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An Experimental Study of a New Approach to Manuscript Writing

Mary Madeleine Adamczyk
Loyola University Chicago

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AN EXPERIMENTAL STUDY OF A NEW APPROACH
TO MANUSCRIPT WRITING

BY
SISTER MARY MADELEINE ADAMCZYK, S.S.J.

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF MASTER
OF ARTS IN LOYOLA UNIVERSITY

FEBRUARY
1946
VITA

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The Bachelor of Arts degree with a major in English was conferred by the Catholic University of America, Washington, D.C., May, 1943.

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CHAPTER I

INTRODUCTION

In the past comparatively little attention has been paid to the psychology of handwriting, despite the opinion of well known authorities, that handwriting is probably the most poorly taught subject in the elementary school, and almost entirely neglected in high school. Much fault has been found with the current methods of teaching handwriting, particularly to beginners. Too much emphasis on perfection of handwriting and too many phases of the skill are introduced at one time, making a highly complex activity more complex for the young child. His immature nervous system and motor control impose some limitation on initial writing quality. Lack of a systematic approach, poorly planned exercises for practice, too large a dosage and a lack of competent diagnosis of writing by the teacher in early learning stages contribute to writing failure.

When emphasis in the early stages of writing is placed simultaneously on arm movement, letter formation, size, rhythm, alignment, relaxation, position, speed, spacing, et cetera, such approach neglects the psychological conditions of learning. A young child is capable of paying
attention to only so much at one time, and if we require him to distribute his attention too widely, the result will be that he will neglect all elements of the task which he is performing.

Consideration must be given to the adjustment of writing to the capacities and needs of the young child. Drill must be suited to the psychological development and the mental and physical characteristics of the learner. Reed\(^1\) in criticizing the present systems of handwriting stresses the lack of consideration for the young child and the neglect of individual differences among children. He says:

> The prevailing system of handwriting has the same instruction for all the grades: there is the same material, the same movement, the same size of letters, and the same drill. This is not true for any other school subject, and it should not be true for handwriting. Small children do not begin to have the muscular control possessed by the older children, and they therefore should not be expected to write small letters.

What seems to be needed most is a method of approach in handwriting which will be adapted to the limitations and the capacity of the younger child.

---

The introduction of manuscript writing in the primary grades has been a marked increase in recent years in modifying the demands to suit the young child. Manuscript writing is a name given to a simplified form of handwriting which aims at greater legibility, speed, and ease by doing away with the unnecessary joinings of the letters and returning to the plain capitals of the Roman alphabet. It is a revival of a style of writing that was popular in the fifteenth and sixteenth centuries. The letters are separated from each other, resemble print, and are made from straight lines in various positions, circles, or a combination of the two.

The increasing use of manuscript writing in the early grades in school seems not only justified but advisable for several reasons.

1. Manuscript writing is easier to learn because the movements are simple. Since the letters are separated, each letter stands out as a distinct unit of perception, and the unit of perception is smaller, being the letter rather than the word.

2. The simplicity of the strokes tends to lessen the strain on immature muscles when writing. This simplicity enables
children much sooner to use writing as a form of expression.

3. Adequate facility is more quickly achieved. Achievement satisfies the child and his learning is motivated.

4. Manuscript writing is legible because forms are more definite. Because of the simple forms, it has been found to be valuable for children with poor vision, as there is less strain on the eyes when reading and when writing in the manuscript form. It is increasingly common to find forms in which an applicant is requested to fill in his name and important data in print. This is a good argument that manuscript is more legible than cursive writing.

5. Manuscript writing helps in early reading since it involves the learning of only one alphabet. The manuscript word that the child makes on his paper and the word he sees in his book are similar. This similarity helps to eliminate confusion in the child's mind.
Strange as it may seem, teachers and children are still encountering failure even though manuscript writing has so many advantages to offer. The proposal to do away with systematic practice and to teach handwriting by the incidental method has raised many a problem in the minds of teachers and has likewise prepared the way for an excessive amount of remedial work. To produce writing which is legible and reasonably attractive in appearance requires a systematic approach and direct practice. A procedure which plays up one set of values to the neglect of another is incomplete and inadequate to meet the young child's needs. Freeman\(^2\) emphasizes the necessity of providing for both values, namely meaning and drill.

There must, then, be the proper relationship between meaning and drill. An emphasis upon meaning alone, as in the incidental method, has been shown to be not the most effective, while the emphasis on drill alone gives a formalized procedure which deadens the child's interest and therefore hinders improvement.

Some authorities in handwriting state the fact that no method of attaining skill without practice has ever been found and it is not likely that such method ever will be found.

In order to carry on practice successfully it is necessary to use suitable materials. Therefore, a book of exercises was prepared with emphasis on the development of the movement by which a child produces letters, and not upon the result as divorced from the movement common in many of the handwriting books in vogue today. This new approach to manuscript writing places particular emphasis on encouraging children to think about, talk about, and take an active part in writing from the very beginning. Such procedure has the advantage of eliciting the interest of the child without any superficial incentives and motivation.

It is the intention of this investigation to determine the effect of preliminary, systematic practice of movements patterned on the basic letter elements for the purpose of establishing better motor coordination in teaching manuscript writing. This investigation is also a diligent inquiry into the relative effectiveness of two methods of teaching handwriting to young children of the first grade. A detailed explanation and description of the methods are given in Chapter III.
CHAPTER II

THE GROWTH OF MANUSCRIPT WRITING IN THE UNITED STATES

As a result of the premium placed on manuscript writing, and its success and rapid growth in the English schools, manuscript style of writing was introduced in the schools of the United States. Many American educators eagerly watched the development of manuscript writing in England. When it finally passed its experimental stage, and when it became a working part of the English school curriculum, American teachers were ready to give it a trial.

Manuscript writing was introduced into our country about twenty five years ago. Strangely enough, it was brought to New York and Boston by different people at almost the same time. However, the real impetus to the movement was given in 1921 by Miss Marjorie Wise, an English woman specialist in the teaching of manuscript writing in her own country, who came to America to study American methods of education. While she was doing graduate work at Teachers College of Columbia University, the authorities therein decided to utilize her experience for introducing manuscript writing to both teachers and children.
at the Horace Mann and Lincoln Schools.

At first its use seemed to be confined largely to private and experimental schools, for despite the enthusiasm of many teachers, the inertia of tradition kept others in the conservative groove. Gradually, as teachers and students began to investigate and to evaluate this style of writing, a great deal of favorable scientific evidence was accumulated. Naturally school administrators became interested and manuscript has made its way into the primary grades of a surprisingly large number of school systems.

In order to trace the growth of manuscript writing within our country it becomes necessary to study the more significant investigations which led to the acceptance of manuscript writing by both private and public schools.

One of the earliest experiments in manuscript writing in this country was made in 1922 by Miss Marjorie Wise\(^1\) herself at the Lincoln School of Teachers College, Columbia University, in the fourth and fifth grades. At about the same time she also experimented at the Horace Mann School with first grade children. Both of these experimental undertakings yielded such satisfactory results that manuscript writing was introduced in the first and second grades

\(^1\)Marjorie M. Wise, "Manuscript Writing," Teachers College Record, XXV (January, 1924), 26-38.
of both schools the following year. Miss Wise, during the same year, that is 1922-23, also offered a course in manuscript writing to elementary school teachers who experimented with it informally and the next year taught it in their own grades.

In 1924 manuscript writing was introduced in the Winnetka public schools. All the children entering the first grade and many of the children in the second grade were taught to manuscript. Each year, as these children moved up a grade, manuscript writing moved up with them until it was the only kind of writing they learned. Today, the practice still persists. Manuscript writing is taught throughout the grades.

Although this form of penmanship was slowly being accepted by teachers, yet many educators were rather skeptical as to the practicability of the new trend. The question of speed seemed to be the greatest stumbling block in the way of a general acceptance of manuscript writing. Various experimenters were urged to make thorough checks on the rate of writing of comparable groups using cursive and manuscript styles. Reeder in 1926 directed an experiment

in the Horace Mann School. The purpose of his study was to find out whether manuscript writing could be speeded up in the fourth and fifth grades to meet the norms which are set for these grades. Results of his study seem to show that it is entirely possible, without undue stress, to teach children to speed up manuscript writing to the point of efficiency necessary in grade five.

Gray\textsuperscript{4} in 1928 made an experimental analysis of the movements used in writing the two styles. He took motion picture photographs of a number of writers who wrote both manuscript and cursive with facility. He found several fundamental differences between the two. The most striking difference is that the pen stroke in manuscript is slower and more uniform in speed than in the cursive. The forms of the letters in manuscript are more clearly defined. In cursive the movements of the one stroke change gradually into that of the next, so the forms of the letters tend to blend into one another. Consequently, manuscript writing was found more legible than the cursive.

Gates and Brown\textsuperscript{5} in 1929 reported that speed of writing


is more readily gained in cursive writing than in manuscript in grades above the primary. Turner\textsuperscript{6} in 1930 reported practically the same findings. She states that in the lower grades manuscript writing was superior to cursive writing in speed and quality of writing. However, as the children progressed through the grades, the speed of cursive writing gradually increased until in grade six it was superior to that of manuscript writing.

Washburne and Morphett\textsuperscript{7} in experiments at Winnetka Schools found that manuscript writing is slightly faster than cursive writing for high school pupils.

Thus we see that the question of speed has been considerably debated and rather extensively investigated with varying results. The contradiction is apparent and is definitely due to the fact that comparisons are sometimes made with younger children and sometimes with older children and adults. However, because of experiment, the trend of practice, and the opinion of those who have used this type of writing, it may be accepted as a fairly well-established fact that manuscript writing is faster in the writing of younger children and that cursive writing is faster in the writing of older children and adults.


\textsuperscript{7}Carleton Washburne and Mabel V. Morphett, 518.
This conclusion brought on another disturbing question to teachers. Since manuscript writing is better adapted for young children and cursive for the older children and adults, when should the transition be made?

Evidence from experimentation was again sought and found. Arnold in 1933 reported that after manuscript writing had been taught in Germantown Friend School for four years the third grade teachers were of the opinion that pupils in that grade should begin to use cursive writing. Therefore Arnold's experiment was initiated in the school. She experimented with four distinct times of change. One third grade continued to use manuscript writing until the middle of the year and then changed to cursive. The other third grade changed to cursive at the beginning of the year. Two fourth grades and two fifth grades likewise changed to cursive at the beginning of the year. Because of the evidence from her experiment she concluded that manuscript writing meets the needs of the young primary pupils, but that it becomes illegible when the children grow older and wish to write rapidly. Fourth grade, she concluded, was the best time for the change.

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Other studies by Winch\textsuperscript{9} and by Gates and Brown\textsuperscript{10} show that, if the change is made not later than the third grade, it can be accomplished with little retardation in progress. If the change is delayed until the writing habit has been firmly fixed, the acquisition of the new style is more difficult.

Goetsch\textsuperscript{11} says that when the transfer is first made, the speed of cursive writing seems to be somewhat slower than when the preceding writing experience has been in cursive, but that after a little practice in cursive, this temporary slowing is more than made up. He also indicates that the early use of manuscript writing has no detrimental effect on the later writing in cursive form.

Freeman\textsuperscript{12} recommends the change in the second half of the second grade. He believes that the change should be made late enough to secure the advantages of manuscript writing as an initial style and early enough to minimize the difficulty of making the change.

\textsuperscript{10}A. I. Gates and Helen Brown, 1-14.
As a result of experimental study in the Chicago schools begun in 1937 and completed in 1942, Dr. Johnson\textsuperscript{13} found that, given suitable materials and guidance and a sufficient period of time in which to complete the transfer, children experience no difficulty in effecting the transition from manuscript to cursive writing.

Teachers using manuscript writing in grade one claim that it definitely hastens the growth of the ability to read. These claims seem to be supported by experimentation. Voorhis\textsuperscript{14} made an extended study of this point and reached the conclusions that manuscript writing is distinctly superior to cursive writing in its effect upon reading. Studies reported by Long and Mayer\textsuperscript{15} in 1931 and Walhert\textsuperscript{16} in 1932 corroborate these findings. Dr. Cutright's\textsuperscript{17} experiment in the public schools of Minneapolis shows that manuscript writing aids the children in at least three ways.


\textsuperscript{16}Jennie Wahlert, "Manuscript Writing," \textit{Childhood Education}, VIII, No. 10 (June, 1932), 517-9.

\textsuperscript{17}Prudence Cutright, "Script-Print and Beginning Reading and Spelling," \textit{Elementary English Review}, XIII, No. 4 (April, 1936), 139-41.
It facilitates the reading process in the first grade, it aids in spelling in the second grade, and finally, because less of the children's attention is focused on the writing activity, they are more free in their written expression than when they try to use cursive writing.

And so, year after year of experimentation forced teachers all over the country to turn their attention to manuscript writing and to incorporate it in their curricula. The spread was rapid. Lucia Keim\(^{18}\) made an interesting study in 1930 to inquire into the status of manuscript writing at that time. Questionnaires were sent to schools teaching manuscript writing. These were located through companies supplying manuscript writing materials, teacher-training schools, and schools supplied by the Progressive Education Association. Of the two hundred and thirty questionnaires sent out, returns from one hundred and sixty-four schools (71 per cent) were received. Although manuscript writing was first introduced into this country in 1920, one school reports the introduction of manuscript writing as early as 1900. This school is probably indicative of the existence of other schools that devised a type of manuscript writing for its practicability before impetus

was received from the English movement. The figures quoted below show the increase in the number of schools adopting manuscript writing from 1900 to 1929.

<table>
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From the data given above it is obvious that from 1920 there was a steady increase in the use of manuscript writing. The greatest number of schools have introduced it in 1924, 1925, 1926 and 1927. Keim states that a further definite increase would not set in until the precise values of the writing had been ascertained. Experimentation has continued, therefore, it is certain that since this survey had been made, many more school systems have adopted the manuscript style of writing. This claim is substantiated by Drohan who conducted a similar questionnaire investigation to determine the prevalence of manuscript writing in the public schools of large cities of the United States.

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United States in 1936. Questionnaires were sent to superintendents in the ninety-three cities having a population of 100,000 or over, and in three hundred sixty-seven other cities selected arbitrarily whose population was 10,000 or more. The information gained from this study shows but a cross section of actual conditions in regard to the use of manuscript writing in the United States in 1936, since the inquiry was limited to public schools only in large cities. And it is known that manuscript writing is taught in many public schools in cities of less than 10,000 and in many private schools throughout the country. Schools in one hundred twenty-one cities of 10,000 or more in thirty-six states in the spring of 1936 were teaching manuscript writing. This was a tremendous increase as compared with Keim's findings six years earlier. Very probably there were many factors responsible for such astonishingly large increase. One fact that particularly influenced the data to a marked degree was the extensiveness of Drohan's study as compared with Keim's.

Although these studies have shed light on the question of prevalence, yet the data are far from being complete. It could not be otherwise, for to send a questionnaire to every city in the United States would be prohibitively expensive. Even so, complete return of replies could not be expected. Nevertheless, it must be granted that manuscript writing is
being accepted in schools all over the country. There seem to be no studies of any weight which would discredit this statement.
CHAPTER III
THE EXPERIMENTAL SET UP

The writer set up a controlled experiment in order to make comparison of (1) the relative effectiveness of preliminary practice of movements patterned on the basic letter elements, and (2) the relative effectiveness of the procedure of introducing the letters of the alphabet without providing such practice on the separate elements or strokes. The pupils in each class were divided into experimental and control groups. Aside from the writing lessons, all other class work for the two groups was identical. Thus, the influence of the teacher, the classroom, motivation, incentives, the amount of writing, reading, and the like were kept constant and equal. The experimental variables were two methods of teaching children the manuscript alphabet. The experimental group used the book *It Is Fun to Write* and the original plan of the author, while the control group followed the ordinary method of teaching writing to beginners.

For the purpose of this study children of ten first grades of six schools in Chicago were used. The experiment was launched with three hundred ninety five subjects, one hundred ninety nine in the experimental group and one hundred ninety six in the control group. Illness and absences on the
day of the re-tests reduced the number of subjects to three hundred sixty. Table I shows the distribution of subjects into two groups in each of the ten classes of the six schools.

The children were tested at the beginning and at the close of the experiment on the same text at the same time. The selection was taken from Freeman's Manuscript Measuring Scale. A copy of the test, shown in Figure 1, was placed on each child's desk to avoid any possible eye strain or in any way hinder the child's performance which would likely occur if the test were written on the blackboard.

I have a bird.  
He likes to sing.

Figure 1. A specimen of the test copy used at the Pre-test and Re-test of the experiment (4/9 of actual size).
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<td>17</td>
<td>35</td>
</tr>
<tr>
<td>K</td>
<td>1</td>
<td>19</td>
<td>18</td>
<td>37</td>
<td>18</td>
<td>18</td>
<td>36</td>
</tr>
<tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column Totals</td>
<td>6</td>
<td>10</td>
<td>199</td>
<td>196</td>
<td>395</td>
<td>183</td>
<td>177</td>
</tr>
</tbody>
</table>

* First Testing made at the beginning of the experiment.  
Second Testing made at the close of the experiment.
To keep constant as nearly as possible all factors except the method of procedure, the experimenter administered the test to all the classes within a three-day period. Great caution was taken in giving directions since both rate and quality of writing are influenced by what pupils are told to do. After the paper, pencils and copies of the test were distributed and arranged in a way that would not interfere with the child's writing activity and his posture, and after the selection was read to the children and by several of them, the following instructions were given:

Now we are ready to write this story as fast and as well as we can. Don't start until I say "begin." Listen. When you finish writing the whole story once, start from the beginning and write it again. When I say "stop" put your pencils up like this. (Examiner demonstrates.) Remember, write as fast as you can and as well as you can. Ready. Begin.

It will be noted that speed and quality have been included in the directions. Freeman,¹ an authority on handwriting, stresses the fact that results are most reliable when both aspects are included in the instructions preceding a writing test. This opinion was corroborated when a class

of first graders in the control school, that is, a school not participating in the experiment, was given two tests. In one the children were told to write as well as they could; in the other, as fast and as well. The most satisfying results were obtained by stressing both speed and quality. Since quality formed the basis for grouping the children in the experimental and control groups, it was stressed most in giving the directions. The children wrote for two and a half minutes, timed by a stop watch. To secure writing specimens more or less indicative of the child's everyday performance, the test was administered twice in each class with a fifteen-minute interval between the two testings. Results of both tests were considered in equating the groups.

Ratings for quality of handwriting are not as objective as are many other educational measures. Therefore, every precaution was taken to arrive at a fair evaluation. The specimens were graded independently by three persons. Children's names were eliminated and numbers substituted for them. Each scorer had twenty blanks specially prepared, containing a letter code for the school and a number for each subject next to which she wrote her estimate. This plan avoided all need of recording test scores on the test sheets and thus eliminated the possibility of having one
scorer influence another. One scorer used a red pencil, the other a blue, and the third a black. When all estimates were made they were pooled and totaled. In scoring, quantity as well as quality was taken into account. The number of letters missing on both trials was counted. For each missing letter two per cent of one point was deducted from the individual's total score. The quality score for each child was the sum of the six ratings, that is, the independent ratings of three scorers on each of two specimens. The following illustrates the scoring procedure considering both quality and quantity. If on the first trial a child scored 1, 2, 1, and on the second trial 2, 2, 1, with seven letters omitted on trial 1 and five letters on trial II, his score would be figures as follows:

\[1 + 2 + 1 + 2 + 2 + 1 = 9\]
\[7 \text{ letters} + 5 \text{ letters} = 12 \times 0.02 = 0.24\]

Final score \[9 - 0.24 = 8.76\]

It will thus be seen that while quantity was taken into account it was so scored as to occupy a minor place leaving the chief emphasis on quality.

Quality of writing was judged by means of Freeman's Manuscript Measuring Scale for Grade I. The scale contains three specimens of children's writing arranged in order of Specimen I--good, Specimen II--satisfactory, and Specimen III--
poor. For the purpose of grouping in our experimental study, a finer gradation was necessary. Therefore, a classification of seven groups was devised with the following assigned numerical values:

<table>
<thead>
<tr>
<th>Quality Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>definitely better than Specimen I</td>
</tr>
<tr>
<td>6</td>
<td>most nearly like Specimen I</td>
</tr>
<tr>
<td>5</td>
<td>between Specimens I and II</td>
</tr>
<tr>
<td>4</td>
<td>most nearly like Specimen II</td>
</tr>
<tr>
<td>3</td>
<td>between Specimens II and III</td>
</tr>
<tr>
<td>2</td>
<td>most nearly like Specimen III</td>
</tr>
<tr>
<td>1</td>
<td>definitely poorer than Specimen III</td>
</tr>
</tbody>
</table>

The highest possible score that could be earned by any one subject was 42; the lowest possible score approximately 5, considering deductions.

Each scorer first arranged the specimens of each class and of each trial into three piles, poor, satisfactory, and good. Then, in a second sifting, each pile was separated into better than the scale specimen, as good as, or poorer then, and rated according to the above values. The two groups which fell between specimen I and II were then accorded a single score of 5 and those between specimen II and III a score of 3. There were ten classes each having two trials or tests, thus giving each scorer twenty sets of
papers to judge. After the first scorer rated the papers according to the plan just described, she shuffled them before the second scorer rated them. The same procedure was carried out between the second and third scorers.

Rate scores are expressed in terms of number of letters written per minute. Each pupil's rate score was found by merely counting the letters on both trials and dividing by 5.

The experimental and control group in each class was equated by the ABBA scheme. Table II represents a typical distribution of subjects into two groups, experimental and control within one classroom.

All the work of equating the groups and orientating the teachers with the experimental procedure was done before the study began. The formal instruction of the children included thirty-three lessons of approximately twenty minutes each, taught three times a week, on Mondays, Wednesdays, and Fridays between January 8 and March 23 inclusive. The study lasted eleven weeks. During the twelfth week a re-test was administered. The type of test, directions used in giving it, and the scoring procedure were exactly the same as in the pre-test.
### TABLE II

**PLACEMENT OF PUPILS IN THE EXPERIMENTAL AND CONTROL GROUPS IN A SINGLE CLASSROOM**

<table>
<thead>
<tr>
<th>Pupil</th>
<th>CONTROL Pre-test Trial I</th>
<th>CONTROL Pre-test Trial II</th>
<th>CONTROL Deductions</th>
<th>CONTROL Final Score</th>
<th>EXPERIMENTAL Pre-test Trial I</th>
<th>EXPERIMENTAL Pre-test Trial II</th>
<th>EXPERIMENTAL Deductions</th>
<th>EXPERIMENTAL Final Score</th>
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</thead>
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<tr>
<td>8</td>
<td>2 3 3 3 3 3 4</td>
<td>18</td>
<td></td>
<td></td>
<td>33 3 3 3 3 3 3 3 3</td>
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</tr>
<tr>
<td>12</td>
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<td>16.64</td>
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<td></td>
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<tr>
<td>11</td>
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<td></td>
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<td></td>
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<tr>
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<td>7</td>
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<td>27 / / / / / / 7</td>
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<td>5.92</td>
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**MEAN**

<table>
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<tr>
<td>EXPERIMENTAL MEAN</td>
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</table>
THE DESCRIPTION OF THE EXPERIMENTAL MATERIAL AND THE
PSYCHOLOGICAL PRINCIPLES GOVERNING IT

The content of the book *It Is Fun to Write*, which was used with the experimental group, is planned to meet the needs of young children beginning to write in the first grade. Because manuscript writing is much simpler than cursive writing, one can easily make the mistake of doing too little about teaching it. Teachers may fail to provide the necessary directions and guidance in developing the writing skill.

The adult who has learned to write may be inclined to look upon the act of writing as a simple activity. He tends to forget the strenuous training and the slow process by which the skill was gained. For him the need no longer exists to refer to the writing movements which have become automatic; instead, he concentrates on the ideas he wishes to express. When a child first learns to write, he energizes a great many muscles not needed in the process. Those who work with young children realize the effort, tension, fatigue, and strain with which young children struggle in their first attempts at writing. Many useless movements are made. The whole body appears to participate in the activity, eyes, tongue, facial muscles, limbs, and trunk.
Cole² gives a rather vivid description of the child in the earlier stages of his learning to write.

When any child first begins to write he becomes very tense and must expend a good deal of energy to make any marks at all. He clutches his pencil as if it were a life-line, screws up his face, bites his tongue, shuffles his feet, squirms about, and gets into rigid, uncomfortable positions.

Many of the overt movements and the expenditure of a large amount of useless energy can be eliminated if the beginner is introduced to the writing habit in a natural way. To place before the young child a letter B, for example, and request that he copy it and learn it by the trial-and-error method is next to the impossible. A child may know the letter well enough to recognize it without hesitation, but to produce it on paper he may find a difficult task. He must be shown where to begin each stroke and the direction of the stroke, else he may begin at the wrong end of the letter. The child must not only be shown the finished letter he is to copy but he should also see the letter as it is being formed. At the beginning a child can very much better imitate the process of

performing an act than the result of the act after it has been completed.

A child of six is not capable of delicate movements of the fingers or of making fine coordinated movements of the hands. For this reason it is advocated by some authorities (Taylor, Thompson) that handwriting instruction of primary school children should be postponed until the ninth or tenth year at least. Such postponement is unnecessary when provisions for writing are made in a natural and psychologically sound way. It would require rather a radical reconstruction of our school practice to postpone writing so long. Besides, the exigencies of the modern school seem to demand that children learn to write very early in their school experience. To meet this need without violating the laws of natural growth, an attempt was made to devise a writing book which would aid the child in acquiring basic writing skills with reasonable ease and efficiency.

The problem of creating readiness depends to a large extent upon the classroom environment and the teacher. She must provide a variety of experiences which will be appropriate and satisfying, and which will lead to feelings of adequacy, security, and confidence in one's achievements. It is known that motor development can be facilitated and hastened by use. If the child uses pencils, crayons, paint
brushes, and scissors, he undoubtedly hastens the development of motor control of the fingers and hands. Such forms of manipulation are an asset in the mastery of writing.

The book *It Is Fun to Write* has been developed in the effort to provide suitable, interesting and satisfying exercises to help the child (1) start right, (2) build the much-needed muscular coordination, a prerequisite to writing, (3) to give the child early experience of success, (4) to help the teacher provide and maintain readiness for the successful learning of writing, and (5) to help the teacher recognize individual differences. With this material the teacher can safely begin to teach "writing" on the first day of school when children are usually keyed up with eager desire to learn something.

Manuscript writing, thus taught, is simple. The letters of the alphabet are built on straight lines in various positions and on circles and parts of circles. Each of the component elements of a letter is treated separately, thus allowing young children at the first grade level of maturation to acquire the use of a writing tool with ease and satisfaction to themselves and their teachers. Since skill is best developed by beginning with the easier and proceeding to the more difficult of a series of acts and by confining practice at the beginning to one difficulty at a time,
the author planned and arranged the book, keeping these principles in mind. The first six parts of the book contain fascinating activities in which the development of motor coordination and the learning of elementary movements used in manuscript writing play an important but unobtrusive part.

Lessons One to Six inclusive, are intended to help the child establish firm vertical strokes, the easiest operation in manuscript writing. These strokes are natural and direct. 3

Beginning school activities should be based on familiar experiences, on what the child already knows, appreciates and enjoys. When the child in pre-school days grasps a pencil, his scribble writing and drawing, having no pictorial content, are largely comprised of just such up and down strokes which he makes in a haphazard manner. In the lesson units of the book It Is Fun to Write, the child makes the same strokes but in meaningful situations. For example, the first lesson calls for the completion of flowers. See Figure 2. The main purpose of this exercise is (1) to develop the ability to handle a pencil and crayon, (2) to teach the child how to make the straight vertical stroke, stressing the direction from top down, (3) to teach the child to make the stroke with

one movement, stopping at a definite point, (4) to sustain interest and provide further muscular training by having the child color the picture.

Lessons Seven to Ten inclusive, have for their main purpose (1) the introduction of the straight line in a new position, that is, the horizontal, stressing the direction from left to right, and (2) the combination of the two lines learned, namely, the straight vertical and horizontal. A sample page of this section is shown in Figure 3.

With these strokes well developed, the next step of actual writing is a natural and easy one. The child proceeds to write letters which involve the same type of movement and lines which were used in the preceding exercises. Size of letters is also carefully adjusted to the capacity of the learner. Before the small letters are taught, capital letters, being large and easier to make, are introduced in a sequence dependent on the child's mastery of the component elements hitherto introduced. Such arrangement is in keeping with what many authorities on handwriting of young children believe and expound. Hosmer and Nystrom,\(^4\) supervisors of handwriting in Minneapolis Public Schools, maintain that

Give the flowers stems. Color the flowers. Use many colors.

Figure 2. From the Manuscript Writing Book
IT IS FUN TO WRITE Page 1.

Make all the beds like the first one. Color the picture.

Figure 3. From the Manuscript Writing Book
IT IS FUN TO WRITE Page 7.
Muscular strain is placed on the child who is forced into unnatural positions or required to make small letters too early. The development of the large fundamental muscles of trunk, shoulders and arms comes before the finer coordination involving the accessory muscles of hand and fingers. Facility with the hands and fingers is in fact dependent on strength from the larger muscles. The earliest writing practice should depend more on the large than the accessory muscles. ... The first writing with pencil and paper should be large.

Freeman, 5 who has probably given more time and attention to experimental work in handwriting than any other person in America, likewise maintains that the writing of the beginner should be very large. A large letter can be made with much less precision than a small one without producing any greater departure from the true form of the letter.

Section by section, the book *It Is Fun to Write* aims to answer two questions most prevalent among teachers of young children beginning to write. With what letters or movements should handwriting begin? In what order should

---

the letters be learned? Reed in discussing the order of presentation maintains that "the order should be such as to give the maximum amount of facilitation and the minimum amount of inhibition between the letters already learned and those yet to be learned." This principle is characteristic of the entire course presented in *It Is Fun to Write*. The order of letters introduced was determined in general by the type of movements utilized in the formation and by the simplicity of the letters. To the first group belong the following: I, F, L, H, E, and T. Children have merely to rearrange the vertical and horizontal strokes already learned. At the blackboard the teacher demonstrates the correct formation of the letters, that is, the process of writing the elements into letter forms. The following schematic drawing aids the teacher in building and presenting the letters properly.

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After the children become acquainted with these six letters, they immediately begin writing words and sentences. To guide the beginners in proper spacing of letters within a word, and words within a sentence, the first few writing exercises have, besides the correct model, a dotted line indicating the beginning of each letter. The children go over this dotted line and build the additional lines to form the letters. This method insures proper spacing from the very start. See Figure 6. The sentences in *It Is Fun to Write* will suggest many interesting episodes which the children will want to relate. And the writing lessons at this stage can be effectively correlated with oral English, story hour, and other phases of the primary curriculum.

The straight diagonal line is the next element introduced. The main purpose of this group of exercises is twofold:
(1) to teach the child the correct direction of the diagonal line, namely, always from the top down, (2) to provide practice in making slant lines preparatory to more writing of words and sentences involving the vertical, horizontal, and diagonal lines. Figure 7, reproduced from Lesson 18, is a specimen of a group of interesting activities which children will enjoy completing and coloring.

With the mastery of the slant line the second group of letters can safely be presented in a similar manner to that below.

Figure 5. Diagonal Line Letters

Lessons Twenty-three to Twenty-seven inclusive, which supply practice exercises including the new letters learned, are postponed until each letter is taught separately. Nothing
is gained by introducing new content before the children are thoroughly prepared for it.

It must be remembered that improvement in quality of line and benefit from these lessons are most likely to accrue from performances in which children are directed and guided properly. The teacher must always be sure she understands the purpose of each set of exercises, so as to be on the alert for evidences of satisfactory and unsatisfactory results.

The importance of practice cannot be too strongly stressed. Freeman points out that the golden rule of sensori-motor learning is much repetition. Progress can be gained only through practice. But caution must be taken that this practice be effective, for the careless repetition of an act may lead to its habituation while it is still very faulty. Nothing is more fatal to progress than to permit pupils to practice and be content with wrong forms. It is important that teachers help the pupils discriminate between those efforts which are in the right direction and those which are in the wrong direction. Self-appraisal and criticism by the child is indispensable. This means that

the child must be encouraged frequently to analyze and appraise the results of his practice in order to discover possibilities of improvement. From the first lesson onward in *It Is Fun to Write*, young children of the first grade can analyze and evaluate. This can be seen by an actual example from a very early lesson. In introducing the first lesson (See Figure 2) the teacher made three rows of flowers on the blackboard. Then she told the children what they were to do and showed them by drawing the stems on two or three
flowers. Several children, volunteers, came to the board, to complete the flowers that remained in the first row. Before proceeding to the next row, the children evaluated their efforts by placing a check above all the flowers in the first row whose stems looked just like the first few the teacher drew. The poor strokes were analyzed also. Almost spontaneously, the children's criticisms took the form of "This line is crooked," or "This line is shaky," or
"This line is not long enough," and the like. The same procedure was followed with the remaining two rows. Effort to improve and get as many checks as possible was obvious. By means of this preliminary work the teacher made certain that everybody knew what to do and how to do it. The work sheets were then distributed and children began individual work at their desks. After the completion of each line they evaluated the work of that line before they proceeded with the next line. At the beginning the procedure was slow but gradually, with practice, the movements became freer and more rapid and the results satisfying. It is a well-established fact that if children are rushed along at too great a speed, partial learning and confusion result. Artificial achievements, resultants of improper stimulation, are ephemeral and interfere with later successful acquisition of skill. Nothing is gained by hurry, and much is lost.

Lesson Twenty-seven marks the beginning of learning another fundamental stroke, the circle. To establish correctly the top swing of the circle used in the formation of capital C, G, Q, Q, S and in the small letters a, c, d, e, g, o, q, s, the child is given a series of exercises planned to develop this stroke. The new activities not only put the new skill to work but tie it up with the type of lines previously experienced and learned. This is evident
in Figure 8, which is representative of the lessons in this section.

With the top part of the circle under control, exercises appealing to the child and typical of children's interests furnish an abundance of practice aimed at developing a well-shaped circle. Lesson Thirty-five, Figure 9, is but one of the many units intended to help the child build a circle. Many of our letters are shaped with parts of a circle made in the direction stressed in the activities.

Figure 8. From the Manuscript Writing Book IT IS FUN TO WRITE, Page 27.
The following four units deal with the introduction of capital letters built on the circle and letters involving a combination of both elements, lines and circles.

Time allotment for these study pages will be comparatively short since the children by this time have an excellent background and can cope with the usual difficulties that crop up. Of course, the needs of the children will determine the amount of time to be spent in drill.

The last letter to be learned is the S. It is one of the most difficult in the alphabet and requires a totally
different movement from the letters that were already taught. For this reason separate exercises are incorporated in the book to help the child develop the proper movement and the "feel" for the letter s. See Figure 10. Practice material wherein the children have the opportunity to combine these letters into words, phrases, and sentences are likewise amply supplied. The words used are selected from the child's speaking and reading vocabularies, such that naturally suggest conversation on a common point of interest.

Figure 10. From the Manuscript Writing Book IT IS FUN TO WRITE, Page 43.
With the capital letters learned, transition to the small letters is very simple. By this time the child certainly has gained in motor control and is prepared to write the small letters. These should present no problem since the preceding drills have aimed at establishing the basic movements and lines for small letters as well as for capital letters. The exercises are arranged so as to present the tallest lines and circles first, then gradually these decrease in size, preparing the foundation for lower-case letters.

The first lesson dealing with small letters has untold possibilities. It is really a study page and gives children the feeling of accomplishment, since nine small letters can be learned in a very short time. The letters o, c, s, z, y, w, and x which at a first glance seem difficult are made exactly like the capital letters but smaller. Only minor changes are involved in i and k. Teachers have the opportunity to emphasize the proper relative size of capital and small letters. Another lesson using the same exercise may develop the idea of alignment.

Study pages following this exercise, presenting work enough for at least two weeks, are devoted to letters built on the circle. The child again proceeds from the familiar to the new without much difficulty. The many pages of preceding exercises were provided to help him build a circle,
the necessary foundation for this next group of letters to be taught. Learning to build letters on this foundation is no task but enjoyable work for both pupil and teacher. Small a is made by making a circle and very close beside it making a straight line, two elements with which the child by now is conversant. To make the letter d we again begin with a circle and close beside it make a tall straight line, as tall as the capital letters. Small g is a circle with a straight line drawn halfway below the line, ending with a curve to the left. Small e, q, b, and p can be introduced in the same simple fashion. The last study page includes the remaining letters composed of straight lines and parts of a circle. To this group belong letters n, m, r, u, h, j, and f. Small t, l, and y are included in this list.

Where adequate grounding of basic strokes has preceded, children grasp the idea of building new letters very quickly, without displaying tension, fatigue, or emotional blocking due to difficulty. They look forward to every writing period.

Proper spacing is an important phase of legibility in manuscript writing. Generally it presents a difficult problem to young children. This fact was considered in planning It Is Fun to Write. In the very first sections of the book, spacing was given attention but in an indirect
way. For example, in Lesson 5, Figure 11, the children are shown how to pack their strokes closely together, pretending that the strokes are letters in a word and that groups of strokes are words within a sentence. Children are told to use the width of the lead of their big pencil between letters for correct spacing within a word, and the width of their index finger between words. Authors of several writing books suggest that the space between the words be equal to the width of a wide letter such as o or w. For the beginner.
this bit of imagination may cause some confusion. By using lead and finger in evaluating their work, the checking of spacing is simplified. Later the children learn to space with the eye. The study pages for small letters stress spacing. To provide the opportunity to learn good spacing, words and phrases containing letters already taught are incorporated in the lessons. Many children easily acquire a surprising amount of skill in producing a well-spaced, attractive page.

Following the introduction of all the small letters, many pages of pictures intended for coloring and accompanied by stories for writing practice comprise a stimulating part of the book.

A provision was also made for writing numbers in situations meaningful to the child. So often the writing of numbers is left to chance or to the number period alone. The child has frequent need for writing numbers outside of the number period in his school day. Shown by some member of the family or even his teacher in the number class how to make numbers, he makes crude symbols for numbers from 1 to 10. These symbols, through years of undirected repetitions, degenerate into undecipherable hieroglyphics hardly resembling the Arabic system of notation. The exercises on number writing in *It Is Fun to Write*, purport to provide, in
a sense, remedial work on number writing. With motor coordination and basic strokes well established, number writing will be a pleasure, and it will be given its rightful place during the writing period. Figure 12 is a sample page from the number section of the book.

Figure 12. From the Manuscript Writing Book *IT IS FUN TO WRITE*, Page 80.
CHAPTER IV

RESULTS OF THE EXPERIMENT

In this experiment two quantitative measures of improvement (quality and rate of writing) were obtained and qualitative observations of growth were made. The latter were for the most part noticeable changes of attitudes of both groups toward the writing lessons, and brief studies of a few outstanding performances.

Both groups, the experimental and control, made a tremendous gain in quality of handwriting. Table III gives in mean scores the results of writing, together with the standard deviation and probable error for each group. As is apparent from this table the experimental group improved in quality from 9.09 to 29.72, a gain of 20.63 points or two hundred twenty-six per cent. The control class advanced from 9.12 to 22.48, a gain of 13.36 points or one hundred forty-six per cent. The standard deviation was derived by using Lindquist's formula for grouped distributions

\[ \sigma = \sqrt{ \frac{\sum f d^2}{N} - \left( \frac{\sum f d}{N} \right)^2 } \].

Computation of the probable error of the means of the re-tests was made by using the formula

\[ P.E_m = 0.6745 \frac{\sigma}{\sqrt{N}} \].

TABLE III
INITIAL AND FINAL RESULTS FOR BOTH GROUPS
IN THE EXPERIMENTAL STUDY

<table>
<thead>
<tr>
<th></th>
<th>Pre-test Mean</th>
<th>Re-test Mean</th>
<th>P.E.M.</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>9.09</td>
<td>29.72</td>
<td>6.32</td>
<td>.315</td>
</tr>
<tr>
<td>Control</td>
<td>9.12</td>
<td>22.48</td>
<td>5.30</td>
<td>.269</td>
</tr>
</tbody>
</table>

Diff. of Re-test Means 7.24
P.E. of above Diff. .414

The finding of the probable error of the difference followed, with the aid of formula $\text{P.E. Diff.} = \sqrt{\frac{\text{P.E.}_{e}^2}{m_e} + \frac{\text{P.E.}_{c}^2}{m_c}}$
The critical ratio of the above difference is 17.49 which indicates that it is a practical certainty that the difference is too great to be the result of sampling fluctuations or attributable to mere chance. Figure 13 represents a discriminative study of results for both groups.

Quality of handwriting for the one hundred eighty-three subjects in the experimental group and the one hundred seventy-seven subjects in the control group included a comparatively wide scatter with the individual scores ranging from 5.28 to 25 and 5.40 to 33.82 respectively on the pretest.
QUALITY

Distribution of Scores for the Experimental and Control Groups at the Beginning and Close of the Experimental Study.

Figure 13
Re-test ratings ranged from 14 to 42 for the experimental group and from 7.96 to 35.84 for the control group.

To compare results of this work with norms for the end of grade one is scarcely representative; but no norms are available for the period of the year at which this experiment terminated. All references therefore to first grade norms must be made with this reservation that our re-tests were conducted not in June but in March. Considering the results in terms of the standards for the Freeman Manuscript Measuring Scale for Grade I, the experimental group rates as follows: 33 pupils, or 18.03 per cent surpass the standards for the end of first grade; 17 pupils, or 9.3 per cent, obtained a rating equal to that of the best specimen on the scale; 61 pupils, or 33.33 per cent, reached a performance between the best specimen and satisfactory writing; 43 pupils, or 23.49 per cent, achieved a satisfactory grade; 28 pupils, or 15.30 per cent, scored between satisfactory and poor writing; 1 pupil, or .5 per cent, received a rating equivalent to that of the poorest specimen on the scale.

The control group presents a somewhat different picture. No pupils exceeded the first grade norms. Three pupils, or 1.68 per cent, obtained a rating equal to that of the best specimen on the scale; 16 pupils, or 9 per cent, attained the writing level between the best specimen and the satisfactory hand; 67 pupils, or 37.85 per cent, scored between
satisfactory and poor writing; 30 pupils, or 16.94 per cent, received a rating equivalent to that of the poorest specimen on the scale; 2 pupils, or 1.13 per cent, rated distinctly poorer than the poorest specimen on the scale. Table IV gives a summary of the distribution according to the seven categories of manuscript writing.

**TABLE IV**

**DISTRIBUTION OF THREE HUNDRED SIXTY FIRST GRADE PUPILS ACCORDING TO QUALITY OF HANDWRITING**

<table>
<thead>
<tr>
<th>Quality Ratings</th>
<th>Experimental</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Pupils</td>
<td>Per Cent</td>
<td>Number of Pupils</td>
</tr>
<tr>
<td>Better than Specimen I</td>
<td>33</td>
<td>18.03</td>
</tr>
<tr>
<td>Like Specimen I</td>
<td>17</td>
<td>9.30</td>
</tr>
<tr>
<td>Between Specimens I &amp; II</td>
<td>61</td>
<td>33.33</td>
</tr>
<tr>
<td>Like Specimen II</td>
<td>43</td>
<td>23.49</td>
</tr>
<tr>
<td>Between Specimens II &amp; III</td>
<td>28</td>
<td>15.30</td>
</tr>
<tr>
<td>Like Specimen III</td>
<td>1</td>
<td>.50</td>
</tr>
<tr>
<td>Poorer than Specimen III</td>
<td>2</td>
<td>1.13</td>
</tr>
</tbody>
</table>
It will be noted from Table IV that there are wide differences in the attainments of pupils in both groups. Out of 183 pupils in the experimental group only 29, or 15.8 per cent, have not as yet reached satisfactory achievement in writing for Grade I according to Freeman's Scale. All but one of these children are on the borderline between satisfactory and poor writing. Of the 177 pupils in the control class 99, or 55.9 per cent, have not as yet attained satisfactory first grade writing. Within this group 67 pupils are on the borderline between satisfactory and poor writing, 30 are writing poorly and 2 are doing very poor writing.

Speed in handwriting of the 360 pupils in this experiment likewise presents an interesting study. The experimental group improved from 10 to 14 letters a minute, or 40 per cent, while the control group advanced from 10 to 13 letters a minute, or 30 per cent. Improvement in rate of handwriting is graphically illustrated in Figure 14. The experimental and the control classes seem to make less than the expected gain in speed. According to Freeman's Scale children of Grade I are expected to write twenty-five letters per minute. Both groups are comparatively distant from that standard. However, more than two months of the school year still remain in which rate of writing can increase and in
Rate of Handwriting for the Experimental and Control Groups at the Beginning and Close of the Experimental Study.

Figure 14
all probability will, since letter formation is, relatively speaking, very good.

During the eleven weeks of the experimental study no effort was directed to the developing of speed in handwriting. Since the most important characteristic of legible writing is good letter formation, attention of teachers and pupils were directed toward establishing accuracy of letter forms. This procedure is in keeping with what some authorities in handwriting maintain. Cole\(^2\) rather emphatically criticizes teachers who present too much too soon, expecting perfection in every phase of handwriting at the very beginning. It is her conviction that

The teacher in the early grades should proceed slowly and emphasize correct letter formation, correct movements, and correct posture. Speed can wait, in fact must wait, if the newly-formed habits are not to be disrupted. Speed drills are not only useless but harmful until letter formation is spontaneously good. It is obviously impossible to make letters rapidly and correctly until one can make them correctly --and no end is served by making them rapidly and wrong. If children have good posture and a comfortable motion, and can make the letters correctly,

greater speed will usually come as they grow older; if it does not, it can be taught. The best preparation in the early grades for speed later on is a high degree of legibility produced by relaxed nerves and muscles.

Hildreth\(^3\) is of the opinion that we cannot successfully stress both form and speed in the early grades. The beginner must develop the correct idea of the letter forms and the movements used in making them, and after this is done speed will naturally develop. She states that

Most handwriting systems place more emphasis on speed than modern methods consider desirable. The rate required is often too great for legibility. Speed emphasis should come only after correct habits are formed. If this precaution is taken, the factor of speed takes care of itself under the natural increase in pressure for speed that increased writing demands require.

Wheat\(^4\) and Freeman\(^5\) are of the opinion that speed and quality should progress together. Writing too rapidly from the start is as wrong as writing excessively slowly. As a

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\(^3\)Learning the Three R's, Philadelphia: Educational Publishers, Inc., 1936, 237.


consequence of too rapid writing the child forms habits of
carelessness and fails to get a clear and correct idea of
the forms of the letters. If the child makes the letters
by a slow movement, he does not experience a sensation of
the whole movement in such a way that he learns how it feels
to write a letter or a word. Then too, the pupil does not
get sufficient practice if he writes slowly.

Although all emphasis during the experimental study was
placed on letter formation, there has yet been some gain in
speed, thereby substantiating the opinions of the authorities
quoted above. Progress in speed is more or less irregular
in both groups at the close of the experimental study. Among
the 183 children in the experimental group, the variation
in speed is from 6 letters a minute to 30; among the 177
children in the control group, the range extends from 4
letters a minute to 29. Many of the 360 children partici-
pating in the experimental study are far beyond the standard
for Grade I. In rate of handwriting the experimental group,
when compared with June norms, ranks as follows:

9 pupils score above the standard for
Grade I

6 pupils are from 1 to 3 letters below
the standard for Grade I

13 pupils are from 4 to 6 letters below
the standard for Grade I

35 pupils are from 7 to 9 letters below
the standard for Grade I
37 pupils are from 10 to 12 letters below the standard for Grade I

58 pupils are from 13 to 15 letters below the standard for Grade I

24 pupils are from 16 to 18 letters below the standard for Grade I

1 pupil is 19 letters below the standard for Grade I

The control group has made the following rating with regard to speed in handwriting:

1 pupil scores above the standard for Grade I

5 pupils are from 1 to 3 letters below the standard for Grade I

11 pupils are from 4 to 6 letters below the standard for Grade I

32 pupils are from 7 to 9 letters below the standard for Grade I

36 pupils are from 10 to 12 letters below the standard for Grade I

61 pupils are from 13 to 15 letters below the standard for Grade I

27 pupils are from 16 to 18 letters below the standard for Grade I

4 pupils are from 19 to 21 letters below the standard for Grade I

Speed in handwriting depends on maturation plus developed and automatized movements. Although the rate of handwriting considered in mean scores is below standard for both groups, yet a majority of the children have increased their speed considerably. At the beginning of the experiment
the range for the experimental group extended from 2 to 23 letters per minute; at the close of the experiment it was 6 to 30 letters per minute. The control class ranges were from 3 to 26 to 4 to 29 letters per minute. Table V shows the number of pupils who have gained in speed during the eleven weeks of training, the number of pupils whose speed remained constant, and the number of pupils whose speed decreased. Every child within this last mentioned group has made a significant gain in quality of handwriting.

TABLE V

<table>
<thead>
<tr>
<th>Experimental</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Pupils Per cent</td>
<td>No. of Pupils Per cent</td>
</tr>
<tr>
<td>Increase in Speed</td>
<td>138 75.41</td>
</tr>
<tr>
<td>Constant</td>
<td>11 6.01</td>
</tr>
<tr>
<td>Decrease in Speed</td>
<td>34 13.11</td>
</tr>
</tbody>
</table>

Despite the fact that so many children are below the standards for Grade I in speed of handwriting, there is no need for alarm. It is absurd to expect finished penmen, perfect in every phase of handwriting, out of children at an age when most of them have not the necessary muscular and
nervous control. Speed will develop with the ordinary writing needs. Pyle\(^6\) maintains that there should be no speed requirements in the lower grades, particularly the first. With the young child care must be taken that too much is not presented and stressed at one time, since such a procedure would, in all likelihood, lead to failure and discouragement. The child has plenty to remember without adding to the load: position, formation of letters, making strokes in the right order and direction, alignment, spacing between letters within a word, and words within a sentence. All this makes heavy enough demands without adding pressure for speed.

Establishing a wholesome attitude to handwriting and developing correct formation of the letters are two most important aims for the first grade, which it seems, have been attained by the experimental group. Speed is of minor importance, not belonging to the sphere of first grade work. It is only after the young child overcomes the initial difficulties of learning a new manual skill that speed can be expected.

To determine the effectiveness of the method used with the experimental group and that used with the control group the groups were divided into three divisions. The first

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group represented one third of the pupils with the highest scores on the preliminary tests; the second group represented the middle third, while the third group represented one third of the pupils with the lowest scores on the pre-tests. The improvement made by each third in both the experimental and control classes can be easily studied and analyzed by examining the results presented in Table VI below.

**TABLE VI**

**WRITING IMPROVEMENT IN MEAN SCORES FOR THE EXPERIMENTAL AND CONTROL GROUPS DISTRIBUTED INTO UPPER, MIDDLE, AND LOWER THIRDS**

<table>
<thead>
<tr>
<th></th>
<th>Experimental Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Preliminary</td>
<td>Final</td>
</tr>
<tr>
<td>Highest Third</td>
<td>13.38</td>
<td>32.31</td>
</tr>
<tr>
<td>Middle Third</td>
<td>7.92</td>
<td>29.77</td>
</tr>
<tr>
<td>Lowest Third</td>
<td>5.94</td>
<td>27.26</td>
</tr>
</tbody>
</table>

The figures indicate clearly that the Experimental group is superior to the Control group in each third. Although every group has increased in quality of handwriting, yet the variations are surprisingly interesting. The highest
third of the experimental group surpasses the highest third of the control group by about 43 per cent. The middle thirds vary by 97 per cent in favor of the experimental group. A very marked improvement was made by the lowest thirds of both groups with the experimental exceeding the control by 150 per cent. In no comparable third is the control group method as effective as the experimental group method.

Of perhaps still greater significance are the differences in the results obtained in the three groups within the experimental class. It will be noted that those scoring highest in the pre-test have made the smallest gain as compared with the remaining two-thirds of the group. The middle third scored 135 per cent higher than the highest third. The lowest third made the greatest improvement, a 123 per cent gain over the middle third and a 218 per cent increase over the highest third. In this group the figures seem to indicate that the experimental method is effective with all types of writers, good and mediocre but most effective with the very poor writers who lack motor coordination and experience difficulty in forming letters correctly. Quite obviously, if a child scored high on the pre-test his progress would not be as marked as that of a child whose score was of mediocre or poor quality at the beginning.
As has been shown, the experimental group as a whole has made a considerably better score than the control group in quality of handwriting. The difference in attainment between the groups within each classroom is worthy of notice. Table VII shows very consistently that the experimental group within each classroom produced a marked gain over the control group. Greatest gains were made by classes scoring low on the pre-test.

**TABLE VII**

**COMPARISON OF MEAN QUALITY SCORES OF EACH GROUP IN EACH CLASS OF THE FIRST GRADE IN EACH SCHOOL**

<table>
<thead>
<tr>
<th>School</th>
<th>Control Pre-test</th>
<th>Re-test</th>
<th>Experimental Pre-test</th>
<th>Re-test</th>
<th>Per Cent Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>12.19</td>
<td>24.75</td>
<td>12.05</td>
<td>33.89</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>8.74</td>
<td>20.53</td>
<td>8.76</td>
<td>31.23</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>9.85</td>
<td>22.81</td>
<td>10.26</td>
<td>29.50</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>6.73</td>
<td>21.50</td>
<td>7.16</td>
<td>31.95</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>7.52</td>
<td>20.08</td>
<td>7.44</td>
<td>27.75</td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>12.55</td>
<td>22.52</td>
<td>12.59</td>
<td>29.22</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.38</td>
<td>19.81</td>
<td>6.92</td>
<td>20.50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.93</td>
<td>23.78</td>
<td>7.86</td>
<td>32.29</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>78</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>78</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>78</td>
</tr>
</tbody>
</table>

Difference in Percent Gain
Table VIII is a summary of gains made in speed of handwriting. It will be observed that in seven of the ten classes the experimental groups write with greater speed. In one class both groups write with equal speed; only in two classes do the control groups write with a slightly greater speed. In general these differences do not exceed three letters.

It will also be noted that all classes within the experimental group have gained in speed. Two classes within this group have more than doubled their speed of handwriting; the remaining eight classes have made rather significant gains. Within the control group two classes have decreased their speed; the remaining eight classes have made gains ranging from 8.3 per cent to 87.4 per cent.

The findings perhaps are so obvious as not to need further comment. It should be emphasized, however, that despite all precautions the control group had gained much by being present in the classroom while the experimental group was instructed. It will be recalled from what has been said heretofore that every unit of It Is Fun to Write was presented on the blackboard, practice at the board preceded practice at the desks, and that evaluation and motivation were presented orally, not only in the presence of the experimental group, but the control. All these
TABLE VIII

AVERAGE LETTERS PER MINUTE IN HANDWRITING OF THE EXPERIMENTAL AND CONTROL GROUPS WITHIN EACH OF THE TEN FIRST GRADES PARTICIPATING IN THE EXPERIMENTAL STUDY

<table>
<thead>
<tr>
<th>School</th>
<th>Control Group</th>
<th></th>
<th></th>
<th>Experimental Group</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Classes</td>
<td>Pre-test</td>
<td>Re-test</td>
<td>Percent Gain</td>
<td>Pre-test</td>
<td>Re-test</td>
</tr>
<tr>
<td>F</td>
<td>1</td>
<td>12</td>
<td>13</td>
<td>8.3</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>14</td>
<td>19</td>
<td>35.7</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>M</td>
<td>1</td>
<td>6</td>
<td>11</td>
<td>83.3</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>8</td>
<td>15</td>
<td>87.4</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>R</td>
<td>1</td>
<td>13</td>
<td>10</td>
<td>- 23</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>12</td>
<td>11</td>
<td>- 8.3</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>S</td>
<td>1</td>
<td>10</td>
<td>13</td>
<td>30</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>12</td>
<td>14</td>
<td>16.6</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>11</td>
<td>14</td>
<td>27.2</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>K</td>
<td>1</td>
<td>8</td>
<td>11</td>
<td>37.5</td>
<td>8</td>
<td>13</td>
</tr>
</tbody>
</table>

procedures undoubtedly influenced the performance of the control group, as well as the experimental. There were several instances where children in the control group of their own initiative at home made designs and drawings
similar to those used by the experimental class, employing the characteristic strokes of manuscript writing. Some went as far as evaluating their work in exactly the same manner as that of the experimental group and proudly handed the results to their teacher.

Many children of the control class made attempts to join in conversation about their fun and experiences similar to those suggested by pictures and content of the experimental material. How to draw away the attention from *It Is Fun to Write*, how to make the writing lesson of the control group as interesting as possible, and how to keep the children eagerly participating was the big challenge each teacher faced. It started almost the first day of the experiment. Carefully planned exercises, preceded by stories and pictures, were used to capitalize on the children's interests. Although these were sparkling with humor and bright with variety, yet it often happened that the conversation would veer toward the ideas overheard from the experimental class. The stories of the elf that lives in the pages of *It Is Fun to Write* provided a basis for much conversation and enjoyment.

Both groups have gained not only in quality of handwriting but also in developing a wholesome attitude toward school life in general. A stream of conversation stimulated by the exercises of *It Is Fun to Write* proved helpful especially to the timid, withdrawn type of child who seemed to
have difficulty in social adjustment. The children of the experimental group reacting in such natural wholesome fashion present a hearty contrast to the too-familiar picture of little first-graders bent over their papers and pencils, straining to find out what the method of approach to writing a letter is. In analyzing the results of this study, it seemed advisable to present each group, that is, the experimental and control, as a whole. A comparison of the highest, middle, and lowest thirds of each group follows. Then the results of the experimental and control groups within each of the ten classes are presented. Finally, our last division consists of individual performances that are typical of the children of the experimental group.

Before presenting a few cases it seems feasible to discuss briefly what constitutes legible writing. The most important characteristic of good writing is correct letter-formation. If letters are correctly formed, they are legible. The most common sources of errors in letter formation are faulty strokes improperly made and poorly proportioned. Secondly, the axis of the letters is uniform. In good manuscript writing there is no diagonal slant of the letters. All adhere to the strict vertical. Thirdly, the alignment of letters is uniform; this means that not only do the letters have a common base line but that the letters
are of proper relative sizes. A fourth characteristic of good writing is good quality of line. That is to say, the lines of the letters are smooth, fluent, regular, and unbroken. Proper spacing, both between the letters of a word and between words within a sentence constitutes the final characteristic of good writing. In evaluating the subsequent cases the above characteristics were used as criteria.

Case 1. Walter is a left-handed child who was six years and four months of age when examined and who had a mental age of six years, Kuhlmann-Anderson I.Q. 95. This little boy was very much confused in writing. Exploration of laterality revealed a consistent left preference for eye, hand and foot. His writing position at the beginning of the experiment was extremely awkward and cramped. He insisted on keeping that position, claiming that it was easy for him to write that way. He twisted his hand around the writing and wrote in the circle between his hand and wrist, that is, his arm was turned in such manner that the writing hand lay above the line of writing. All strokes were made from the bottom upward. By means of close supervision and the well-planned lessons of It Is Fun to Write, Walter soon was trained to make the simple strokes in the correct direction, that is, from top down, and gradually developed a natural
position and a free movement, not exactly like that of a right-handed child but quite as comfortable. Opportunity was given Walter to complete the exercises at the blackboard, a task that preceded every writing lesson at his desk. In December, on the basis of Freeman's Measuring Scale, Walter earned a writing score of 9.92, which placed him in the middle third of the experimental group. Motor coordination was poorly developed. Retracing of strokes was a prevalent fault. Spacing both within a word and between words was irregular. Quality of line gave evidence of insecurity, poor motor control, and exertion of uneven pressure. His letters, although recognizable, were angular and much too narrow. Rate of writing was somewhat hindered by the retracing tendency. He wrote ten letters a minute, the average rate of the class.

After eleven weeks of training, Walter had made exceptional progress. He acquired a surprising amount of skill in producing a well-spaced, pleasing page. Motor control, letter formation, and a smooth, fluent, firm line are outstanding characteristics of his writing. His quality score on the re-test was 39 which placed him among the children in the highest grouping of the 360 children participating in the experiment. According to Freeman's Scale he writes better than the ordinary first grader. Rate likewise increased from ten to thirteen letters per minute. Walter is
but one of the many who has gained in power and acceleration after an easy, zestful and thorough beginning of a highly complex activity has been made. Specimens of Walter's handwriting are shown in Figures 15 and 16.

Case 2. Alice is a little girl who was five years and eleven months of age when examined, and who had a mental age of six years and eleven months, kuhlmann-Anderson I.Q. 114. Her writing on the pre-test in December, 1944, was characterized by faulty perception of letter forms, poor muscular control, and crowded writing, the letters being bunched together in each line with no spacing between words. Hers was a rapid movement resulting in a quality of writing that is poor. Her writing score at the beginning of the experiment was 6, the lowest in the middle third of the experimental group within her class. At the close of the experimental study her score soared up to 38. According to Freeman's Scale her writing is classified as superior to that of a first grade child. Improvement to a marked degree can be noted in her letter formation, alignment, spacing, and smoothly integrated writing movement. Speed in writing has slightly decreased from 32 to 29 letters per minute. In general, persons who write well write more slowly than do those who write poorly. This was shown clearly in Alice's case. Certainly, it is more desirable that she maintain her
Figure 15 -- Case 1. Walter's writing achievement at the beginning of the experimental study.

I have a bird.
He likes to sing.

Figure 16 -- Case 1. Walter's writing achievement after eleven weeks of training.

I have a bird.
He likes to sing.
I have a bird.
quality of writing and decrease her speed rather than emphasize speed to the detriment of quality. Alice is one of the few who has acquired a level of skill that exceeds the standards for grade one in both speed and quality. The specimens presented below give a fair idea of the improvement Alice made.

Case 3. Gerald is a small timid child of inferior mental ability as measured by the Kuhlmann-Anderson test. He was seven years and nine months of age when examined, with a mental age of four years and eight months, I.Q. 60. He is repeating the first grade and is kept in the present school conditionally, that is, until he can be placed in a special school which is equipped to meet his needs. Social immaturity is evident in many ways. He speaks very little in monosyllables and that only in answer to direct questioning. Interest in others is nil. He is most happy when left to himself. In addition to these inadequacies, physical handicaps hinder him from participating in activities of interest to the first grade child. Because of club feet his walking was delayed for several years. There is a marked awkwardness and slowness about all his movements. His control of hand and finger movements is poor. He presents no behavior difficulty at school other than timidity.
Figure 17 -- Case 2. Alice's writing achievement in December, 1944.

Figure 18 -- Case 2. Alice's writing achievement in April, 1945.
From September onward but especially from the beginning of the experiment Gerald was provided with a variety of handwork, such as, drawing, coloring, finger painting using large sweeping movements, cutting out simple pictures, trying to keep on the line, tracing, making things out of clay. All these activities helped develop motor control and coordination.

Learning without interest is almost impossible. Therefore, the teacher took special care to show interest in Gerald's work. She displayed his work, often bubbling over with praise and enthusiasm. She tried to impress him with the thought that he can do things that are worthwhile and in this way she hoped to draw him out of his own little shell.

At the beginning of the experiment Gerald, who was accustomed to having someone guide his hand, a method his oversolicitous sisters used in helping him at home, could write very little by himself. During the first pre-test he was unable to print the selection presented and tried to compensate by writing his name. Prior to the second two-and-a-half-minute pre-test the examiner had gone over the entire selection with Gerald pointing out the letters and asking him to write not his name but the letters on the test specimen. Gerald was completely baffled; his consternation and chagrin were almost pathetic. His writing was a combination
of both print and cursive, characterized by weak motor coordination, uncertainty, poor letter formation, and cramped, jerky, tense movements. His quality score on the pre-test was 5.28, the lowest in the entire experimental group. After eleven weeks of intensive training Gerald became quite adept in the use of his pencils and crayons. He can write all the capital letters and most of the lower case letters from memory with a considerable amount of ease. No hand guidance is necessary, in fact, it was discouraged. He has become writing conscious, noticing not only the manuscript on the reading charts but also the spacing and arrangement of letters and words on bulletins and blackboards.

Gerald's happiness and satisfaction in his present ability to write have been potent factors in his improvement and the development of his skill. Improvement in Gerald is noticeable in other ways. It is not claimed that the course in manuscript writing alone has caused a change of attitude and a better school and social adjustment, but it seems to have been a valuable aid. Gerald is much more independent and self-reliant. His interest in school work is amazingly improved. His papers are neater and more legible, much to the delight of the members of the family and his teacher. He takes great pride in displaying his writing ability. He appears much happier and less timid than before the experimental study began, although he still remains at the edge of
Figure 19 -- Case 3. Gerald's writing achievement at the beginning of the experimental study.

I have a bird
He likes +

Figure 20 -- Case 3. Gerald's writing achievement after eleven weeks of training.
the group, watching rather than participating in social activities.

His final quality score is 25.78. Gerald made a gain of 20.50 points. His writing performance is better than that of 187 children of the entire experimental study.

Gerald's case is one that can be utilized to substantiate the opinions of several authorities on handwriting. High intelligence is favorable to handwriting, but it is not necessary for success in learning it. Muscular development and control, prerequisites to writing, are functions of chronological age and physical condition, not of intelligence.

Case 4. Joseph was seven years old when examined and earned a mental age of five years and eleven months on the Kuhlmann-Anderson and an I.Q. of 85. It is obvious that he is developing mentally more slowly than the ordinary child of the first grade. During the first half of the school year his interest in picture books and story-telling was easily detectable; writing, drawing, and coloring, on the other hand, were done in a very infantile manner with little success. It was apparent that he lacked muscular control. Dropping his pencil, holding his tongue clinched between his teeth, and facial contortions accompanied every writing
exercise. Very often he scribbled the entire page, paying no attention to the content.

At the time of the pre-tests in December Joseph offered several excuses and expressed his dislike for writing. After he had written the first two words he looked up at the examiner and said: "I feel like scribbling it all up." On the pre-tests he earned a score of 5.56; the lowest in his class. In eleven weeks his attitude toward writing and the writing itself improved greatly. His re-test score was 22, a gain of 16.44 points or approximately 295 per cent. Rate was more than doubly increased.

The day his first exercise was placed on the display board he was "wild" with glee and asked to be permitted to run home during the recess so as to show it to his mother. He is beginning to feel that, after all, there is a chance for him to be in the limelight if not in reading and number work than at least in writing. Figure 21 and 22 are specimens of his writing ability on the pre-test and re-test. Figure 23 illustrates Joseph's writing achievement under natural conditions, that is, writing without being rigidly timed.

Case 5. Arthur is a little sickly boy who because of a serious mastoid operation was unable to complete his kindergarten year. During the first three months of the
Figure 21 -- Case 4. Joseph's writing achievement at the beginning of the experimental study.

I have a bird.
He likes to sing.
I have a bird.
He likes to sing.

Figure 22 -- Case 4. Joseph's writing achievement after eleven weeks of training.
Dear Sister,
I like to come to school.
I like to write.
Do you like my writing?

Joseph K.

Figure 23 -- Case 4. Joseph's writing ability displayed impromptu.

First grade his attendance was very irregular. He presented very few problems at home and at school until the other children began to read and write. Results of the Kuhlmann-Anderson tests administered when he was six years and two months chronologically revealed a mental age of six years and ten months and an I.Q. of 111. His visual acuity according to the Snellen Test seems to be; right eye $\frac{20}{20}$, left eye $\frac{20}{20}$; both eyes $\frac{20}{20}$.
I have a bird.
He likes to sing.

Figure 24 -- Case 5. Arthur's writing achievement at the beginning of the experimental study.

I have a bird.
He likes to sing.
I hav

Figure 25 -- Case 5. Arthur's writing achievement after eleven weeks of training.
I have a bird.
He likes to sing.
I have a bird.

Figure 26 -- Case 6. Phyllis' writing achievement at the beginning of the experimental study.

Figure 27 -- Case 6. Phyllis' writing achievement after eleven weeks of training.
Arthur's score on the writing test at the beginning of the experiment was 5.76, placing him in the lowest third of his class. His writing is characterized by extremely poor alignment, poor motor coordination, and slowness of movement. After eleven weeks of systematic training, the re-test showed a total gain of 19.24 points or about 334 per cent. There was likewise a small increment in speed. Figures 24 and 25 are specimens of Arthur's handwriting.

Case 6. Phyllis was five years and eleven months of age when examined, with a mental age of six years and nine months on the Kuhlmann-Anderson test, I.Q. 114. Her writing on the pre-test gave evidence of insecurity, poor motor control, spacing and alignment inadequate for legible writing. She earned a score of 5.84 on the pre-test which placed her in the lowest third of the experimental group. At the close of the experimental study Phyllis earned a score of 39 points, a gain of 33.16 points or 567 per cent. According to Freeman's scale her writing surpasses the standards for grade one. Not only is her writing legible and pleasing in appearance, but also it indicates a performance done with reasonable facility and ease. There is a significant increase in speed from seven letters per minute to 13. Figures 26 and 27 are specimens of her writing.
CHAPTER V
SUMMARY AND CONCLUSION

The foregoing study has developed from a desire to help the classroom teachers of beginners present and develop writing lessons. The hygienic difficulties of learning to write have been a problem to teachers for many years. By hygienic difficulties we mean the difficulties involved in coordinating the physiological and psychological responses necessary in writing. Analysis reveals that the art of making even the simplest-formed letters requires a muscular coordination of fingers, hand, wrist, and arm. Writing is a matter of coordinating the visual centers with the motor centers which control our arms, hands, and fingers. It requires considerable skill to perfect this coordination, and it is often very difficult for immature beginning writers to acquire it. Facts of child growth and maturation shed much light on this problem of handwriting and cannot be ignored when devising an appropriate method of introducing young children to such highly complex activity as writing. Strain, fatigue, attention span, success, satisfaction, interest, habit, and attitude are but a few of the components
that must be considered in any phase of learning not excluding the writing activity.

Since manuscript writing is still in its infancy, very little has been done by way of presenting and developing in a systematic and psychologically sound way writing lessons to beginners. Most copybooks intended for the first grade do not differ from those of the second or third grades, thereby ignoring facts of child growth. All these factors led the writer to devise a method of writing in which adequate attention is given the learner as well as the material to be learned.

The chief purpose of this experimental study was to determine the relative efficacy of the newly devised method as contrasted with the current method of teaching manuscript writing to first grade children.

The experiment was conducted in ten first grades of six schools in Chicago during the first eleven weeks of the second semester of the school year 1944-1945. Within each classroom the children were equated into two groups, the experimental and the control, on the basis of two brief pre-tests which were graded independently by three judges using Freeman's Manuscript Measuring Scale. The experimental group used the book It Is Fun to Write, the original material and plan of the author, described fully in Chapter III.
The control group followed the current procedure of having the letters of the alphabet introduced one at a time either in random order or in sequence. The effectiveness of the two methods was indicated by the amount of improvement made in learning to write. The improvement was measured by comparing the results of the pre-tests and the re-tests.

With all the data analyzed and statistical treatment applied to them, this whole investigation seems to provide valuable evidence of the superiority of the newly devised method of approach over the ordinary method of approach in teaching manuscript writing to first grade children.

Briefly, the most important general conclusions to be drawn from this study are: (1) Method was the only planned variable and seems to account for the superiority in improvement of the experimental group (2) Children of the same grade differ both in quality of handwriting and in speed. Among the 183 children of the experimental group the variation in quality is from 14 to 42 on a scoring system based on the Freeman Scale, a difference of 28 points between the poorest writer and the best writer; in speed, it is from 6 letters a minute to 30. The 177 children of the control group vary in quality of handwriting from 7.96 to 35.84 or 27.88 points; in speed the range extends from 4 letters a minute to 29. These variations are probably
due more to muscular and nervous control which are functions of chronological age and physical condition than to intelligence. (3) All who have taught this writing are quite convinced that it is much easier to teach; good results come more quickly with less effort, for the reason that motor coordination is better developed, interest is at top notch and early success is invariably reached by every child. (4) The advantages of this new approach have already been dealt with at length and one has but to see the specimens of children's work to be convinced that the results are gratifying. The spirit created in both teachers and children was itself of sufficient value to make the use of the book *It Is Fun to Write* well worthwhile.
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BOOKS


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PERIODICALS


The thesis submitted by Sister Mary Madeleine Adamczyk, S.S.J. has been read and approved by three members of the Department of Psychology.

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the thesis is now given final approval with reference to content, form, and mechanical accuracy.

The thesis is therefore accepted in partial fulfillment of the requirements for the Degree of Master of Arts.

January, 1946

[Signature of Adviser]