

Developing Braille Literacy Engagement Through Hand-Movement Training and Innovation in Instructional Materials

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Abstract—Effective approach in engaging the young learners with visual impairment to early Braille literacy is necessary for their future success in education. This motivated the researcher to employ hand-movement training and innovation in instructional materials to engage students in literacy and enable them to be efficient Braille readers. The target group of this research is composed of visually impaired students who do not have additional disabilities and are studying in Kindergarten 2 at Khon Kaen School for the Blind. These students could not read Thai Braille. The researcher used tools such as Thai Phonics books in Braille that are arranged and produced by Khon Kaen School for the Blind to suit the learning needs of the students; tactile materials; learning management plan and the record form for the hand-movement used for reading Braille. This undertaking motivated the visually impaired students to be efficient readers and enabled them to read Braille on their own without the need for the teacher to guide their hands.

Keywords—braille literacy; early education for the visually impaired; braille reading techniques

I. INTRODUCTION

Literacy is fundamental in education and in improving one's quality of life. [1] maintains that literacy is a right as well as a tool in accomplishing other rights. UNESCO further explains that it is beneficial to economic, social and cultural aspects. The Ministry of Education recognizes reading and writing as 21st century skills that the students need to be equipped in order to prepare them for their future [2]. For the visually impaired, Braille is the main method to obtain information and education.

The Christian Foundation for the Blind in Thailand (CFBT) under the Royal Patronage of H.M. the King ensures that the students with visual disabilities also access literacy so they can benefit other opportunities they need to develop their lives [3]. Khon Kaen School for the Blind as one of the schools under CFBT reinforces this policy by encouraging innovation in the classroom in order to properly accommodate the needs of the students.

Based on the students' assessment conducted during the first semester of academic year 2018, there were still two students in Kindergarten 2 who have difficulty in reading Thai braille. The result of the assessment shows that these two

students have incorrect hand movement in reading braille such as reading from left to right and moving the hand from top to bottom. Their hands were not in the same row when they read which caused them to lose their place a lot when they read. The teacher needed to constantly supervise and remind them.

The researcher would like to address the reading problems of the two students and came up with the idea of organizing teaching and learning processes for children with visual impairment by using books on compound letters, giving out tactile pictures and teaching hand movement techniques.

II. TEACHING READING TO CHILDREN WITH VISUAL IMPAIRMENT

Deliberate teaching is needed in order for visually impaired students to learn things that we expect students without visual impairment to acquire through incidental learning Ferrell (1997) in [4].

When starting to read, children must learn the parts of the book such as page numbers, letters, and pictures. They also have to learn reading from left to right and top to bottom. Children with normal vision will explore and learn these things by themselves before reading different words but children with visual impairment have no chance to learn this way because visual cues are not accessible for them. Therefore, teachers and parents should plan the appropriate instructions and provide concrete examples to develop concepts among children with visual impairment.

There are researches conducted on the techniques in teaching reading braille to the visually impaired. Lumley & Farnsworth (2002) in [5] presented the use of Snow White activity set as a pre-braille pack to develop the reading skills of children with visual impairment. The package includes a simple version of the story for children to read with tactile graphics for them to explore. The purpose of the activity set is to aid the visually impaired students in forming pre-vocabulary skills, fluency in following the text and tactile discrimination. Using this technique, the children with visual impairment were able to experience reading and writing. The students were also able to learn how to avoid bad habits in reading such as rubbing on braille points.

Moreover, the Snow White Activity set also develops predictability skill among the visually impaired students Smith in [6] contended that enhancing the skill to predict is very important in learning how to read. The teachers and parents can also adapt this idea by using the story of Snow White to teach reading to the visually impaired students accompanied with toys and other illustrations that are tangible for the blind. After the child read the story of Snow White, the teachers can allow them to practice using their fingertips to read letters along the line, practice describing tactile media and learn how to navigate books. In addition, the children can learn vocabulary from the story such as Snow White, dwarf, apple and witch. They can also learn how to recognize Snow White from the dwarf and tree through the texture of the tactile representation of the vocabulary words.

[7] also conducted a research on using the preparation kit before studying braille to practice braille reading skills of female visually impaired students in Grade 1, aged 9. The results showed that the case studies have developed readiness before studying braille for books and reading skills.

III. RESEARCH INSTRUMENTS AND TEACHING METHOD

A. Research Instruments

The researcher employed the following instruments in conducting this study:

1. Books for reading compound letters and tactile pictures

The braille textbooks and tactile pictures used in this study were produced by Khon Kaen School for the Blind through the Educational Technology Center for the Blind (ETCB), the leading media production unit of the Christian Foundation for the Blind in Thailand. The braille books for reading compound letters were designed with features that aid the beginners in reading braille [8].

2. Learning Management Plan

The researcher designed the learning management plan in teaching braille using the braille books for reading compound letters and tactile pictures [9]. The learning management plan contains instructions and developmental goals in teaching braille reading to the visually impaired students.

3. Form for Recording the Progress of the Students' Hand Movement in Reading Braille

In order to keep a record of the progress of each student's hand movement, forms for documenting the changes in hand movement was employed in this research.

B. Teaching Methods

It is important for visually impaired students to be familiar on how to navigate the book [10]. The students were taught on how to locate the page numbers, the beginning and the ending of the text. They also practice tracing the braille text from left to write and from top to bottom.

After familiarizing the physical layout of the braille text book, the students proceed to learning through books for reading compound letters and tactile pictures. The tactile pictures were able to reinforce the braille text that the students read.

IV. RESULTS

The study measured the students' progress in reading Thai compound letters and hand movement by conducting pre-test and post-test.

TABLE I. SCORES IN READING THAI CONSONANTS USING THE HAND MOVEMENT FROM LEFT TO RIGHT

Student	Comparison of Scores	
	Pre-test	Post-test
Student 1	64%	70%
Student 2	68%	78%

TABLE II. SCORES IN READING THAI CONSONANTS USING THE HAND MOVEMENT FROM TOP TO BOTTOM

Student	Comparison of Scores	
	Pre-test	Post-test
Student 1	54%	60%
Student 2	70%	76%

Based on the scores showed in the tables above, there was a significant increase in the achievement rate of the students in reading Thai braille after teaching the hand movement techniques from left to right and from top to bottom with the use of books for teaching Thai compound letters together with tactile pictures. The visually impaired students were able to learn how track the braille text spontaneously and avoid losing their place when they read.

This teaching method was able to address the students' problem in reading braille and was able to prepare them to the next level of learning braille.

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