

Does Using a Tablet for Assessments Improve Students' Assessment Scores?

Jennifer Owens

Poster Project

Key Words/Terms of Project

A student with special needs – According to kidshealth.org, a student is classified as special needs if they need extra help because of a medical, emotional, or learning problem. These kids have special needs because they might need medicine, therapy, or extra help in school — stuff other kids don't typically need or only need once in a while (Nemours, 1995-2014).

Unique Curriculum – According to the N2Y website, the Unique curriculum is defined as the Unique Learning System is an online, dynamic, standards-based curriculum specifically designed for students with special needs (N2Y, 2014).

Autism Spectrum Disorder (includes Asperger's) – According to kidshealt.org, Autism is defined as problems that happen when the brain develops differently and has trouble with an important job: making sense of the world. A kid's symptoms could be very mild, severe, or somewhere in the middle (Nemours, 1995-2014).

Moderate Intellectual Disabilities – According the website Better Health, a moderate intellectual disability is defined as an IQ between 35 and 50 (Victoria, 2014).

Severe Intellectual Disabilities – According the website Better Health, a severe intellectual disability is defined as an IQ between 20 and 35 (Victoria, 2014).

Abstract/Summary of Project

After being given an iPad to use in my classroom, students quickly began to demonstrate growth behaviorally. Students were allowed access to the iPad after completing an activity or earning all of their reinforcer/tokens. Being that the students were doing so well with using the iPad as a reinforcer, I began to wonder the impact using the iPad would have on students' assessment scores. Therefore, I posed the question as to whether or not the iPad/tablet would increase students' assessment scores. This paper discusses teacher perspectives of using the iPad as well as the data collected and analyzed to determine if, in fact, the iPad/tablet does increase students' scores when being used as an assessment tool. Since there was such a great improvement with students' behaviors, I would hypothesize that the iPad/tablet would also improve students' assessment scores.

Introduction

Computers have been shown to improve students' performance and participation, especially in the special education classroom. One way teachers have incorporated the use of computers to supplement the classroom is through the use of games. Teachers allow students to play games on the computer as a supplement to the lesson to reinforce learning. The results of the incorporation of games conclude that students are able to learn and remember key facts that are covered during the process of playing the game (Sarhan & Alzboon, 2011).

Not only can the iPad or tablet be used for academics and assessment but can also be used to reinforce desired behaviors, to collect data, and to teach and differentiate activities to meet each student's individual needs. By using the iPad as a tool for teaching reading skills, a teacher was able to improve her student's reading level a full grade (McClanahan, 2012).

The iPad and tablet can be used as communication tools by improving the interaction between students with cognitive disabilities and teachers (Sestic, Dobrota, Radovanovic, & Karic, 2012).

In the past, the students with disabilities that I teach have had a difficult time communicating with people outside their family or teachers. Nevertheless, the iPad and tablet have applications, such as “My Voice” that give these students a voice (Campigotto, McEwen, & Demmans, 2013). In a recent study completed by Connell (2012), students were given the option to read a story either on paper or on an iPad. Students chose unanimously to read the story on the iPad. Allowing students to use the iPad motivated the students and in return, students participated and focused more on the reading passage (Connell, Bayliss, & Farmer 2012).

Therefore, I used the tablet to assess students in my classroom. The students I selected were the students that were in my class for the whole year. I teach a total of six students but only four of the students were in my classroom the entire year. These students include three boys and one girl. All students have deficits in behavior, social skills, and academic; yet none of their disabilities are the same. One student has Autism, one has Cerebral Palsy and is Moderately Delayed, one student has a chromosome disorder and is severely delayed and the final student is severely delayed and has a seizure disorder. Therefore, the students in this project could not be more different. Being that the students are so different and all on different ability levels, each student was assessed on an individual bases. The Unique Curriculum is a leveled program that, based on a student’s profile, levels each student so that the students’ individual needs are met.

Each student participated in a pre and posttest that was also leveled. Therefore the assessments are individualized as well to better meet the students' specific needs.

The students that were not in my class the entire year had incomplete assessment scores and therefore were not able to be included in this project. The other two students also have disabilities and fall within the moderately delayed range. I would have loved to include these students to gather more precise data, but just was unable.

Literature Review

Teacher Perspectives

According to House, (2012) teachers that have the opportunity to use devices such as the iPad and tablet are excited with the results of their students' work after using the devices. When questioned about the use of the device in a science classroom, the teacher responded that when implementing the use of computers and technology, student participation and achievements increase significantly (House, 2012). The previous year, this same teacher was questioned in a study by House (2011) and stated that the results of using the devices in the classroom were that the students did better and their achievements in math significantly improved after the implementation of the technology (House, 2011). Teachers' perspective of using technology in the classroom to supplement learning is positive with positive results (Ifenthaler, & Schweinbenz, 2013).

Staples (2005), completes a study of three urban schools by having teachers complete a survey to determine teachers' perspectives about using different types of technology in their classroom. The results concluded that teachers were optimistic about using the technology

(Staples, Pugach, & Himes, 2005). On the other hand, when surveying a different group of teachers about their perspective of using technology, the teachers responded by saying that their feelings about using the technology was effective but there were a couple of concerns like overcrowded classrooms and lack of time (Geçer, & Özel, 2012).

Students with Disabilities and Learning Life Skills

According to Carlile (2013) other research has been completed to determine how students with autism would interact with technology to use with academics as well as life skills. Children with Autism need a consistent routine and one way teachers are able to ensure routine is by producing a visual schedule for students to follow throughout their day. For some, this can be a daunting task. Therefore, a teacher began using an iPod touch displaying a daily schedule with a student with autism. The teacher concluded that the student was successful with using the iPod touch to follow the schedule and in return the student's level of independence increases (Carlile, Reeve, Reeve, & DeBar, R. 2013). Although, students with disabilities can follow a paper based calendar, less prompting is needed when their tasks are technology based. From my observation in my classroom, students are more motivated and apt to complete a task without prompting when the task is completed using tablets.

Gentry's research indicates (2010) that the number one goal for a teacher of a moderate to severely delayed student is to teach life skills, especially in high school. Therefore, along with following a schedule, it is necessary to teach a student with a disability time management skills. As a part of Gentry's research, a student was provided with a personal digital assistant to assist with task and time management. As a result, the student was motivated to use the devices and as

their understanding increased, so did their ability to follow their schedules, manage time, and increase independence (Gentry, Wallace, Kvarfordt, & Lynch, 2010).

Benreznak, (2012) describes another way in which devices are being used to assist and teach students with autism life skills. Initially, three students with autism were given picture directives to complete certain life skills but it was until the students were shown videos via an iPhone to teach them life skills such as washing clothes and cooking that they were successful in completing these tasks. Each of the boys watched the videos several times and when the boys began to show comprehension of the content, teachers took the boys to a life skills classroom and allowed them to practice the skills newly taught. As a result of the videos, the boys became more successful in completing the necessary life skills that were taught via the iPhone (Bereznak, Ayres, Mechling, & Alexander, 2012). This scenario is another example of the impact tablets can have on students with disabilities.

Academic Achievements

According to Macaruso, (2008) a sample of students classified as struggling readers or students with lower performance abilities were observed and assessed while using the iPad during to determine if there is a correlation between using the device and increased reading skills (Macaruso, & Walker, 2008). In a study by Culén, (2012) students were assessed based on their memory skills and comprehension. The teacher had students read stories and answer questions related to the story using the iPad. The iPad kept tally of the questions students answered correctly. After the assessment was complete, the assessor determined that the iPad improved students' reading scores and the students' ability to comprehend what was read. Another area in which iPads and tablets can be used to improve students' skills is while teaching phonics. As

with the improved reading skills, student scores increased between the pre and posttests covering concepts of phonics (Wild, 2009).

King-Sears' research (2011) describes the characteristics of students with Asperger's, a form of Autism. These characteristics include, social difficulties, difficulty with communicating with others, and most have an almost genius knowledge level with a specific topic. Therefore, teaching a student with Asperger's can be quite difficult. With the introduction of technology into classrooms, teachers developed TECH, a technology based method for teaching. In this classroom, the teacher used TECH to teach literacy to her students with Asperger's. Upon conclusion of the study, results shows that when using this technology to teach her students literacy, the students did better and made the curriculum more accessible for the student (King-Sears, Swanson, & Mainzer, 2011).

Research has been completed by Schreyer, (2011) to determine the effect of using the devices in a math class. The instructor of the math class introduced using the mobile technology to assist in problem solving. The results of the study concluded that, not only were students more interested in the work they were doing but the students' overall grade point averages increased as well (Schreyer-Bennethum, & Albright, 2011). According to Peltenburg, (2012) another instructor observed several students using computers to determine if computer-based assessments for subtraction would affect the students' scores. It was determined that when students' subtraction skills were assessed by using the computer, the students were able to use concepts not previously taught to successfully complete the assessment and, in return, the students' scores were higher than initially thought (Peltenburg, Heuvel-Panhuizen, & Robitzsch, 2012).

In a study completed by Sarhan, (2011) a teacher developed a way to teach her students science skills that will not be forgotten by allowing the students to play games. Data was collected to determine if this mode of teaching positively affected students' understanding of scientific concepts. Data showed that students liked playing games related to science with the technology provided and therefore, students' understanding of the science concepts being taught increased (Sarhan, Alzboon, Al Mufleh, & Al-Zboon, 2011). Ensuring that students are able to learn and retain information is a difficult but necessary task for classroom teachers, especially when working with students with special needs.

Methodology/Procedure/Project Implementation

In 2012, selected teachers were assigned iPads to use in the special education classroom based on the needs of their students. Being one of those teachers that received an iPad really sparked my interests as to the effectiveness of using the iPad in the classroom. Initially, research was completed to determine teacher perspectives of using the iPads in their classrooms. Each teacher completed a questionnaire about their personal perspectives. The results of the questionnaires proved that the teacher participants were unanimously excited to use the iPad. Teachers felt that the iPad would have a positive effect on students' behaviors as well as their academics based on the apps downloaded.

After being trained, I used the iPad with my students. Initially the iPad was used as a tool for reinforcement. When students completed a task or activity and earned their tokens, the students were allowed to play on the iPad. While observing my students playing the educational applications on the iPad, I noticed patterns beginning to form. The patterns I noticed included the following; students were asked to complete tasks with paper or with flashcards but were not

able to complete the activity. Nevertheless, when students completed the same activity on the iPad, they were successful. Therefore, I used the apps on the iPad instead of flashcards and the students were able to demonstrate academic growth. Therefore, I decided to complete a quantitative action research plan in which numerical data points are collected and assessed to determine the effectiveness of using the iPad in a special education classroom.

The time line of research will be throughout the 2013-2014 school year. During August and September, I gathered baseline scores on the students' individual education plan goals. After gathering the baseline, I analyzed the scores and decided how to implement the use of the iPad so the students gained the most benefits. During October, November, and December, I used the iPad/tablet as a tool for teaching the students their plan goals. When students returned after Christmas break, I reviewed the students' skills while using the iPad and then reassessed. During February and March, I again reassessed students' performances on assessments to determine if progress was made with using the iPad/tablet. Upon completion of the experiment, all data was analyzed to determine if there was enough evidence to clearly determine whether or not the tablet helped to improve students' assessment scores.

After compiling the students' scores and analyzing all the data, I completed a poster project to give a visual display of the data and information gathered.

Data Analysis and Results/Project Impact Assessment

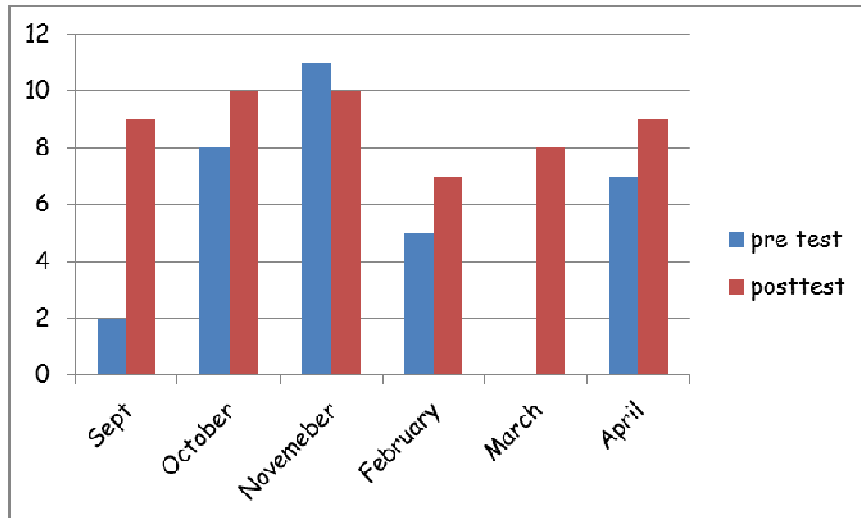
During the 2013-2014 school year, I collected data using observational notes and students' assessment scores first without using the tablet and then with the tablet. For each unit I teach, I complete a pre and a post test for each student. Starting in September, students were

assessed using paper/pencil and the computer. In January, students were assessed using the tablet instead. Students were definitely motivated to use the tablet.

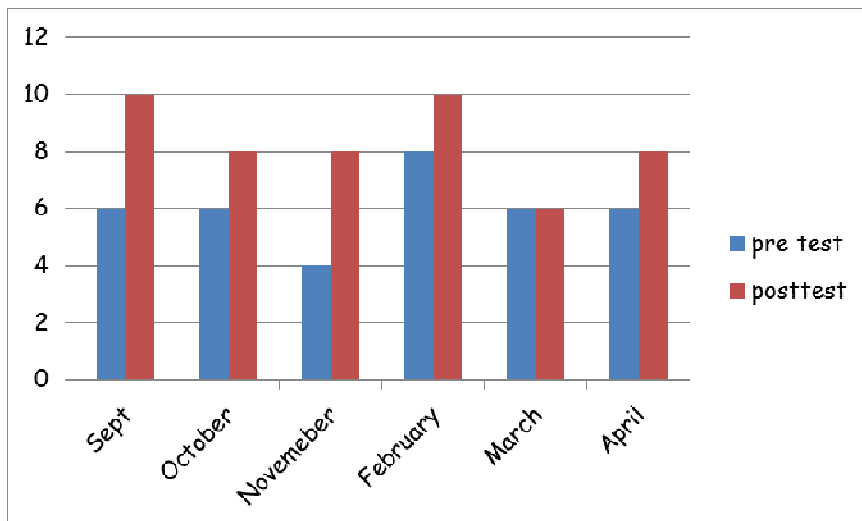
Scores were kept and analyzed using both assessment methods. Unfortunately, there was not a great difference between scores not using and using the tablet. Nevertheless, there was a significant difference between the prompting each student needed to complete the assessment. From September to December, students needed moderate to full prompting to complete an assessment. Students were not engaged in the activity and therefore did not perform well. When I started using the tablet in January, students were very engaged and needed very little to no prompting to complete the assessment. Even my lowest performing students were able to independently select answers to the questions for the first time this year.

Along with increasing students' engagement in the assessments, the students' behaviors improved tremendously. In the beginning of the year, students would not sit, pay attention, or independently participate in the assessment. There were times when some students would even become aggressive or destructive to attempt to escape the assessment all together. Being that students were displaying these inappropriate behaviors, it was difficult to determine what the students truly understood and what the students did not understand. With implementing the use of the tablet, students not only were engaged and compliant, but the students were also able to answer questions independently allowing me to get a more accurate understanding of what each of them comprehended.

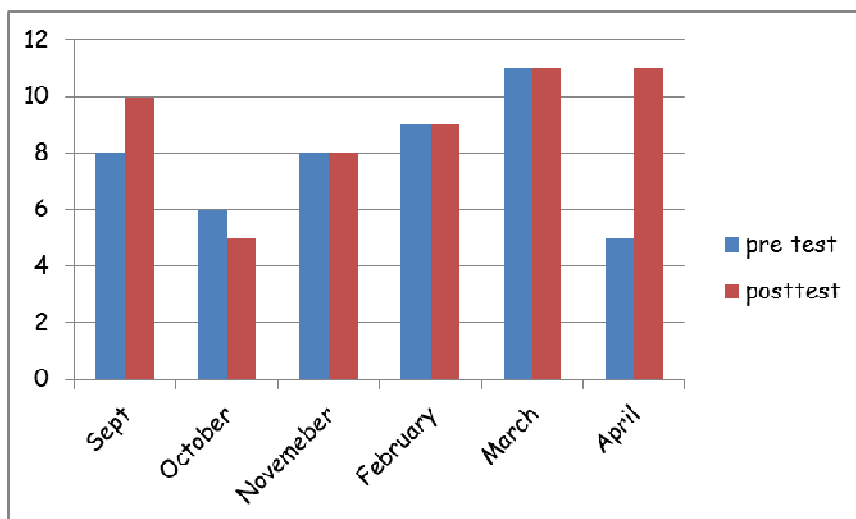
Student A



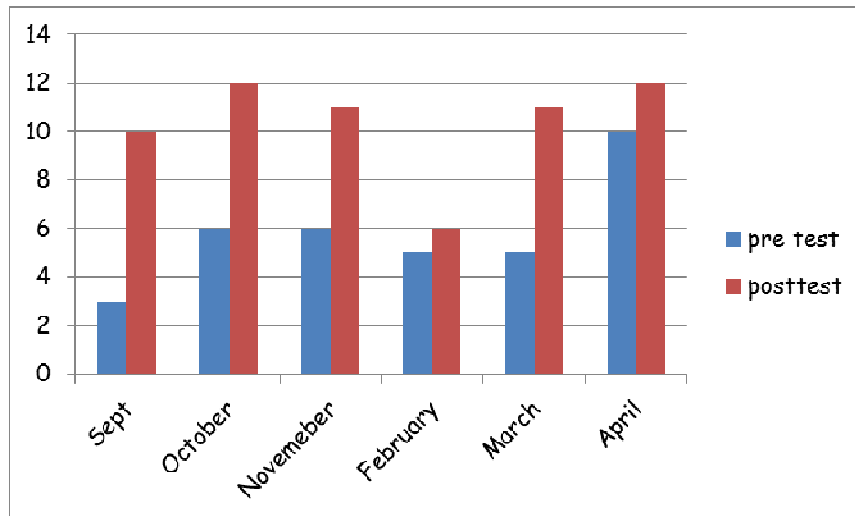
Student B



Student C



Student D



Graphs are evidence of project execution directly gotten from the Unique curriculum – [“https://www.n2y.com/Unique/ViewCheckpointScorecard/?id=156151#unique”](https://www.n2y.com/Unique/ViewCheckpointScorecard/?id=156151#unique)

The graphs display students’ scores on the pre and posttest administered during the year. Although a lot of progress is not shown by the numerical scores, students made great progress in that the students did not need the amount of prompting that they needed at the beginning. Therefore, the data is inconclusive as to whether or not the tablet improves students’ scores. Nevertheless, based on the observational notes that were collected, students showed growth and improvement with the amount of prompting needed as well as their behaviors.

Discussions/Implications/Conclusion

I teach at a school that is actually a psychoeducational program. Each of the students at this school has cognitive and behavioral difficulties as well as mental disabilities. More specifically, the students I teach all have behavioral, cognitive, social, and mental disabilities. The students in my class all have different disabilities and functioning levels. The difference in my classroom verses the rest of the school is that my students are aggressive or self-injurious but

do not know any better and lack the communication skills to talk about their feelings and emotions. I teach my students all subjects as well as recess, computer time, and art activities. My students are unable to participate in the general education classroom. Therefore the students are not able to attend specials with their regular education peers.

Since my students' functioning abilities are so low, they participate in an alternate curriculum. The curriculum is called Unique and is a standards based curriculum specifically designed for students with special needs. The curriculum is a leveled curriculum that strives to meet each student's individual needs. Each month, Unique offers a different unit that includes all subjects. Along with the different units, students take a pre and a posttest to determine understanding. When completing this project, I assessed students at the beginning of the year not using a tablet and then assessed the students second semester using a tablet.

After reviewing the literature which was all about using iPads and tablets in the special education classroom, I felt that the data would show an increase in the students' assessment scores. Each review discussed several ways in which the tablets had helped students with communication skills, daily living skills, and academic skills. Based on the literature reviews, I was sure that I would see the same results in my classroom. After collecting and analyzing the data, I did see slight improvements in students' scores; enough progress that I will continue to use the tablet in my classroom in the following years as well as work towards completing more research to gather more evidence of the positive effects of using the tablet in the classroom. Although the data does not show a significant impact of using the tablet for assessment, the observational and behavioral data does conclude a positive impact on students' behaviors.

In the future, I would like to complete the same type of research but would like to expand my population to include more students as well as students in a regular education classroom. The data I collected on my students was limited by the size of the group. If I had access to a larger population, I believe the data would be more concise. Another limitation that I would be cautious of with future research is that amount of prompting I offered each student. One major reason the data was somewhat inconclusive was because students were given a lot of prompting during the first semester. Some students even needed hand over hand assistance to complete the assessment. Therefore, after second semester was complete and I was analyzing the data, there was not a clear indication that students had made progress; progress was made because students were prompted very little or not at all; but, was unclear since they were prompted initially.

Secondly, the data I have collected has all been within the special education classroom so I would be very excited to see the impact using the tablet would have with regular education peers. I would guess that the tablet would also have a positive effect on students' assessments in the regular education classroom similar to the effects that occur in the special education classroom.

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Appendix

Poster Project

This importance of using iPads in the Special Education Classroom

Jennifer Owens

Dr. Feng

Abstract

After being given an iPad to use in my classroom, students quickly began to demonstrate growth behaviorally. Students were allowed access to the iPad after completing an activity or earning all of their reinforcers/tokens. Being that the students were doing so well with using the iPad as a reinforcer, I began to wonder the impact using the iPad would have on students' assessment scores. Therefore, I posed the question as to whether or not the iPad/tablet would increase students' assessment scores. This paper discusses teacher perspectives of using the iPad as well as the data collected and analyzed to determine if, in fact, the iPad/tablet does increase students' scores when being used as an assessment tool. Since there was such a great improvement with students' behaviors, I would hypothesize that the iPad/tablet would also improve students' assessment scores.

Objective

Computers have been shown to improve students' performance and participation, especially in the special education classroom. One way teachers have incorporated the use of computers to supplement the classroom is through the use of games. Teachers allow students to play games on the computer as a supplement to the lesson to reinforce learning. The results of the incorporation of games conclude that students are able to learn and remember key facts that are covered during the process of playing the game (Sarahan & Alboon, 2011).

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Methodology

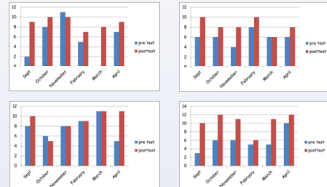
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Results



** Graphs are evidence of project execution directly gotten from the Unique curriculum - <https://www.n2y.com/Unique/ViewCheckpointScorecard/?id=15615#unique> **

During the 2013-2014 school year, I collected data using observational notes and students' assessment scores first without using the tablet and then with the tablet. For each unit I teach, I complete a pre and a post test for each student. Starting in September, students were assessed using paper/pencil and the computer. In January, students were assessed using the tablet instead. Students were definitely motivated to use the tablet.

Scores were kept and analyzed using both assessment methods. Unfortunately, there was not a great difference between scores not using and using the tablet. Nevertheless, there was a significant difference between the prompting each student needed to complete the assessment.

From September to December, students needed moderate to full prompting to complete an assessment. Students were not engaged in the activity and therefore did not perform well. When I started using the tablet in January, students were very engaged and needed very little to no prompting to complete the assessment. Even my lowest performing students were able to independently select answers to the questions for the first time this year.

Along with increasing students' engagement in the assessments, the students' behaviors improved tremendously. In the beginning of the year, students would not sit, pay attention, or independently participate in the assessment. There were times when some students would even become aggressive or destructive to attempt to escape the assessment all together. Being that students were displaying these inappropriate behaviors, it was difficult to determine what the students truly understood and what the students did not understand. With implementing the use of the tablet, students not only were engaged and compliant, but the students were also able to answer questions independently allowing me to get a more accurate understanding of what each of them comprehended.

The graphs display students' scores on the pre and posttest administered during the year. Although a lot of progress is not shown by the numerical scores, students made great progress in that the students did not need the amount of prompting that they needed at the beginning.

Therefore, the data is inconclusive as to whether or not the tablet improves students' scores. Nevertheless, based on the observational notes that were collected, students showed growth and improvement with the amount of prompting needed as well as their behaviors.

Conclusion

I teach at a school that is actually a psychoeducational program. Each of the students at this school has cognitive and behavioral difficulties as well as mental disabilities. More specifically, the students I teach all have behavioral, cognitive, social, and mental disabilities. The students in my class all have different disabilities and functioning levels. The difference in my classroom versus the rest of the schools is that my students are aggressive or off-injunctive but do not know any better and lack the communication skills to talk about their feelings and emotions. I teach my students all subjects as well as recess, computer time, and art activities. My students are unable to participate in the general education classroom. Therefore the students are not able to attend specials with their regular education peers.

Since my students' functioning abilities are so low, they participate in an alternate curriculum. The curriculum is called Unique and is a standards based curriculum specifically designed for students with special needs. The curriculum is a leveled curriculum that strives to meet each student's individual needs. Each month, Unique offers a different unit that includes all subjects. Along with the different units, students take a pre and a posttest to determine understanding. When completing this project, I assessed students at the beginning of the year not using a tablet and then assessed the students second semester using a tablet.

After reviewing the literature which was all about using iPads and tablets in the special education classroom, I felt that the data would show an increase in the students' assessment scores. Each review discussed several ways in which the tablets had helped students with communication skills, daily living skills, and academic skills. Based on the literature reviews, I was sure that I would see the same results in my classroom. After collecting and analyzing the data, I did see slight improvements in students' scores; enough progress that I would continue to use the tablet in my classroom in the following years as well as work towards completing more research to gather more evidence of the positive effects of using the tablet in the classroom. Although the data does not show a significant impact of using the tablet for assessment, the observational and behavioral data does conclude a positive impact on students' behaviors.

In the future, I would like to complete the same type of research but would like to expand my population to include more students as well as students in a regular education classroom. The data I collected on my students was limited by the size of the group. If I had access to a larger population, I believe the data would be more concise. Another limitation that I would be cautious of with future research is that amount of prompting I offered each student. One major reason the data was somewhat inconclusive was because students were given a lot of prompting during the first semester. Some students even needed hand over hand assistance to complete the assessment. Therefore, after second semester was completed and I was analyzing the data, there was not a clear indication that students had made progress; progress was made because students were prompted very little or not at all, but was unclear since they were prompted initially.

Secondly, the data I have collected has all been within the special education classroom so I would be very excited to see the impact using the tablet would have with regular education peers. I would guess that the tablet would also have a positive effect on students' assessments in the regular education classroom similar to the effects that occur in the special education classroom.

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