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An approach to enhance accessibility of E-Learning materials by hearing impaired youth

S. G. Nambuwasam

Department of Information Communication Technology, Faculty of Training Technology,
University of Vocational Technology, Sri Lanka
nambuwasam@yahoo.com

Children with hearing loss have difficulty with all areas of academic achievement, especially reading and mathematical concepts (Chamberlain & Mayberry, 2000; Hoover & Gough, 1990). Learning difficulties of hearing impaired learners lie in their linguistic inability varying according the degrees of hearing loss. E-learning materials designed for non-hearing impaired learners are comparatively abundant. This paper presents a preliminary study done for an ongoing research to identify the accessibility of e-learning materials developed for non-hearing impaired youth for the hearing impaired youth. A major objective of the study is to examine the effectiveness of using text, graphics, audio and video to make e-learning materials accessible by hearing impaired youth in developing Information Communication Technology literacy. The sample study was done with twenty hearing impaired youth selected using convenience sampling technique. The open source Sharable Content Object Reference Model based e-learning materials developed using Analysis, Design, Development, Implementation, Evaluation model were used in the study. Using individual computers the participants logged into the system to accesses the e-learning materials available on the virtual learning environment. Paper based semi-structured questionnaire was used to collect the participants' feedback about the virtual learning experience and the accessibility of the e-learning materials. The questionnaire contained seventeen structured and a single unstructured question. The structured questions were in single response, multiple responses and scaled question forms. Responses of structured questions were analyzed using a statistical package. Unstructured question was used to check the writing skills of the participants. According to data analysis, over 70% had the experience of accessing the Internet through a computer, was not familiar with e-learning or Learning Management System, preferred to follow an e-learning course and use e-learning materials. In comparison to typical hearing peers, students who are deaf or hard of hearing demonstrate vocabulary knowledge that is quantitatively reduced (Luckner & Cooke, 2010). The research results reveal that hearing impaired youth have limited vocabulary, difficulties in pronunciation of words, can write only simple sentences, to understand repeatedly read the same sentence for several times, could understand only simple short sentences and less motivated to read and learn. To make e-learning materials accessible by hearing impaired youth, the learning materials should be customized by using simple short sentence structures, applying good contrast colours between the background and the foreground, using larger font sizes, avoid using of blinking/flickering or moving elements and take precautions to eliminate unnecessary complexities of the contents.

Keywords: E-learning, hearing impaired, information communication technology, virtual learning