

A Web Site Model for Improving Korean and English Reading Abilities for Korean Deaf Children

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Jhang, Se-Eun. 2005. A Web Site Model for Improving Korean and English Reading Abilities for Korean Deaf Children. *The Linguistic Association of Korea Journal*, 13(4), 179-197. The purpose of this paper is to propose a web site model to improve reading skills of Korean and English for Korean deaf children, in line with the bottom-up model of reading process. The proposed model involves four text factors of reading processes: letter recognition, word identification, syntactic analysis, and figurative expressions. For the purpose of this paper, the paper reviews the previous research on this topic and the current online sites for Korean deaf people, and discusses why the proposed model needs a bilingual approach as the theoretical background.

Key Words: Korean Sign Language, bilingual, deaf, reading process, web site model

1. Introduction

The good understanding and comprehension of Korean (*Hangul*, the written language of Korea) and English, which are spoken languages of the community and the world, enables deaf students to easily access the home pages of their schools and other useful web sites, to communicate with hearing parents, family members, friends and other hearing persons, to gain knowledge of the world, and acculturate into the world of the hearing and of the deaf. As pointed out by Grosjean (2001), the only way to achieve this aspect successfully is through a sign language-oral

language bilingualism. Bilingualism is usually referred to as the knowledge and regular use of two or more languages. The bilingualism of the deaf involves the sign language used by the deaf community and the oral language used by the hearing majority. By knowing and using both a sign language and an oral language in its written modality, they will attain their full cognitive, linguistic, and social capabilities. Just like other bilingual children, deaf and hard of hearing children will use their languages in their everyday lives, and they will belong to both the hearing world and the deaf world.

The purpose of this paper is to propose a web site model to improve reading skills of Korean and English for Korean deaf children. For the purpose of this paper, section 2 reviews the previous research on this topic and the current online sites for Korean deaf people. Section 3 discusses why the proposed model needs a bilingual approach as the theoretical background. Section 4 proposes a web site model to improve Korean and English reading abilities for deaf children in line with the bottom-up model of the reading process. The proposed model involves four text factors of reading process: letter recognition, word identification, syntactic analysis, and figurative expressions. Finally, section 5 summarizes the paper and offers some suggestions for future study.

2. Previous Research and Online Learning Web Sites for Korean Deaf People

There is no previous research on the topic of this paper, but there were a number of studies for the development of Korean literacy using oralism (Chun, 1998) or Sign Korean (Hwang, 1994), for the relationship between Korean literacy and Korean Standard Sign Language (Jung, 2002) or Korean Sign Language (henceforth KSL) (Choi & Ahn, 2003), and for the application of reading model strategies for hearing impaired students (Cho, 1996). The main point shared in common is that most of the studies were concerned with teaching methods for special education and then to adhere to the total communication. The previous research studies, therefore, neglected linguistic properties of KSL including

phonemes, syllables, word-formation, syntactic properties, and semantic properties, along with nonmanual signals. Contrary to the expectation of advocates of the total communication, the use of Signed Korean in classrooms results in the poor literacy and in poor linguistic knowledge about KSL. As discussed in the previous section, Signed Korean, which can be called invented Korean-based signing or Manually Coded Korean, has been used to foster the development of speech and spoken Korean, because it is artificially invented to conform to Korean grammar. On the other hand, KSL has been considered an obstacle to the learning of Korean literacy, thus not regarded appropriate for classroom use. As a result, most deaf and hard of hearing students have great difficulty reading and writing Korean, and their reading ability stands at the second or third grade levels of the elementary school, when they graduate from high schools (Choi & Ahn, 2003; Park, 1989); just as cited in the case of the U.S.A. in the 1970s (Fruchter, Wilbur, & Fraser, 1984). It may sound paradoxical, but Signed Korean has brought forth retarding to the development of learning Korean.

It is interesting to notice that Cho (1996) indicates no statistically significant difference in the effects of a bottom-up strategy application. Rather, she suggests that a strategy of reading comprehension for hearing impaired students should be adopted as a top-down model, because her study shows statistically significant difference at 1% level in the effects of a top-down strategy application. But the results of her study are unreliable because the reading ability of both a low literacy group and a high literacy group stands at the second or third grade levels, but her study used a measurement tool for sixth grade level students. She wrongly points out that the reason why no progress was made for improving their reading ability during a few decades depends on the ineffectiveness of a bottom-up reading strategy. This wrong assumption will be discussed at great length in the next section.

Moreover, there is no study regarding the processing of KSL acquisition at the early stages of development for deaf children. This result comes from the fact that KSL has never been allowed to be used in the preschool or the kindergarten for deaf children, and Signed Korean

has been used in the upper grades of the elementary school.

Now, let us consider online learning web sites for deaf people. To the best of my knowledge, only one web site is being operated for Korean deaf people. It is a type of web broadcasting station whose address is <http://ksltv.yc.ac.kr> (Korea Sign Language TV). However, it does not broadcast live but broadcasts a program recorded on video tape regarding seminar and public speech for deaf people as well as current events. We can play video clips of news in brief translated into KSL. There are only a few video clips per month. Hence, we doubt how well this poorly equipped broadcasting station has fulfilled its aim of helping deaf people to understand the culture and society of hearing people and then serve as a member of the deaf community as well as the hearing community. It has also provided a learning area of KSL for hearing people, composed of signs in everyday life based on words at a basic level, conversations at intermediate and advanced levels, and technical terms of various fields. Unfortunately, however, it does not provide a learning area of Korean or English as written for deaf people. All of the other current web sites have been operated for hearing persons for the purpose of online learning of Signed Korean or KSL. No sites delineate nonmanual signals of KSL, because recent research studies have just started investigating linguistic properties of KSL. Hence, most of the current web sites for learning KSL remain at a word level in everyday life.

Therefore, we need to develop a web site for learning Korean (*Hangul*) or English as written for deaf people, as well as KSL for hearing people, at all levels covering from simple words to complex sentences with nonmanual signals. Moreover, the necessity of this kind of learning web site is much more highlighted, because learning of literacy of the spoken languages of the community and the world allows deaf children to read captions fast and then acquire much more information than the one that they gain from video clips. To design this web homepage, an effective model should be the first consideration to improve reading skills of Korean as a second language and English as a foreign language for Korean deaf, with a so-called trilingual approach to use KSL as a communication "bridge" between two spoken languages, Korean and

English. It will be hoped that my proposed model will be applicable in a new web site for a bright outlook for the future of deaf children.

3. Theoretical Background: Bilingual Approach

Why do most deaf children read poorly, while only a very small minority of deaf children can learn to read fluently? It has been discussed over 20 years in a lot of American Sign Language (henceforth ASL) research that a plausible answer to this question can be found in a bilingual/bicultural approach to deaf education, as an alternative method to Total Communication Programs. It has been illustrated that, in KSL research, there has been a growing recognition of this approach during the last few years. However, parents, teachers, and educational administrators are still obstinate in oral-only instruction without using sign language in classrooms of lower grades of elementary school and only tolerate the use of Signed Korean in classrooms of upper grades. These modes of communication in classrooms resulted in the disheartening improvement in literacy skills of deaf students of the past several decades, because many deaf students graduating from high school are still reading at levels comparable to hearing students who are nine to ten years younger. Park (1989) notes that the median reading level of deaf elementary school students in the 6th grade was about a 2.4 grade level of hearing elementary schools. Choi and Ahn (2003) also show a similar result since deaf elementary school students were at the median reading level of about a 1.6 grade level, deaf middle school students were at a 2.6 grade level, and deaf high school students were at a 2.7 grade level of hearing students.

Moreover, many people have a misconception about the cognitive factors that account for how deaf children learn, or fail to learn, to read. Thus, we need to think over another question regarding whether or not the general cognitive ability of deaf children is really different from that of hearing children. A myth that both hearing and deaf people believe, is that deaf children do not develop the ability to apply their nonlinguistic cognitive skills to linguistic tasks. This myth is wrong because Jhang

(2004) shows that there is no clear relationship between intelligence and language performance.

The current research studies on KSL will help many people to have a correct understanding of a bilingual approach to Korean literacy because many people have wrongly recognized that KSL has been viewed as retarding the development of learning Korean. Thus, there will be a number of more lively discussions on the bilingual/bicultural approach to deaf education in Korea, focusing on a hypothesis that signed language as the first language correlates to the development of literacy of the spoken language of the community. As pointed out by Liddell and Johnson (1992), however, we have to consider that the acquisition of a spoken language for deaf children is more a matter of learning than of acquisition. Because deaf children do not have full sensory access to spoken languages, it is not available at an appropriate time or in an appropriate form for them to undertake an ordinary and natural course of language acquisition. So they view deaf education as an education for bilingualism, rather than viewing it as an education through bilingualism. Therefore, this paper takes a bilingual and bicultural approach based on KSL as the primary language and Korean as a second language. Their idea can be extended to trilingual education to use KSL as a communication "bridge" between two spoken languages, Korean and English (Christensen, 2000).

4. Proposal of a Web Site Model of Reading Process

4.1. Bottom-up Model of Reading Process

The proposed model is concerned with the bottom-up processing strategies as proposed by Gough (1972) and Marzano et al (1987) among others. This bottom-up reading processing focuses on linguistic knowledge regarding letters, vocabulary, and grammar. It has been suggested in reading strategies for oral languages that this model of reading process is suitable for beginners of reading and learners with low verbal ability who are dependent on written languages.

Here, we need to understand the terms "processing" and "knowledge." Paul (2003) accounts for these two terms, as follows (the underlined and bold characters are mine):

[T]he reading difficulties of deaf and hard of hearing students can be categorized as difficulties with both processing and knowledge. In general, "**processing**" refers to the decoding (e.g., pronunciation, signing) of linguistic information in print, such as words and connected-discourse items such as syntactic structures and figurative expressions. The **knowledge** domain (e.g., knowledge of the structure of English, topic or world knowledge) is mentally represented and is necessary for comprehension and interpretation of decoded items. As an example, it is possible for a reader to pronounce or sign a word (**processing**), but not know its meaning (**knowledge**). Conversely, it is possible for readers to know a meaning of a word, but not be able to identify its written counterpart.

Now, let us consider why the present model takes bottom-up reading processing rather than other reading processing strategies. It has been discussed that, in second/foreign language reading, readers often pay much attention to the word recognition and surface structures of the text, because of limited linguistic competence in the second/foreign language (Swaffar, Arens, & Byrnes, 1991). Thus they are likely to use more bottom-up processing strategies, compared with first language readers (Carrell, 1989; Kern, 1989). For the purpose of this study, it is worth noticing that lower-level second/foreign language readers are also observed to use more bottom-up processing strategies than higher-level second language readers, as indicated in Carrell (1989). Although a number of research studies have illustrated some differences in reading processes between second language and foreign languages, the most clearly observed difference stems from a dichotomous reading strategy divided into two categories: general comprehension and local linguistic strategies (Block, 1986), global and local strategies (Carrell, 1989). Especially, as pointed out by Carrell (1989), Spanish-as-a-foreign-language group, who appears to be at a relatively lower level than ESL learners, tends to be

more local (or bottom-up), whereas ESL learners tend to be more global (or top-down).

The result of these studies above is closely related to the reading ability of deaf and hard of hearing Korean students. Many deaf students graduating from high schools are still reading at levels comparable to hearing students who are nine to ten years younger, as pointed by Park (1989) and Choi and Ahn (2003) in the previous section.

In this respect, a model for oral languages can be also applied to a model for sign languages. Therefore, it is plausible to consider that the bottom-up model of reading process is the most suitable for deaf and hard of hearing children who are at the beginning level of reading processing.

4.2. Four Text Factors of the Reading Process

The present model will be designed to be totally accessible to deaf users as well as hearing users using a bilingual (or trilingual in a sense) approach. Of course, to build up this learning web site, more than at least two years should go into the development of innovative softwares, with funding support from government or research institutions. The present model with a bilingual approach will provide an opportunity to discover how KSL signs and Korean/English relate through meaning showing pictures, animations, or actual signers, from a grapheme (or letter) level to a sentence level. For deaf users, pictures or animations convey meaning more clearly than words or sentences alone. For hearing users, KSL signs performed by actual signers can be found easily, because Korean and English words are listed alphabetically. The present model is proposed for beginning to intermediate students, because their reading ability of spoken languages stands at the second to third grade level, and a model is needed, first of all, to overcome their limitation of learning of literacy of oral languages. As the first step, thus, we consider the following four text factors of reading process: letter recognition, word identification, syntactic analysis, and figurative expressions.

4.2.1. Letter Recognition

The present model starts with the learning of Korean and English alphabet letters. Its course is equal to recognition of graphemes in bottom-up reading processing. The recommended web sites for the learning of Korean and English alphabet letters are <http://kr.kids.yahoo.com/infant/learn/hangul/> for Korean and <http://kr.kids.yahoo.com/infant/learn/eng/> for English. Since Korean and English are an alphabetic language, they can be easily learned with the help of fingerspelling.

When opening this learning page, two flags appear on the screen with Korean information on the left and English information on the right. After the arrow button on the Korean flag is clicked, a new page of a package of boxes consisting of the *Hangul* alphabet, puzzles, and other games is hyperlinked. Whenever a letter is selected, fingerspelling appears on the screen, instead of voice. When clicking on a video clip provided, a question is asked with some explanation or direction signing KSL.

Hangul and English typing programs are recommended to be involved in this package. The typing programs should be extended to the learning of vocabulary and sentences. In addition, it has been indicated that CALL (Computer Assisted Language Learning) helps deaf children as well as hearing children to improve their reading skills. But some materials of KSL in the present model should always come together with Korean or English data so that deaf children continue to be engaged in the programs.

In this area, fingerspelling plays a great role in learning Korean and English letters. A few ASL researchers have suggested the use of ASL and/or fingerspelling to facilitate the development of word identification, particularly for letter and word knowledge (Andrews & Mason, 1986; Hirsh-Pasek, 1987). On the other hand, we could not find such a study of KSL and fingerspelling, but we assume that the same effect will be had on the development of letter and word identification for Korean deaf children.

Finally, let us now briefly consider some aspects of important properties of fingerspelling. Fingerspelling is a system of manual alphabet. It is a signed representation of written language. Although a discussion of fingerspelling may again raise the issue of languages and modalities

for representing languages (spoken, written, and signed), fingerspelling is still useful. It is often used for verbatim representations of words, phrases, or sentences of spoken languages. It is also used to convey personal names, place names, names of months and holidays, and words for which no conventional signs yet exist such as technical vocabulary of spoken languages. It is also used to convey acronyms or other abbreviations. It is usually used to teach some peculiar properties of Korean or English morpho-syntax such as case markers, ending makers, pre/postpositions, participles, pronouns, and bound morphemes, which KSL does not have. Signed Korean contains a kind of manual alphabet called fingerspelling. It is interesting to notice that fingerspelling systems differ by country and by the signed language with which they are associated (Van Cleve, 1987). The Korean and American manual alphabets use a one-hand system, whereas Great Britain uses a two-hand fingerspelling system.

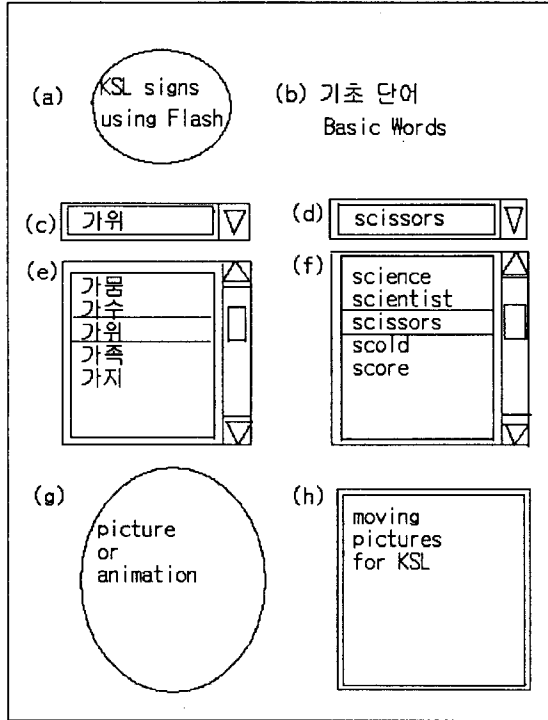
4.2.2. Word Identification

Word identification is sometimes referred to as word recognition, word analysis, decoding, and even single-word reading. Word identification means that the reader can identify (i.e., decode) the word and may or may not know its meaning (Paul 2003). Interestingly enough, as quoted from Paul (2003), it is possible to possess adequate word identification skills and have poor reading comprehension ability; however, the converse has never been empirically demonstrated (Snow et al., 1998). From a logical point of view, poor word identification ability is a good predictor of difficulty in reading comprehension.

Thus, first of all, we need to strive to make Korean deaf children cultivate good word identification ability in order to improve their reading ability of the Korean and English languages. The area of vocabulary is the most important part and the longest time required among other components involved in the present model¹⁾, as designed below:

1) The information about a multilingual translator CD-ROM titled "Russian Sign Language/American Sign Language Translator (2001)" can be obtained from

Figure 1. Trilingual (Korean/English/KSL) translator for basic words



This page is a convenient, entertaining place to learn printed or signed vocabulary in three languages: Korean, English, and KSL. Korean and English words can be identified in KSL, and vice versa, by way of a video clip showing an actual signer. When opening the program, pictures, letters, and boxes of (a) through (h) appear on the screen, as shown in figure 1. The picture (a) is signs of KSL equivalent to "Basic Words" in Korean and English of (b), which means what this page is for. Because (a) and (b) are always on the screen whenever this program is open, a

<http://www.multilingualbooks.com>. This CD-ROM is an easy, entertaining way to learn signed or printed vocabulary in four languages: Russian Sign Language (RSL), American Sign Language (ASL), Russian, and English. Thus the basic idea of Figure 1 is very similar to that of this CD-ROM.

video clip showing KSL signs of (a) is made with Flash for deaf people. The boxes of (c) through (f) contain lists of words in Korean and English. Above the Korean or English word are in boxes of (c) and (d) for typing words. A video clip of a KSL sign equivalent will appear where the box (h) is first shown, and the meaning of the selected word will appear in (g) with a picture or animation, after the arrow button on the box (h) is clicked. To select a word/sign, scroll through either the Korean or English word lists or type in letters and/or words in the box provided. Once a word in either language has been identified, click on either video button to see a video clip of the related sign and to see a picture or animation of the word's meaning. Figure 1 is displayed for learning basic words of Korean and English. It will be recommended that basic words contain a list of fundamental vocabulary at the second and third grades level.

On the other hand, more vocabulary items will be contained in the design for learning Korean or English words at the intermediate level. In this area, it will be recommended that the sign language equivalents of over 500 Korean and English words can be identified in KSL, and that sentence examples written in Korean or English are provided in (g) when a highlighted word is selected.

4.2.3. Syntactic Analysis

Like vocabulary knowledge, it has been suggested that syntactic knowledge is also a good predictor of reading levels because it requires the ability to integrate information across connected linguistic units such as phrases, sentences, and paragraphs (Paul, 2003). Contrary to this claim, it has been reported that deaf students understand syntactic constructions better in context (i.e., short paragraphs) than in isolation (i.e., sentences) (Nolen & Wilbur, 1985).

Although there is some controversy with respect to syntactic knowledge, we need to focus on the syntactic structures such as topicalization, question formation, negation, complementation, relativization, etc., along with nonmanual signals, for the purpose of further study of

linguistic properties of KSL. Compared with those of ASL research studies, syntactic properties of KSL remain open to be examined. In fact, we have to scrutinize the basic word order of KSL. With regard to syntactic structures of KSL, Suk (1989) noticed that although the basic order of KSL sentences is SOV, like Korean, all kinds of word order are possible by means of topicalization, along with nonmanual signals. Hwang (1994) also presented the varieties of word order which cannot be allowed in Korean, a spoken language of the deaf community. However, their sentence data for grammatical judgements of signed language seems to be Pidgin Sign Korean so that their generalization cannot put confidence in grammaticality.

When we take a closer look at KSL sentences, not all kinds of word order but some variety can be allowed in some syntactic behaviors like left dislocation. It is interesting to mention that the word order OSV is only allowed in a construction of spatial verbs like <ttalita> 'hit', <ccochta> 'chase', <mannata> 'meet', etc., where a pronominal expression can be used in a certain space.²⁾ As pointed out by Jhang (1999), therefore, the word order changing of KSL is much more restricted than that of ASL, because the former is expected in terms of subject-object agreement on the verb, whereas the latter is expected in terms of nonmanual signals on the topicalized elements. Interestingly, he mentions that KSL allows for wh-left dislocation even when nonmanual signals for the wh-question formation are used. He proposes that this phenomenon is a piece of evidence for a rightward wh-movement analysis. The readers can refer to his study for a detailed discussion about some arguments provided by the two current disputing analyses of the rightward and leftward wh-movement.

Therefore, the design of this area will be contributed to studying some aspects of important syntactic properties of KSL. First of all, nonmanual signals of KSL should be systematically examined. When Korean deaf children fully understand different word order of the Korean and English languages, it is necessary for them to know syntactic properties of KSL, since understanding their own language directly leads to understanding

2) The symbol < > stands for a Korean sign, following Suk (1989)'s notation.

other languages. For instance, KSL does not have any case markers, ending markers, and postpositions, whereas Korean has. KSL has a rich agreement system, whereas Korean does not.

As designed in letter recognition earlier, two flags appear on the screen with Korean information on the left and English information on the right. After the arrow button on the Korean flag is clicked, a new page of a package of boxes appears, consisting of an arrangement of partial sentences, puzzles, and completing the blanks in sentences which are hyperlinked. When clicking on a video clip provided, a question is asked with some explanation or direction signing KSL. When clicking on another video clip appearing on each screen, a basic grammar is explained with KSL.

4.2.4. Figurative Expressions

In addition to vocabulary and syntax, figurative expressions are another area that presents difficulty for deaf students attempting to learn Korean/English as a second/foreign language (Paul, 2003). For instance, deaf students have difficulty comprehending what involves figures of speech (e.g., "It's raining cats and dogs") and verb-particle phrases (e.g., "She ran into a friend") in printed materials. Korean also has similar figurative expressions (e.g., "Pae-ka apu-ta" "stomach-nominative case marker ill-declarative ending marker," its literal meaning is 'have a stomachache' but its figurative meaning is 'I am green with envy')

On the other hand, there are few research studies on figurative expressions in KSL (Ch. Kim, 1999; Son, 2000). Hence, hearing people have difficulty comprehending what involves figures of speech (e.g., <Palam><Cilwuhata> "wind", "tedious", 'Wind cannot continue any longer'). A KSL figurative expression <Cilwuhata> means 'cannot continue (to do anything) any longer' when somebody cannot do anything because he/she feels very tired.

Those who have low reading ability, standing at the third or fourth-grade level, have great problems comprehending figurative expressions in reading materials. As argued by some researchers, these

expressions can be learned as a whole, despite the use of selected vocabulary and syntactic constructions (Fruchter, Wilbur & Fraser, 1984).

In the design of this area, each spoken language contains a list of figurative expressions frequently found in reading materials suitable for the third-grade hearing students. Whenever clicking on each of figurative expressions, KSL is shown on the video clip. Like contents discussed in syntax earlier, this area is recommended to contain various exercises such as arrangement of part of a sentence, puzzles, and completing the blank in sentences from the context of a short paragraph.

5. Summary and Suggestions

So far, we have proposed a web site model to improve reading skills of Korean as a second language and English as a foreign language for Korean deaf children. We have discussed that the proposed model of reading process is based on a bilingual approach as a theoretical background. We have also discussed that the proposed model is concerned with the bottom-up model of reading process strategies, because this model is the most suitable for deaf and hard of hearing children who are at the beginning level of reading processing. Finally, we have presented four text factors of reading process to be involved in the proposed model, even if they are a kind of preparation activity before the context reading: letter recognition, word identification, syntactic analysis, and figurative expressions. It has been suggested that the proposed model could be designed in a web site of the future to be totally accessible to deaf users as well as hearing users, using a bilingual (or trilingual in a sense) approach, because the proposed model could provide an opportunity to discover how KSL signs and Korean/English relate through meaning, showing pictures, animations, or actual signers, from a grapheme (or letter) level to a sentence level.

No current web sites provide a learning area of Korean or English as written for deaf people. Also, no sites delineate nonmanual signals of KSL. This is because recent research studies have just started investigating linguistic properties of KSL. Therefore, we need to develop

a web site for learning Korean (*Hangul*) or English as written for deaf people, as well as KSL for hearing people, at all levels covering from simple words to complex sentences with nonmanual signals. The accumulation of this data is likely to be directly contributed to the linguistic analyses of KSL such as phonemes, syllables, morphemes, and compounds at the word level.

Moreover, the necessity of this kind of learning web site is much more highlighted, because the learning of literacy of spoken languages of the community and the world, allows deaf children to read captions fast and acquire much more than they gain from video clips. They can enjoy watching T.V. or movies, not needing any sign translators but using letter captions.

Finally, it is worth pointing out that a good model for language learning is recommended to contain effective games, which are supported by language teaching and learning theories, because language games are an important part of language learning courses. Following Lee (1986), it is hoped that this proposed model contains three kinds of games classified by language components: spelling games, vocabulary games, and structure games. As given in Wright (1989), picture games suitable for beginners are also recommended to be involved in this model. The future study is encouraged to refer to recommended web sites for the learning of Korean and English alphabet letters, words, and sentences which were indicated earlier.

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