51.18 (answer sheet), and for grade two, 85.29 (booklet) - 74.50 (answer sheet). Also, grade one

showed significantly greater impairment in performance using the answer sheet than grade two. Grade three, however, produced no significant differences in performance ($M=89.23$ (booklet) - 85.91 (answer sheet)). The results of this study indicated that students in grades one and two were unable to function effectively with separate answer sheets, while students at grade three performed about as well on either format.

Ramseyer and Cashen (1971) in an attempt to verify the results of their earlier study and to determine the effects of formal practice sessions on the ability of first and second graders to use separate answer sheets again administered the California Test of Mental Maturity to 79 above average pupils in first and second grade in one elementary school. Employing a counterbalanced design, the CTMM was administered twice to the students, once with the usual booklet marking format and once with a separate answer sheet preceded by a formal practice session (a slide projector was used for this purpose). Significant mean raw score differences of 10.30 and 7.19 in grades one and two respectively in favor of the booklet format were determined. This study indicated that above average pupils in grades one and two are unable to employ a separate answer sheet effectively even with prior practice sessions.

Another effort to determine if practice sessions would raise test performance when employing separate answer sheets was undertaken by Gaffney and Maguire (1971). The students in grades two through nine were from 32 classes from three schools in Canada. None of the students had used a separate answer sheet before. A 40-item test was developed for each grade level with seven items assumed to be known to all the students in that grade. The other 33 items were not scored. The three instruction treatments included use of a separate answer sheet with a minimum of instruction and no practice test, use of a separate answer sheet with a maximum instruction session and no practice test, and use of a separate answer sheet with a maximum instruction session and a practice test. Results indicated that second and third graders were unable to make valid responses on a machine scorable answer sheet while fourth and fifth graders could after receiving specific instructions. Above the fifth grade, all students could make valid responses regardless of specificity of instructions.

What age or ability level, then is the lower bound at which separate answer sheets may be used effectively? Hieronymous (1961) used third graders and three methods of teaching children to use separate answer sheets. The test employed was the Iowa Test of Basic Skills. He found

no significant difference between the three methods of teaching children to use answer sheets at this grade level, and concluded that with a normal range of ability, and a test with a traditional format, that third graders can use separate answer sheets effectively. McKee (1967) also attempted to train third graders to use separate answer sheets. He prepared and duplicated sample answer sheets which corresponded to the format of the IBM 805 answer sheet. These were utilized in a practice session intended to train the students to use them effectively. The next day the "real" test was administered with the IBM 805 answer sheet. Although the study was not empirically evaluated, McKee concluded that the practice session given the day before "eliminated anxiety and confusion" and "seemed to help".

The evidence is inconclusive as to what effect a separate answer sheet has on students at the primary level and above. This study was an attempt to evaluate this matter more extensively.

Literature Concerning the Effect of Answering Format on Test Performance

Despite the obvious importance of the suggested criteria, the wide-spread use of separate answer sheets and various methods of scoring, little empirical evidence is available concerning the effects of answer sheet format

upon test results or examiners (Dizney, Merrifield, and Davis, 1966).

In an attempt to determine if answer sheet format has any effect on performance Dizney, Merrifield, and Davis (1966) conducted a study to compare the IBM 805 and IBM 1230 answer sheets. They used an unselected group, all sophomores in the College of Education at a certain college, and an arithmetic proficiency exam. If the exam was failed, the students were required to enroll in a non-credit remedial course, so the motivation was extremely high. The students were randomly split into two groups, with half using the IBM 805 and half employing the IBM 1230. The results indicated that students had more difficulty with the 1230 format (numbered from left to right) than with the 805 format (numbered from top to bottom), although performance was not altered because of the high motivation.

As was indicated from the above study, college students preferred the IBM 805 over the 1230 answer sheet, although their performance was not altered by the 1230. Hayward (1967) also employed the 805 and 1230 answer sheets in her study, but introduced the Digitek answer sheet to compare test performance of fourth and eighth graders employing the three formats. The subjects were 108 fourth graders and 126 eighth graders from two New

Jersey public schools. The entire grade level at the two schools was utilized. Both groups had previous experience with answer sheets. The groups were subdivided according to sex; then one-third employed the 805, one-third the 1230, and one-third employed the Digitek answer sheet while taking the Sequential Tests of Educational Progress (Reading Test). Each group also took the Academic Ability Test to allow for differences in verbal ability. Results of the study indicated a significant difference ($P < .05$) in mean STEP scores at both grade levels, with some interaction of sex and answer sheet format. Sex made no difference at the fourth grade level, but sex and type of answer sheet did affect performance. At the eighth grade level, sex made the difference, with girls scoring higher than boys on all three answering formats.

Miller (1965) attempted to determine whether color or design of answering format had any effect on performance of fourth, eighth, and twelfth graders. He administered two forms of the Lorge-Thorndike Intelligence Test (Verbal Battery) to these subjects from four cities (226 fourth graders, 255 eighth graders, 198 twelfth graders). Each subject took one test appropriate for his grade with the new red form; then half took the alternate test form with the regular blue answer sheet and the rest took the alternate test with the regular answer form but printed in red.

Miller found no significant differences in performance based on color, and concluded that color of answer sheet does not effect performance.

How does an answer card as compared to a traditional answer sheet effect performance? Slater (1964) in an attempt to answer this question, administered the Otis-Quick-Scoring Test of Mental Ability with an IBM answer sheet to all the sixth graders in the Houston Independent School District, Houston, Texas. Later in the year, he retested a sample of the students who had made the lowest scores on the original test. He felt this group would have the most difficulty converting from the regular answer sheet to the answer card. Three hundred and fifteen students were retested with the IBM Mark-Sense Answer Cards. Slater determined that there was no statistical or operational difference between mean IQ scores on the two types of answering formats, although there were some marked individual differences. He determined that there was a difference of 10 IQ points in 10% of the students, and felt that individual student errors were hidden by the total group.

Clark (1965) attempted to compare three different answering methods; (1) a separate machine-scored answer sheet, (2) a method in which the letter preceding the answer choice was written in a blank to the right of the

question; and (3) the key word was paired with each of the four choice words and the subject circled the pair which was closest in meaning. The separate answer sheet involved the greatest time and distance between answer decision and indication. The subjects were 180 slow-learning pupils within the Chicago, Illinois school system. These subjects ranged in age from 11-16. Three equivalent test forms were used in a counterbalanced design. Results of the study indicated that the separate answer sheet resulted in significantly ($P < .01$) lower means (separate answer sheet 22.79, answer choice to right of question 24.42, correctly paired words circled by pupil 23.98) than that of either of the other two methods of answering.

Results of these studies seemed to indicate that answer format does effect performance. It was hoped that this study would further clarify the effects of answering format on test performance.

Chapter 3

METHODOLOGY

Subjects

The subjects for the study were fifty-one students in grades three and four at Eugene Field Public Elementary School, Manhattan, Kansas. This school was chosen by Mrs. Eunice Bradley, Chief Elementary Supervisor for U.S.D. #385, from among the nine elementary schools as the one most representative of the population living in Manhattan, Kansas. This number constituted one of two classrooms represented at each grade level and included the total enrollment in the two classrooms. These two classes were chosen randomly from the four classrooms represented in the two grades. The total number constituted twenty-nine third graders and twenty-two fourth graders.

The author considered investigating the significance of sex on test performance, but after reviewing the work of Hayward (1967), Solomon (1971), and others who found sex made no difference in test performance at the fourth grade level, this idea was abandoned.

Procedure

The Otis-Lennon Mental Ability Test, 1967, was administered twice to each of the grades represented. During

the first testing period, the third grade class was administered Form J, Elementary I Level, and used the regular test booklet marking format. The fourth grade class was administered Form J, Elementary II Level, and used the test booklet marking format. One week later, the students were again administered the test with each grade using the alternate form of the Otis-Lennon test and IBM 805 answer sheet format.

The separate answer sheet employed for the third grade class was an IBM 805 answer sheet (which can be used with the Elementary II Level Test - fourth grade) modified in a manner similar to the one used by McKee (1967) to fit the format of the Level I test (see Appendix). This required eliminating the last answer choice in every row, as there were only four choices for each question in the Elementary I Level test. Two sample boxes were also added, as this level is divided into three distinct sections, each one with new directions. The modifications were made in such a way that the answer sheet for Level I corresponded to that used for Level II. The IBM 805 answer sheet was used without modification for the fourth grade tests.

The test booklet for the Level I test was slightly modified. Each answer choice was lettered in such a way that this level would correspond to Level II of the test. All the answer choices in the Elementary I Level booklets

were lettered regardless of whether the student would be using the booklet marking format or the answer sheet format. A copy of one of the Level I test booklet pages is shown in the Appendix, page 42.

The administrations occurred during the regular school day with no special preteaching sessions for the separate answer sheets. The regular classroom instructors administered both forms of the test in their respective classrooms. The two forms were administered one week apart, and were given at approximately the same time of day.

The test directions were followed exactly as given in the manual for each form, with the exception of the directions to mark the answer on the separate answer sheet (Elementary I test). These directions were the same that would be given to older students using test booklets intended to be used with separate answer sheets. A copy of the instructions and the answer sheet for the Level I test are shown in the Appendix, pages 20 and 41.

The deviation intelligence quotients on the Otis-Lennon Mental Ability Test were used as the criterion measure.

Hypothesis to be Tested

In an attempt to assess the effects of employing a separate answer sheet on the standardized performance of

pupils in grades three and four, the following null hypothesis was proposed: the performance of elementary children on a standardized test of mental ability will not be impaired by answering format, grade level of the student, or any combination of these factors.

Treatment of Data

The reliability of the two forms (J & K) was determined from data included in the Manual for Administration. At the conclusion of the testing procedures, the deviation intelligence quotient was determined, and a two-way analysis of variance was used to test the hypothesis of the investigation. The 0.05 level of significance was established for the rejection of the null hypothesis.

Chapter 4

RESULTS

Description of the Subjects

The subjects for the study were fifty-one students in grades three and four from the same elementary school chosen from among the nine elementary schools in Manhattan, Kansas. This number constituted twenty-nine third graders and twenty-two fourth graders. One third grade male was not present for both tests which reduced the sample to twenty-eight third and twenty-two fourth graders.

Based on idiographic data, this school was chosen by Mrs. Eunice Bradley, Chief Elementary Supervisor, U.S.D. #385, as the one most representative of Manhattan, Kansas students. All of the students, as nearly as could be determined, were Caucasian, English speaking, and of the middle-class socio-economic level.

Determination of Reliability of the Test Forms

The reliability of the two forms (J & K) was determined from data included in the Manual for Administration. This data was obtained in a special research program carried out in four school systems in 1967 by the test company. The alternate-forms correlation coefficient was 0.90 for the two forms of the Elementary I Level Test and 0.89 for the Elementary II Level of the test. This

was based on populations of 917 and 1,004, respectively.

Analysis of the Test Means

At the conclusion of the testing procedures, the deviation intelligence quotients for the fifty students were determined on the two forms of the test. Stanine information, mental age, percentile rank, and other information were also determined, although deviation intelligence quotients were used as the criterion measure.

A special computer program written by Dr. John T. Roscoe of the College of Education for a two-way analysis of variance with unweighted means was employed. The criterion variable was the answer sheet format. Table 1 shows the cell means of the intelligence scores.

Table 1
Cell Means for Test

	Grade 3	Grade 4
Answer Booklet	112.04	112.45
Answer Sheet	115.21	111.59

Table 2
Original and Unweighted Means for Rows

	Original	Unweighted
Answer Booklet	112.22	112.25
Answer Sheet	113.62	113.40

Table 2 shows the original and unweighted means for the rows, and Table 3 shows the original and unweighted means for the columns. No significant statistical difference was determined between the means at the 0.05 level.

Table 3
Original and Unweighted Means for Columns

	Original	Unweighted
Grade 3	113.63	113.62
Grade 4	112.02	112.02

Analysis of Variance

The analysis of answer format as a variable in test performance resulted in an F ratio of 0.2350. This analysis was not statistically significant at the 0.05 level of significance ($F_{.05,1,96} > 4.00$). The null hypothesis, that the performance of elementary children on a standardized test of mental ability will not be impaired by answering format, was retained.

An analysis of grade level as a variable in test performance was conducted. The obtained F ratio of 0.4410 was not statistically significant at the 0.05 level of significance ($F_{.05,1,96} > 4.00$). As a result of this analysis, the null hypothesis, that the performance of elementary children on a standardized test of mental

ability will not be impaired by grade level of the student, was retained.

The hypothesis that the interaction of answer format and grade level was an important variable in test performance was specifically investigated. This analysis resulted in an F ratio of 0.6840 which was not statistically significant at the 0.05 level of significance ($F_{.05,1,96} > 4.00$). As a result of this finding, the null hypothesis was retained.

The results of these analyses are summarized in Table 4.

Table 4
Analysis of Variance

Source	Sum of Sq	df	Mean Sq	F
Answer format	34.2650	1	34.2650	0.2350
Grade level	64.2950	1	64.2950	0.4410
Interaction	99.7151	1	99.7151	0.6840
Error	13995.0000	96	145.7813	
Total	14193.2751	99		

Chapter 5

DISCUSSION, IMPLICATIONS, AND SUMMARY

Discussion

The first analysis of this investigation dealt with answer format as a variable in test performance. It was found that type of answer format did not effect test performance for these elementary grade children.

The second major analysis of this study concerned the effect of grade level on test performance; the two grade levels employed were third and fourth grade. As a result of this analysis, it was found that test performance on a standardized test of mental ability was not impaired by grade level.

The third major focus of this study was the possible effect on test performance of an interaction of answering format and grade level. Results indicated that test performance of these children on a test of mental ability was not impaired by an interaction between answer format and grade level of the student.

Implications

The results of this study indicated that pupils in grades three and four performed as well with separate answer sheets as they did with the booklet answer scheme.

Thus, although some test publishers and educators feel that separate answer sheets should not be introduced before fourth grade, these findings do not support their position. This study indicated that separate answer sheets can be introduced as early as third grade without impairing test performance.

It is hoped that these results will provide justification for school districts to save time and money by ordering standardized tests with separate answer sheets for their pupils in grades three and four.

Summary

The purpose of this study was to investigate the effects of answer format, grade level, and the interaction of these two variables on the standardized test performance of third and fourth graders.

The subjects for the study were third and fourth grade students from one elementary school in Manhattan, Kansas. A total of fifty students were involved in the study.

The results of the study indicated that the test performance of the subjects on a standardized test of mental ability was not impaired by answer format, grade level, or an interaction of these two variables.

Based on this limited sample, it appears that

separate answer sheets may be introduced as early as grade three without depressing test performance.

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APPENDIX

DIRECTIONS FOR ADMINISTERING
ELEMENTARY I LEVEL TEST
FORM K

TO THE EXAMINER: Make certain that you have a copy of the test booklet to use for demonstration during the administration of all parts of the test. At the beginning of the first sitting, the pupils fill in the identification blanks on the front of the answer sheet. Examiners will find it helpful to have a facsimile of this part of the page drawn on the chalkboard with all information correctly entered except the pupil's name and date-of-birth. It is essential that the pupil's date-of-birth appear correctly on the test booklet. Examiners should use their own judgment in deciding whether pupils are to enter their birth dates. With younger or less mature pupils, examiners may want to enter the date-of-birth information. In any case, examiners should verify the date-of-birth by checking the pupil's permanent record.

FIRST SITTING: Part I.

Before beginning, make certain that pupils' desks are cleared and that each pupil has two soft-lead pencils and a good eraser. Distribute IBM 805 answer sheets.

BEGIN BY SAYING:

Mark all of your answers on your answer sheet with pencil only.

Using an answer sheet to demonstrate, SAY:

Fill in these blanks at the side asking for your name, age, date-of-birth, etc. Now look at the chalkboard where the same spaces are drawn and see how I have filled them. Do the same in the blanks on your sheet. Do not make any other marks on the sheet.

Pause for pupils to complete the identification blanks on the answer sheet. Give pupils any specific directions needed for completing (or not completing) the date-of-birth information.

THEN SAY:

Print plainly and as quickly as you can, and be sure to complete all the blanks as you were told.

Make certain that all pupils have completed the required information on the answer sheet.

THEN SAY:

Today we will work on some new and interesting puzzles that are in this book. Leave your book closed on your desk until I tell you what to do.

Distribute the test booklets to all pupils.

THEN SAY:

You must listen very carefully to what I tell you. You must do the best that you can in working the puzzles in this book. Do not begin work until I say "Go", and when I say "Stop", put your pencil down. If you break your pencil, raise your hand and I will give you another. After you have begun working, you must not ask questions. Now open your book to page 2 and fold it back like this.

Demonstrate and make certain that all pupils have only page 2 exposed.

THEN SAY:

(Sample A) Now look at the pictures in the first row at the top of the page. Three of these pictures are alike in some way. What are they?

Pause for pupils to respond.

THEN SAY:

Yes, three of them are dogs. The box is not like the three dogs. Now look at the first box marked SAMPLES on your answer sheet. Since the box which is letter (b) is different, the answer space marked letter (b) has been filled in with a heavy mark.

Make certain that all pupils understand the sample and the way it has been marked.

THEN SAY:

(Sample B) Now look at the pictures in the next row. Find the three things that are alike. What are they?

Pause for pupils to respond.

THEN SAY:

Yes, the hat, shoe, and glove are all things to wear. The flag which is letter (j) is not like them. Now take your pencil and fill in the answer space marked (j) on your answer sheet in the sample box.

Demonstrate by drawing an answer space on the board and filling it in.

THEN SAY:

Be careful to keep your answer marks inside the little answer spaces. Do not make any marks in the booklet. Mark only on the answer sheet.

THEN SAY:

(Sample C) Look at the next row of pictures. There are three drawings that are alike. How are they alike?

Pause for pupils to respond.

Yes, they are alike because they have dots in them. Which one will you mark?

Pause for pupils to respond.

Yes, the square which is letter (a) has no dot in it so you should fill in the answer space marked (a) on the answer sheet in the sample box.

Pause for pupils to mark the answer.

THEN SAY:

(Sample D) Now look at the last row of drawings. These are not quite the same as the others you have been doing, so look at them carefully. Which box does not go with the others?

Pause for pupils to respond.

Yes, the third box which is letter (h) is different from the others because it has two straight lines and a circle in it. The others all have three straight lines. Now fill in the answer space (h) on your answer sheet in the sample box.

Pause for pupils to mark the answer.

THEN SAY:

If you mark an answer and then want to change it, be sure to erase your first answer mark completely. On this page and the next two pages, there are more problems like these. In each row, find the picture that does not belong with the other three and mark the answer space with the same letter on your answer sheet. Keep working until you come to the bottom of page 4. Remember to keep your eyes on your own work. Try to get as many right as you can. Begin with row 1 and go ahead by yourself. Mark only one answer space in each row. Go ahead.

The examiner should move quietly around the room to make certain that pupils are marking their answer in the correct manner. Answer any question by referring to the practice examples on page 2. Pupils should have only one page of the test booklet open at a time to work on.

After exactly 10 minutes, SAY:

Stop work. Put your pencil down and look up.

Go ahead with the directions for Part II.

FIRST SITTING: Part II

SAY:

Now turn your booklet over to page 5 like this. You should see the words "Part II" at the top of the page.

Demonstrate and check to make certain that all pupils are on page 5.

THEN SAY:

(Sample A) Now look at the first row of pictures. In the first box see the dog, then the puppy. In the next box see the cat. Notice the empty box after the cat. We say: "A dog goes with a puppy the same way that a cat goes with what?"

Pause for pupils to respond.

Yes, kitten is right. A dog is a grown-up puppy, and a cat is a grown-up kitten. We say: "Dog is to puppy as cat is to kitten." Find the picture of the kitten in the last part of the row. It is marked letter (d). Now look at the second box marked SAMPLES - letter (d) has been filled in.

Pause and demonstrate, if necessary.

THEN SAY:

(Sample B) Now look at the next row of pictures. The pictures in the box go together in a certain way. We say: "Boy is to trousers as girl is to what?"

Pause for pupils to respond.

Yes, "dress" which is letter (f) is right. A boy wears trousers and a girl wears a dress. Now take your pencil and fill in the answer space marked (f) on your answer sheet.

Check to make certain that all pupils understand the task and how they are to mark their answers.

THEN SAY:

(Sample C) Now look at the drawings in the next row. The first two drawings are alike except that the second one has a dot inside it. Now look at the circle in the next box. Which drawing in the last part of the row goes with the circle in the same way as the first two drawings go together?

Pause for pupils to respond.

Yes, the circle with the dot inside it is right, letter (c). We say: "The drawing without the dot goes with the drawing having a dot inside it the same as the circle without a dot goes with the circle that has a dot inside it." Now take your pencil and mark the answer space marked (c) on your answer sheet.

Pause for pupils to mark the answer.

THEN SAY:

(Sample D) Now look at the drawings in the next row. Do this one by yourself. Think of how the drawings go together.

Pause.

What is the right answer?

Pause for pupils to respond.

THEN SAY:

Yes, letter (h) is correct. The green-colored drawing next to the last drawing in the row is right. It is just like the drawing in the second box except for its color. Mark your answer, letter (h) on your answer sheet.

Pause for pupils to mark the answer. Make certain that the pupils understand the task and how they are to mark their answers. It is permissible to reread certain portions of these directions if pupils are unsure of the task.

THEN SAY:

On the rest of this page and on the next two pages, there are more problems like these. Do them as we have been doing these. There is only one right answer for each problem. If you want to change an answer, be sure to erase your first mark completely. Mark only one answer space in each row. Keep your eyes on your own work. Try to get as many right as you can. Do not work any farther than to the bottom of page 7. Begin work now on row 1.

Circulate among the pupils to make certain that they are marking their answers correctly. After exactly 12 minutes, SAY:

Stop work. Put your pencil down. Close your book and pass it in.

Pause.

Now check your answer sheet once again to make certain that your name and date-of-birth have been filled in.

Pause.

Now hand in your answer sheet.

Pause.

This concludes the first sitting. It is recommended that Part III be administered during the next half-day of school. Part III should not be administered without a sufficient rest period.

SECOND SITTING: Part III

TO THE EXAMINER: Each item in Part III has a specific direction which is read aloud by the examiner. In reading the direction, speak clearly and distinctly enough so that all pupils can hear. Try to make each direction as clear as possible. If you make a mistake in reading a direction, stop.

SAY: No. That is wrong. Listen again.

Then read the direction through correctly. Read each direction through ONLY ONCE unless some disturbance might have interfered with the pupils' hearing or understanding of the direction. You must NOT explain the meaning of any word or phrase, because the test is, in part, a vocabulary test.

TIMING THE ITEMS: After each direction has been read, give the pupils enough time to mark their answers. Watch them carefully, and as soon as most of them have finished marking, move on to the next item. Keep the pupils working at a steady pace. About 15 seconds is all that will be needed for any one item.

Before beginning, make certain that each pupil has two soft-lead pencils and an eraser.

BEGIN BY SAYING:

Now we will do some more puzzle problems in this book.
First, I will pass out your answer sheets. Be sure
you have the answer sheet with your name on the side.

Distribute the answer sheets, making certain that each
pupil gets the one with his name on it.

THEN SAY:

Now I will pass out your books. Keep your book
closed until I tell you what to do.

Distribute the test booklets.

THEN SAY:

Turn to page 8 and fold your book back like this, so
that the words "Part III" are at the top of the
page.

Demonstrate and check to make certain that all pupils have
turned to page 8.

THEN SAY:

(Sample A) Look at the pictures in the first row at the
top of the page. Suppose I said: "Mark the thing
we drink from." This is letter (a). Now look at
the third box marked SAMPLES on your answer sheet.
You would fill in the answer space marked (a) on
your answer sheet. Do you see how this has been
done?

Check to make certain that pupils understand the sample
and the way it has been marked.

THEN SAY:

(Sample B) Now look at the pictures in the next row.
Look at each picture carefully. Find the picture
that shows two boys running.

Pause.

Which picture is it?

Pause for pupils to respond.

Yes, it is (f), the first picture shows two boys
running so you should take your pencil and fill in
the answer space marked (f) on your answer sheet
like this.

Demonstrate by drawing an answer space on the chalkboard
and filling it in.

THEN SAY:

(Sample C) Look at the next row of pictures. Find the picture of a circle that has the largest star inside it. Which one is it?

Pause for pupils to respond.

THEN SAY:

Yes it is (c), the next-to-last circle has the largest star inside it. Now fill in the answer space marked (c) on your answer sheet.

Pause for pupils to find and mark the correct answer.

THEN SAY:

(Sample D) Look at the next row of pictures. Find the box closest to the green circle and mark that answer on your answer sheet.

Pause. Check to make certain that all pupils have found and marked the correct answer. (j)

THEN SAY:

On the next pages there are more rows of pictures like these. I will tell you what to mark in each row of pictures. You must listen very carefully to what I say, because I can tell you what to mark only once. Always put your mark inside the little answer space on your answer sheet. Do not make any marks on the pictures or drawings. If you mark an answer and then want to change it, be sure to erase your first answer mark completely. There should be only one space marked in each row, since there is only one right answer.

Continue with the directions printed below. Pupils should not receive any help beyond this point. Allow about 15 seconds after reading each direction for pupils to mark their answers. Check periodically to make certain that all pupils are on the same item and are marking their answers correctly.

SAY:

(1) In row 1, find the picture that shows an acrobat and mark the answer space with the same letter on your answer sheet.

(2) In row 2, find the picture that shows a blade and mark the answer space on your answer sheet.

(3) In row 3, find the picture that shows a tangle. Mark the correct answer space on your answer sheet.

(4) In row 4, find the thing that can go the fastest. Mark the correct answer on your answer sheet.

Now turn your book over to page 9 like this.

Demonstrate and check to make certain that all pupils are on the right page.

THEN SAY:

Remember to mark the answer space on your answer sheet. Do not mark in the booklet.

(5) In row 5 at the top of the page, find the picture that shows a tunnel. Mark the answer on your answer sheet.

(6) In row 6, find the set of circles where there is a cross, in the first circle, a number in the second circle, and nothing in the third circle. Mark the answer on your answer sheet.

(7) Look at row 7. Suppose you saw all of these things in this room. Find the thing that would be the tallest. Mark the answer on your answer sheet.

(8) In row 8, find the picture that shows an injury and mark it on your answer sheet.

(9) In row 9, find the room that has a window, a chair, and a lamp in it. Mark it on your answer sheet.

(10) In row 10, find the picture of a balance. Mark the answer on your answer sheet.

(11) In row 11, find the picture of the glass where both letters are the same and touch each other. Mark it on your answer sheet.

(12) In row 12, find the picture of the shears. Mark the answer on your answer sheet.

(13) Look at the box at the beginning of row 13 at the bottom of the page. The letter A stands for the smallest ball, B for the largest one, and C for the middle-sized one. Find the pattern of letters that stands for the balls being arranged from largest to smallest. Mark the answer on your answer sheet.

Now turn the page and fold your book back like this. You should see only page 10.

Demonstrate and check to make certain that the pupils have only page 10 exposed.

THEN SAY:

- (14) In row 14 at the top of the page, find the picture that shows a boulder. Mark the answer on your answer sheet.
- (15) In the next row, find the container that will hold the least amount of water, and mark the answer on your answer sheet.
- (16) In the next row, find the glass to the right of the one that has been turned upside down. Mark the answer on your answer sheet.
- (17) In the next row, which picture shows something that has a crease. Mark the answer on your answer sheet.
- (18) In the next row, find the curved line that has a dot on the outside of the curve and a broken line on the inside of the curve. Mark the answer on your answer sheet.
- (19) In the next row, find the pair of things that could not be put together to make a circle. Mark the answer on your answer sheet.
- (20) In the next row, which picture shows fluid. Mark the answer on your answer sheet.
- (21) In the next row, find the picture of the thing farthest from the little truck on this page. Mark the answer on your answer sheet.
- (22) In the bottom row, find the thing that is about as heavy as a pencil. Mark this answer on your answer sheet.

Now turn your book over to page 11 like this.

Demonstrate and check to make certain that all pupils are on the right page.

THEN SAY:

Remember to mark the answer space on your answer sheet. Do not mark in the booklet.

- (23) In the top row, which picture shows a nick. Mark the answer on your answer sheet.
- (24) In the next row, find the picture that shows an infant. Mark it on your answer sheet.

(25) In the next row, find the shortest path through the park. Mark the answer space on your answer sheet.

(26) In the next row, which picture shows a portrait. Mark the answer on your answer sheet.

(27) Look at the oranges at the beginning of the next row. A teacher divided these equally among four children. Which picture shows how many oranges each child got. Mark the answer on your answer sheet.

(28) In the next row, find the picture that shows a gorge. Mark the answer on your answer sheet.

(29) In the next row, find the picture where the number at the center of the circle and the number under the circle are the same. Mark the answer on your answer sheet.

(30) At the beginning of the next row look at the circle that has been cut into parts. Which picture shows the same number of dots as one-half the parts of the circle. Mark the answer on your answer sheet.

(31) Look at the candy bar at the beginning of the row at the bottom of the page. Which group of coins will buy the fewest number of candy bars like this one. Mark the answer on your answer sheet.

Now turn your booklet over to the last page.

Check to make certain all the pupils are on page 12.

(32) In the top row, find the picture that shows an arch. Mark the answer on your answer sheet.

(33) Look at the set of beads at the beginning of the next row. Find the picture that shows how these beads would look if you added another bead just like the first one of the set. Mark the answer on your answer sheet.

(34) In the next row, find the picture that shows applauding. Mark the answer space on your answer sheet.

(35) In the next row, find the lines that are not going in the same direction. Mark the answer on your answer sheet.

(36) In the next row, find the picture which shows a crouch. Mark the answer on your answer sheet.

(37) In the next row, find the picture where the corner of one figure falls at the center of the other figure. Mark the answer on your answer sheet.

(38) In the next row, which picture shows a banner. Mark the answer on your answer sheet.

(39) In the next row, find the picture that shows a disc. Mark the answer on your answer sheet.

(40) In the last row, which picture shows something inflatable. Mark the answer on your answer sheet.

THEN SAY:

Stop work. Put your pencil down. Close your book and pass it in.

Collect the booklets and check to make certain that each pupil has turned his in. Collect the answer sheets and check to make certain that each pupil has turned his in.

This concludes the test.

**THIS BOOK
CONTAINS
NUMEROUS
PAGES THAT ARE
CUT OFF**

**THIS IS AS
RECEIVED FROM
THE CUSTOMER**

**THIS BOOK
CONTAINS
NUMEROUS PAGES
WITH DIAGRAMS
THAT ARE CROOKED
COMPARED TO THE
REST OF THE
INFORMATION ON
THE PAGE.**

**THIS IS AS
RECEIVED FROM
CUSTOMER.**

**THE
FOLLOWING
DOCUMENT HAS
PRINTING THAT
EXTENDS INTO
THE BINDING.**

**THIS IS AS
RECEIVED FROM
CUSTOMER.**

Otis-Lennon Mental Ability Test

ELEMENTARY I, INTERMEDIATE AND ADVANCED LEVELS

IBM 805 ANSWER SHEET

RAW SCORE

PERFORMANCE BY AGE	
DIQ	%ILE RANK
	STANINE

PERFORMANCE BY GRADE	
%ILE RANK	STANINE

Name _____

Teacher _____

School _____

Grade _____ Boy _____ Girl _____ (CHECK ONE)

City _____ State _____

Level: Elementary I _____ Intermediate _____ Advanced _____

Form: J K (CIRCLE ONE)

Date of Test _____ YEAR _____ MONTH _____ DAY _____

Date of Birth _____ YEAR _____ MONTH _____ DAY _____

Age _____ YEARS _____ MONTHS _____ DAYS

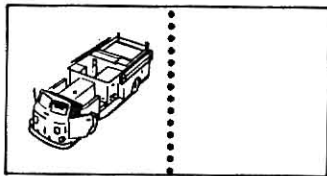
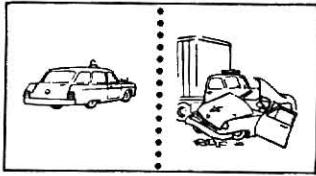
SAMPLES			
A	a	b	c
B	f	g	h
C	d	e	j
D	i	k	l

SAMPLES			
A	a	b	c
B	f	g	h
C	d	e	j
D	i	k	l

SAMPLES			
A	a	b	c
B	f	g	h
C	d	e	j
D	i	k	l

1	a	b	c	d	e	f	g	h	i	j	k	l
2	f	g	h	i	j	a	b	c	d	e	f	g
3	a	b	c	d	e	f	g	h	i	j	k	l
4	f	g	h	i	j	a	b	c	d	e	f	g
5	a	b	c	d	e	f	g	h	i	j	k	l
6	f	g	h	i	j	a	b	c	d	e	f	g
7	a	b	c	d	e	f	g	h	i	j	k	l
8	f	g	h	i	j	a	b	c	d	e	f	g
9	a	b	c	d	e	f	g	h	i	j	k	l
10	f	g	h	i	j	a	b	c	d	e	f	g
11	a	b	c	d	e	f	g	h	i	j	k	l
12	f	g	h	i	j	a	b	c	d	e	f	g
13	a	b	c	d	e	f	g	h	i	j	k	l
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4	f	g	h	i	j	a	b	c	d	e	f	g
5	a	b	c	d	e	f	g	h	i	j	k	l
6	f	g	h	i	j	a	b	c	d	e	f	g
7	a	b	c	d	e	f	g	h	i	j	k	l
8	f	g	h	i	j	a	b	c	d	e	f	g
9	a	b	c	d	e	f	g	h	i	j	k	l
10	f	g	h	i	j	a	b	c	d	e	f	g
11	a	b	c	d	e	f	g	h	i	j	k	l
12	f	g	h	i	j	a	b	c	d	e	f	g
13	a	b	c	d	e	f	g	h	i	j	k	l
14	f	g	h	i	j	a	b	c	d	e	f	g
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17	a	b	c	d	e	f	g	h	i	j	k	l
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19	a	b	c	d	e	f	g	h	i	j	k	l
20	f	g	h	i	j	a	b	c	d	e	f	g
1	a	b	c	d	e	f	g	h	i	j	k	l
2	f	g	h	i	j	a	b	c	d	e	f	g
3	a	b	c	d	e	f	g	h	i	j	k	l
4	f	g	h	i	j	a	b	c	d	e	f	g
5	a											

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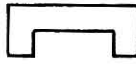
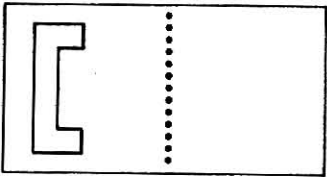
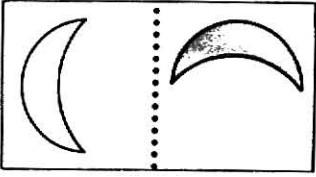
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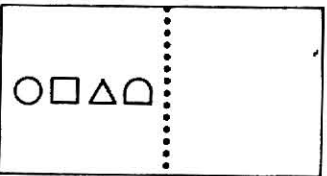
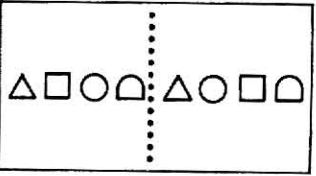
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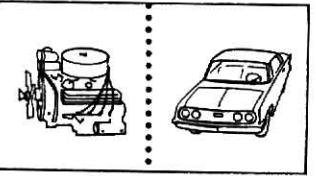
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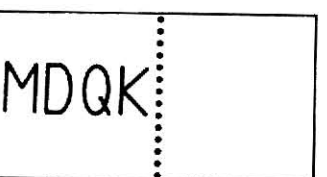
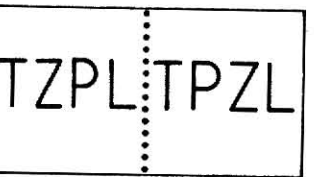
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MDKQ

MKQD

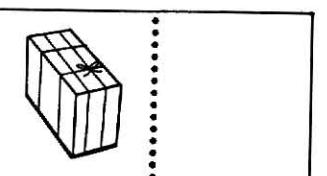
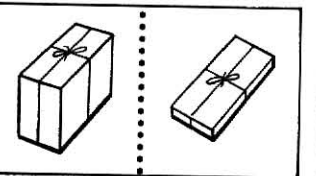
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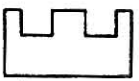
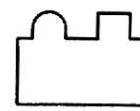
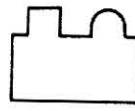
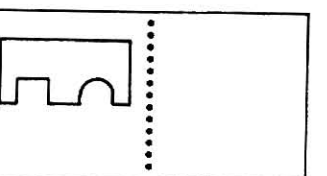
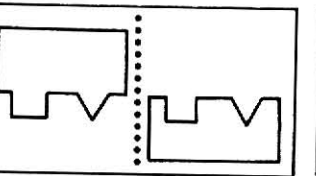
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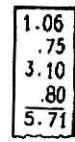
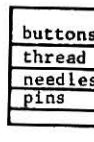
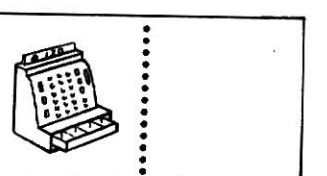
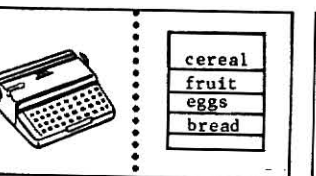
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STOP!

A COMPARISON OF ANSWER SHEET AND TEST BOOKLET
RESPONSE FORMATS WITH THIRD AND FOURTH GRADERS

by

NANCY LOUISE FRY

B. S., Kansas State University, 1970

AN ABSTRACT OF A MASTER'S THESIS

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requirements for the degree

MASTER OF SCIENCE

College of Education

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Testing has become an extremely important phase of the total educational program in the elementary school. One of the goals of these testing programs is to help the child by helping the teachers, administrators, and counselors better understand him and his abilities by using the test data in a manner beneficial to him. This test data should give an accurate reflection of the student's ability. Separate answer sheets and other response formats are widely used today because of their low cost and time saving characteristics. Administrators and test publishers feel that separate answer sheets cannot be used below the fourth grade without impairing performance. Yet, despite the obvious importance of the goals of the testing program, little empirical evidence exists to determine what effect scoring procedures, answer format, and grade level have on test performance.

The purpose of this study was to investigate the effect of separate answer sheets versus test booklet marking format on the test performance of third and fourth graders. The following questions were specifically explored: (1) does answer format effect performance on a standardized test of mental ability, (2) does grade level of the student effect test performance, and (3) is there an interaction between grade level of the

student and response format employed.

The fifty subjects in this study were from one elementary school in Manhattan, Kansas. They included twenty-eight third graders and twenty-two fourth graders. This included the total enrollment of two classes in the school.

The Otis-Lennon Mental Ability Test, 1967 was administered twice to each of the grades represented, once using the usual test booklet marking scheme and one form of the test, and once using a separate answer sheet and the alternate form of the test.

The results of the study indicated that answer format, grade level of the student, or an interaction of the two did not depress performance on a standardized test of mental ability. Based on this limited sample, it appears that pupils in grades three and four seem to perform as well with separate answer sheets as they do with the booklet answer scheme. Thus, separate answer sheets may be introduced as early as grade three without impairing test performance.