

Development of Computer Based Teaching Materials to Increase Phonetic Awareness of Deaf Students in Special Schools for Deaf

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Abstract. This paper aims to describe the development of computer-based teaching materials to increase phonemic awareness of deaf students in special deaf schools. The development of teaching materials is based on the background of the lack of teaching materials in the learning of Communication Development and Sound and Cadence Performance (PKPBI). This situation resulted in learning becoming less flexible, and not giving many opportunities for students to carry out adequate exploration and learning experiences especially in language development. The main problem of children with hearing impairments is a communication problem rooted in the limitations of language acquisition. The development of language skills in special deaf schools is carried out through language learning, speech training and the development of communication and sound perception and rhythm. The low level of language skills in deaf students in both oral and written schools is one indication that the learning that has been carried out is not optimal. This condition reflects the need for efforts to deepen learning, implying the need for learning as a system is a complex process involving the teacher component, teaching material, strategy and environment.

Keyword: Phonemic Awareness, Deaf Student

1. Introduction

The main problem of children with hearing impairment (deaf) is a communication problem that is rooted in limited mastery of language, this is because hearing impairment has a significant impact on communication skills (WHO, 2013). Essential deprivation experienced by a deaf person from birth is not poverty or loss of sound stimuli, but in language poverty. Even phlegm does not only result in the lack of developing speech skills; more than that, the impact of extinction is poverty in overall mastery of language (Meadows, KP in Bunawan, L. (2000). Mentzer (2014: 16-17) reveals the results of Conrad's research, as follows: "... discouraging results that 75% of the deaf school-leavers (15-16

years of age) in Great Britain lacked functional reading skills, the discussion regarding educational reading practice began to swing. It appears that deaf children who have graduated from school (aged 15-16 years) do not have functional reading skills. Furthermore, Power & Leigh, (2000) presented the results of the study as follows: "However, soon it became evident that the degree of hearing is negatively affected by literacy acquisition, particularly reading comprehension. "However, the level of hearing loss they experience has a negative impact on the acquisition of literacy, especially in reading comprehension. the development of language skills in normal students in schools becomes more important, because language skills will be the opening key in mastering other knowledge in school. Moreover, in recent developments public awareness of the importance of literacy skills has increased. The importance of literacy skills in life is increasingly recognized and felt by all citizens, this can be seen from various efforts made in developing literacy skills such as the existence of the school literacy movement (GLS).

Literacy is simply interpreted as reading and writing skills. The importance of literacy skills is not limited to the general public but also to those who are classified as special needs including groups of people who experience hearing impairments (deaf).

The development of language skills in deaf students in schools is carried out through academic programs in the form of Indonesian Language subject matter, and Special Needs Programs such as the Talk and Communication Development and Sound and Rhythm Perception Program (PKPBI). Efforts to increase phonemic awareness in this research are carried out through the development of computerbased teaching materials, this is based on the consideration that a deaf person is more likely to learn through direct and more visual experience than those who are heard. They are more in need of the presence of forms of visualization (images, graphics, text etc.) in learning. To be able to provide opportunities for children to explore experiences, especially in the language needed by possible resources can be used by children both mentally and independently. In an effort to accommodate the characteristics of the PKBPI program which is more auditory training, where the teaching materials are in the form of audio, and the characteristics of deaf children who tend to be visual, efforts to increase phonemic awareness are carried out through the development of computer-based teaching materials.

First, language skills development especially phonemic awareness for deaf students in school is important to do, because phonemic awareness is one of the predispositions to the development of literacy skills. To develop phonemic awareness, deaf students in schools need to be supported by adequate learning resources.

Secondly, the results of observations in some special schools for deaf students show the following: (1) The process and results of language learning for deaf students in the School have not been optimal, this can be seen from the various language skills of deaf students in the language (oral and written) . (2) Potentially deaf students not included in the category experience mental deficiency, meaning that in general they have adequate intelligence. (3) Based on the 2013 Special Education Curriculum Structure, the Communication of Sound and Rhythm Perception (PKPBI) is one of the mandatory programs given to deaf students at school. (4) The implementation of the PKPBI program in schools is generally given directly by their respective classroom teachers, (4) There are no teaching materials specifically provided to implement the PKPBI program in schools.

2. Literature Review

Research results of Ampuch, et al. (2014, 47-53) showed that the application of computer-assisted learning in learning English in elementary schools can improve learning achievement and satisfaction of deaf students in learning. About the role of multimedia in learning to read Gentry et al. (2004/2015: 401-402) revealed that multimedia presentations from reading material were significantly more effective for reading comprehension than just using print. The implications for deaf education classes appear that multi-media might be an attractive supplement for reading comprehension. However, in this study, "print plus pictures" were the most effective of all treatments. Furthermore, as the results of the study show, reading by print alone is very difficult for deaf children. The information provided by this study shows that the use of images significantly helps understanding written texts. However, at present the addition of sign language to photographs does not seem to help understanding written texts. For these students, computer-based technology can play a very important role. Not only can computer technology facilitate a wider range of educational activities to meet the various needs of students with mild learning disabilities, but adaptive technology now exists that can enable even those students with severe disabilities to become active learners in class with their peers who do not have disabilities. Hasselbring, and Glaser. (2000).

Consider the various advantages of computers as learning media and the specific requirements of learning for children who are deaf; then to improve the language skills of deaf students in school can be done by making computers as media, and at the same time become a source of learning for students.

Phonetic Awareness in the Development of Language Deaf Learners. Conceptually there are several limitations regarding phonemic awareness. According to Yopp (1992), that: "Phonemic Awareness: The ability to hear and manipulate words, and the understanding that words and syllables are made up of sequences of speech sounds.". Phonetic Awareness: The ability to hear and manipulate sounds in spoken words, and understanding that words are spoken and sort syllables into words.

Anthony and Francis (2005) state that "phonemic awareness refers to the level of sensitivity a person has towards sound structure in oral language". Lane & Pullen, (2004) in Kauffman, James M ..., Hallahan, P. Daniel., (2011: 411) suggest that: 'Phonemic awareness (PA) includes the ability to detect, match, blend, segment, or otherwise manipulate the individual sound or phonemes in spoken language. Phonemic awareness includes the ability to detect, compare, integrate, separate, or manipulate individual sounds or phonemes in spoken language.

The importance of phonemic awareness is strongly related to the success of reading and spelling. Phonetic awareness does not only mean words but also the scope of spoken language that relates to the ability to think sounds in words. This is an understanding of the form of spoken language consisting of words, syllables, onset-rime and sound. Fracasso, Bangs, and Binder (2014) revealed the contribution of phonemic awareness and morphology to literacy abilities as follows: "In addition, decoding skills and morphological awareness were positively and significantly correlated with the other literacy measures: spelling, vocabulary, reading comprehension, and listening comprehension".

Therefore phonemic awareness is an important aspect to be developed for deaf-educated participants before children can begin to learn to read. Phonetic awareness functions not only as a basis for reading but also as an indicator of children's potential to learn to read.

Development of Communication and Sound and Rhythm Perception (PKPBI) in Deaf Education. The PKPBI concept known in the world of deaf education in Indonesia is growing in line with the development of technological progress and the education history of deaf children. This term originated from various efforts of the leaders of education in an effort to optimize the auditory functions that are still owned in accessing sounds in the surrounding environment in the form of auditory training (auditory training). The fact shows that from the various results of the measurement of real listening ability, no individual has a complete loss of hearing ability, but to a certain extent they still have the ability to hear. The remaining listening ability is lethargic and can still be awakened through the provision of stimulation in the form of auditory training.

3. Methods

The research design uses the Research and Development (R & D) approach. The subjects in this study were as follows: (1) Deaf students who were the subjects of this study consisted of 20 students in SDLB Mulia Mulia I and SDLB Karya Mulia II Surabaya. (2) There are 20 teachers who work in SDLB Mulia Mulia I and SDLB Karya Mulia II Surabaya. At this stage of the needs analysis data collection is carried out using questionnaires and observations. Analysis of questionnaire results data and observations using descriptive analysis.

4. Result and Discussion

Based on the results of observations on the implementation of PKPBI learning and questionnaires given to teachers in schools, data were obtained about the implementation of PKPBI learning as follows: (1)

Most deaf students in schools are classified as losing hearing ability. (2) PKPBI learning is carried out by each class teacher, and is not given by a special teacher who teaches PKPBI. Learning is carried out by referring to the PKPBI curriculum. Implementing learning is carried out on certain spaces. Learning is still limited to the practice of detecting and discriminating against background sounds and sounds as signals or signs. PKPBI learning has not developed much directly related to language. (2) Facilities and infrastructure in the form of learning resources, media and teaching materials used in PKPBI learning are still very limited. Learning is carried out according to the capacity and experience of each teacher. Learning resources in the form of PKPBI teaching materials that can support the implementation of learning do not yet exist. So that students have relatively limited opportunities to explore their experiences.

This becomes less favorable for child development especially in language development. How Skinner does not reveal that verbal activity is the effect of environmental conditioning and strengthening. External factors in the form of stimulation and strengthening become extraordinarily important in the mastery of language. Skinner in Nath (2010: 10). Learning becomes less optimal because some components of learning are not fully fulfilled. In the terms of Dick and Carey (2015), learning is a systematic process where the role of teachers, students, material or teaching materials and learning environment is crucial for the success of learning.

5. Conclusion

1) The implementation of PKPBI learning in schools has not been optimally implemented, and learning resources in the form of media and teaching materials PKPBI are still lacking and have not been provided; 2) Language learning especially aspects of phonemic awareness learning in PKPBI has not been programmed so that it is not measurable; 3) Most deaf students in school are mostly categorized as heavy hearing loss (> 85 dB)

6. Recommendation

Based on the results of these studies, it can be recommended (1) PKPBI teaching materials need to be developed which are specifically associated with the development of children's language, especially aspects of phonemic awareness so that it can be a reference for teachers and students. (2) Learning resources / teaching materials developed should be able to accommodate the characteristics of deaf students and PKPBI learning characteristics.

7. References

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