

**WHAT IS THE EFFECT OF BRINGING TECHNOLOGY INTO THE
KINDERGARTEN CLASSROOM ?**

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Abstract :

Many educators are curious about the overall impact to blending technology in with traditional teaching methods. Educators are collaborating and discussing best methods to meeting the needs of all students and creating a learning environment which is meaningful and challenging.

Educators are seeking more professional learning opportunities in order to further educate themselves and prepare to teach students of the 21st century. (International Education Advisory Board)

Keywords: technology, kindergarten, differentiation, blended learning, professional development

Introduction:

In the field of education we need to look at the needs of students who are entering kindergarten. Teachers are finding that early exposure to technology better prepares children to develop 21st century skills (Transform Lives) and to continue with the fast growing expectations within the school setting. There is a need for young children to have exposure to basic digital literacies in Kindergarten. Naeyc has incorporated technology with young learners in mind. They have made available a wide range of digital tools that are developmentally appropriate for early childhood education. Such tools include STEM kits, professional development opportunities with an emphasis on technology and online forums where educators reflect on teaching practices (Naeyc). The California Common Core Standards also includes a varied technology scope and sequence of skills which are required to be introduced as early as the Kindergarten level.

Currently The Hebrew Day School uses technology in meaningful and developmentally appropriate ways. The lower school uses iPads to develop reading and writing strategies through online reading and writing programs as well as the use of applications. All middle school students are provided with a chromebook which is used for research and writing. In addition the Kindergarten class and middle school work together through a buddy system to write their own stories and retrieve pictures from the internet. In the Kindergarten classroom the teacher uses technology to enhance curriculum and the learning experience as appropriate. The Hebrew Day School is working toward creating a continuum to further align with 21st Century learning skills and using the tools and devices available. The experiment which will be conducted in the Kindergarten classroom will focus on the effect of implementing the Blended Learning approach. Essential Question: What is the effect of bringing technology into the Kindergarten classroom?

Statement of the Problem:

In the heart of Silicon Valley, technology is leading the world toward a platform for a technologically centered approach in all that we do. Educating and preparing students for this ever changing digital age is something educators need to strongly consider. For 21st century primary grade (Kindergarten) educators, it is especially important to develop an understanding of digital knowledge and its potential. Blended learning is one such opportunity for teachers to find the balance between traditional methods and an enhanced education. Blended learning can enhance the learning experience in classrooms and provide a foundation for success with technology. Blended learning integrates “technology to not just supplement, but transform and improve the learning process” (www.teachthought.com). Educators should be encouraged to

provide children with the tools to become confident problem solvers with innovative ideas.

Digital tools such as software and applications on iPads or similar tablets provide differentiated, individualized learning roadmaps that may motivate kindergarten children to challenge themselves and push their limits in a fun, non-competitive and engaging manner. What is the effect of blending technology into the Kindergarten classroom?

Background and Need:

Learning should encourage children to engage in their learning, connect learning to real life experiences and guide children to think critically and problem solve. John Dewey was a philosopher with great insight into how children learn. He understood that children learn best by actively participating in their education and by guiding children's learning based on their interests. Through play a child may engage in family activities in the house area which may guide his or her learning further based on a natural desire and interest. For example a Kindergarten child may decide that he or she would like to pretend to take their baby to the store, realizes that the classroom does not have a store and the child may be intrinsically motivated to problem solve to create a store and everything that goes with it. A teacher can guide the child by asking questions to motivate the child to think critically about what may be needed. The child may then decide to create food for the store and to create money for the store which integrates mathematics and social studies into their learning. Together the student and the teacher are able to guide and direct interest and motivation to create a meaningful learning environment. Dewey (1916 pg. 188) noted that "In such shared activity, the teacher is a learner, and the learner is, without knowing it, a teacher-and upon the whole, the less consciousness there is, on either side, of either giving or receiving instruction, the better." Early elementary educators implement an

integrated curriculum which encourages children to create meaningful connections about the world around them. In the later grades, learning has been lost to a spoon feeding of meaningless material that is to be regurgitated as a way of proving student knowledge. John Dewey truly understands how learning occurs and that “Ideas are not segregated, they do not form an isolated island” (Dewey 1916 pg. 190). The preschool and early elementary classroom experiences can teach the upper grades a lot about intrinsic motivation, child directed learning, project based learning and an integrated curriculum in hopes of creating a more memorable learning experience for all.

Educators at all levels should be encouraged to support student interest, to encourage a critical exploration of their environment and to thoughtfully challenge students. Blended learning is a teaching method that would support students to become investigators of the world around them. Professional development and an open mind are necessary tools to supporting teacher growth and to keep moving with society's demands. During the mid 1900's teachers realized that change was of the essence in order to maintain a current curriculum. Jackson's Mill curriculum became a popular, published curriculum map for many educators ([JacksonsMill.pdf](#)). The developers provided quality professional development opportunities to educators in order to support the improvements. Today with the ever fast paced Technology Education it is important to provide teachers with quality workshops and presentations which will support their ability to provide a current, equitable education to all students (Snyder and Hales pg. 63) .

Organizations such as the International Society for Technology in Education (ISTE) and the International Technology Education Association (ITEA) provide detailed benchmarks and

standards for educators to refer to. The ISTE and ITEA provide teachers with professional development and conference opportunities which reflect current program models. Programs such as STEM and STEAM are quality programs that many schools are implementing on a multitude of levels. The experts inform that administrators and districts are encouraging and supporting teachers as they embrace new models that involve Technological Literacies in an advanced way that both challenge children to think critically and create meaningful connections to the faced past world of today.

There is a need in early elementary grades to prepare students for the 21st Century.

Kindergarten children need to practice learning in an environment which promotes the 4 Cs of learning; Critical thinking and problem solving, Communication, Collaboration, and Creativity and innovation. Preparing 21st century students for the next grade is as important as teaching Literacy skills. Bringing technology into the kindergarten classroom would expose children to 21st century skills and better prepare them to be lifelong learners full of curiosity and success. Kindergarten lays the foundation for a child's academic career and early exposure to technology will provide students with an equitable digital education.

The Hebrew Day School currently provides 1:1 chromebooks in the middle school and ipads to be checked out for the lower school. Most classrooms at The Hebrew Day School include SMART boards and projectors. The entire school uses Parent Locker to communicate with parents, community and colleagues. The school has an Technologically Educated individual available to support teachers as they implement more technology into the curriculum. Teacher

support and education are key elements to successfully integrating 21st Century skills into the curriculum. The school has also provided another means of support and professional development within the Touro Masters of Education with an Emphasis in Innovative Learning Master's degree program which has been offered to all teachers.

The Kindergarten classroom has a Smart Board and a chromebook. Both technologies are incorporated thoughtfully as opportunities to enhance learning. iPads are also available for checkout and may be used for literacy activities during small group instruction. The Kindergarten class has middle school buddies who visit the class to read to the kindergartners and participate in hands on projects. Recently the two grades have worked together to write and illustrate stories using chromebooks and the internet.

Review of the literature:

A kindergarten teacher may consider how to best implement a blended learning environment which connects and relates to the kindergarten child's interests, curiosities and world.

Integrating technology such as iPads into the Kindergarten classroom may provide meaningful opportunities to differentiate student learning and improve literacy skills. Professional development for educators will have great benefits when teacher children of the 21st century.

The purpose of the project is to understand the benefits of a Blended Learning environment in the Kindergarten classroom, differentiation and the importance of professional development for educators.

What is the effect of blending technology into the Kindergarten classroom?

Something to consider when blending technology into the kindergarten classroom is that there may be a “digital divide” according to Rini Sinha “Many of the students who begin kindergarten have not used a computer at all.” Providing learning opportunities to students will hopefully provide a foundation to basic digital education needed in the Kindergarten classroom. Sinha states that “ If this promotion of technology begins in early childhood, the digital divide in kindergarten will be less of an issue.” In addition to the possible digital divide it is also important to manage screen time as it is not developmentally appropriate to have young children using screen time for extended amounts of time (Sinha). When integrating technology into the kindergarten classroom there needs to be a balance between technology and traditional methods such as the hands-on approach otherwise, “ they are bound to have issues with activity levels, motor development, social skills, as well as cognitive development” states Sinha.

Will differentiating instruction provide students with the opportunity to become intrinsically motivated, confident learners?

Differentiating instruction in the elementary classroom allows teachers to develop more opportunities for small, flexible group instruction in order to better teach content and address individual needs. Integrating technology into the curriculum has allowed teachers to differentiate instruction in ways they never imagined. Digital differentiation “allows teachers to focus on essential skills in each content area, be responsive to individual differences, incorporate assessment into instruction, and provide students with multiple avenues to learning” (Hobgood and Ormsby). Students who have struggled with learning differences and

or the need to be challenged are presented with equal access and equal opportunities to work confidently amongst peers. In addition to differentiated instruction providing learning based on appropriate instructional levels it also provides opportunities to learn based on student interest. Therefore teachers are noticing an improvement in classroom management. “ In a classroom where gifted learners, learners with learning disabilities, and learners with other special needs are all challenged at appropriate levels at the same time, students are more likely to be engaged in learning activities and less likely to be engaged in inappropriate behaviors” (Hobgood and Ormsby).

What is the benefit to providing educators with digital literacy professional development workshops and seminars?

Technology and differentiating instruction may not come easily to some teachers and therefore professional trainings should be provided before and during the implementation of such methods. According to Hobgood and Ormsby’s, “teachers largely do not feel prepared to address students’ diverse needs.” As students represent a wide range of learning styles, abilities and experiences so do teachers. It is important when providing professional development opportunities that teachers complete a survey so small learning groups can be formed to best meet the digital needs of each teacher and close the digital divide amongst staff. Teachers should be encouraged to seek professional development opportunities as it is a “disservice to students if they do not equip themselves to use technology in the daily learning environment” (Swain and Pearson). Administration and teachers need to understand that this type of teaching is a process and therefore teachers should be on a continuous learning path when it comes to digital literacies.

Purpose of the project

The project will be a two week long experiment within a kindergarten classroom of approximately thirty participants. Technology is a curriculum standard in every classroom around the state. Since kindergarten is the foundation to every child's social and emotional development and academic path it is equally important to familiarize and educate kindergarten children with technology. Early exposure may reduce an achievement gap down the road and prepare students for the future. This project may prove to have significant benefits to early exposure to technology in the kindergarten classroom. In addition this project may confirm the use of iPads to support reading in the classroom and will show improvement in skills more quickly than traditional teaching methods.

Research questions:

Driving Question:

*What is the effect of bringing technology into the Kindergarten classroom?

Sub Question:

*Would loading up iPads to support reading improve skills more quickly than traditional teaching methods?

Definition of terms:

Differentiation: differentiation is modified instruction that helps students with diverse academic needs and learning styles master the same challenging academic content. (The Center for Comprehensive School Reform and Improvement)

ISTE: The International Society for Technology in Education (ISTE®) is the premier nonprofit organization serving educators and education leaders committed to empowering connected learners in a connected world. ISTE serves more than 100,000 education stakeholders throughout the world. (www.iste.org/about)

ITEA: The *International Technology and Engineering Educators Association* (ITEEA) is the professional organization for technology, innovation, design, and engineering educators. (<http://www.iteea.org/>)

STEM: Science, Technology, Engineering and Math

STEAM: Science, Technology, Engineering, Art and Math

Blended Learning: technology to not just supplement, but transform and improve the learning process” (www.teachthought.com).

Naeyc: The National Association for the Education of Young Children (NAEYC) is a professional membership organization that works to promote high-quality early learning for all young children, birth through age 8, by connecting early childhood practice, policy, and research.

4 C's: critical thinking, communication, collaboration, and creativity
(<http://www.nea.org/tools/52217.htm>)

Methodology

Action research methodology:

A. The driving question:

What is the effect of bringing technology into the Kindergarten classroom?

Sub Question:

Would loading up iPads to support writing difficulties improve skills more quickly than traditional teaching methods?

B. Specific measurable objectives for success: writing assessment which will be used to assess student performance prior to the study sample. The same writing assessment will be used to assess student performance at the conclusion of the study.

C. The experiment will be approximately two weeks long. A baseline of student writing data will be collected and analyzed. All of the participants will use a writing program on an iPad in conjunction with working with the teacher using traditional teaching methods. At the conclusion of the two week experiment student performance will be assessed and compared with the initial baseline data and writing assessment. The quality of writing will be compared with traditional teaching methods prior to the introduction to the iPad versus with the blended learning approach with iPads. The data collected from the post writing assessment will show whether or not there was a significant improvement in the participant's who experienced a blended learning approach with the use of iPads on a daily basis for two weeks.

D. The participants will include the entire 30 participants ranging from 5-6 years of age. An emphasis will be on the focus group consisting of the green and blue group participants who are experiencing challenges in the development of literacy skills such as english learners and learning differences.

E. The data collected will reflect sub groups of children in the kindergarten class.

F. Instrumentation: student samples of work, informal and formal assessments, data

Data Analysis and interpretation :

The research questions that guided this study were:

Q1: What is the effect of bringing technology into the Kindergarten classroom?

Q2: Would loading up iPads to support writing difficulties improve skills more quickly than traditional teaching methods?

The experiment took place in the kindergarten classroom. There were a total of thirty participants all between the ages of five and six years old. The experiment was two weeks in length which provided enough time to collect meaningful data. The children were divided into four groups with approximately eight participants in each group. The groups were categorized by color names; red, yellow, blue and green. Two groups (yellow and red) were mixed ability levels and shared similar learning strengths and challenges. One group (green) was a low leveled group with participants with learning challenges and differences. The blue group had children who were learning english and have only been in America for a 3 months. Both the green group and the blue group required more 1:1 teacher support and guidance. The green and blue groups struggled with the formation of letters, letter id and letter sound to symbol recognition. An informal writing assessment was collected from each participant prior to the experiment. In addition iPads were introduced to the four groups one week prior to the experiment in order to properly prepare the participants and focus on the usage of iPads rather than the instruction of how to use an iPad. Each day the lesson in each group began with a two minute phonics song, 20 minute literacy applications on the iPads followed by 10 minutes of traditional (pencil and paper) guided journal writing. The participants arrived to the literacy group excited and motivated to begin. The participants were smiling and vocalizing excitement with questions

such as, “ Do we get to use iPads today?” The two week experiment concluded with a final informal assessment identical to the first one in which the participants had to draw a picture and write sentences to match the drawing. It was recorded that the red and yellow groups continued at a steady pace to further develop and challenge their literacy skills. It was noted that more sentences were hand written than originally collected, they used more correctly spelled sight words than were originally introduced by traditional methods, more words were phonetically spelled with more sounds recorded and their overall penmanship improved. The results of the green and blue groups were even more surprising. The green group (learning challenges) participants motivation levels increased. Participants from this group looked forward to playing with the fun, interactive technology and were more eager to write with paper and pencil after the use of iPads. The blue group (language learners) were beginning to speak with simple English, sound out words confidently and reread what they wrote in English with comprehension for what they were reading. In just two weeks the green and blue groups showed significant improvements in letter identification, letter and sound recognition and penmanship. The post assessment shows an increased understanding for sound-symbol association in that the participants phonetically spelled more words than before and even included simple sight words in their writing. Participants in the green group that struggled with pencil grip, weak fine motor skills and letter formation were beginning to pay closer attention to detail. Participants asked questions about their work and were more motivated to try. Participants in the blue group that originally showed little or no comprehension of the written language were beginning to spell phonetically. The experiment proves that blending technology into the kindergarten classroom will have significant and quick learning benefits for all participants including the struggling

students, english learners and higher participants who benefit from higher level academic challenges. In addition the use of iPads in the Kindergarten classroom provided a differentiated learning road map for all learners regardless of ability. All groups showed greater areas of improvement when blending technology with traditional teaching methods.

Recommendations and summary:

This paper contains valuable ideas to consider when blending technology into the classroom.

The idea that all learners, regardless of learning challenges will benefit from the use of iPads is definitely a motivating piece to implementing blended learning methods within the kindergarten classroom. It is suggested that early educators expose young children to technology as a way to differentiate the curriculum, motivate learners and keep up with 21st century demands. It is essential that as educators we continue to grow, learn and advance our education in order to best prepare our 21st century students

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