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The Effect of Systematic Cursive Instruction on the Length of Writing Samples

John Kendall Vail

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THE EFFECT OF SYSTEMATIC CURSIVE INSTRUCTION
ON THE LENGTH OF WRITING SAMPLES

by

John Kendall Vail

A Project Report
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Specialist in Education
Department of Psychology

Western Michigan University
Kalamazoo, Michigan
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THE EFFECT OF SYSTEMATIC CURSIVE INSTRUCTION
ON THE LENGTH OF WRITING SAMPLES

John Kendall Vail, Ed.S.

Western Michigan University, 1993

This research study investigated the effects of a systematic cursive writing instruction program on the quantity of written product generated by sixth grade students identified as having poor cursive writing (legibility). A Direct Instruction curriculum was chosen to remediate the students' cursive writing skills. Subjects received three to nine weeks of four 20-minute sessions per week of cursive instruction. A multiple baseline across subjects design was used. During the baseline phase, students were asked to write a story based on story starters provided. The total number of words generated was determined for each story. In the intervention phase, subjects received the cursive instruction, while continuing to develop stories from story starters on a weekly basis. The results did not support the contention that improved cursive writing resulted in increased production of written text. The lack of positive results may be due to the limited amount of training the students received.
ACKNOWLEDGMENTS

Thanks to the staff and students at the school where this study took place for putting up with my schedule and for the giving of their time.

Also, many thanks to my advisor, Dr. Howard Farris, for his editing which made the final product much more professional. Thanks also are due to my committee members, Dr. Galen Alessi and Dr. William Redmon for their willingness to accommodate a last minute request.

A final thanks is due to my wife, Carol, who searched for typographical errors on each page, and who learned a lot more about cursive writing than she cared to.

John Kendall Vail
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INTRODUCTION

"The mastery and automatization of handwriting skills is an important prerequisite to a student's development as a competent writer" (Graham, 1986, p. 373). Unfortunately, some elementary schools have no formal handwriting program and of those that do, only 30% of schools in a national survey had a systematic method of evaluating handwriting achievement (Addy & Wylie, 1973).

Cursive handwriting instruction, when provided, is introduced in the third or fourth grade. The reasons for teaching cursive include the ease of writing in cursive, no look-alike letters, only one starting point, significantly fewer strokes to learn, and all letters are curved (Phelps & Stempel, 1987).

Because of the emphasis on other subjects and the introduction of new technology, cursive instruction seems to be left to a teacher's discretion. Consequently, it is not taught in enough depth for students to develop mastery of this skill. By the time students reach the sixth grade, cursive instruction has ended and some students are still unable to write legibly.

Inadequate legibility can set up some negative lifelong consequences for the child and some immediate frustrations for the teacher. Unable to read the words, the teacher possibly cannot fully assess the content of a student's work. Teacher's receptivity to this work may also be lessened. Grading may become an issue of
readability rather than of knowledge in the content area. The child, therefore, would not receive the feedback necessary for learning essential material.

Writing may also become an aversive task for the student whose penmanship is poor. Rather than expressing the thoughts and knowledge the student has, the writing exercise can get mired in the mechanics of text production. In a study by Scardamalia, Bereiter, and Coleman (1982) with fourth and sixth graders, it was hypothesized that mechanical requirements for producing text can interfere with writing in the following ways:

1. Planning and content generation may be undermined by having to attend to putting words onto paper.
2. The student's rate of production may not keep up with his or her thoughts.
3. Students' motivation and persistence may be affected by difficulties with mechanical production.

The purpose of the present study was to determine if remedial cursive writing instruction to predetermined mastery criteria will result in increased quantity of written material on a given task. Studies have exhibited that production factors do impact quantity and content (Graham, 1990; Scardamalia et al., 1982; MacArthur & Graham, 1987). However, no studies were found that investigated the impact on production factors of improving a student's cursive writing. This study explored the effects of the use of a systematic curriculum for remediating cursive writing on this one production factor—quantity. Positive results from four 20-minute sessions per week would suggest that even limited remedial efforts to improve handwriting skills
can show benefits other than the appearance of the text. Also, if the data support this contention, development of the psychomotor skill of writing might be viewed as a prerequisite to written access of a student's verbal repertoire. Once the student has achieved some level of competence with the mechanics of handwriting, then instruction for teaching grammar, expression, and style can begin. Positive results would also make a case for providing systematic instruction to mastery of cursive writing.

If, however, cursive skill level has no impact on story length, then further research on the role and nature of handwriting mechanics in terms of sampling a student's verbal repertoire would need to be conducted.
METHOD

Subjects

The subjects selected for participation in this study were all general education students enrolled in the sixth grade at an urban southwestern Michigan elementary school. Subjects were initially selected based upon their performance on the pre-test of the Test of Legible Handwriting (Larsen & Hammill, 1989). The students with the nine lowest scores (approximately one-third of the class) were identified. This list of students was then given to the classroom teacher for confirmation. The teacher concurred with the selections and was pleased with the fact that these particular students would be receiving some instruction in handwriting. Although the teacher had learned how to decipher most of what was produced by these students, she believed that each student's academic work suffered from poor handwriting skills.

Despite a 50/50 class mix of boys and girls, all nine subjects were boys. Seven of the nine boys actually completed the study. One student left the study during baseline due to a family move. The other student who did not complete the study was released due to very poor attendance rate.

The subjects were grouped for instruction in sets of three. Several factors were used in the grouping process, the most significant of which was the student's availability for one of the three designated training time slots. Other factors
considered were interpersonal compatibility within the group and neediness of the individuals in terms of handwriting skills.

Setting

Instruction was given separately to each group of three students outside their regular classroom. Each group was brought to a quiet room in the school for 20 minutes of instruction, four times a week. For the baseline writing samples and for the weekly writing samples, all students were scheduled at the same time and given an unlimited amount of time to write.

The rooms used for instruction and writing were quiet and free from distractions. Initially, some disruptions between the subjects occurred but this was brought under control through assigned seating. Number 2 pencils were sharpened and distributed prior to each session.

Materials

In order to prompt writing samples, a random selection of story starters was used from the list provided by Shapiro (1989). This list of story starters was originally supplied by Shapiro for the purpose of doing frequent probes in a Curriculum Based Measurement (CBM) program.

Training strictly adhered to the curriculum provided in Science Research Associates' Cursive Writing Program (Miller & Engelmann, 1980). As mentioned previously, each student was supplied with a sharpened Number 2 pencil at the
beginning of every session. Story starters were written in cursive at the top of lined 8½ x 11 paper typically used in the sixth grade classroom.

Pre- and post-testing were conducted using the Test of Legible Handwriting (TOLH) (Larsen & Hammill, 1989). The main emphasis of this scale, as described by the authors, is legibility of cursive writing. A study by Graham, Boyer–Shick, and Tippets (1989) showed this instrument to be a valid measure of learning disabled students' handwriting. Since the TOLH was developed for general education students, there is reason to believe that this validity would hold for the subjects of this study. Furthermore, letter formation was found to be the best predictor of TOLH scores.

Dependent Variables

The dependent variable addressed in this study's research hypothesis was the total word production by each student on the baseline and weekly writing samples. Other dependent variables included rate and accuracy of production on the samples, as well as the pre– and post–test measures achieved by the subjects on the TOLH.

The story starters were handed out at the beginning of each session in which a sample was to be generated. Students were asked to spend one minute thinking about what they were going to write. At the end of the minute, students were told to begin writing. At the end of three minutes of writing, the students were told to make a mark to show how far they had gotten in the story at that point in time. The subjects were then instructed to continue writing until they had completed their story. Extra paper and pencils were provided when needed. At the completion of their
writing each student returned to his classroom. No other instructions were given in any session.

Total production was determined by counting the number of words written after the story starter. Rate of production was determined using the number of words written up to the mark the students made after three minutes of writing. Accuracy was assessed on a randomly selected 50 letter segment of each sample. Correctly formed letters were determined by visual inspection using the guide provided in the cursive instruction manual. Another person not familiar with the study was given one-third of the samples, randomly selected from the entire collection, for a similar analysis. Finally, pre- and post-test scores on the TOLH were developed using the criteria established for that instrument. In this instance, the other rater analyzed all of the TOLH writing samples. A discrepancy between the two raters on a score awarded any sample was analyzed using the standards and criteria provided in the TOLH to determine the final rating.

Independent Variable and Experimental Design

The independent variable in this study was the number of lessons mastered in the cursive training curriculum by each student. Mastery was determined by a grading system used in assessing the students' worksheets. Each worksheet could receive a total of ten points. An error lowered that possible score by one-half point each. Errors were defined as improper slant, improper formation, letter size out of proportion, and violations of the line guides. Scores less than eight resulted in the
student having to redo the worksheet. Students who lost three points or less in a five-lesson period were given a prize.

The research framework used in this study was a multiple baseline across students. Baseline data were established with all of the subjects during Phase 1 of the study. When baseline data for each individual had either stabilized or developed a trend in the direction opposite of the hypothesis of the study (total production decreased rather than increased), the student was eligible to begin receiving cursive instruction. This instruction phase, labelled "Phase 2" was continued for each student until the end of the study. Students were placed in groups of three for instruction. The instruction groups entered Phase 2 in a staggered manner, with each subsequent group entering the instruction phase three weeks after the previous group.
RESULTS

The hypothesis of this study was that story length would increase as a function of increased cursive writing skill. Figures 1 through 7 graphically represent the impact a limited amount of cursive instruction had on each subject's performance in accuracy of letter formation, rate of word production, and total production of words created in the development of a story.

Accuracy

Even though a mastery criterion was required on the instruction worksheets, only Subjects 1A, 1C, and 2B showed improvement in the percent of letters formed correctly on the writing sample during Phase 2. The balance of the subjects performed at a constant level of accuracy.

Rate

The rate of production on the timed segment of the writing samples remained virtually constant between Phase 1 and Phase 2 for all subjects. Five of the seven subjects displayed a brief drop in words per minute immediately following the introduction of the instruction phase but the rates resumed to previous levels within a three to four week period.
Figure 1. Accuracy, Rate, and Production: Subject 1A.
Figure 2. Accuracy, Rate, and Production: Subject 1B.
Figure 3. Accuracy, Rate, and Production: Subject 1C.
Figure 4. Accuracy, Rate, and Production: Subject 2A.
Figure 5. Accuracy, Rate, and Production: Subject 2B.
Figure 6. Accuracy, Rate, and Production: Subject 2C.
Figure 7. Accuracy, Rate, and Production: Subject 3A.
Total Production

Of the seven students involved in this study, average total production was less during the cursive instruction phase than during baseline for four of them (1A, 1B, 1C, and 3A). The total production for each of these four subjects either stabilized at a lower rate during Phase 2 or continued to trend lower. The remaining three subjects had total production outputs in Phase 2 similar to those achieved in Phase 1. None of the production data for the students indicated a trend toward supporting the original hypothesis.

Pre- and Post-Test Data

Table 1 (see Appendix A) shows the pre- and post-test scores each student achieved on the TOLH. Six of the seven subjects showed increases ranging from one to four points. The scoring system used a nine-point Likert-type scale with one representing the least legibility and nine the most legibility. The only subject who did not show an increase between pre- and post-test scores was the one who received the least amount of cursive instruction (Subject 3A). The average of the pre-test scores was 2.9 (range 2 to 4), while the average of the post-test scores was 4.7 (range 3 to 7).
DISCUSSION

The hypothesis of this study was not supported. A number of observations may be relevant for understanding the results achieved. It may be that cursive writing ability actually has no positive influence on the amount of text one produces. Secondly, and most important, it might be that the method or content of the cursive instruction was only marginally successful in developing improved writing skills with the subjects. This may have been due to the length of instruction, namely, it did not last long enough for the students to learn and practice enough letters to make a difference in their overall writing ability. Finally, it may be that generalization of any new skills developed for use in writing samples other than the cursive worksheets never occurred. Further analysis of these variables would be needed to determine recommendations for further research.

The failure to demonstrate that the improvement of cursive writing has a significant positive impact on quantity of production runs contrary to both previous research of production factors (Graham, 1990; Scardamalia et al., 1982; MacArthur & Graham, 1987) and common sense. If the length of instruction or the generalization of skills proves to be inadequate as an explanation for the results achieved, then it must be concluded that the improved fluency and accuracy of cursive writing indeed has no effect on quantity. The focus then might be to teach keyboarding to those children whose cursive skills are extremely lacking. This would
insure legibility. Although keyboarding is not as accessible in the variety of settings paper and pencil are, it is becoming a necessary skill in its own right for computer use.

An inadequate curriculum to remediate cursive skills, or a lack of fidelity of implementation could explain the results. Some of the data of this study, however, suggest that the curriculum and implementation were adequate. Two of the three subjects receiving the most cursive instruction in the study showed gains in accuracy of letter formation. Also, all but the subject receiving the least amount of instruction increased the legibility of their writing sample on the post–test of the TOLH.

Another possible cause of the failure to show positive effects lies in the fact that the subjects did not receive enough instruction and practice to make proper cursive writing techniques fluent and consistent. In addition, generalization of these new skills was not attempted; thus, the new skills were possibly not utilized in other settings including the story completion exercises that were a part of this study. It is these two factors that seem to have the most merit in terms of explaining the results, considering the limited nature of the research conducted.

In order to engineer a new behavioral repertoire, one must train the subject in any skills required for the new repertoire. Mastery of these skills must be achieved and maintained over time in order for the skill to become a more natural response. Next, one must design a program to replace existing, competing behaviors with the new skills. Then a method for maintaining the new skills in the setting in which they
are learned needs to be developed. Finally, transfer of these new skills to other settings needs to be planned for an implemented (Stokes & Baer, 1977).

For numerous reasons, various components of this process were not a part of this study. The Direct Instruction Cursive Writing Program consists of 140 lessons. The most lessons any subject received was 36. This means that only a quarter of the practice required for learning this new skill was accomplished. By lesson 36, only 15 of the 26 lower case letters had been introduced, while none of the capital letters had been presented. Because of the rewards and consequences existing in the tutoring session, most of the students performed consistently well on their worksheets. Still, the skills were only at a point where the students were writing very short sentences containing words with a maximum of three or four letters.

Although desired, generalization techniques were not considered. Working in a public school setting on the school's time, control of variables outside of the tutoring session proved to be an insurmountable task. Also, generalization procedures could confound the interpretation of the results. If positive results had been seen, would the results have been an indication of the effectiveness of the training technique, or would it have been due to increased emphasis on handwriting across all settings (or both)?

The purpose of this study was to determine if increased cursive writing skill alone would allow students to express their thoughts more fully on paper. It is this researcher's opinion that the hypothesis of this study is still plausible. Future studies should encompass the entire 140 lesson program, as well as allowing enough practice in addition to that required by the curriculum to ensure fluency. Once this research
question has been answered, future studies should focus on the generalization issue to see what type of techniques work best to transfer the skill to other areas of functioning.
Appendix A

Pre- and Post-Test Scores Obtained by Each Subject on the Test of Legible Handwriting (TOLH)
Appendix A

Pre- and Post-Test Scores Obtained by Each Subject on the Test of Legible Handwriting (TOLH)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Pre-</th>
<th>Post-</th>
</tr>
</thead>
<tbody>
<tr>
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<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Subject 1B</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Subject 1C</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Subject 2A</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Subject 2B</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Subject 2C</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Subject 3A</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: Scores are based on a scale from 1 to 9, where 1 is the least legible and 9 is the most legible.
Appendix B

Consent and Assent Forms
INFORMED CONSENT

Dear Parent:

My name is John Vail and I am a graduate student in the School Psychology Program at Western Michigan University. I am presently placed in your school for training under Mike Vreeland, Kalamazoo Public Schools-School Psychologist. As a part of my experience, I would like to conduct some research that I believe will help the students involved and also provide useful information to the education profession.

The study I am proposing involves training sixth grade students in cursive writing using a proven systematic curriculum. The students included in this study will have been identified by their teachers as having handwriting that is difficult to decipher and thus limits the teacher's ability to assess the content of the written material. The poor handwriting may also keep the student from fully expressing his or her knowledge.

Your teacher has identified your child as one who would benefit from this project. Participation in the study would involve about twenty minutes of your child's time during each school day. The training will start in late February or early March and continue until the end of the school year. Twice during the training, your child will be recorded using an audio-recorder. This is done to determine what kind of story the student can generate when not limited by the requirements of writing. The recording will be transcribed and the tape will be erased promptly so as to insure confidentiality.

Your teacher is very supportive of this training and feels the time out of the classroom will be well spent. We will work within your child's schedule so as to minimize the lost time in the classroom.

Participation in this experiment is voluntary; your decision will not in any way prejudice relations with the researchers or with the teachers and staff at your school. Although we strongly recommend that you participate in the entire project, you will be free to discontinue your child's participation any time without repercussions.

The results of this study will be shared with some of the staff at your school as well as being included in a written report that may become published. However, only overall results will be used and names of the students involved will always be withheld. The published results will not include the students' names, the teacher's name, nor the name of the school. At the end of the study, all materials which could be used to identify the participants will be destroyed. Consequently, your child's individual performance will remain confidential.

If you have any questions or concerns regarding this research, you may contact John Vail (phone: 327-1816) or my advisor, Dr. Howard Farris of Western Michigan University (phone: 387-4478) at your convenience.

Your signature below indicates that you understand the above information and have decided to participate. You will receive a copy of this form.

parent's signature __________________ date __________________
INFORMED ASSENT

Dear Student:

My name is Mr. Vail and I am conducting a study that involves providing special training in cursive writing to a select group of students. Your teacher has informed me that you would be a good person to help in this study.

As a participant, you would be required to attend a training session with one or two of your classmates for about 20 minutes a day. This program will start in a few weeks and last until the end of the school year. The training will take place here at your school during normal school hours. There will be no grades given and even your teacher will not be informed of your individual results. We believe this will be a fun and beneficial experience for you. If you would like to participate and see how well you can do, please sign your name below:

_________________________   ____________
student's name                  date

_________________________   ____________
witness's name                  date
Appendix C

Human Subjects Institutional Review Board Approval Letter
Date: February 27, 1992
To: John K. Vail
From: Mary Anne Bunda, Chair
Re: HSIRB Project Number 92-01-11

This letter will serve as confirmation that your research protocol, "The effects of Systematic Cursive Instruction on the length of Writing Samples" has been approved after full review by the HSIRB. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the approval application.

You must seek reapproval for any change in this design. You must also seek reapproval if the project extends beyond the termination date.

The Board wishes you success in the pursuit of your research goals.

xc: Farris, Psychology

Approval Termination: February 27, 1992


