

Running head: iPads and Word Segmenting and Spelling

Using iPads to Increase Student Knowledge of Word Segmenting and Spelling

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University of Wisconsin Oshkosh

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6-5-13 _____ Date Approved

 _____ Member

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Abstract

This study examines the *ABC Spelling Magic Short Vowel Word (ABC SMSVW)* application for the iPad in regards to improving student ability to segment and spell words. With the abundance of technology available for young students, it is necessary to examine the effects of using technology when teaching literacy skills. In this study, five and six year old students interacted with the *ABC Spelling Magic Short Vowel Word (ABC SMSVW)* application for five minutes a day, three times a week for a month. The study indicated that use of the application increased student abilities to segment and spell words.

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Chapter 1

Introduction

Overview

Technology has become accepted as a vital learning tool. Students are entering school with more technology skills and experiences than ever before. Educators need to find ways to incorporate technology into the curriculum. Using technology will enhance children's learning and increase expression of ideas (Couse & Chen, 2010).

More recently, the focus of Kindergarten has shifted from socializing and making art projects to learning how to read and write. Consequently, educators need to find interesting ways to teach reading and writing skills, taking into account the students' developmental level. Ability to segment words is essential for learning to read and write. Segmenting is defined as the breaking apart of a word by sounds. Students use word segmenting to decode unknown words while reading. In writing, students segment sounds and write what they hear. Thus, through segmentation, students learn how to phonetically spell words.

The iPad, released in April 2010, was designated in the trade market as a tablet computer. The iPad, manufactured by Apple Incorporated, has a touch screen and uses downloaded applications (apps). An app is a computer program designed for use on iPads, iPods, iPhones, smart phones, and tablets. Some examples of apps are games, electronic readers, translators, banking information, movies, email, and photo applications. Educators and parents can use apps to support student learning in a variety of topics such as reading, writing, spelling, adding, and subtracting.

A team of educators using accelerated learning techniques and Montessori principles developed the *ABC SMSVW* app. According to the description in the app store, the *ABC Spelling*

Magic Short Vowel Word (ABC SMSVW) app makes spelling “fun and easy”. The *ABC SMSVW* app can be used to teach letter sounds and word segmenting. The app has two levels of play, *Word Jumble* and *Moveable alphabet*. The levels of play have two features, letter sound and letter hints, that can be turned on or off depending on the degree of difficulty required for a particular student. When the letter sound feature is on, the student hears the letter sound upon touching the letter. When the letter hint feature is on, the student hears the letter sound on the touch of the corresponding letter box. For example, the word cat has three boxes, one for each letter in the word “cat”. If one touched the first box, the “c” sound will be heard. The first level shows a picture and has a mix of letters on the screen that can be used to make the word that corresponds with the picture. A touch of the picture says the word that corresponds with the picture. For example, a picture of a fan would say the word “fan”, helping the user know the correct name of the item. Students need to correctly place the letters in the corresponding box. If they choose the wrong letter, the letter bounces back to its original spot. When the student moves the correct letters into the right boxes, the boxes join together and a crescendo of piano music is heard. Students can practice a, e, i, o, or u words, double consonant words, or a random shuffle of all.

The second level of play is the moveable alphabet placed across the top of the screen. Consonants are red and vowels are blue. Like in the first level of play, a picture appears on the screen. Upon touching the picture, the user will hear the name of the picture. Students need to place the correct letter in the corresponding box. If a wrong letter is chosen, the letter bounces back to its original spot. When the student moves the letters into the correct boxes, the boxes join together and a crescendo of piano music is heard. Students can practice a, e, i, o, or u words, double consonants, or a random shuffle of all.

There is limited research on latest technology (such as tablets, computer programs) and using computers in early childhood education. With the rising number of students using apps, it is important to investigate the effects of using apps in student learning. For this reason, the literature review for this study will focus on technology research in education, benefits of using technology for students, using technology as a motivator, and essential technology and literacy skills. The following research questions will be addressed: Does using the *ABC SMSVW* app increase student knowledge of word segmenting and spelling?

Chapter 2

Literature Review

Technology Research

Mohammad and Mohammad (2012) examined existing research and scholarly work on the use of computers to support development and learning in young children. The researchers stressed the importance of meeting the developmental needs of young children when integrating computers into the early childhood curriculum. Mohammad and Mohammad noted that using computers in early childhood classrooms has the potential to increase children's social-emotional, language, physical, and cognitive development. Hourcade, Parette, Boeckmann, and Blum (2010) examined the emergent literacy technology toolkit that consisted of basic hardware and software components of an early childhood field-tested technology toolkit. Hourcade et al. described the benefits of using hardware such as large computer video displays, audio output and input, and digital cameras. The use of these allows students to actively participate in activities. For example students' interest may increase if they can record their own voices for digital storytelling. Additionally, Hourcade et al. discussed the benefits of using software such as, Microsoft PowerPoint and Clicker 5. The graphics used in these software programs may enhance interest in reading. The audio in Clicker 5 allows students to hear words spoken before and after choosing their answer. Although these authors analyzed and reflected that educators must learn how to best include technology into their teaching, they did not have empirical data to support the findings about the use of various hardware and software.

McClanahan, Williams, Kennedy, and Tate (2012) examined the impact of using an iPad to learn reading strategies with a student with Attention Deficit Hyperactivity Disorder. A preservice teacher used the iPad to deliver intervention reading strategies for six weeks.

Results showed an increase in post-test measurements from the pre-test measurements, which indicated that using the iPad could facilitate reading improvement. The authors noted the necessity of examining the impact of devices like the iPad on students learning and encouraged teachers to find ways to incorporate iPads and similar devices to provide support for struggling readers.

Digital media for young children is available abundantly, but data on the effectiveness of the media is not available. According to Lieberman, Bates, and So (2009), the effectiveness of digital media (such as, console video games, handheld media, electronic toys, learning systems) has not been tested. In their meta-analysis, they reviewed a selection of studies on digital media and learning for young children age's three to six. Findings indicated that digital media may introduce children to abstract concepts, engage children in collaborative learning, and provide problem solving activities. The authors stated that more research needed to be done to determine the benefits and shortcomings of digital media. Lieberman and colleagues stressed the need for outcome and effect studies focusing on the effect of digital media on teaching students and the types of learners that may benefit from the media.

Benefits of Using Technology

Mohammad and Mohammad (2012) noted that developing motor skills (e.g., holding a crayon or pencil or playing with puzzles) is an important part of early childhood curriculum. Children need to experience by moving and doing. Motor skill development may be achieved through the use of computers. The use of computers incorporates fine motor skills that may increase the physical development of young children. Children use their hands when manipulating the mouse and typing on the keyboard. The use of computers may incorporate fine

motor skills and increase the physical development of young children by developing eye-hand coordination.

Computers may make learning enjoyable and increase socialization through using hands-on activities. Mohammad and Mohammad (2012) noted that from their experience at an elementary school in Virginia, the use of computers increased students' social interactions with peers and teacher. Through sharing computers, students learned to collaborate and help each other. Shah (2011) interviewed parents and students with special needs on the benefits of using iPads. Students and their parents praised the capabilities of the iPad, noting that the tablet style incorporates sound and touch, which may help children with poor fine motor skills. The adjustable screen size can be user friendly for students with vision problems. The touch screen gives instant gratification for a student who has difficulty waiting because they get a response immediately. The touch screen also is beneficial for the student who does not understand the connection between the mouse and the computer. The author stated that when you learn something through doing it you remember it. The iPad puts the student in control of his or her education.

According to Giles and Shaw (2011), technology has taken over every aspect of our daily lives. These authors examined the use of the SMART board in an early childhood classroom. A SMART board combines a whiteboard, computer, and projector into one system. The SMART board is similar to the iPad in that both are manipulated by touch. The SMART board can work by using a finger, pen, or pointer, which allows the youngest learners to independently navigate the system. Giles and Shaw noted that the touch-sensitive display takes advantage of children's natural, intuitive movements. The authors emphasized the importance of using technology to provide an interactive and meaningful way to deliver content.

McClanahan et al. (2012) found that computer-aided instruction (CAI) promotes continued attention and enhanced work performance for students. CAI provides immediate feedback and uses multiple modalities, which is helpful for students who have limited attention spans. CAI offers self-paced instruction that can be designed for specific students. Often, instruction is presented in a game format, which encourages engagement and attention. McClanahan et al. noted that students enjoyed using eBooks and iPads because they could read in more comfortable positions compared to sitting at a desk or table when using a computer. The authors suggested that the iPad was the reason for the students' growth in reading confidence. Through the use of the iPad, students felt in control of their learning.

Couse and Chen (2010) conducted a study with 41 three-to-six-year-old children to show the viability of tablet computers in early childhood education. The researchers investigated how students learned to use the tablet and the effectiveness of engaging them in drawing. Students used tablet computers equipped with Microsoft Word software to draw. Results indicated that students adapted to using the new technology and were motivated and engaged while using computers and tablets. The use of a stylus, which is a writing instrument used to enter information or write on a touch screen, was also examined. Students in Kindergarten were engaged and were able to manipulate the stylus for writing and drawing.

Technology and Literacy Skills

Mohammad and Mohammad (2012) examined existing research and scholarly work on the use of computers to support development and learning in young children. They found that children improve the most in terms of reading and writing as opposed to other core curriculum areas when they were using computers. Likewise, Clements, and Nastasi (1993) noted that students showed gains in reading skills, letter recognition, and letter naming through the use of

computers. According to these authors, using computer programs with songs, pictures, colors, and animations promoted development of children's literacy.

Hourcade et al. (2010) noted the importance of using successful approaches to emergent literacy instruction. The author believed that there is a close relationship between the use of technology and literacy. Digital cameras are being used to record student work into portfolios and class books. Software programs such as Clicker 5 facilitate word recognition, word naming, rhyme awareness, and grapheme awareness skills. Literacy is changing in the 21st century because of technology-based communication. Hourcade cautions that educators must measure the educational impact of using technology when instructing emergent literacy skills.

McClanahan et al. (2012) examined a boy with ADHD and his ability to improve literacy skills while using an iPad during one-to-one instruction. The student received one-to-one reading instruction using traditional teaching methods for recognition strategies for decoding, recognizing compound words, and utilizing context clues to decrease his miscues. The tutor was unable to capture the boy's attention so she incorporated the iPad to teach reading strategies. With the use of the iPad the tutor was able to gain the boy's attention by using several modalities such as visual, tactile/kinesthetic, and audio. The student increased his reading ability by one full grade level in six weeks.

Digital media may aid in the development of emerging literacy skills. Hisrich and Blanchard (2009) discussed the importance of exposing young children to digital media, such as, electronic learning aids (ELAS), smart toys, activity laptops, and hardware/software learning systems. After reviewing these items against their checklist of Early Literacy skills (pictures, letters, sounds, words/vocabulary, concepts of print, reading, comprehension, listening skills, language, and writing) the researchers concluded that there are few activities or products

especially designed for emerging literacy skills development. Several of the ELAS supported emergent writing and letter name knowledge. Children use ELAS media in educational or entertainment contexts to learn emergent literacy skills. According to Lieberman et al. (2009), students can increase their knowledge of vocabulary, spelling, reading, writing, word recognition, and word creation by using digital media.

Chapter 3

Methods

This study examined the effects of using *ABC SMSVW* app on student knowledge of word segmenting and spelling.

Setting

The study was conducted in an elementary school in rural northeastern Wisconsin with a student body of 454. The school district serves approximately 2,960 residents. In the school district there are about 7 % minorities, 93 % Caucasian). Twenty-one percent of the students are on free and reduced lunches. About 14% of the students are enrolled in special education.

The research took place in a Kindergarten classroom during the Literacy Center portion of the day. During that time students participated in various literacy activities such as, reading to self, writing, word work, reading to someone, listening to stories by a volunteer or on the computer, and reading with a teacher.

Participants

Participants included six Caucasian students (three boys and three girls) from one kindergarten class who did not have the ability to segment and spell common three letter short vowel words. Five of the students are six-years old and one student is five years old. Two of the students received speech and language services. A letter describing the research was sent to each of the parents of the six children. The letter indicated that participation was voluntary and non participation would have no effect on the child's academic standing or relationship with the teacher. Parental consent was granted prior to the start of the study.

Instruments

The assessment tools used in this study was the *Fountas and Pinnell Segmenting Assessment* (Fountas and Pinnell, 2010, see Appendix A) and the *Words their Way Spelling Inventory* (Pearson Education , 2012, see Appendix B). *The Fountas and Pinnell Segmenting assessment* tests the students' ability to segment words. The *Words their Way Spelling Inventory* tests the students' ability to spell words.

Procedure

The research design is pre test/post test design. This design was chosen because it shows if the students' knowledge of segmenting increased after working on the iPad app *ABC SMSVW*. Students are familiar with taking tests similar to these. The six students were assessed on the *Fountas and Pinnell Segmenting Assessment* and *Words their Way Spelling Inventory* in the week prior to using the iPad app. Students who scored higher than seven out of ten on the *Fountas and Pinnell Segmenting assessment* did not qualify to participate in the study. Students participated in the study regardless of how they scored on the *Words their Way Spelling Inventory*. After using the iPad app *ABC SMSVW* for four weeks students were re-tested on the *Fountas and Pinnell Segmenting assessment* and *the Words their Way spelling inventory*.

For four weeks, six students used the iPad app three times a week for five minutes. Prior to using the app, the researcher instructed participants on the expectations. The students were informed that they would work on the iPad to practice segmenting sounds, which is breaking apart words by their sounds. For example, "if I said fan. You would say f-a-n". Students segmented sounds on the iPad three times a week for five minutes. The researcher set the timer on the iPad for five minutes. When the five minutes was over, the iPad closed the game and the students chose a literacy center.

During the final week, the researcher assessed students using the *Fountas and Pinnell Segmenting assessment* and *Words their Way spelling inventory*. Students were assessed individually. The assessment took place in the kindergarten classroom. Before beginning the *Fountas and Pinnell Segmenting test* the researcher gave an example. Then, students were asked to segment the ten words. The researcher recorded the students' answers on each student's individual recording sheet. Before beginning the *Words their Way spelling inventory*, the researcher gave an example in a sentence. Then the student was asked to write the five short vowel words.

Data Analysis

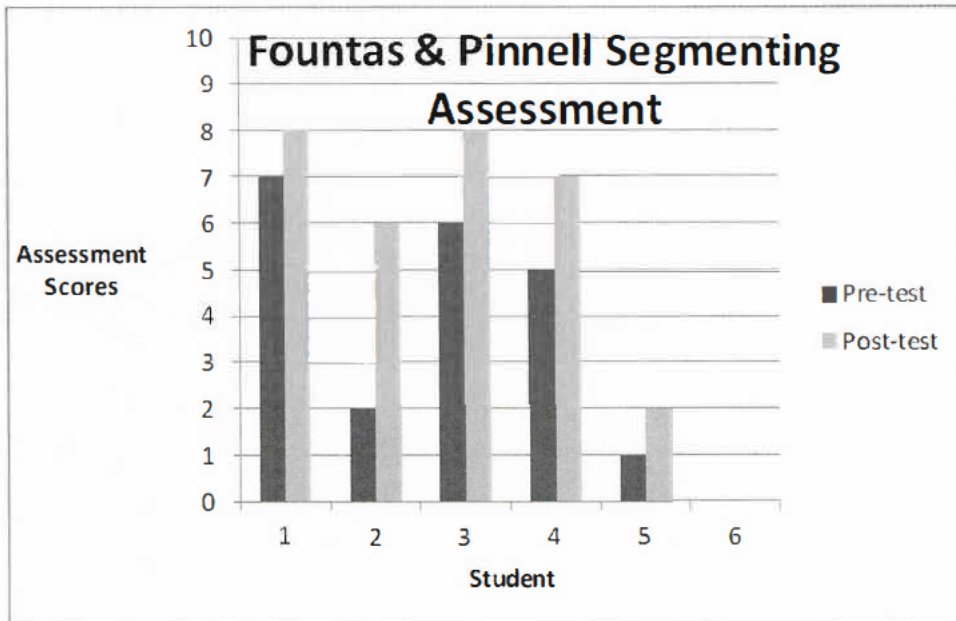
Scores from pretest and posttest assessments were recorded for each student participating in the study. The mean of the students' pretests and posttests were calculated. The difference was determined by subtracting the score on the pretest from the score on the posttest for each student.

Chapter 4

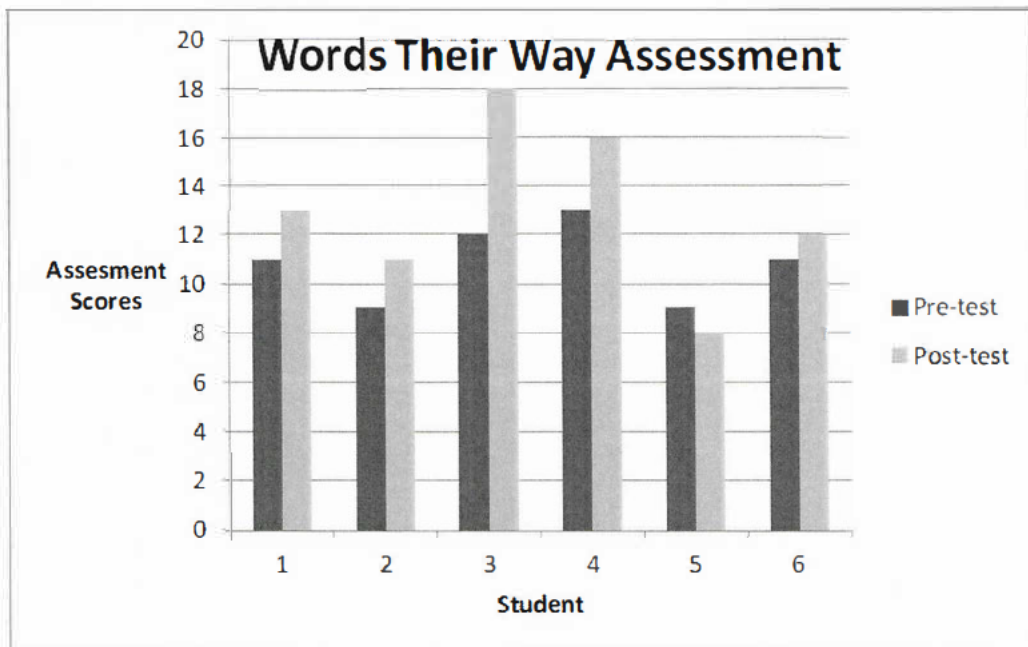
Results

This study explored the impact of using the *ABC SMSVW* iPad app on increasing knowledge of word segmenting and spelling for six kindergarten students. The researcher administered a pre- and post-test of the *Fountas and Pinnell Segmenting Test* and the *Words their Way Spelling Inventory*. Results of the pre- and post-test for each student participant were compared to determine the effect of using the *ABC SMSVW* on student knowledge of word segmenting and spelling.

Students were tested on their ability to segment ten words using the *Fountas and Pinnell Segmenting Assessment*. The possible total score on the assessment was 10. Student 1 scored 7 out of 10 possible points for the pre-test and 8 out of 10 possible points for the post-test, representing an improvement of 10%. Student 2 scored 2 out of 10 possible points for the pre-test and 6 out of 10 possible points for the post-test, representing an improvement of 40%. Student 3 scored 6 out of 10 possible points for the pre-test and 8 out of 10 possible points for the post-test, representing an improvement of 20%. Student 4 scored 5 out of 10 possible points for the pre-test and 7 out of 10 possible points for the post-test, representing an improvement of 20%. Student 5 scored 1 out of 10 possible points for the pre-test and 2 out of 10 possible points for the post-test, representing an improvement of 10%. Student 6 scored 0 out of 10 possible points for the pre-test and 0 out of 10 possible points for the post-test, resulting in no change. Results of the *Fountas and Pinnell Segmenting Assessment* pre- and post-test are displayed in Graph 1.



Students were tested on their ability to spell five short vowel words. The possible total score for the *Words Their Way Spelling Inventory* was 20. A point is earned by spelling the word correctly and each letter that is correct gets a feature point. Students are able to earn 4 points per word. Student 1 scored 11 out of 20 possible points for the pre-test and 13 out of 20 possible points for the post-test, representing an improvement of 10%. Student 2 scored 9 out of 20 possible points for the pre-test and 11 out of 20 possible points for the post-test, representing an improvement of 10%. Student 3 scored 12 out of 20 possible points for the pre-test and 18 out of 20 possible points for the post-test, representing an improvement of 30%. Student 4 scored 13 out of 20 possible points for the pre-test and 16 out of 20 possible points for the post-test, representing an improvement of 15%. Student 5 scored 9 out of 20 possible points for the pre-test and 8 out of 20 possible points for the post-test, representing a decrease of 5%. Student 6 scored 11 out of 20 possible points for the pre-test and 12 out of 20 possible points for the post-test, representing an improvement of 5%. Results of the *Words Their Way Spelling Inventory* pre- and post-test are displayed in Graph 2.



Summary

Results show an increase in the students’ ability to segment words and spell words over a four-week time period of using the *ABC SMSVW* iPad app. Five out of the six students increased their ability to segment and spell words. One student did not make any change for segmenting. One student’s scores showed a decrease in their ability to spell words.

Chapter 5

Discussion

Students' knowledge of segmenting and spelling improved after using the *ABC SMSVW* iPad app. This study compared to McClanahan et al. (2012) study, which used an iPad to increase a student's reading abilities. The authors encourage educators to find more ways to incorporate iPads and other technology into existing curriculum.

Hisrich and Blanchard (2009) reviewed several technologies that were used to increase student knowledge of emergent literacy skills. They found that using these devices captured students' attention similar to the use of the iPad. Students who used the *ABC SMSVW* iPad app were typically engaged in the activity. The *ABC SMSVW* iPad app is another avenue for teaching students how to segment and spell words.

A technology toolkit is essential for educators according to Hourcade et al. (2010). The iPad is the ideal tool to have in your toolkit. The students in this study were excited for the opportunity to use the iPad. Educational apps that teach emergent literacy skills may engage students in learning. Students learn in a variety of ways and using the iPad may be the avenue a student responds best to.

Using the *ABC SMSVW iPad* app gave students confidence when segmenting and spelling. After using the app a few times, the students in this study commented that it was easy for them. Prior to using the app they were reluctant to segment and spell words. Shah (2011) found similar results. Use of the iPad boosted the students' self-confidence.

Limitations of the study

A limitation of this study was the lack of direct adult supervision during use of the iPad. The researcher gave the instructions, set the timer and left the students to use the iPad independently. Many times the students were observed to be distracted throughout their time when using the app. One student in particular continued to press the same letter over and over again to just to hear the sound. Another time a student was slouched in her chair staring off into space. These two students were not actively engaged in the activity for the duration of the study.

A further limitation of the study was the researcher did not know the amount of time each student spent on practicing each short vowel. The students may have only practiced the vowels they knew or were easy to them. Without sitting with the student it is unknown what short vowels they practiced when using the app.

Another limitation of this study is the sample size. This study only had six kindergarten students. It was also limited to one rural northeastern Wisconsin school. The results of this study may not be generalized to students at other schools.

Implications and Recommendations

The *ABC SMSVW* iPad app is an effective tool for learning segmenting and spelling words that should be used with close supervision. Although the majority of the scores increased two of the students did not improve their scores. The researcher was present when the students were using the iPad but was not next to them. In future studies the researcher should be in close proximity to ensure active student participation.

Another reason the *ABC SMSVW* iPad app should be used with close supervision is that the researcher would be able to monitor which short vowels the student has practiced. The researcher could ensure that all vowels were practiced. Any vowels that the student did not do

well with could be practiced more frequently than the other vowels. In future studies, the researcher should monitor which short vowels are practiced.

Summary and Future Research

Technology is continuously changing and educators are struggling to keep up (Couse & Chen, 2010). Educators are faced with the challenge of capturing their students' attention in a world full of technology. Many forms of technology have limited research to support their successful use. Mohammad and Mohammad (2012) stated that teachers must not fully depend on computers in teaching young children nor can they ignore the potential of computers. Researchers (e.g., Couse & Chen) suggest incorporating technology into the curriculum and using it as a teaching tool. Future studies should focus on how technology supports learning and assessments in early childhood environments.

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Appendix C: Institutional Review Board Approval



12/5/2012

Ms Renee Swetlik
[REDACTED]

Dear Ms. Swetlik:

On behalf of the UW Oshkosh Institutional Review Board for Protection of Human Participants (IRB), I am pleased to inform you that your application has been approved for the following research: Does ABC Spelling Magic 1 application increase student knowledge of segmenting and spelling? The approval is valid for one year from the date of this letter.

Your research protocol has been classified as EXEMPT. This means you will not be required to obtain signed consent. However, unless your research involves **only** the collection or study of existing data, documents, or records, you must provide each participant with a summary of your research that contains all of the elements of an Informed Consent document, as described in the IRB application material. Permitting the participant, or parent/legal representative, to make a fully informed decision to participate in a research activity avoids potentially inequitable or coercive conditions of human participation and assures the voluntary nature of participant involvement.

Please note that it is the principal investigator's responsibility to promptly report to the IRB Committee any desired changes in the research project, whether these changes occur prior to undertaking, or during the research. In addition, if harm or discomfort to anyone becomes apparent during the research, the principal investigator must contact the IRB Committee Chairperson. Harm or discomfort includes, but is not limited to, adverse reactions to psychology experiments, biologics, radioisotopes, labeled drugs, or to medical or other devices used. Please contact me if you have any questions (PH# 920/424-2328 or e mail: mirona@uwosh.edu)

Prior to the end date of the approval period, please return a summary report "IRB Status Form" to the Office of Grants and Faculty Development. The form may be found electronically at http://www.uwosh.edu/grants/forms/grants-forms/IRB_Status-Form-2012-09-04.docx and may be returned via e mail to irb@uwosh.edu or to our office in Room 214 in Dempsey Hall.

Sincerely,

Dr. Anca Miron
IRB Chair

Protocol Number 972313
cc: Dr. Florence Muwana

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Appendix D: Consent Document

Consent Document

I am a graduate student at the University of Wisconsin-Oshkosh and I am conducting a research project on the impact of the iPad application (app) *ABC Spelling Magic Short Vowel Word* on student knowledge of segmenting and spelling. I am requesting permission for your child to participate in the study.

This study will involve using an iPad, the iPad app, *ABC Spelling Magic Short Vowel Word*, and Fountas and Pinnell assessments of your child's segmenting skills. This technology is prominent in the classroom. Your child will play the *ABC Spelling Magic Short Vowel Word* app for five minutes three times a week for four weeks. Your child will be given a pre and post assessment on his or her ability to segment words.

I do not foresee participation in this study having any risk greater than minimal. In fact, the study should benefit them directly academically. The information gathered will be no way published. Fictitious names will be given to the participants and no identifying characteristics will be shown.

Participation in this study is completely voluntary. Participation or lack thereof will have no effect on the child's standings, relationships or academics. The students are free to withdraw from the study at any time. The information collected from the students can be destroyed if so desired.

If you have any questions or desire for more information, please call me at (920) 388-2458 ext. 304 or email me at rswetlik@kewaunee.k12.wi.us.

If you have any questions about your rights as a research subject you may contact the University of Wisconsin-Oshkosh Institutional Review Board (IRB) by mail:

UW Oshkosh
Office of Grants & Faculty Development
800 Algoma Boulevard
Dempsey Hall, Suite 214
Oshkosh, WI 54901-8601
Phone: (920) 424-3215

Please keep top portion of this letter, indicate whether or not you wish to allow your child to participate in this project, and return the signed consent form in your child's folder.

I grant permission for my child to participate in Renee Swetlik's study on using *ABC Spelling Magic Short Vowel Word* app to increase segmenting skills.

I **do not** grant permission for my child to participate in Renee Swetlik's study on using *ABC Spelling Magic Short Vowel Word* app to increase segmenting skills.

Printed Name

Signed Name

Date