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The iPad: Using new technology for teaching reading, language, and speech for children with hearing loss

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**THE IPAD: USING NEW TECHNOLOGY FOR TEACHING READING,
LANGUAGE, AND SPEECH FOR CHILDREN WITH HEARING LOSS**

by

Ellen W. Sciuto

**An Independent Study
submitted in partial fulfillment of the requirements for the degree of:**

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Abstract: The focus of this study was to review existing literature and analyze a survey of teachers of the deaf/hard of hearing utilizing the iPad when teaching their students reading, language, and speech. Included is a handout of popular apps to use during intervention in these three areas.

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Introduction

In April of 2010, Apple introduced a new product: the iPad. Just one year after its introduction, there were 7.8 million iPad users in the U.S., according to an article in the Wall Street Journal. (Mir, 2011) With its introduction came not only an advancement in personal technology, but also an advancement in technology used in education and classrooms around the world. For those unfamiliar, an article by Barbara Fernandes entitled “iTherapy: The Revolution of Mobile Devices Within the Field of Speech Therapy” describes the iPad as a “mobile touchscreen device....that runs an operating system called iOS.” She further explains it by saying, “with each update, improvements and new functions are added to the iPad, which makes the device more powerful and functional. The iPad allows users to purchase applications (software) from the App Store.” (2011) In March of 2011, the iPad 2 was released, which has “exponentially increased the possibilities of using the iPad as a device for promoting speech and language development”. (Fernandes, 2011) Now, in the year 2013, we also have the 3rd generation of the iPad and the iPad Mini, which is a smaller, less expensive version of the original iPad.

Although the iPad was not originally created as an educational tool, it has found its way into classrooms across the United States and the world. The iPad, which is still a fairly new device, is already becoming a large part of our everyday lives and education. This is supported by Sergei Soprunov, Elena Yakovleva, and Ilia Leibo, in “Educational Microcosms on iPad”. They say, “It is an undeniable fact that computers (including tablets, such as iPads) are nowadays a major instrument for modern school education”. (2012) Therefore, if using iPads is the route that modern educational settings are taking, the field of deaf education also should be working to stay current with those educational trends.

Even though the iPad is still a young device, there has been research completed on the benefits and effectiveness of its use for educational purposes. Teachers everywhere are seeing the benefits of incorporating the iPad into their daily instruction. According to one study by Alma Culen and Andrea Gasparini entitled “iPad: A New Classroom Technology? A Report from Two Pilot Studies”, which was done with elementary aged children in the general education setting, “the families, the children, [and] the teacher [said] that the iPad enhanced teaching, learning, and play”. (2011) In order to understand why teachers might choose to use the iPad with their students who are deaf and hard of hearing (D/HH), we first must look at the benefits of its use.

There are many benefits of using the iPad for educational purposes. According to “A Breakthrough for Josh: How Use of an iPad Facilitated Reading Improvement” by Barbara McClanahan, Kristen Williams, Ed Kennedy, and Susan Tate, one benefit, which is especially applicable to this study, is the “plethora of affordable applications that are easily downloaded”. (2012) In other words, there are many applications available for teachers to explore that are not only affordable, but also easy to install onto their iPads. This is a large benefit, seeing that using pre-made iPad apps can result in a decreased preparation time during lesson planning. This is not to say that teachers should forgo making lesson plans and preparing for lessons when deciding to use the iPad; having a set plan is still necessary. However, utilization of the iPad can help decrease the time that teachers might spend on the creation of the materials for the lessons; instead, they can use the pre-made materials and apps on the iPad, seeing that they fit the students’ needs.

Another benefit is increased practice at sharing and turn-taking, which is a skill all young students work on developing. One study, entitled “Exploring iPads in Practitioners’ Repertoires

for Language Learning and Literacy Practices in Kindergarten” by Margareth Sandvik, Ole Smolder, and Svein Osterud, found that “children’s smooth turn-taking in controlling the tablet (i.e., iPad) is strengthened by the device’s portability and shared display”. Their data showed that “it is easy for [the children] to cooperate, easy to participate, and easy to share.” (2012) This tells us that another benefit of the iPad can be increased practice at sharing, which is an essential skill for all children to learn. In addition, this study also found that, while using the iPad, “peer support was extensive, and the children helped each other both in pair work and in the full group activity, and while doing this their communication was verbal”. (Sandvik et al., 2012)

Therefore, the iPad can be used as a tool to promote the development of sharing, helping, and supporting fellow classmates, all while using verbal communication.

In addition, children, no matter what educational setting they are in, need to be exposed to technology throughout the school day. In the article “Digital, Hybrid, and Multilingual Literacies in Early Childhood”, Aria Razor and Eunuch Yang share their thoughts on the incorporation of technology into childhood education:

The last decade has witnessed substantive digital...changes in the United States and worldwide. The social context for early childhood literacy development has shifted from an exclusively print-based medium toward a more robust semiotic field that included a variety of electronic media. In this millennium, children and adults are expected to fluently interact in an increasingly diverse world using multiple mediational tools and modalities. (2010)

Therefore, and as noted previously in this section, children must be exposed to technology because it has been and still is becoming a very important part of our world, especially as a means of communication with others. (Leibo et al., 2012)

Another noted benefit is increased ability to focus. One study found this to be especially true during a task that utilized the iPad. In the McClanahan et al. study on using the iPad to facilitate reading development in a boy with Attention Deficit

Hyperactive Disorder (ADHD), she found that the using the iPad “helped the student focus attention”. (2012) The iPad can be a very intriguing device, and this study proves that focus can be increased by using the iPad with students who are having trouble attending. Furthermore, this study found that through the customization (e.g., changes in font size, writing notes in the text, and using the audio-enhanced dictionary) of using the iPad as a digital reading device, students, although not struggling readers, found benefits in using the iPad. (2012)

One last benefit discussed in this paper is the motivation that the incorporation of the iPad presents to students. Students like to use the iPads, and therefore they can be used to motivate students during instruction. Alma Leora Culen, Andrea Gasparini, and Roni Hercz, in their article “iPad - the space between the cool and the useful”, note “it is generally agreed that the iPhone and the iPad were Apple’s truly cool products”. They continue to support this point by saying, “On day one 300,000 units (i.e., the original iPad) were sold, [and] in less than a month that number reached one million, beating the sale numbers of the iPhone, and within six months it was selling better than Macs”. (2010) This indicates just how popular the iPad is. With so many owners, it is inevitable that children also find themselves intrigued and enthralled by the device, whether in the classroom or at home. Motivation is a key component in education, and finding a tool that can motivate children, such as the iPad in this case, can be beyond beneficial for instructional purposes. When children are motivated by materials, it helps to engage them in lessons, which can result in more practice of targets during instruction.

One factor revolving around the use of the iPad has been seen as a benefit by some and a disadvantage by others. The initial cost of the iPad, which according to

Apple's website is \$499.00, is a large sum to pay up front. (2013) In addition, educators then have to purchase apps to download onto their iPad in order to use them during instruction. Although the price of the iPad itself is high, it can be offset through educational discounts. When purchasing the apps, there are often daily and weekly sales available to help lower the purchase price. Another way in which the purchase of an iPad actually can save money in the long run is decreased printing costs. According to "The Reed College iPad Study" by Trina Marmarelli and Martin Ringle, participants in the study "were delighted with the savings they realized by reading thousands of pages of documents on the iPad rather than printing them". (2011) Teachers, who often find themselves printing many different materials for class, may also find this to be an applicable benefit in their lives. While the upfront cost may be high, users may find themselves saving money on materials in the long run.

However, there are disadvantages to using this tool as well. The disadvantages of the iPad, as noted by Catherine Attard in "Thanks for the iPads, but what do we do with them? Integrating iPads into the teaching and learning of primary mathematics", is "related mostly to technical and management issues." These issues, she continues, may manifest themselves as difficulties with the "uploading of appropriate applications" and "supervision of students while using the iPads, and the problem of how to allocate the limited number of iPads between students". (2013) While these are legitimate concerns, the goal is for the incorporation of the iPad to be teacher-directed, and therefore constant supervision would be provided and behavior management would help in sharing the limited number of iPads.

Another disadvantage seen by some is exposure to "screen time" at young ages. There are different reasons that people are opposed to "screen time", which is "the time spent using a

device such as a computer, television, or game console”. (Oxford Dictionary, 2013) For the case of this paper, “screen time” also includes the time spent using an iPad. One reason is that it can be a health risk for children. According to a study by Susan Sisson, Stephanie Broyles, Birgitta Baker, and Peter Katzmarzyk entitled “Screen Time, Physical Activity, and Overweight in U.S. Youth: National Survey of Children’s Health 2003”, “high volumes of screen-based leisure time sedentary behaviors have been associated with increased chronic disease risk”. (2010) While this is a valid concern, the goal of incorporating an iPad in education is not to use it for prolonged periods of time, but rather to enhance instruction. Therefore, it should not have an effect on the physical activity level of students. However, there are other possible concerns, associated with “screen time”. These concerns, as noted by the Mayo Clinic’s “Children’s Health webpage” are: obesity, irregular sleep if the child resists going to bed, trouble falling asleep, behavioral problems (e.g., emotional, social, and attention problems have been noted in children who spend more than two hours a day watching television), too much exposure to violence on the television, in movies, and through video games, and less time to play (i.e., less time to be active and creative). (2013) While all of these are valid concerns, the goal of iPad incorporation is for the students to be exposed for short periods of time only, to be interactive participants with the device rather than sedentary observers, and to be teacher led so that students only are accessing apps and media that are appropriate.

As one might imagine, with iPad research in the educational realm scarce, the iPad research specific to children who are D/HH also is very limited. One reason this could be is due to how young this device is. It has only been on the market for a little over three years, so its incorporations into classrooms are still evolving. Another reason could be due to the very specific population on which this paper is focusing. While many studies have been done on

students with other special needs, such as Autism, and their use of the iPad, research has not yet made its way to studying how the iPad is being integrated into academic instruction with students who are D/HH.

Even though not much research currently is available with children who are D/HH, it is the obligation of educators of children who are D/HH to stay informed on new technology that can be incorporated into their classrooms. According to the American Speech and Hearing Association's (ASHA) website, the Joint Committee of ASHA and the Council on Education of the Deaf, in the "Recommendations" section of their "Roles of Speech-Language Pathologists and Teachers of Children Who Are Deaf and Hard of Hearing in the Development of Communicative and Linguistic Competence" articles, note that teachers should "provide information on current research, technology, and approaches for developing communicative competence." In addition, "these recommendations are intended to provide the SLP and Teacher with a framework for resource allocation based on collaboration that optimizes the development of linguistic and communicative competence of children who are deaf or hard of hearing." (ASHA, 2004) In other words, teachers of the D/HH need to stay up to date on technology and the ways in which they can use it to teach children who are D/HH.

One way to do this is through the incorporation of the iPad during intervention. However "when it comes to using iPads for teaching and learning, teachers have had little to guide them, in terms of either academic research or targeted professional development". (Attard, 2013) In other words, there is a need for guidance when it comes to teachers knowing what to do with iPads in the classroom.

Therefore, the primary purpose of this paper is to explore the role of the iPad when teaching children with hearing loss reading, language, and speech and the pros and cons of

introducing this device into a classroom. It will look at the benefits and the possible disadvantages of introducing technology into a classroom. Furthermore, it will offer a look into what current teachers of the deaf are saying about their personal experiences using the iPad with their students. This will be accomplished through the presentation and discussion of the survey that was created and administered specifically for this paper. This information will help to determine the most beneficial apps to use during intervention. Hopefully, this paper will give current and future teachers guidance on what apps to use and how best to use them with their students who are D/HH. In order to accomplish this goal, a handout of iPad apps found to be useful during reading, language, and speech instruction with children who are D/HH is included.

Why a Survey?

A survey was used as part of this research project for a variety of reasons. First, a survey provides demographic information, such as amount of teaching experience and age of students the participants teach. In addition, it allows the researcher to gather information on what teachers of the D/HH are using right now. Knowing this allows results to be as current as possible. A survey also allows questions about the opinions of the teachers on the pros and cons of using an iPad. Lastly, a survey gives the option of asking participants whether they believe they would benefit from more information on using iPad in their classrooms, which is a main aim of this study.

Survey

A paper survey was distributed to teachers of the D/HH at OPTION schools around the country. According to the OPTION schools' website, OPTION schools are private Listening and

Spoken Language (LSL) schools dedicated to providing services to teach children who are deaf to listen and talk. All of the schools surveyed for this research paper were Moog Certified Programs. This means that they follow the curriculum of listening and spoken language developed by Jean Sachar Moog, which focuses on “accelerating development of spoken language so the children (i.e., students at these schools) can develop sufficient language skills to be full participants in the mainstream”. (The Moog Center website, 2013)

The goal of this survey was to receive information on how teachers of the D/HH are using iPads in their classrooms. The aim was to learn what their experiences using iPads have been thus far and to see what apps they are finding to be most useful in the areas of reading, language, and speech with the end target of compiling a list of the most popular apps to use with students who are D/HH.

Methods

Participants and Procedures

The examiner designed a survey based on her observations of iPad use in the classroom with students who are D/HH. The examiner recruited participants at the Moog Certified Programs. Six schools agreed to participate in the survey. Fifty surveys total were mailed out to these schools. The survey was comprised of 14 questions. Surveys were sent via mail with self-addressed stamped envelopes to make mailing back surveys more convenient. Due to time constraints, participants were asked to return surveys within one week. In total, 28 surveys were completed and returned. However, one survey was deemed as “void” because the participant responded to questions in regards to SMART Board utilization instead of the iPad. Therefore, results of that survey were not included and the total number of surveys was 27.

As noted previously, all participants were teachers at OPTION schools, specifically Moog Certified Programs. This type of educational setting focuses on teaching children who are D/HH how to listen and use spoken language. None of the participants used any form of sign language in their instruction with their students.

Results

As mentioned previously, all but one returned survey was usable for this project. Therefore, 96% of the participants who returned their surveys said that they have an iPad, and they use it with their students who are hearing impaired. Twenty-seven percent of participants use the iPad with their students in the Early Intervention setting. This setting is comprised of students who are between the ages of 0 to 3 years old. Fifty-eight percent answered that they use the iPad with their students who are of the pre-kindergarten and kindergarten age, which is mostly students ages 3 - 5. Eighteen percent use it with their primary aged students, and 3% use it with students who are older than the ages listed above.

The highest percent of teachers who use iPads, 50%, have been teaching for one to five years. The next highest grouping of teachers using the iPad, 27%, have been teaching for 16 or more years. Twelve percent of teachers using the iPad have been teaching for 6 - 10 years. Three percent of the teachers have been teaching for 11 - 15 years. In addition, 8% of respondents were Speech-Language Pathologists working with students who are D/HH. See Figure 1.

When asked how much teachers are willing to pay for an iPad app, the range was \$1.00 - \$50.00. Seventy-four percent of participants answered that their school or school district

purchases the apps for them. The rest of the participants said that they purchased the apps with their personal funds.

Only one participant, 4%, reported that he/she use the iPad during reading instruction. Seventy-four percent of teachers reported that they use the iPad during language instruction. Seventy-four percent also reported that they use the iPad during speech instruction with their D/HH students. Another participant reported that he/she use the iPad for teletherapy only. Teletherapy is intervention provided from a distance via two devices (i.e., iPads or computers). Each party can see and view each other. This type of therapy is useful especially for those who are unable to travel to a clinic or school or if the distance between the two locations is too great to travel. See Figure 2.

None of the participants use the iPad during reading instruction with intermediate or middle school students. This could be due to the fact that the majority of participants we surveyed do not work with students who are in this age range.

In the area of reading, only one app was mentioned by a participant. This app was “Letter Quiz”. This means that only 4% are participants listed an app that they used during reading instruction.

As for language, 32 different apps were mentioned when survey results were compiled. “My Play Home” was the most commonly listed app for this area; 41% of teachers listed this app as one that they like to use with their students. The apps titled “Cake Doodle” and “Cookie Doodle” were listed by 22% of participants, making these the second most popular apps recorded.

In total, 14 different speech apps were recorded when all results of the surveys were compiled. The speech app that the teachers listed most was “Articulation Station”. This app was

listed by 55% of participants. The next most frequently mentioned app in this area was “Articulate It!”. This app was mentioned by 7% of the participants. All other apps listed were only mentioned once throughout all of the surveys.

When asked why the participants like to use the iPad during instruction, 96% answered that they like to use the device because it is motivating to their students. Eighty-one percent said they use it due to incorporation of technology. Forty-eight percent said that they use it because it requires less material preparation, and 19% said they use it to help collect data. See Figure 3.

Teachers also noted reasons they do not like to use the iPad during instruction. Thirty percent recorded that it is too distracting, 11% said it results in too much screen time, and 7% said it was too confusing. Some teachers also recorded other reasons they do not like to use the iPad, such as students having difficulty sharing, inappropriate age level of vocabulary, and only owning a few apps.

In summary, 89% of teachers said that they believed that their students benefit from using the iPad during instruction. Seven percent responded that they believed they did not have enough information to tell at this point, and 4% said that they believed this question was not applicable because they used the iPad for teletherapy purposes only. When asked if the teachers would benefit from an informational packet on the most beneficial apps to use with students, 96% said that they would, and 4% (one participant) did not answer this question.

A full copy of the survey can be found in Appendix B.

Discussion

The results of the survey show that overall, nearly all of the teachers who returned surveys do use iPads during instruction in at least one of the following areas: reading, language,

speech, and/or reading. As for length of teaching, the largest group of teachers who use the iPad have been teaching for one to five years. This might not be surprising seeing that this most likely is the youngest group of teachers, and thus possibly the most likely to be willing to incorporate new technology into their classrooms. However, the next largest group of participants was teachers who have been teaching for 16 or more years. Next were teachers who have been teaching for 6-10 years, followed by just a few who have been teachers for 11-15. Two participants were Speech-Language Pathologists (SLP) who work with students who are D/HH, which shows that professionals other than teachers are finding ways to incorporate the iPad into intervention.

The largest group of teachers who completed the survey work in pre-kindergarten/kindergarten departments. The next largest group was Early Intervention teachers, followed by primary teachers, and then just one who used it with students older than primary age. This tells us that, according to this study, the iPad is more often used with younger students than older students. However, the majority of the participants in this study work with younger students; therefore, the results from this portion of the survey may be skewed and not consistent with research.

The data from this study shows that there was a wide range for how much participants were willing to pay for an app. This range was from \$1.00 all the way to \$50.00. However, nearly three-fourths of the participants noted that their school or school district purchases the apps for them. The rest of the participants used personal funds. This indicates that most teachers are using apps that their school has purchased rather than purchasing apps on their own.

Reading

When asked about the use of reading apps for intervention, only one participant reported that they used the iPad for this purpose. This tells us that, according to this study, not many teachers of the D/HH are using the iPad to teach reading to their students. However, most of the participants teach students who are not yet learning to read or are just at the beginning stages of reading, which may be an explanation for why our survey did not yield much information in this specific area of instruction.

The one app that was listed was “Letter Quiz”. “Letter Quiz” is an app that has “four different games for every stage of learning [to read]; flashcards, identification, matching and handwriting”. (iTunes Preview, 2013) This one participant who listed this app reported that he/she used it to teach a toddler class.

Language

The survey found that nearly three-fourths of participants use the iPad for language instruction. The app that was listed most by teachers is titled “My Play Home”. This app, which is a virtual dollhouse that was not created to be a language app, was listed by nearly half of all participants. The next two most popular apps from the survey are titled “Cake Doodle” and “Cookie Doodle”. Neither of these apps, which allow the user to make virtual cakes and cookies respectively, was created with the intention of being an educational tool. Both “Cake Doodle” and “Cookie Doodle” were listed by nearly a quarter of participants.

This information indicates that teachers of the D/HH are using the iPad to help them teach language to their students. While not all teachers are doing so, a large majority have

decided to implement the iPad during this time of instruction. This may show that using the iPad for language instruction is worthwhile in some respect.

Speech

This survey found that almost three-fourths of participants use the iPad for speech intervention with their students who are D/HH. The survey also resulted in the mention of 14 different speech apps that these teachers or SLPs utilize with their students. The most popular app listed is titled “Articulation Station”, which was created by a Speech-Language Pathologist and helps children learn to produce speech sounds and thus speak more clearly through a variety of activities. (iTunes Preview, 2013) This app was listed by over half of the participants as one that they like to use during speech lessons. The next most popular app listed is titled “Articulate It!”. This app is a “unique multi-player application created specifically to help children improve their speech sound production”. (iTunes Preview, 2013) However, this app was listed by less than 10% of participants, which was much less than Articulation Station.

This information tells us that many teachers of the D/HH are utilizing the iPad for speech instruction. However, according to this survey, many teachers are using the same two apps. Therefore, it would be beneficial to explore more apps in order to give teachers more variety in the apps they choose to use with their students.

Pros of Using an iPad During Intervention

Nearly all of the teachers who participated in this survey recorded that they like to use the iPad during instruction because it is motivating to their students. As noted previously in this study, research shows that motivation is a key reason other teachers like to use the iPad as well.

The second most common reason that teachers said they like to use the iPad is for the incorporation of technology. As mentioned in the introduction, it is a teacher's obligation to stay current on technology and introduce it during instruction as appropriate. In addition, students should be exposed to technology, as this is something that students in the general education population are experiencing. Another reason that teachers said they liked to use the iPad was that it requires less preparation time than the methods that they were previously using. For example, instead of making speech cards for a specific phoneme or sorting through stacks to find appropriate cards, some apps preselect words for each phoneme, which takes the preparation work away from the teacher. One last reason teachers reported is that they like to use the iPad was because it helps them with data collection, which is a large part of teaching students who are D/HH. Keeping data on how students are progressing is essential for planning goals and making decisions for future educational placements. According to this survey, teachers have found that the iPad is a tool that can help them with this large task. See Chart 1.

Cons of Using an iPad During Intervention

Many participants did report that there are reasons that they do not like to use the iPad during intervention with their students. The most reported reason teachers did not like using the iPad was that they thought it was too distracting. In contrast, this paper discussed earlier that the iPad has been found to increase, rather than decrease, focus in students. The next most noted response was that they believed that the incorporation of the iPad resulted in an inappropriate amount of "screen time" for their students, which also was a concern according to the research. However, as discussed earlier in this study, the negatives of "screen time" can be mitigated by using the iPad in an educationally appropriate manner. A few teachers also noted that using the

iPad was too confusing. In addition, teachers had the opportunity to write in other reasons that they did not like using the iPad. Some answers for this section were: preselected vocabulary was too high for students' levels, only one child can use it at a time, problems with sharing and turn-taking, and the lack of apps on their iPads to use with students.

The last two questions of this survey yielded exciting results. Twenty of the 27 participants said that students benefit from using the iPad during class. One participant believed this question was not applicable to him/her because he/she uses the iPad for teletherapy services. The other participants did not indicate that their students lack benefit from the iPad, but they believe that they do not yet have enough information to make an informed decision for this question. As for the last question, nearly all participants said they would benefit from more information on apps to use during intervention. One participant left this question blank on the survey. This shows that teachers of the D/HH would like to have more information on the topic of this study.

Limitations

One large limitation of this study was that it included only participants from one particular setting. Only six schools were included in the results of this survey, and ideally more schools would have been included. In addition, all six schools were OPTION schools. OPTION schools use the auditory oral method to teach children. This method only represents one communication mode option for children who are D/HH. Therefore, the results of this study are not comprehensive of all children who have hearing impairments. It would be interesting to include different communication modalities for the purpose of future studies.

Part of this survey was based on opinion, which means that the results from some sections do not have a factual basis. Teachers needed to draw upon their experiences using the iPad with their students to answer questions about their favorite apps. Therefore, the compiled results, and thus the handout, are based on experiences that teacher of children who are D/HH have shared via their surveys. In addition, it is difficult to collect concrete evidence of the students' success rates after using the iPad since it is relatively new technology.

Another limitation of this study was that most of the participants worked with students who were under the age of 9. Therefore, information on older students was not able to be collected. Information on how teachers use the iPad during reading, especially with older students, would be applicable information for this field of education.

Future Research

Because the iPad is only a few years old, there is limited research in regards to its usage in educational settings. Therefore, future studies need to be completed. For the specific purposes of this paper, this researcher suggests that in the future, more research needs to focus on children who are deaf or hard of hearing. As noted in the research before, the iPad can be helpful with children who are typically hearing, but we still need to learn more about its general effects on children who have hearing impairments. Another area of future research is studying the impact that reading apps have when used by children with hearing loss. This project was not able to investigate this area more, due to age of students and lack of reading app usage by participants.

In addition, it would be interesting to have more research completed from the perspective of the teacher. Some areas of data collection might include: decreased preparation time,

increased monetary savings, and decreased number of materials to transport from lesson to lesson or classroom to classroom.

Conclusion

The purpose of this study was three fold: To investigate the benefits of using the iPad in education, to survey teachers of the deaf on how they use the iPad during intervention with their students, and to create a practical and beneficial handout for teacher to employ in the future. To explore these points, a review of past and present research was completed, a survey was administered to teachers of the deaf and then results were compiled, and a hand out was created to help teachers explore different iPad apps to use for reading, language, and speech intervention.

A review of the research showed that there are many benefits to choosing to use the iPad for educational purposes. Benefits discovered through the research include staying current with changing technology, an increased ability for students to focus, student motivation, and the potential of saving money in the long run. Other benefits may be discovered upon further research being completed.

The included survey provides insight into how teachers of the D/HH are using the iPad in intervention during reading, language, and speech. While only a small number of teachers were sampled, this study will hopefully help other teachers in knowing how to incorporate the iPad into their classrooms.

The handout at the end of this study is intended to be an aid for teachers who are looking to incorporate the iPad into reading, language, and speech instruction. This handout can be used as a starting point for teachers who have never used the iPad and for teachers who are looking for

new apps to use with their students who are D/HH. Hopefully, this handout will make the incorporation of the iPad a less intimidating task for teachers of students who are D/HH.

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Figure 1

Length of Time Participants Have Been Teaching

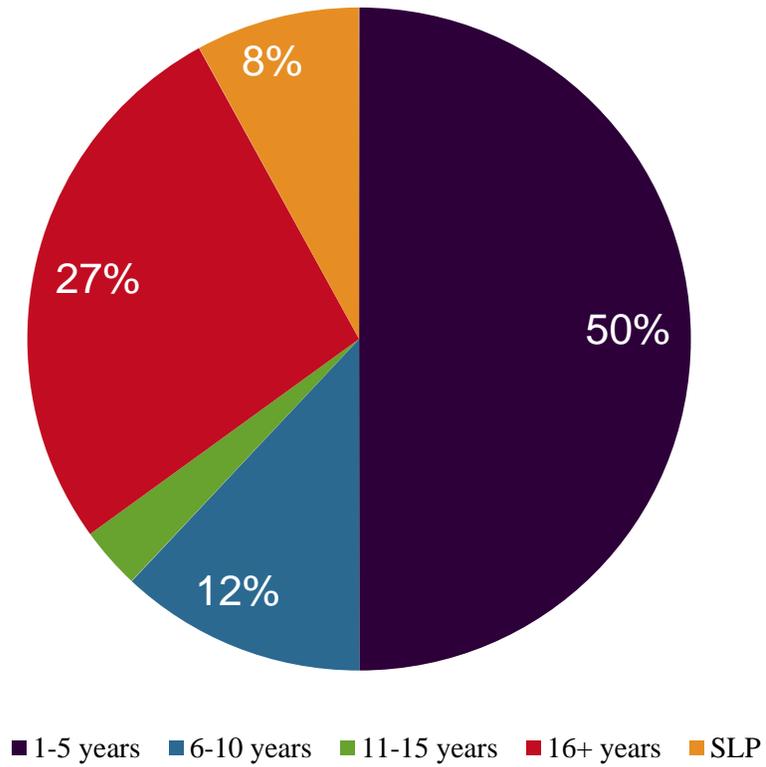


Figure 2
Areas in which Teachers of the Deaf Utilize the iPad

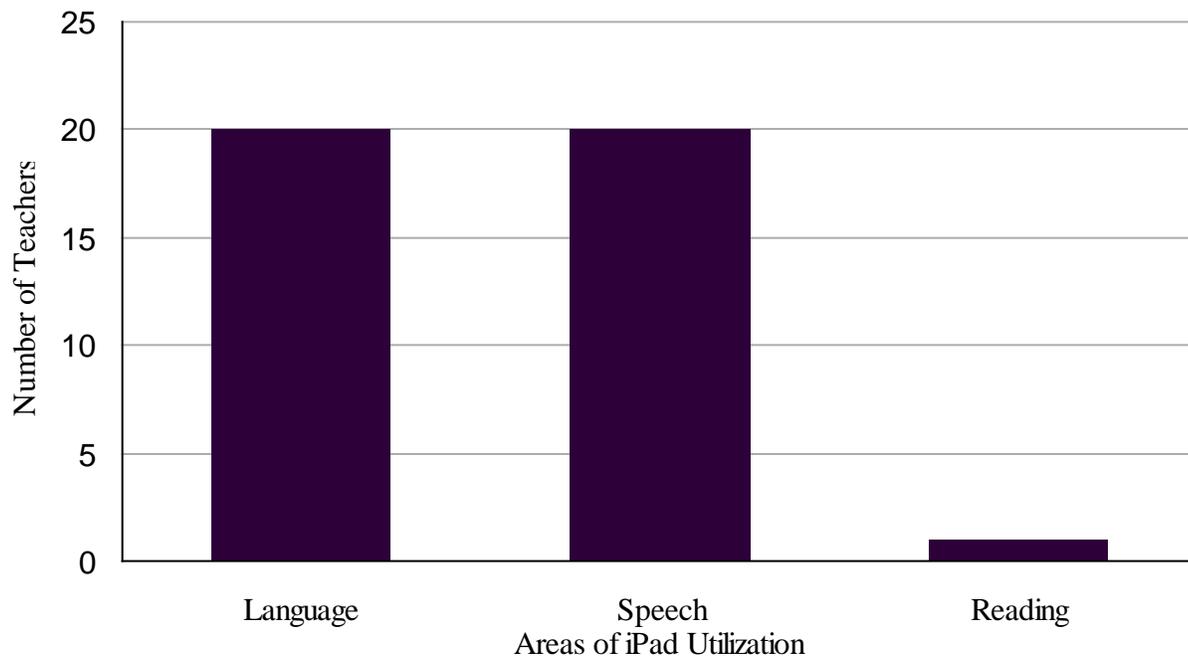
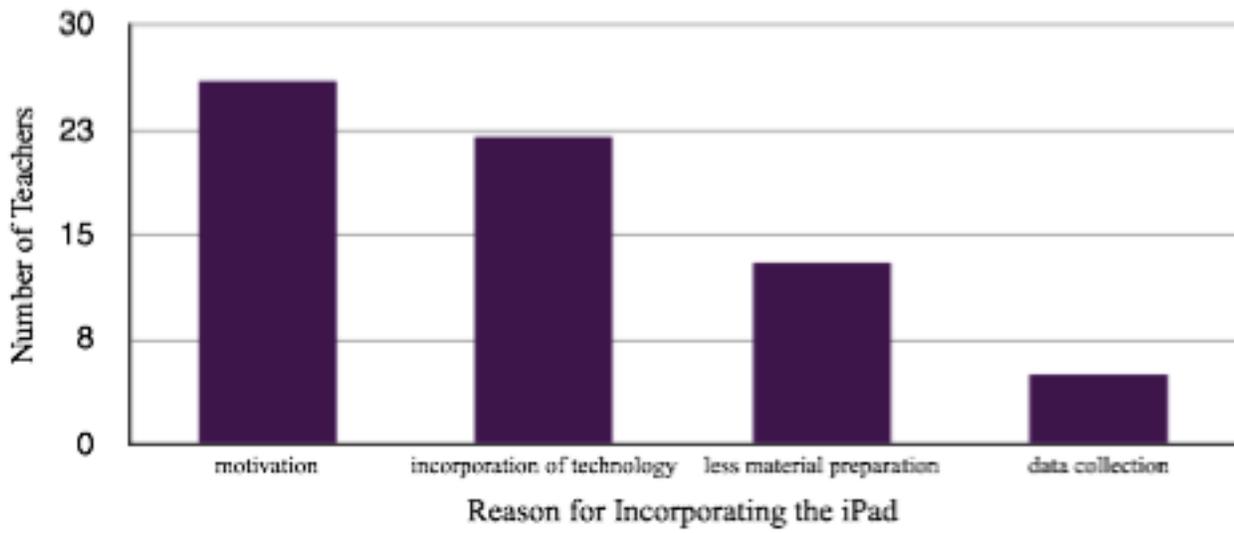


Figure 3

Reported Reasons Teachers of the D/HH Like Using the iPad



Appendix A

Most Popular iPad Apps Results

This handout includes iPad apps that other teachers of the deaf/hard of hearing have found to be useful in their reading, language, and speech interventions. The hope is that these suggestions will help other teachers of the deaf/hard of hearing incorporate the iPad into their classroom intervention.

Language

My Play Home (price: \$3.99) - “My PlayHome is a doll house for the iGeneration. Imagine a doll house where your child can use everything, even the closets, TV and shower. Where you can fry an egg and feed the family pizza. Where you can pour drinks, blow bubbles and turn out the lights...Massively interactive, your kids can explore and use everything in the house. The characters eat, sleep, shower, brush their teeth and more. Want the room to be darker? Close the drapes! Fancy a change in music? Pop a different CD into the stereo!”. Although not designed as a language app, teachers can get creative and utilize this app to target many different syntactic structures.

Language examples for children who are D/HH: 3-word phrases and sentences, simple sentences, complex sentences, interrogative, following directions

Cake Doodle (price: \$0.99) - “Crack the eggs, shake the salt, pour in the liquids, squeeze the lemon, mash the bananas, sift the flour, and toss in the dry ingredients. Blend the batter and bake your cake in our super fast oven. No need to wait for the cake to cool before icing and decorating it...Eat the cake yourself when you're done or save it to your photo album.” This app was designed for entertainment purposes. However, it can easily be turned into an app that allows teachers to target specific syntactic structures with students.

Language examples for children who are D/HH: present progressive, future tense, past tense, sequencing

Cookie Doodle (price: \$0.99) - “If you enjoy making cookies but hate the mess, this is the app for you. We provide the dough, a rolling pin, cookie cutters, your choice of frostings, sprinkles, and candies all in one easy to use package.” This app can be used to elicit specific language structures from students in a fun and exciting way.

Language examples for children who are D/HH: present progressive, future tense, past tense, sequencing

Speech

Articulation Station Pro (price: \$49.99) - “Created by a certified Speech-Language Pathologist, Articulation Station is a full featured articulation application to help children as well as adults learn to speak and pronounce their sounds more clearly...Articulation Station is the only articulation application offering practice at the WORD, SENTENCE and STORY levels all in one app!...Each of the 22 sound programs target sounds in the initial, medial and final positions of words, sentences and stories. The majority of sounds (p,b,m,d,n,t,k,g,f,v,ch,j,z,sh,th) have 60 target words each. The l,r and s sound programs target blends as well. Additionally the r sound program has all the vocalic r's.” This app also allows the user to select words to practice and keeps data.

Articulate It! (price: \$38.99) - “Articulate it! is a unique multi-player application created specifically to help children improve their speech sound production. Designed by a certified speech-language pathologist, Articulate it! contains over 1000 images selected for working on English consonant sounds at the word and phrase level. Perfect for all levels of articulation/phonology therapy; potential targets include consonants, digraphs, and consonant clusters.” This app also has the capabilities for personalized data collection.

Webber Photo Artic Castle Pro (\$29.99) - “Webber Photo Articulation Castle is an educational app for speech pathologists from Super Duper Publications. It has 3,000 PHOTO-WORDS with 24 PHONEMES for students to practice their articulation skills at the word, phrase, and sentence level, as well as certain phonology skills. All photos are from Sharon Webber's Jumbo Artic Drill Book - Volume 3. To keep your children engaged, Artic Castle has three different learning activities.”

Reading

Letter Quiz (price: \$1.99) - “Letter Quiz is the best way to learn the English Alphabet. Four different games for every stage of learning; flashcards, identification, matching and handwriting. Designed for kids but great for all ages.”

(All information gathered from iTunes - *itunes preview*. (2013). Retrieved from <http://www.apple.com/itunes/>)

Appendix B

iPad Survey for Teachers of the Deaf

1. Grade/age/placement of students I teach: _____
2. Please check one:
 - I have an iPad and use it. (Please continue with the rest of the survey.)
 - I do not have an iPad.
 - I do not have an iPad, but I would like to use one in my teaching.
3. I have been a teacher of the deaf for _____ years.
4. The most I will pay/have paid for an app is _____.
 - My school/school district purchases the apps for me.
5. I use the iPad during **speech instruction**.
 - agree
 - disagree (Please go to number 6.)My favorite speech/articulation apps are:
6. I use the iPad during **language instruction**.
 - agree
 - disagree (Please go to number 7.)My favorite language apps are:
7. I use the iPad during **reading with primary students** (kindergarten, 1st, and 2nd grade).
 - agree
 - disagree (Please go to number 8.)My favorite reading apps for this age group are:
8. I use the iPad during **reading with intermediate students** (3rd, 4th, and 5th grade).
 - agree
 - disagree (Please go to number 9.)My favorite reading apps for this age group are:
9. I use the iPad during **reading with middle school students** (6th, 7th, and 8th grade).
 - agree
 - disagree (Please go to number 10.)My favorite reading apps for this age group are:
10. Reasons I like using an iPad with my students (please check all that apply):
 - Motivation
 - Data collection

- Incorporation of technology
- Requires less material preparation
- Other: _____

11. Reasons I do not like using an iPad with my students (please check all that apply):

- Too much screen time
- Not motivating to students
- Distracting
- Too confusing
- Other: _____

12. Overall, the iPad is motivating to my students.

- agree
- disagree

13. My students benefit from using the iPad during class.

- agree
- disagree

14. I would benefit from an informational packet on the most beneficial apps to use with my students.

- agree
- disagree

Thank you for participating in this survey.

(Optional) Name: _____

(Optional) Email: _____