

A Framework for Promoting Reading Skills for Hearing-Impaired Persons Using the Sign Language Picture Story

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Abstract—The researcher’s objective was to search for frame work applicable to HI-children learning to read more naturally and determining how the content of these guidelines could be accurately extrapolated to the situation in which hearing-impaired students are being taught how to read. The aspects surveyed and analyzed in this research investigation were the role of sign language, the concept of second language development; guidelines for visual communication; and the concept of multimedia interaction. This approach can be used to enhance the learning of Thai language and sign language. The findings were used to frame work for promote the second language (L2) reading of H-I children. It was found that H-I children pay attention while reading and they can practice using sign language themselves. This frame work finding can be used in motivating H-I children to be more interested in learning to read.

Index technology and design, Thai language, hearing-impaired children, picture story sign language

I. INTRODUCTION

Hearing-impaired children (H-I children) develop readings skills at a slower pace than those with normal hearing. This is because these children do not hear sounds, which is crucial in human language learning. Accordingly, H-I children cannot learn language through the oral-acoustic-auditory nexus as is the case with those who can hear sounds. As such, H-I children use sign language for communication in lieu of oral speech and that spoken language differs from the written language. More importantly, more than 90 percent of H-I children have parents who have normal hearing abilities and thus do not learn sign language as

a manually coded language on a par with the natural language they learned as they matured.

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Utilizing this conceptual framework, the researcher went on to develop a model that could be extrapolated to assisting H-I children to learn to read Thai on their own involving cognitive processes analogous to the acoustic-auditory processes used in natural language learning by normal children. The parallel process for H-I children involves, however, the analogous cognitive processing on learning through visual processes a manually-constructed sign language in which information is conveyed through clear pictures. Thus, the emphasis falls on developing learning skills through visual learning. The researcher’s program goes on to show how motivation can be fostered and reinforced in H-I children through the continuous presentation of pictures or images synchronized with multimedia interactive stories (7).

II. FRAMEWORK FOR PROMOTING READING SKILLS FOR HEARING-IMPAIRED

A. Observing in Classroom

Knowing only sign language may not be sufficient for students achieving full understanding of vocabulary. H-I children learn from seeing and memorizing the pictures or glyphs seen. Therefore, the explanation of the meaning of vocabulary must fall under the categories of simultaneously occurring or related incidents. We conducted participatory observation in classes and found that the teaching of vocabulary from stories requires teachers who have command of sign language and the Thai language at a very good level because they have to be able to explain vocabulary items for each section in an understandable manner.

The process of practicing reading on a single topic is time consuming and requires at least twelve hours solely for the memorization of vocabulary items. The children’s understanding of what they read is limited. An example is provided by the word “museum.” The vocabulary item is simultaneously presented with a picture of a museum. The sign language used in the explanation is in the form of incidents or representing in abbreviated meanings defining the word through such techniques as showing that this is a place where

valuable and ancient things are collected and exhibited, etc.

The researcher expected to extract guidelines for developing a model of reading for H-I children by fostering the experiential learning of the meanings of vocabulary items.

B. Concept Frame work

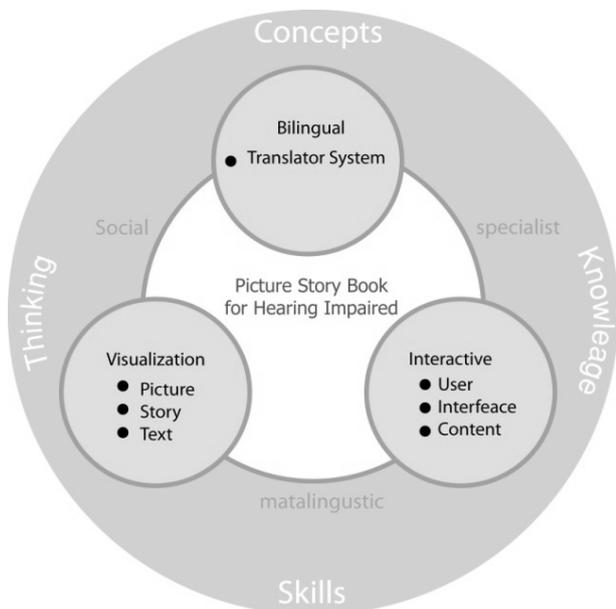


Fig. 1. Framework for Promoting Reading Skills for Hearing-Impaired Using the Sign Language Picture Story

The conceptual framework utilized by the researcher in developing a learning model promoting the reading development for H-I children involved three aspects: (1) the concept of L2 development by Translator System Fig. 1; (2) guidelines for Visualization with picture story text: Fig. 2-3 ; and (3) interaction of user, interface and content. Fig. 4

The researcher accordingly learned that the use of materials must be clear and appropriate, as well as specifically designed for the purposes of reading development. Although certain limitations are found, it is necessary to develop and foster reading motivation in H-I children (11) the concept of L2 development by Translator System.

The reading model is designed to instill confidence in these children such that they believe they can indeed learn to read properly. Short moving pictures are part of the program in providing reading guidance with a sign language video explaining meanings in the form of words and sentences. Freedom in reading is enhanced because buttons can be used for purposes of stopping, playing and rewinding.

Children can read interactively using glyphs in conjunction with moving images, colors and special techniques. Using these techniques as reinforcement will better ensure the recall of the meanings of vocabulary items (8). The researcher found that knowledge of vocabulary affects knowledge and understanding in reading for the purpose of locating or identifying main ideas. This is a skill that is crucially implicated in developing more advanced reading skills (9).

Presentation Tool : Materials for practice experience of see and learn for Hearing-Impaired Using the Sign Language Picture Story

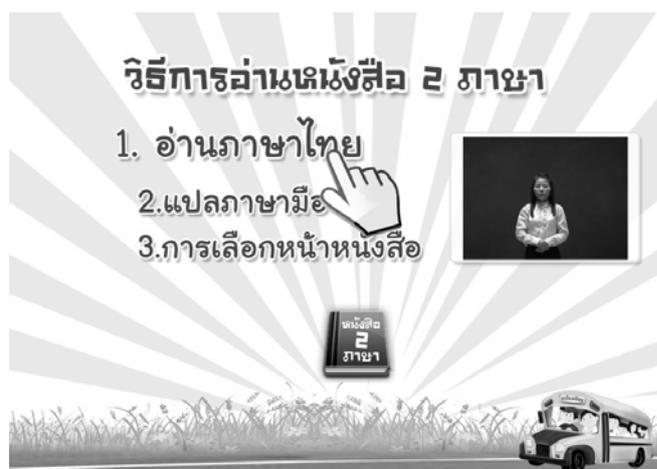


Fig. 2. Translator System of Second Language.

“Reading Experience with see and learn”



Fig. 3 guidelines for Visualization with picture story text

“Practice is Reading with meaning”



Fig. 4. Interaction of user, interface and content

However, the analogous cognitive processing on learning through visual processes a manually-constructed sign language in which information is conveyed through clear pictures. Thus, the emphasis falls on developing learning skills through visual learning. The researcher's program goes on to show how motivation can be fostered and reinforced in H-I children through the continuous presentation of pictures or images synchronized with multimedia interactive stories (7). This will assist H-I children to learn vocabulary with a heightened understanding of the meanings of the words being learned (5). The reading model is designed to instill confidence in these children such that they believe they can indeed learn to read properly.

The structure of this prototype experiment was as follows: beginning to learn (from the guide); the presentation of stories (sequence of stories, click selection of vocabulary from glyphs and movement techniques); the interpretation of meaning (still and moving pictures explaining the meaning of the stories). Windows are used to make contact with users. Applications are divided into three systems: the presentation of the sign language video in conjunction with vocabulary; the presentation of pictures reflective of vocabulary and stories; and assistance in explaining meaning using sign language.

III. A REVIEW OF THE RELATED LITERATURE

This state of affairs also shows that learning language in the family setting and at educational institutions is discontinuous for these H-I children. The study of sign language commences at an early childhood level with practicing sign language vocabulary concurrently with practice using the Thai language. Practiced also are speaking, writing and

spelling in a manner duplicating the process of language learning commencing with the early days of life.(4). As we know, development for these H-I children is slow paced and so required are guidelines and tools that can be used to widen the experience of these children in language learning.

Other researchers have contributed to this area by designing program for enhancing the reading skills of H-I children by using the visual resources of sign language, pictures, and concept mapping. These are used as tools to develop skills and cognitive processes supportive of the understanding used in reading. It was found that the use of pictures in the learning of vocabulary was possible, but it was of the essence to practice skills. (11) The same is true of the use of concept mapping in fostering thinking skills. It is difficult in teaching such children if they have not previously learned the technique of concept mapping (12)

Systematized sign language translation is helpful in children learning meanings. This approach can be used to enhance the learning of Thai grammar and sign language. In this model, however, are many glyphs which may not be suitable for children (10). Technology has been developed that allows integrating reading aloud by those with normal hearing with reading using sign language.

This technological advance permits the parents of H-I children to instruct their own children through the reading of stories using both the natural language of Thai and Thai sign language, thereby simultaneously practicing both types of linguistic skills (3) (10). The construction of multimedia systems allows English-speaking practice stressing the English sound system or phonology using different colors in explaining meanings (7).

The use of technology allowing children to practice or to remedy their deficiencies enhances their linguistic potentialities and thereby encourages learning (12). Systematized sign language translation is helpful in children learning meanings.

IV. RESULT

The researcher conducted participatory observation in classes at Sot Sueksa School and found that the teaching of vocabulary from stories requires teachers who have command of sign language and the Thai language at a very good level because they have to be able to explain vocabulary items for each section in an understandable manner. The process of practicing reading on a single topic is time consuming and requires at least twelve hours solely for the memorization of vocabulary items. The children's understanding of what they read is limited.

V. CONCLUSION

This concept frame work the researcher was how best to allow the children to access the computer program easily while being entertained. The meaning can be understood accurately by using clear pictures and sign language. The colors used must be easy to discern. Buttons to select for responding to content must be clear with easy-to-understand symbols that encourage joint learning between children and tools.

REFERENCES

- [1] Johnson, R. E., Liddell, S. K., & Erting, C. J. (1989). *Unlocking the Curriculum: Principles for Achieving Access in Deaf Education*. Department of Linguistics and Interpreting. Washington, D.C.: Gallaudet University.
- [2] Padden, C., & Ramsey, C. (1999). Reading Ability in Signing Deaf Children. 1-40.
- [3] Hermans, D., Ormel, E., Knoors, H., & Verhoeven, L. (2008). The Relationship Between the Reading and Signing Skills of Deaf Children in Bilingual Education Programs. *Journal of Deaf Studies and Deaf Education* , 518-530
- [4] Paul, P. V. (1996). Reading Vocabulary Knowledge and Deafness. *Journal of Deaf Studies and Deaf Education* , 1 (1), 3-15.
- [5] Wauters, L. N., Knoors, H. E., Vervloed, M. P., & Aarnoutse, C. A. (2001). Sign Facilitation in Word Recognition. *The Journal of Special Education* , 35, 31-40.
- [6] Reeves, J. B., Wollenhaupt, P., & Caccamise, F. (1995). Deaf Student as Visual Learners: Power for Improving Literacy and Communication. *Education of the Deaf* , 1-10.
- [7] Mayer, R. E., & Anderson, R. B. (1992). The Instructive Animation: Helping Students Build Connections Between Words and Pictures in Multimedia Learning. *Journal of Educational Psychology* , 84, 444-452.
- [8] Garrison, W., Long, G., & Dowaliby, F. (1997). Working Memory Capacity and Comprehension Process in Deaf Reader. *Journal of Deaf Studies and Deaf Education* , 78-94.
- [9] Mayer, C., & Wells, G. (1996). Can the Linguistic Interdependence Theory Support A Bilingual-Bicultural Model of Literacy Education for Deaf Student? *Journal of Deaf Studies and Deaf Education* , 93-107.
- [10] Parault, S. J., & Williams, H. M. (2010). Reading Motivation, Reading Amount, and Text Comprehension in deaf and Hearing Adults. *Journal of Deaf Studies and Deaf Education* , 120-135
- [11] Nikolarazi, M., & Vekiri, I. (2011). The design of software to enhance the reading comprehension skills of deaf student: An integration of multiple theoretical perspectives. Springer Science + Business Media , 10.1007/s10639-011-9152-1.
- [12] Mueller, V., & Hurtig, R. (2009). Technology-Enhanced Shared Reading with Deaf and Hard-of-Hearing Children: The Role of Fluent Signing Narrator. Oxford University Press , 72-101.