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An investigation of the comparative efficiency of the third, fifth, seventh, ninth, and eleventh grade students of New Hartford Community School's use of two types of card catalog arrangement

George Richard Berry
University of Northern Iowa

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An investigation of the comparative efficiency of the third, fifth, seventh, ninth, and eleventh grade students of New Hartford Community School's use of two types of card catalog arrangement

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Abstract

Simply stated the problem for school library administrators is to determine which is the best method to prepare, arrange and maintain the card catalog.

**AN INVESTIGATION OF THE COMPARATIVE EFFICIENCY OF THE
THIRD, FIFTH, SEVENTH, NINTH, AND ELEVENTH GRADE STUDENTS
OF NEW HARTFORD COMMUNITY SCHOOL'S USE OF TWO TYPES OF
CARD CATALOG ARRANGEMENT**

A Report

**Presented to the Faculty of the
Library Science Department
University of Northern Iowa**

A Report Submitted

**in Partial Fulfillment of the Course Requirements of
Library Science 289 and the Master of Arts Degree**

by

George Richard Berry

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E. Martin

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Chapter 1

PROBLEM AND DEFINITION OF TERMS USED

Simply stated the problem for school library administrators is to determine which is the best method to prepare, arrange and maintain the card catalog.

The dictionary card catalog in most schools represents a substantial investment in time, money, and personnel in its development as the key or index to the library's holdings. It is indispensable to librarians in their work with the library collection, to the school staff in their finding material for the supplementing of educational programs, and to students in their studies and use of leisure time. The dictionary card catalog, nevertheless, is criticized for its limitations as a wholly effective tool for the school librarian or other users.

Faced with the selection of the best method of preparing, arranging, and maintaining the card catalog, the school library administrators must weigh the complex combination of factors in two basic variables: (1) cost, and (2) effectiveness. In selection of the best method for preparing, arranging, and maintaining the card catalog the school library administrator can find a wealth of testimony and opinion. For making a decision, however, he will find very few objective articles for making a decision.

THE PROBLEM

Statement of the Problem

This study is designed to investigate and evaluate the difference between the dictionary card catalog and the divided card catalog in the basic factor of effective use.

Specifically, the study was designed to answer the following question:

Is there a difference between the dictionary catalog and the divided card catalog in the ease of use by the school student in locating correctly, author, title, and subject entries?

Importance of the Study

There are very few objective studies which compare the basic factor of effectiveness of use by students for the school library administrator to use in making sound decisions to prepare, arrange and maintain a card catalog.

DEFINITION OF TERMS USED

Card Catalog

A list of books, maps, etc., arranged according to some definite plan. It is distinguished from a bibliography in that it is a list which records, describes, and indexes the resources of a collection.¹

Dictionary Catalog

A catalog in which all entries (author, title, subject, series, etc.) and their related references are arranged together in one general alphabet. The subarrangement frequently varies from strict alphabetical.²

¹Bohdan S. Wynar, Introduction to Cataloging and Classification, 3rd ed., (Littleton: Library Unlimited Inc., 1967), p. 293.

²Anglo-American Cataloging Rules, (North American Library Association, 1967), p. 344

Divided Catalog

Commonly understood to denote an arrangement where the subject entries and the author and title entries are put separately into two alphabetical sequences.³

For this paper the "divided catalog" was divided into three separate alphabetical sequences, one for authors, one for titles and one for subjects. This arrangement differs from the dictionary catalog which places all entries in a single alphabet sequence.

Effectiveness

The successful use of the card catalog by students in locating authors, titles, and subjects.

³James Krikelas, "Subject Searches Using Two Catalogs: A Comparative Evaluation," College and Research Libraries, 30:506, November, 1969.

Chapter 2

REVIEW OF THE LITERATURE

Library literature has a wealth of information on the subject of the dictionary card catalog versus the divided catalog. There are some fifty-nine articles on the subject. There are forty-two articles favoring the divided catalog, ten favoring the dictionary catalog, six expressing a wait-and-see attitude, and one stating there is no difference. Of these, only one study was by a school librarian. Most of the articles were by college and university librarians, with a few articles by public librarians.

The first article of modern times which advocated the concept of the divided catalog over the dictionary catalog as an answer to the shortcomings of the dictionary catalog was written by William I. Fletcher in 1905. In his article Fletcher writes that the dictionary catalog

has the character of a superstition in so far as it is accepted and religiously carried out on grounds that are traditional, rather than on any intelligent conviction that it meets present needs and is good for future needs for which we must make provision.

Fletcher then goes on to advocate a divided catalog like the one he established at Amherst because the separate subject catalog can readily be used in conjunction with bibliographies in subject fields.⁴

Fletcher's article was followed by thirty years of apparent

⁴William I. Fletcher, "The Future of the Catalog," Library Journal, 30:141-44, March, 1905.

silence in the journals. Not until 1935, when Donald Coney again advocated the divided catalog in order to simplify the dictionary catalog, was there a body of literature produced.⁵

From 1935 to the present, there has been a steady flow of literature which can be divided into five general categories:

First, articles which condemn the dictionary catalog as: too bulky, too complex, too congested, and too expensive. These articles usually then suggest that the divided catalog would solve these problems because:

1. The divided catalog provides a better and more economical possibility for expansion.
2. The divided catalog would cut down congestion at the card catalog by providing different areas to look for particular materials.
3. The divided catalog is easier to use since it eliminates confusion caused by types of entries and complicated filing rules.
4. The divided catalog is more economical in that it cuts down filing cost and is easier to maintain.

Articles which are typical of this category were written by Adams,⁶ Coney,⁷ Fletcher,⁸ and Hagedorn.⁹

While these articles give some ideas as to the controversy of

⁵Donald Coney, "The Library and the Catalog," ALA Bulletin, xxix (September, 1935) p. 593-94.

⁶W. Adams "Divided Catalog in Practice [Abridged]" Pacific Northwest Library Association Quarterly, 7:48-50 (October, 1942).

⁷Coney, op, cit., p. 593-94.

⁸Fletcher, op, cit., p. 141-44.

⁹Rolf K. Hagedorn, "Toward Catalog Reform." Library Journal, 64:223-25, March 15, 1939.

the dictionary catalog versus the divided catalog, they are of little value in determining the efficiency of use. They are based on experience and observation but not on unbiased research.

Second, are articles which describe why, how, and apparent results of libraries which have divided their catalog. The evaluation of results of libraries that divided their catalog is usually based purely on observations. These articles usually favor the division of the card catalog. Typical of this category is an article by Pieters in which he writes, "Are we sorry that we divided the catalog??? Not at all! Right now we think it is the greatest thing that ever happened to the catalog."¹⁰ Others who express similar views are Drenner,¹¹ Harkins,¹² and Marke.¹³

While these types of articles present opinions and observations, they are of little scientific value in relation to the question of effective use of the card catalog. It is in these articles that the cost factor ^{s.} ^{p.} are usually discussed and some firm judgement may be made, however, cost is not the subject of this paper.

Third, are articles which are results of questionnaires and surveys which were intended to determine whether the divided catalog

¹⁰Donald L. Pieters, "Professional Voices of Wisconsin: Dividing the Card Catalog," Wisconsin Library Bulletin, September-October, 1970, p. 339.

¹¹Don V. R. Drenner, "Coffeyville Librarian Recommends Divided Catalog for Small Libraries," Kansas Library Bulletin, 33:32-4, (December, 1964).

¹²Nadine Harkins, "The Divided Catalog, A Study of Central Baptist Seminary," Library Resources and Technical Services, 6:265-69, (summer, 1962).

¹³J. J. Marke "Divided Catalog as a Time Saver at New York Law Library," Law Library Journal, 43:187-89, (November, 1950).

succeeded in solving the problem it was meant to solve. Mixed results came out of these articles, however, the majority were favorable for the divided catalog.

Two representative surveys are the ones by Markley¹⁴ and Thom.¹⁵

These articles are of some help but lack any real test of the effectiveness of use of the card catalog. They are opinion polls with shortcomings.

Fourth, are articles which are a defense of the dictionary card catalog as the best answer to service for the library's clientele.

These articles defend the dictionary catalog on the grounds that:

1. The dictionary catalog is not as bulky or require as much room as a divided catalog.
2. It is more economical because it requires less duplication of cards.
3. There is no more congestion at the dictionary catalog than at a divided catalog.
4. There is less confusion and it is easier to understand since everything is in one sequence and in one place.

The defenders usually point out that the divided catalog splinters knowledge and forces the patron to run from one catalog to another to find information.

Representative and most recent of these articles was written by Mc Gregor. In his article he writes:

¹⁴Anne Elhelyn Markley, "The University of California Subject Catalog Inquiry: A Study of the Subject Catalog Based on Interviews with Users," Journal of Cataloging and Classification, 6:80-95 (Winter, 1950).

¹⁵Ivan W. Thom, "The Divided Catalog in College and University Libraries," College and University Libraries, 10:236-41 (July, 1949).

Although the dictionary catalog, with its integrated author, title, and subject approach actually is a more recent phenomenon than split catalogs, there is a continuing trend to revert to the older, divided catalog approach. The advantages of the dictionary catalog that brought about its widespread adoption and practically drove the split catalog from existence have been all but forgotten in the literature of technical processes.

Mc Gregor then presents the merits of the dictionary catalog and the demerits of the divided catalog.¹⁶

Others who represent this writer are: Hamilton,¹⁷ Pettee,¹⁸ and Ver Nooy.¹⁹

With these articles we are again faced with opinion and little evidence. These authors have not seemed to have tried the divided catalog. Nothing of value can be found on the effective use of the catalog.

Fifth, are articles which are based upon research on the effective use of the card catalog by students. In the literature there are only two. One by Krikelas²⁰ and the other by Heitert.²¹ These

¹⁶James Wilson Mc Gregor, "In Defense of the Dictionary Catalog." Library Resources and Technical Services, 15:28-33 (winter 1971).

¹⁷W. B. Hamilton, "What Scholars Expect of Library Cataloging." In Association of Research Libraries, Problems and Prospects of Research Library, New Brunswick, New Jersey, 1955, p. 65-70.

¹⁸Julia Pettee, Subject Headings, New York, 1947.

¹⁹W. Ver Nooy, "Consumer and the Catalog," In Randall, W. M. (ed), Acquisition and Cataloging of Books, Chicago, 1940, p. 310-330.

²⁰James Krikelas, "Subject Searches Using Two Catalogs: A Comparative Evaluation." College and Research Libraries, 30:506-517 (November, 1969).

²¹Sylvia Heitert, "An Investigation of the Comparative Efficiency of Junior High School Students Use of Two Types of Card Catalog Arrangement." Unpublished Report (MS), Palmer Graduate Library School, Long Island University, 1969.

articles are specifically designed to test the effective use of the card catalog and attempt to determine the relationship between the type of arrangement and the successful use of the catalog.

Krikelas research was an attempt to test the following hypothesis:

Assuming all other factors are equal, subject searches using a catalog in which the subject entries have been separated (*i.e.*, a divided catalog) will produce more pertinent references and fewer inappropriate references than identical searches using a file combining all entries into a single (dictionary) sequence.²²

Krikelas conclusion was that:

The results indicate that, for a series of questions representing different levels of difficulty, a change in arrangement from dictionary to divided would not materially assist college undergraduates in finding subject references.²³

Heitert¹⁰ research was a report which tested the time it took the students to locate an exact author, title, or subject in the card catalog, (dictionary and divided).

The results of the statistical treatment of test scores revealed that the divided card catalog was 21.4 percent more efficient for the students in the sample test than the dictionary card catalog. The test of significance further established that the results of the testing were valid at the .004 and .006 levels of confidence.²⁴

Each of these authors agree that more research is needed in the field to support or modify their findings. For this paper these are the only two works which have proved of great value.

Heitert and Krikelas came to different conclusions, therefore, the paper will further investigate the effectiveness of use by students using the dictionary and divided catalog. Since there appears to be

²²Krikelas, op. cit., p. 508. ²³Ibid., p. 506

²⁴Heitert, op. cit.

some question as to which catalog is more effective the writer, therefore, believes that the problem under investigation can be stated as follows: That there is no difference between the dictionary catalog and the divided catalog in the effectiveness of use by students in the search of author, title, and subject entries.

Chapter 3

DESCRIPTION OF PROCEDURE

Assumptions

The function of the dictionary card catalog and divided card catalog are the same.

The mechanical processes of using the dictionary catalog and the divided catalog are the same.

In the dictionary catalog there are conflicting entries between the types of cards.

All students have had previous instructions in the use of the card catalog.

Research dealing with the effective use of the dictionary and divided catalog is applicable to school library.

Limitations

There are a limited number of schools which have divided catalogs.

Prior experience and familiarity with one of the two types of catalog arrangements may bias the test in favor of one of the arrangements.

Change of arrangement may in itself cause a bias in favor of the change.

There may be a carry over from the test of one catalog to the test of the other catalog.

The outside influences as dictionary skills and reading skills may influence the outcome of the test.

DESCRIPTION OF SAMPLE

Identification of Population

The students used in the test of the effective use of the dictionary and the divided catalog were students of the third, fifth, seventh, ninth, and eleventh grades of the New Hartford Community School. A wide range of grades ^{wide} were selected in order to present an overall picture of the effective use of each catalog by age and grade level.

Method of Selection

The writer arbitrarily picked the third, fifth, seventh, ninth, and eleventh except the third grade. The third grade is the first grade level ^{which} where the school librarian and staff felt were able to use the card catalog by themselves. No attempt at stratification was attempted since each grade was felt to be naturally stratified. By using the whole population of each of the grades, it was not necessary to match or pick students randomly.

There were 152 students in the combined grades used. The student population breakdown by grades is as follows: Third grade, 35; fifth grade, 36; seventh grade, 35; ninth grade, 26; and eleventh grade, 18.

The student population who participated in both tests breaks down as follows: third grade, 30; fifth grade, 36; seventh grade, 35; ninth grade, 24; and eleventh grade, 17.

All 152 students took at least one of the tests but students

were absent for the other test leaving 144 usable tests.

Type of Student

2 The students who attended New Hartford School are from the high low class and the low middle social economical class. In comparison with the other Iowa schools, based upon the Iowa Test of Basic Skills, New Hartford students are scholastically below the state average. However, based upon I.Q., and gain score from one year to the next year the students fall in the normal average curve.

INSTRUMENTS AND THEIR CHARACTERISTICS

Test

The test used was specifically designed for the content in the card catalog at New Hartford, however, it was based upon a model of a test used by Heitert.²⁵ The test was a short answer test consisting of twelve questions which could be answered by finding the proper card in the card catalog. There were four questions which could be answered from each type of entry; author, title, and subject. The basic difference between Heitert's test questions and the writer's test questions is that of form. Heitert's subject questions place the subject looked for in capitals as found on subject cards thus biasing it, the writer feels, in favor of the divided catalog. To overcome this shortcoming the writer changed the forms to the literary forms, ~~eg,~~ Who wrote a book on the subject of NEW JERSEY--HISTORY? to Who wrote a book about the history of New Jersey?

²⁵Heitert, "An Investigation of the Comparative Efficiency of Junior High School Students Use of Two Types of Card Catalog Arrangement." p. 61-65.

This change did not change the validity of the test, for the writer found that five eighth grade students achieved similar results as those of Heitert.

A time limit of twelve minutes for completion of as many test questions as possible.

Card Catalog

The card catalog used at New Hartford was a fifteen drawer card catalog. It was arranged with three drawers down and five drawers across of which eleven of the drawers were arranged in the dictionary sequence. Three students could work at the catalog without crowding the students, however, five students though crowded were still able to work satisfactorily with the card catalog.

DESIGN OF STUDY AND DATA-COLLECTION PLAN

Study Design

The simplest design for testing the difference between the dictionary card catalog and the divided card catalog in the ease of use by school students in locating correctly author, title, and subject entries is to have the same school students conduct the same search twice, first with a catalog of a given arrangement and, second, with the same catalog after it had been rearranged. A comparison of the amount of success achieved by the student using each form of the catalog would measure the effect of the modification of the catalog on the success in the students.

An alternative design is to locate two catalogs similar in size but arranged differently and have the same students search through each card catalog using a similar test. A comparison of the amount of

success, would achieve the same result as the first procedure.

A third acceptable alternative design is to match individuals at the two schools, and give them identical search problems, and treat the results as those of one person. By careful matching and careful treatment of results a comparison of the amount of success would achieve the same similar results of the first two.

For this paper, the simplest design of having the same student conduct the same search twice by using two different forms of the card catalog was used. The other two alternatives were not available to the writer for the following reasons:

1. Lack of schools in the immediate area with divided catalogs.
2. Lack of finances.
3. Lack of time for extensive travel.

The writer was able to obtain permission from the New Hartford School's administration to conduct a research project on the use of their card catalog. He was further able to obtain the whole-hearted cooperation of the school's librarian and the school's teaching staff and administration in this research project. The librarian was agreeable to letting the card catalog be divided after first tested in its dictionary form.

Beyond selecting the card catalog to be used and the grades to be tested, it was necessary to plan the pattern of actual searches.

Krikelas states:

Traditionally, catalog-use studies have observed an individual at the catalog, having noted the purpose of his search, and then have judged success or failure from a determination by the investigator or by the respondent himself that what he found did or did not achieve the original purpose. Under such circumstances the interpretation of success or failure itself can be questioned and, in any case many other factors than the catalog alone are

likely to be involved in the outcome.²⁶

In order to eliminate those factors in which interpretation of success or failure based upon observation or degree of students satisfaction, it was decided to reject any such questions as a sufficient test of effectiveness of the card catalog. Therefore, it was decided in advance that the critical test would be location of cards bearing predetermined author, title, and subject entries in a predetermined amount of time. Therefore, the test is designed to have the same school students conduct the same search twice, first with a catalog with a dictionary arrangement, second with same catalog with a divided arrangement.

In order to cope with the limitations previously stated it was felt that since one school's catalog was being used that the limited number of schools which have divided catalogs would not effect this particular study.

It was further felt that prior experience with the dictionary card catalog would not bias the test in favor of the dictionary catalog because the novelty in the change in arrangement would probably cause a cancelling out of this factor.

In order to minimize the possibility of a carry over from one test to the other test, the second test taken by the students had the same number and type of questions, but required different responses. It was further felt that the time factor of twelve minutes would be an effective barrier to memorization of the questions.

There was no way to control the other outside influences such

²⁶Krikelas, "Subject Searches Using Two Catalogs: A Comparative Evaluation." p. 509.

as dictionary skills and reading skills. It was hoped that these would not influence the test.

Collection of the Data

Data for this paper is drawn from the two test searches completed by 1144 New Hartford students in grades third, fifth, seventh, ninth, and eleventh. These tests were taken on March 16, 17, 21, and 22.

The selection of the test questions were achieved by random sampling from each of the letters found in each catalog drawer. The sampling produced 300 possible author entries, 300 possible title entries, and 300 subject entries for use in the possibilities for constructing the test.

From these possible entries five separate tests were compiled, using four author, four title, and four subject entries on a total of twelve questions for each test. The test questions were checked for ambiguity and simplicity. It was found that four fourth grade students understood the questions.

The procedure for conducting the test was to bring in one class at a time to the library and explain the purpose of the test. Five minutes were spent with each class in which the dictionary card catalog arrangement was reviewed as they have already had training in this area. The types of entries found in the dictionary card catalog were then reviewed. Students were informed this was not a test of them, but a test of the catalog system. They were also informed they would not be graded. Any questions by the students were answered. Five students were then selected and given two minutes to look over the questions, making sure they were easily clarified. The five students were then

given twelve minutes to search for the answers in the card catalog. After eleven minutes the second group of five students were given two minutes to study a set of the test questions for clarity. After twelve minutes the first group of students were stopped. If the students were in the process of writing an answer they were given time to complete their answers. One minute after the first group were stopped, the second group were told to proceed to the catalog to search for the answers to the questions. The above procedure was followed for each group of five students until each grade finished the test. If the last group had less than five students, other students were brought in from study hall to bring the level to five. After all grades finished the test, the card catalog was divided and the same process was followed.

Each grade was then brought back to the library for the second test of the card catalog. There was a review of the purpose of the test. Students were reminded that the catalog was being tested, not them. Five minutes of instruction were used to explain the difference between the divided catalog and dictionary catalog. The separate sections for the author, title, and subject were pointed out to the students. Any questions by the students were answered.

Five students were then selected at random. Each student was given one of the sets of five questions. No attempt was made to keep the student from obtaining the same test. Of the 152 students only 20 of the students received the same test. Of these, one student's test scores were thrown out due to similarity of the answers on all questions answered. The others were considered valid since there were difference on those questions where more than one answer was possible

and where there were only one possible answer, the students missed different questions.

The two searches by each student were checked. Only right answers were counted. The student's test was then compared in order to establish the differences in the number of correct answers. These scores were then tested by a t-statistic for the difference of means for each grade level at the .005 level of significance for significance gained.

Chapter 4

ANALYSIS AND RESULTS

The primary objective of the study was to test the statement: there is no difference between the dictionary catalog and the divided catalog in the effectiveness of use by students in the search of author, title, and subject entries. For the specific empirical test described, the original statement can be restated as follows:

Assuming all other factors are equal, the mean gain score for an individual using a divided catalog will not be significantly greater (statistically) than the resulting score for the same search using a dictionary catalog.

The test for significance is one of computing a t-statistic by dividing the difference between the mean score of the students and the standard error of the difference for the grades tested. Mathematically this would appear as $t = \frac{(\bar{x} - \mu) \sqrt{n-1}}{\sigma}$

A t-statistic was calculated for the gain score for each grade at the .05 level of significance for acceptance of the problem. For the third grade with a population of twenty-nine, the value of the t-statistic at the .05 level for a two-tailed test was expected to be under 2.048.

For the fifth grade with a student population of thirty-six, the value of the t-statistic at the .05 level for a two-tailed test was expected to be under 2.042.

For the seventh grade with a student population of thirty-five, the value of the t-statistic at the .05 level for a two-tailed test was expected to be under 2.042.

For the ninth grade with a student population of twenty-four, the value of the t-statistic at the .05 level for a two-tailed test was expected to be under 2.069.

For the eleventh grade with a student population of seventeen the value of the t-statistic at the .05 level for the two-tailed test was expected to be under 2.120.

The experimental data for the gain mean scores were tested and found to be significant at the .05 level for the third, seventh, and ninth grades and not significant at the .05 level for the fifth and eleventh grades. Specifically, the value of the experimentally derived t's were:

$$\begin{array}{ll}
 \text{Third grade} & t = \frac{.5862 \cdot 5.2915}{1.0176} = 3.0483 \\
 \text{Fifth grade} & t = \frac{.4444 \cdot 5.916}{1.7069} = 1.5403 \\
 \text{Seventh grade} & t = \frac{1.2857 \cdot 5.8309}{2.3913} = 3.1350 \\
 \text{Ninth grade} & t = \frac{1.25 \cdot 4.7958}{2.7233} = 2.2013 \\
 \text{Eleventh grade} & t = \frac{-.1176 \cdot 4}{2.6568} = -.1832
 \end{array}$$

The following table is derived from the computed values of the gain scores at the .05 level of significance and a printed table of value of t at the .05 level of significance.

From this evidence there appears to be a significant gain in the effective use of the divided card catalog over the dictionary in obtaining correct author, title, and subject data. However, the question arises: Why did the fifth and eleventh grades not achieve similar results as the third, seventh, and ninth grades.

Table 1

Results of Comparing Computed t value and Printed t value

Grade	No. of Student	Computed t value	Printed t value	Accepted No Gain	Reject of No gain
3	29	3.048	2.048		✓
5	36	1.5403	2.042	✓	
7	35	3.1350	2.042		✓
9	24	2.2013	2.064		
11	17	.1832	2.120	✓	✓

Two possible reasons were discovered by the writer for the fifth grade test results.

First: The librarian reported after questioning that her test revealed the fifth grade students could not read past two letters in searching for words. This would tend to slow the students down.

Second: The teachers reported that the students worked at about the same speed, while this did not seem to affect other grades, it could have caused a difference in the results. By using the dictionary catalog and working at the same speed, there would not be any conflicts with the search. On the other hand, by using the divided catalog at the same rate, there would be eighteen conflicts among using the drawers. These situations combined to influence the outcome of their tests. Further study needs to be done in the area of the influence of dictionary skills upon the effect of the card catalog.

The resulting scores of the eleventh grade can be attributed to methods used to search the card catalog. The eleventh grade students took all the drawers out of the catalog and took them to a table.

After lining them up in alphabetical order, they called to each other the letter they needed for obtaining their information. They passed the drawers back and forth to each other. This method worked very well for the dictionary catalog. When they were tested with the divided catalog, they attempted to do as they had previously done, taking the drawers out of the card catalog and arranging them alphabetically on the table. Their problem rose when they tried to call out letters they needed, because there were three alphabets; one for the author, one for the title, and one for the subject. Their search system caused mass confusion. Those students who left the drawers in the card catalog appeared to do better. However, only five students left the cards in the card catalog. Thus the eleventh grade students search method biased the test in favor of the dictionary catalog.

Chapter 5

CONCLUSIONS, RECOMMENDATIONS AND SUMMARY

Conclusion

The rejection of the statement there is no difference between the dictionary card catalog and the divided card catalog in the effective use by the student in obtaining data from the author, title, and subject entries seems to the writer to be in order. Barring outside influences of dictionary skills and non-standard card catalog search methods, the significance in gain scores is in favor of the divided catalog would suggest the divided catalog is more effective in use. At least this is true for New Hartford Community School.

Every study has inherent limits which are both conceptual and practical that define degrees of generalization that ^{are} possible. In the interest of maintaining maximum control over the various elements of the catalog searches, the choices of grades used, catalog used, and questions were highly structured.

The effective use of the dictionary card catalog and divided card catalog was measured in terms of a mean gains score by the correct answers on the tests given the New Hartford students. This score represented the ability of students to select appropriate author, title and subject references in a given time in response to a series of questions. The experimentally derived data were tested for significance at the .05 level of significance in the third, fifth, seventh, ninth,

and eleventh grades and were found to be significant in the third, seventh, and ninth grades. It is concluded that dividing the catalog was a satisfactory device for making the card catalog more effective. This tends to confirm Heitert finding the divided card catalog is more effective.

Recommendations

Much more research needs to be done ~~before~~ on other aspects of the divided and dictionary catalog before one can state the dictionary card catalog is superior to the divided card catalog or the divided card catalog is superior to the dictionary card catalog. The question of the importance of dictionary skills in the successful use of the card catalogs must be investigated.

More studies need to be made on the effects of dividing the catalog on different size of school catalogs. Studies need to be made on other areas of the differences between the divided and dictionary card catalogs, eg. filing and alphabetical arrangement in the divided catalog. More studies need to be made on the effort of the type of divisions, eg., author, title, subject division; author, title, subject division; layered division, etc.

Until more research is completed, the writer would suggest the divided catalog be tried in new school libraries.

Summary

The results of this study indicate the students attending New Hartford Community School were materially assisted in their search for author, title, and subject entries by the changing of the dictionary card catalog to the divided card catalog. The school library

administrator, choosing between a divided catalog or a dictionary catalog, can take into consideration that at present time those works which deal with the divided and dictionary catalog toward the effective use in school libraries, tend to agree in their findings that: the divided catalog is more effective.

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APPENDIXES

SCHEDULE FOR TESTING THE CARD CATALOG

31

Thursday 16 March and Tuesday 21 March

8:25-9:15	9th grade girls	
9:15-10:05	7th grade boys	
10:30-11:15	3rd grade	Cuvelier
12:55-1:40	5th grade	DeGroote
1:45	11th grade basketball boys	
2:34-3:20	5th grade	Den Berger

Friday 17 March and Wednesday 22 March

8:25-9:15	9th grade boys	
9:15-10:05	7th grade girls	
10:30-11:15	3rd grade	Stewart
11:15-12:55	5th grade	Den Berger
12:55-1:45	5th grade	DeGroote
1:45-2:45	11th grade	

The above grades and students will be called from class.

Name _____

Please write your name in the space above.
Read each question carefully.
Look in the card catalog for the answer.
Write the answer in the space at the end of the question.

1. Give the title of a book by Herbert S. Zim. _____
2. Who wrote the book The Dam? _____
3. Who wrote a book about blood? _____
4. Who wrote the book The Rainbow? _____
5. Give the title of a book about magic. _____
6. Give the title of a book by Leo Politi. _____
7. Who wrote a fiction book about Florida? _____
8. Who wrote the book Arkansaw Bear? _____
9. Give the title of a book by Roderick Huff. _____
10. Give the title of a book by Harry S. Truman. _____
11. Who wrote the book Ghost in the Castle? _____
12. Give the title of a book about Penguins _____

Test 2

Name _____

Please write your name in the space above.
Read each question carefully.
Look in the card catalog for the answer.
Write the answer in the space at the end of the question.

1. Who wrote the book Bear Party? _____
2. Give the title of a book about rocks. _____
3. Give the title of a book by Gladys Malvern. _____
4. Who wrote a fiction book about New Mexico? _____
5. Who wrote the book Fair Wind? _____
6. Give the title of a book by Richard Atwater. _____
7. Give the title of a book by Ralph E. Lapp. _____
8. Who wrote the book Tamar? _____
9. Give the title of a book about ghost stories. _____
10. Give the title of a book by Clarence Weed. _____
11. Who wrote the book Dale of the Mounted? _____
12. Who wrote a book about the Papago Indians? _____

Test 3_____
Name

Please write your name in the space above.

Read each question carefully.

Look in the card catalog for the answer.

Write the answer in the space at the end of the question.

1. Who wrote a book about man? _____
2. Who wrote the book Omoo? _____
3. Give the title of a book by George Eliot. _____
4. Give the title of a book by Rachel Baker. _____
5. Who wrote the book Joe Buys Nails? _____
6. Give the title of a book of fiction about spiders. _____
7. Give the title of a book by Wanda Gag. _____
8. Who wrote the book When I Go to the Moon? _____
9. Who wrote a book about ancient civilization? _____
10. Who wrote the book The Cat in the Hat? _____
11. Give the title of a book about sex instruction. _____
12. Give the title of a book by Leo Gurko. _____

Test 4_____
Name

Please write your name in the space above.

Read each question carefully.

Look in the card catalog for the answer.

Write the answer in the space at the end of the question.

1. Give the title of a book by Peter Farb. _____
2. Who wrote a book about art? _____
3. Who wrote the book Iroquois? _____
4. Who wrote the book Stolen Pony? _____
5. Give the title of a book by Berta Hader. _____
6. Give the title of a book about witchcraft. _____
7. Give the title of a book by Agatha Christie. _____
8. Who wrote the book The Brave and the Free? _____
9. Give the title of a fiction book about the history of Rome. _____
10. Who wrote the book Maida's Little Camp? _____
11. Who wrote a book about plants? _____
12. Give the title of a book by David Hebb. _____

Test 5_____
Name

Please write your name in the space above.

Read each question carefully.

Look in the card catalog for the answer.

Write the answer in the space at the end of the question.

1. Who wrote a book about Kangaroos? _____
2. Give the title of a book by Louis Slobodkin. _____
3. Who wrote the book Giggle Box? _____
4. Give the title of a book about the underground railroad. _____
5. Who wrote the book Hiroshima? _____
6. Give the title of a book by Virgina Burton. _____
7. Give the title of a book by Carl Sagan. _____
8. Who wrote a book about Lysergic Acid Diethylamide? _____
9. Who wrote the book On Beyond Zebra? _____
10. Give the title of a book by Ann Emery. _____
11. Who wrote the book Bartholomew and the Oobleck? _____
12. Give the title of a fiction book about Hungary. _____

RAW DATA

THIRD GRADE

Number of students 29

Number of Questions Correct
Dictionary Divided

Sum of means 17

65

83

Difference of Means $\bar{x} = .5862$ Square of means $\bar{x}^2 = .3436$ Standard deviation $\sqrt{\frac{\sum x_i^2 - \bar{x}^2}{n}} = \sigma = 1.0173$ t-statistic $t = \frac{(\bar{x} - u) \sqrt{n-1}}{\sigma} = \frac{.5862 \cdot 5.2915}{1.0176} = 3.0483$

Level of Significance 3.0483

Level of Significance at .05 2.048

$$u = 0$$

$$\frac{\sum x_i^2}{n} = 1.3793$$

RAW DATA

FIFTH GRADE

Number of students 36

Number of Questions Correct
Dictionary Divided

Sum of means 18

126

136

Difference of Means $\bar{x} = .4444$ Square of means $\bar{x}^2 = .1974$ Standard deviation $\sqrt{\frac{\sum x_i^2}{n} - \bar{x}^2} = \sigma = 1.7069$ t-statistic $t = \frac{(\bar{x} - u) \sqrt{n-1}}{\sigma} = \frac{.4444 \cdot 5.916}{1.7069} = 1.5403$

Level of Significance 1.5403

Level of Significance at .05 2.042

$$u = 0$$

$$\frac{\sum x_i^2}{n} = 3.111$$

RAW DATA

SEVENTH GRADE

Number of students	35	Number of Questions Correct	
Sum of means	45	Dictionary	Divided
		126	136
Difference of Means	$\bar{x} = 1.2857$	158	194
Square of means	$\bar{x}^2 = 1.653$		

Standard deviation $\sqrt{\frac{\sum x_i^2}{n} - \bar{x}^2} = \sigma = 2.3913$

t-statistic $t = \frac{(\bar{x} - \mu) \sqrt{n-1}}{\sigma} = \frac{1.2857 \cdot 5.8309}{2.3913} = 3.1350$

Level of Significance 3.1350

Level of Significance at .05 2.042

$$\mu = 0$$

$$\frac{\sum x_i^2}{n} = 7.7314$$

RAW DATA

NINTH GRADE

Number of students 24

Number of Questions Correct
Dictionary Divided

Sum of means 30

~~158~~~~194~~Difference of Means $\bar{x} = 1.25$

121

148

Square of means $\bar{x}^2 = 1.5625$ Standard deviation $\sqrt{\frac{\sum x_i^2}{n} - \bar{x}^2} = \sigma = 2.7233$ t-statistic $t = \frac{(\bar{x} - \mu) \sqrt{n-1}}{\sigma} = \frac{1.25 \cdot \sqrt{24-1}}{2.7233} = 2.2013$

Level of Significance 2.2013

Level of Significance at .05 2.069

$$\mu = 0$$

$$\frac{\sum x_i^2}{n} = 8.9166$$

RAW DATA

ELEVENTH GRADE

Number of students	17	Number of Questions Correct	
Sum of means-2		Dictionary	Divided
		132	130

Difference of Means $\bar{x} = .1764$

Square of means $\bar{x}^2 = .1176$

Standard deviation $\sqrt{\frac{\sum x_i^2}{n} - \bar{x}^2} = 2.6568$

t-statistic $t = \frac{(\bar{x} - \mu) \sqrt{n-1}}{\sigma} = \frac{-.1764 \cdot 4}{2.6568} = -.1832$

Level of Significance $-.1832$

Level of Significance at .05 2.110

$$\mu = 0$$

$$\frac{\sum x_i^2}{n} = 6.941$$