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BRAILLE LITERACY



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Editor

Harry Svensson
National Agency for Special Needs
Education and Schools
Box 12161
SE- 102 26 Stockholm
SWEDEN

Associate Editor

M.N.G. Mani
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Designing and Printing

ICEVI Secretariat
No.3, Professors' Colony
Palamalai Road, S.R.K. Vidyalyaya Post
Coimbatore – 641 020
Tamil Nadu, INDIA
Phone : 91-422-2469104
Fax : 91-422-2693414
e-mail : sgicevi@vsnl.net

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Guest Editor : **Cay Holbrook**

A study of Braille writing skills acquisition in early learners with visual impairment using Braille and Slate as assistive devices

Smriti Swarup and Sujata Bhan

Centre of Special Education, SNDT Women's University
Juhu Campus, Mumbai – 400 049, India

Introduction

As more children with visual impairments are being educated in the regular classroom, issues such as reading and writing speed and comparative literacy levels are causing educators to reexamine early education in braille literacy. Learning with a slate and stylus means that it takes the child with visual impairment several years before they reach a comparable literacy level with their peers. While the braille provides the child with a faster writing instrument, a key question for educators is whether it facilitates the acquisition of braille literacy better than the slate and stylus. The present study was conducted to study the difference in the rate of acquisition of braille writing in students using a slate and stylus and a braille. The sample for the present study was drawn from a local school for blind girls in Mumbai, India studying in the Montessori section of the school. The age range of the students was 6-11 years. None of the students had been exposed to writing on a braille prior to this study. Systematic observation of each child was done in the natural setting of a classroom for 2-3 hours a day for six weeks.

Description of the sample

Case 1 was introduced to the use of slate and stylus for two weeks prior to the start of the study. Her current level of performance was just pressing the stylus on the slate without recognizing any letter.

Case 2 was introduced to slate and stylus for about a month. Her current level of functioning was writing only first letter of the alphabet.

Case 3 was writing in braille using the slate and stylus for about four months prior to the start of the study. Hence she was comfortable in the use of slate and stylus.

Her current level of performance was such that she could write almost 17 letters from the alphabet in braille.

Case 4 was writing in braille using the slate and stylus for about four months prior to the start of the study.

Her current level of performance was such that she could write 10 letters from the alphabet in braille. She worked on slate and stylus for a period of four weeks before the braille was introduced in the fifth week.

Case 5 was in the same class in the previous year. She had been using the slate and stylus for about a year and a half. She was never exposed to a braille. She had been low on motivation and poor in grasping concepts.

Her current level of performance in braille writing was the knowledge of three letters. None of the students had been exposed to writing on a braille prior to this study.

Pre-braille skills of each student were observed and assessed before the commencement of the actual study. Each student was found to have acquired good pre braille skills.

Procedure

Adopting multiple baseline design, baseline observations (A) using a slate and stylus continued for all students until a braille (B) was introduced for each one of them at variable times. Baseline performance of all the cases was compared to their performance during and after the intervention. When intervention started with Case 1, baseline observation continued for other students. When intervention started for Case 2, intervention observation continued for both the Cases 1 and 2 and baseline observation continued for Cases 3, 4, and 5. As the study was conducted over a period of 6 weeks, Case 1 worked on slate and stylus for 1 week and on braille for a period of 5 weeks whereas Case 5 worked on slate and stylus for 5 weeks and on braille for 1 week. Baseline performance of all the cases was compared to their performance during and after the intervention.

Cross-case analysis of all five students was conducted on the following parameters selected for the study:

- quality of cell
- speed of writing

- accuracy in writing
- level of letter and word acquisition.

1. The Quality of Cell:

- a) Evenness of the cell: This referred to the evenness in the embossed letter. When the embossed letter was so suppressed that it could not be felt by the finger tips or when the letters were typed with excessive pressure that it led to tearing of paper, both were treated as errors.
- b) Spacing between the letters typed: Every incorrect spacing (leaving no or more space between two letters than as instructed) was counted as an error.
- c) Position of lines typed: If the letters typed were not in a straight line it was treated as an error.

2. Speed of Typing:

Total number of letters written: Total number of letters written in the given time (15 minutes) irrespective of its correctness.

3. Errors in writing:

- a) Wrong formation of letters
- b) Omission of letters
- c) Substitution by another letter

4. Level of Acquisition:

New letters/words learnt in a week

Results

Cross-case analysis of all five students on parameters selected for the study, namely quality of cell, speed of writing, errors in writing and level of acquisition was done.

The parameter of Quality of Cell revealed a convincing performance of Case 1 across all the three quality indicators. As far as Case 2 is

concerned improved performance was observed in Evenness and Position of Lines. Only in Spacing she showed drop in performance. Case 3 showed improvement in performance after initial increase in errors with respect to Evenness and Spacing while her performance in Position of Lines was erratic. Quality of Cell of Case 4 was reflected by marked improvement in Evenness of dots. In Spacing and Position of Lines the performance was maintained at the same level as in baseline phase. Case 5 sustained her performance with regard to Evenness and Position of Lines while a drop was noticed in Spacing.

Cases 1 and 2 showed marked improvement in speed of writing, whereas Cases 3, 4 and 5 maintained their level of baseline performance.

Errors in writing is an important determinant of braille literacy and all students except Case 5 either improved performance or maintained their performance after the introduction of braille.

Cases 1 and 2 showed good or improved performances with the braille while Cases 3 and 4 were able to maintain their rate of learning within the same week the braille was introduced. Since none of the students had ever had previous exposure to the braille, this ability to learn new letters without any interruption in pace is a positive finding on the ease of use of this writing instrument. Case 5 alone showed a drop in performance with braille.

Conclusions

- All students, regardless of their length of time on the braille and their skill level on the slate and stylus showed improvement in braille writing skills.
- Students who were struggling in the use of a slate and stylus learned much better with the use of a braille

- Students who had learned the skill of using a slate and stylus well took longer to adjust to a braille. But once they grasped the skill of using the braille, they showed improvement or maintained their performance
- Across all students, the quality of cell was found to be better when students used a braille than when a slate and stylus was used
- Evenness of dots improved the most with the use of a braille in all cases. Higher quality braille cells make it more likely that the students would be able to perceive what they have written and thus support their reading skills
- Finding a line, maintaining a straight line and leaving space between letters was found to be more difficult while using a slate than with the use of a braille
- The speed of writing improved and errors in writing dropped with the use of a braille.

The rate of learning increased dramatically particularly for those students slowest to learn on the slate and stylus. As the students were able to use the braille with more ease in comparison to the slate and stylus, they could focus on acquisition of new letters and many progressed to writing words. The transition of students who were efficient in the use of slate and stylus to the use of braille was possible without any disruption of learning.

The teachers in the Montessori class concluded that the use of a braille significantly improved the speed of Braille writing acquisition and felt that it would improve the efficiency of the learning process and the acquisition of braille literacy.

The study therefore indicates the value of the braille as a tool to promote early learning of Braille writing skills, enabling students of a greater range of ability

to acquire early literacy at an age comparable to their sighted peers. Transition to slate and stylus, once children are literate in braille, is a viable option for most students, giving them flexible tools as older learners and adults.

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