Chapter 16
An Analysis of Mobile Applications for Early Childhood Students With Bilateral Hearing Loss

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ABSTRACT

The present research reviews Dolch Sight Word Apps and their potential impact on early childhood classrooms when students with bilaterial hearing loss are present. Little research exists that articulates the impact of such technological intervention, this paper therefore provides a framework for future study. Although few teachers incorporate mobile apps into the early childhood classroom, this paper provides a strategy for instructors should they choose to in the future. This strategy entitled, low-tech, mid-tech, high-tech, provides examples of a number of activities that help teachers to design their classroom ranging from basic activities to those that are technologically focused.

INTRODUCTION

Bilateral hearing loss is defined as, hearing loss that occurs in both ears; it can affect newborns, children and adults (ASHA, 2013). There are various degrees of hearing loss including, slight loss (15-12dB), mild loss (26-40 dB), moderate loss (41-55 dB), moderately severe loss (56 to 70 dB)and severe loss (71-90 dB) (Lieberth, 1988, p. 1). Those who struggle with hearing loss often have great difficulties hearing and pronouncing sounds like *ch, f, k, p, s, sh, t, th,* thus hearing loss can often lead to slower gains in reading fluency and comprehension. According to The National Institutes of Health (2016), "2 to 3 out of every 1,000 children are born with a detectable level of hearing loss in one or both ears (par. 1). Hearing loss can greatly impact a child's academic progress, causing him or her to lag behind peers tremendously (Tharpe & Sladen, 2008). Early detection and ongoing intervention are promising practices that help such students gain success. Early childhood classroom teachers can help their students to attain

literary gains through an array of Dolch Sight Word applications. An understanding and identification of sight words leads to strong literary abilities. Further, educators can help their students make literary gains with mobile applications by virtue of the usage of the sight sensor.

According to Schmidt and Pyers (2014), vision is one key factor to aiding the educational advancement of students with bilateral hearing loss. According to their research, sensory perception is related to knowledge acquisition based on age and experience. A hard of hearing student who is introduced to learning apps in a kindergarten classroom might be less successful than a second grader based on the second grader's already existing knowledge and language skills. Mobile apps give students innumerable opportunities to use their sight sensory in order to recall knowledge and use cues to better grasp concepts. The ability to use the sight sensory improves chances for a student to better understand learning concepts while enhancing literary abilities.

Literacy is defined as, "An individual's capacity to understand, use and reflect on written texts, in order to achieve one's goals, to develop one's knowledge and potential and to participate in society (Organization for Economic Co-operation and Development, 2006, p. 46). At each milestone in a child's life, he or she is supposed to make certain literacy gains. Unfortunately, for children with hearing loss, goal attainment may take a little more time. Typically, by the age of two, children should be able to talk and understand some conversations (Goldman, 1999). For students with limited hearing functionalities, this process might take longer. They may need additional visual cues to aid their academic growth which is one aspect available through mobile learning applications.

Very young children cannot yet read the texts themselves, but they can observe important aspects of the practical literacy form such as the ways in which one alternates between reading the texts and carrying out a physical act, or the fact that the text is used to verify accuracy of action. By eight or nine years of age, a child participating with an adult might do some or even all of the reading but would not be expected to figure out alone, calling for occasional help in interpreting certain difficult words or steps (Goldman, 1999, p. 174).

The aforementioned reading strategy (scaffolding) can be greatly enhanced with mobile applications. Through scaffolding, students can move towards a greater understanding of words through pictorial cues and sounds made through mobile applications. In classrooms that are not technologically inclined students are introduced to a series of words often seen throughout a wide array of text known as sight words. These words are used in spelling tests and recited by students verbally. However, there are a number of mobile applications that incorporate Dolch Sight Words making literacy attainment both meaningful and fun. The following visual displays the PrePrimer App (Figure 1). The application is for students in late kindergarten through first grade.

Through this app, students identify the correct word and receive points. Students hear a particular word and determine which word was pronounced based on the list provided. The app helps students to apply what they see to what they hear. Dolch Sight Word Apps are not limited to this one. While there are a number of free applications, others range from .99 to $1.99. The apps come in the forms of flash cards, matching games, handwriting applications, sight words trainer (computer based recitation), games and sentence building activities. The apps are categorized according to grade and reading level. Mobile apps are a supplemental component of the early childhood classroom. Before educators can incorporate mobile applications into their daily lessons, they must first understand their importance.

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