Education Individualized Through Technology

Rachel Leers

A Senior Thesis submitted in partial fulfillment
of the requirements for graduation
in the Honors Program
Liberty University
Fall 2016

Acceptance of Senior Honors Thesis

This Senior Honors Thesis is accepted in partial
fulfillment of the requirements for graduation from the
Honors Program of Liberty University.

_____

Randall Dunn, Ed.D.
Thesis Chair

_____

Deanna Keith, Ed.D.
Committee Member

_____

George Young, Ph.D.
Committee Member

_____

James H. Nutter, D.A.
Honors Director

_____

Date

Abstract

This thesis will overview technology in the classroom and the impact as well as the potential that is has individualizing instruction in order to meet the needs of every kind of student. The thesis will consist of thorough research on the subject matter. Technology is a great tool to use for individualizing instruction as it consists of many recourses, it increases communication, increases discussion, has high availability, it is affordable, and consists of a variety of lesson plan ideas to meet the needs of each student. Individualized learning is especially important in the classroom as it increases student achievement, provides quality lessons, and connects with students. Individualized learning has the ability to reach all kinds of students such as at-risk students, English language learners, and students with special needs. It is a universal design for learning and has an endless amount of possibilities for the future.

Education Renewed Through Technology

Technology is advancing each day more rapidly than ever before. The extent of technology is limitless, and man is searching for the possibilities each day. Technology has changed lives all over the world as it is able to do things in the speed that man cannot. Nevertheless, technology can be used as a means of teaching and can have the potential to change the way a teacher will teach. When used correctly, there is a positive impact that technology can have in not only a general classroom but a special education classroom that will allow students to reach their full potential. Ultimately, when technology is used correctly it can individualize the learning experience for every student. First, technology can be used to accomplish this as there are many advantages to using it such as the surplus of resources, increased discussion and communication, cost, and availability. Second, individualized learning increases student achievement, provides quality lessons, and connects with students. Individualized learning also meets the needs of every student such as at-risk, English language learners, or students with special needs. With the use of technology to meet the needs of every student, there is an immense amount of potential for a greater educational future.

Advantages

Resources

There are many advantages to having technology in the classroom, and one of these is the surplus of resources (Golian, 2005). A classroom is confined to holding only a certain amount of books as there is space, whereas digital content is using only virtual space. This can allow a classroom to have access to millions of books regardless of the

size of the classroom. These virtual resources are also beneficial as many books and materials have different features built in. While students are reading virtual books, some include links or definitions built into the story that the student may use while reading. Often times a classroom has dictionaries readily available. However, online resources such as *Merrium Webster Online Dictionary* has, "20,000 terms with contextual definitions created by terminology experts as well as 6,000 full-color images. It is part of the Merriam Webster free online resources which include a traditional dictionary, thesaurus, medical dictionary and encyclopedia" (Pierson, 2014, p. 1). These resources provide a larger opportunity for students to learn. They target different learning styles in order to meet the needs of each student. The significance of learning or cognitive styles is essential to understanding how each mind works: "The notion of cognitive styles gained recognition in the 1950s and 1960s as a significant personal characteristic which raised the understanding of how people learn… [they] define the term as the unique and preferred way in which an individual processes, stores and retrieves information" (Kwock, 2011, p. 6). The Internet also holds an abundant amount of resources (Golian, 2005). It provides students with up-to-date, primary source material. Young and Bloor (2008) confirm that the information that is available is constantly growing and keeping up to date, it always contains the latest research and news. Students are given a wide variety of data that they can collect or record. They are also given many opportunities to express their understanding than simply with paper and pencil.

Communication

Technology can provide students different opportunities to communicate. There are various ways that students can communicate that may increase their desire to share their thoughts. From pen pals, to web quests, to discussion boards, an online community can allow more reserved students to feel comfortable sharing: "An OLC is a digital version of a learning community in that it brings together students, faculty, student affairs professionals, and other institutional members who interact and connect with each other within a learning management system" (Blanchard & Cook, 2012; Lenning et al., 2013). A learning management system is an application used to track, report and deliver educational courses, it is also known as e-learning. Although not every student has access to technology outside of the classroom it does still provide an opportunity for communication away from school. Teachers have noticed that when students use technology there is an increased collaboration with peers. Students will often communicate more with their neighbor to discuss their findings or even ask for help (Banitt, 2013).

Teachers also have the opportunity to communicate with their students using technology. Students can receive feedback immediately and have access to help from the teacher outside of the classroom. Collaboration among peers also has the potential to increase as students have a wide array of options to do so. Students do not have to wait the next day to ask their teacher a question or get a second opinion from a peer. Emails, texts, and online chats allow students to communicate instantly and collaborate with one

another (Driscoll, 2007). This increases communication drastically as students working together do not have to rely on meeting up as frequently.

Increased Discussion

Since technology is still a new and ever evolving fad, the excitement obtained from students can be used in a teacher's favor. Brown & Thomas (2014) suggest that, "faculty should take advantage of the opportunity to increase student learning" (p. 83). There are many instances where students do not share their thoughts or ideas within the classroom for possible shyness, fear of rejection, or disagreement. However, "they are more willing to respond anonymously via student response systems, which will increase the overall engagement and learning of students" (p. 83). Anonymity, although discouraged in the writing process, might provide a vehicle for students to overcome their public anxiety (Ferry, 2000). Once students gain the confidence to showcase their work to the public, they might begin to slowly attach their name. These opportunities have the potential to increase ownership of personal work and opinions, but should only be used as a tool rather than a crutch.

Availability

The dramatic increase of technology use creates an availability of technology. The classrooms that were present years ago are unlike any classroom today especially due to internet and technology access. Today, 98% of all schools own computers, 85% of American schools have multimedia computers, and 64% sixth grade and up have a cellphone, and 86% of college students have cellphone, specifically a smartphone (Poll, 2015). With the availability of technology increasing, everyday new apps and resources

are created to supply the demand: "As access to mobile phones and other portable electronic devices spreads throughout the world, the number of interventions attempting to use these devices to enhance learning for people of all ages is increasing dramatically" (Zuilkowski, Kwayumba, & Strigel, 2016, p. 205). For students that do not own any form of technology such as a phone or laptop, there are many opportunities for students to obtain one. Many libraries, public locations, and schools contain computers available for use or for rent. Not only the hardware itself, but also internet is available. In 2008, 98% of students had access to the internet (NCES, 2008). Internet is useful as it contains many teaching resources readily downloadable within seconds. With the internet dramatically overtaking the world, access to free Wi-Fi has become easier to find. Students have access in coffee shops, libraries, and designated public places for free Wi-Fi (Neel, 2014). The wide range of availability for these educational tools allows teachers to have a greater chance of incorporating them into their lessons for an enhanced learning experience.

In the past, education was only limited to those who lived in close proximity to a school. Today, not only students who live near schools have access, but anybody that has access to internet can now attend a school. Online classes have peaked as technology is emerging through this era. It is now a $100 billion global industry. Students from all over the world can have access to an education, and even receive a full degree (Moore, 2011). Many students who often attend different schools tend to fall behind in their academics. Other times students with parents that travel overseas have had to forfeit their education. With technology, students have an opportunity to continue taking classes regardless of

their situation or location. Although it may not be appreciated today, education has been a luxury for many years. Once personalized, students may learn to understand and appreciate the gift that it truly is.

Affordable

The cost of technology has decreased dramatically which has made technology more accessible all over the world. States that the increasing affordability of technology can allow every classroom to become a maker space, and each child can become a maker which will ultimately lead to truly personable learning (Martinez, 2013). The decrease in price has increased the accessibility in schools around the world. Many students regardless of various socio-economic backgrounds, can afford or have access to some form of technology. Integration of technology in the classroom has become easier due to the decrease in cost (Markoff, 2013). Companies are also recreating new versions of every type of technology which lowers the cost of older versions. This allows schools with a lower budget to have a higher chance of affording technology for the classrooms.

Resources for Lesson Plans

Creating even one lesson plan is a difficult job. A teacher must incorporate all the instruction for the class, the multiple means of delivering this message, and all the formative and summative assessments to track progress. An elementary teacher ranges from teaching five to seven lessons a day. The creativity of these lessons are completely up to the teacher. After months of creating many lessons, often times they tend to lack their creativity and uniqueness. Technology provides many different resources that guides teachers in lesson and activity making. Sometimes resources online can better

explain a concept to the student better than the teacher can. Online resources provide a wide range of ways to teach one lesson. Abott and Shaikh (2005) found that, "Employing creative ways of learning across the curriculum using digital technology facilitated greater pupil motivation and achievement in all participating schools, using digital cameras actively involved pupils in decision-making process and pupils took greater responsibility for aspects of own learning" (p. 457). Technology is simply a helpful resource for teachers that can allow their lessons to continue to be exciting and engaging all throughout the year. Certain websites such as "education world" consists of lesson plan ideas, templates, worksheets, lessons of the day, 5-minute lessons, and themed lessons. The instantaneous grading software also benefit teacher's lessons. Instead of teachers splitting up their time from grading and creating lesson plans, more time can be spent just creating meaningful lessons for the students. Also, when students receive instant feedback, it allows them to immediately correct where they went wrong Anant Agarwal who is an electrical engineer and president of EdX, predicts:

> Instant-grading software would be a useful pedagogical tool, enabling students to take tests and write essays over and over and improve the quality of their answers. He said the technology would offer distinct advantages over the traditional classroom system, where students often wait days or weeks for grades. (Markoff, 2013, p. 4)

There is a large amount of advantages to technology over a classroom in terms of efficiency. Software is able to do things in the speed that man cannot. As stated by Agarwal, the quality of student's work increases when feedback is given immediately.

Lessons can be at a disadvantage when confined to the walls of the classroom. Technology has produced virtual field trips which allow students to engage and explore a lesson while staying in the classroom. New virtual field trips give students a larger opportunity to explore many concepts and lessons without the hassle and difficulties of going on an actual field trip. Exploration is an engaging and exciting way for students to learn. Students can explore landscapes and countries by just using the computer. Science teachers can have students dissect plants or animals simply on an iPad without spending the majority of the time just setting up the experiment. This is especially helpful for kinesthetic learners; teachers will not have to go to extremely great lengths in order to meet their kinesthetic students. Overall, technology has the ability to create more engaging lessons within a day than a standard general classroom can have which has a greater potential to meet the needs of every student.

Individualized Learning

One highly popular teaching strategy is making use of stations so that students are given multiple ways of receiving the knowledge. However, certain apps allow this time-consuming strategy disappear. Many educational apps are created so that they focus on trouble areas based on each student and are tailored to their learning style. This allows a period to focus primarily on a child and their specific needs, rather than participating in stations that may or may not each reach their cognitive ability: “Increasingly, people want education products and services tailored to their individual needs rather than one-size-fits-all courses of fixed length, content, and pedagogy” (Dede, 2005, p. 8). Technology also improves individual learning by challenging students in order to advance: “In

conjunction with teacher guidance, students select lessons on the basis of their preferred learning style. As they master key concepts, they advance to higher skill domains, often aided by multimedia and interactive educational materials" (West, 2012, p. 22).

The online tutoring tool is a useful learning aid as it is able to monitor how students are approaching math problems: "dealing with the geometric characteristics of circles, providing relevant hints, and giving them access to a detailed knowledge base. It allows students to avoid common errors and coaches them along the path to solution" (West, 2012, p. 26). When students are working through difficult problems, they are more likely to use resources that are easily accessible such as a dictionary, glossary, or hint button, rather than giving up on the problem. When students are working at home they can be guided to find the correct answer, rather than leaving it blank.

In every classroom, there are varying levels of academic success. A teacher can accommodate only so much. Moe and John (2009) claim, "technology can customize instruction literally for every student. Kids could have substantial amounts of customized remediation or acceleration, and even entire courses. Education could be dramatically differentiated" (p. 51). Students will no longer run into the issue of waiting for classmates to finish their work before they proceed, or not having enough time to complete their assignments. Students can work at their own pace, which ultimately gives each student the most profitable learning experience.

Increases Student Achievement

Student achievement is one of the largest benefits of technology use within the classroom. Many resources are aimed at providing immediate feedback to students in

order to improve their achievements. No Red Ink is a site that helps students with Grammar and Writing skills. They use differentiated instruction aligned with common core standards. They give unlimited help to students and focus on their specific problem areas. Teachers are able to track students and provide detail reports. Clever Island is another site that lets students take charge and be accountable for their own learning. It covers the core classes such as math, reading, and science and adapts to the students learning styles. These are just few of the many resources created that increase student achievement: "Teachers will often be the first source of instruction, helping kids master core concepts and skills. Then, technology will provide customized remediation for students not able to grasp the core and acceleration for students ready for specialized and enriching extensions" (Moe, Cuban, & Chub, 2009, p. 48). Technology allows learning to be personalized more than a teacher can. After a lesson has been taught, every student that needs clarification in various areas can receive help. A teacher is limited to the amount of personalized attention each student can receive, therefore, technology provides that personalized care that a teacher cannot. The student achievement rate is shown to increase dramatically when assisted immediately after an unclear lesson: "In one study that looked at delayed vs. immediate feedback, the researchers found that participants who were given immediate feedback showed a significantly larger increase in performance than those who had received delayed feedback" (Stenger, 2015).

Quality

Curriculum infused lessons allow students to receive the most profitable learning experience. Many resources throughout technology focus on using common-core and use

that as their guide. As students grow older, software and resources are paired with different industries so that students are receiving the most profitable and quality learning experience that is aligned with their desired career. Singer (2015) states, "Partnerships to support technology-enhanced education extend beyond the walls of the campus as well. Working collaboratively with industry partners can hone the curriculum to prepare students for the workplace" (p. 30). One of the most successful learning techniques within a classroom is inquiry-based learning. When students must search for answers to questions, it puts them in control of the knowledge that they receive. Students are more likely to connect with what they learn when they genuinely want to discover why something is the way it is. Often times it is difficult for a teacher to implement inquiry based learning due to limited time and resources. Technology offers a wide array of means to facilitate this type of quality learning.

Connects with Students

There is a reason why technology has been growing drastically especially with the younger generation. It connects with students in various ways. To begin, students are drawn to immediate results. It is able to motivate them as they are tracking their progress instantly. It also provides students a platform to have a voice. They begin to have a self-esteem like never before. When they are using technology they no longer feel inferior, instead they begin to feel like an equal which begins to empower them: "These participant responses show the importance of using technology to connect and engage students and provide an authentic audience for their work" (Wardlow, 2016).

Students also connect with technology as it provides a large variety of ways they can demonstrate their performance. Rather than the conventional test or writing piece given in class, students can be given various forms that are less intimidating and can better showcase their sills. Since technology is valued greatly today, students begin to feel a sense of power. When students are given technology, it begins to add a greater weight to their school activities. Many sites allow students to see how many views they have which promotes accountability for their work. They can begin to do school work for intrinsic motivation rather than extrinsic motivation. There work is no longer only being viewed by a teacher, instead they can have a large audience enjoy the work that the student has put so much time into.

Some schools will allow students to discover within the classroom. "When students are intrigued by words and ideas, they want to dig more deeply. Interesting technologies encourage students to connect what makes them wonder with the ideas they encounter in their academic reading, and the effect can be quite powerful" (Wosley & Grisham, 2014, p. 459). When students are given the freedom with technology, it allows them to connect with what they are learning. It allows the students to stop seeing it classwork, instead, they are using their curiosity to guide them. When they discover on their own it creates a sense of ownership of their findings.

Individualized Learning Reaches a Variety of Students

At-Risk Students

The amount of at-risk students in the school system is much larger than it should be. If the numbers could be reduced simply by implementing technology in the

classroom, that would be beneficial to the health of these students. Miur-Herzig (2004) conducted a study that found that the use of technology in the classroom improves at-risk student's grades, attendance, and complex thinking skills:

> Recent findings have shown that at-risk students in grades k-12 are being deprived of challenges and of the chance to use complex thinking skills. The purpose of this study is to determine the effect that the level of computer technology use in the classroom has on at-risk students' grades and attendance…These results suggest that for technology to be effective and make changes in at-risk students' grades and attendance, schools must be prepared for technology use in the classroom. (p. 111)

Although many at-risk students might not be given the same privileges as other students, providing challenging learning experiences is important for the health of any student. Many schools have been posting grades and attendance online for students to see which has helped families keep an eye out for at-risk students to begin with. Many at-risk students are searching for an escape and technology might be that escape. If a student can learn at their own pace and be intrigued and challenged, it has the ability to help him or her reach their potential.

English Language Learners

Diversity within a classroom is inevitable. Teaching English language learners can be an obstacle at times for a teacher as they are not only teaching the content but also another language to some. There have been many resources created in order to aid teachers in teaching ELL students: "Over the past decades, the increasing use of

Computer Assisted Language Learning (CALL) has encouraged numerous studies investigating the impact of the implementation of technology on students' language learning outcomes and their motivation for learning" (Huang & Hong, 2015, p. 177). Other resources that have been found to play a major roll in the learning experience for ELL learners is app such as "Intro to letters" which introduces students to the alphabet through pronunciation strategies, tracing, audio, flashcards, and phonogram puzzles. "Sounds Right" allows students to develop the correct pronunciation and displays the proper mouth formation. "Sentence Builder for IPad" challenges students to construct simple grammatically correct phrases based on the pictures given. These are just few of the examples that can make a world of a difference for students who are in need of extra assistance learning English. These examples are to aid in English learners, however: "Technology allows for adaptations to different linguistic groups, given that one trained home-language speaker is available for an initial audio recording" (Leacox & Jackson, 2014, p. 193). Students may be given an assistive iPad which provides an opportunity for students to practice and develop their English outside of the classroom.

Special Needs

Students with disabilities face the challenges of trying to cope with everyday life as well as try to become more autonomous after they graduate. The increase of technology has made a major breakthrough in the world of special needs. It has been proven repeatedly as a valuable tool due to its ability to individually meet the needs of each student. Technology has created surgeries and accommodations to make impairments less of a hindrance such as hearing aids, vocal surgeries, eye surgery, etc. In

the world of education, technology has been slowly able to replace the impairment. Applications now can act as a voice, decode slurred words, and so much more that allow students to overcome barriers. Students with special needs have had to miss out on so many activities and educational opportunities due to their impairment. Electronic devices and multimedia contents have been studied and:

> In many cases they have the opportunity to perform activities that previously were not accessible to them, because of the interface and contents of the activities have been adapted specifically to them. The study also suggests that the repertoire of types of activities provided is suitable for learning purposes with students with impairments. Finally, the use of electronic devices and multimedia contents increases their interest in learning and attention. (FernáNdez-LóPez, RodríGuez-FóRtiz, RodríGuez-Almendros, & MartíNez-Segura, 2013, p. 73)

Students with special needs have also been benefited in the school systems with the replacement of textbooks to digital textbooks. There are many accommodations that can be made into digital textbooks that allow students with special needs to have a better learning experience. Teachers also make use of assistive technology which allows the instruction to differentiate to meet the different needs in the classroom. Students with physical disabilities can use E-readers which will turn pages without apply dexterity, there are also voice adaptive software that allows students to answer questions without writing.

One of the major benefits with technology in the classroom, is that it is able to meet the needs of students with mild disabilities so that they are able to compete

academically within the classroom. It has been noted that students with mild learning disabilities thrive in multimedia projects due to their higher-level performance and attention to detail.

Theories

Educational theories provide insight into the lengths it takes to reach each student's cognitive ability. Each student learns differently and requires specific gateways in order to receive the information. Technology plays a large role in facilitating these individualized learning opportunities for each student.

Social Cognitive Theory

The Social Cognitive theory asserts that people learn from observing others. The main components to this theory is modeling, self-efficacy, and mentoring. Modeling occurs when a student observes another performing a specific concept or skill. This is an extremely key component to teaching. Before technology, students had little access to models. Technology grants students with many different options to observe someone modeling. Sometimes a video, a song, or a diagram, is all a student may need to understand a concept. Self-efficacy, is one's ability to reach their own goals: "Rather than being passive recipients of information, students contribute actively to the learning goals and exercise a large degree of control over the attainment of those goals" (Zimmerman & Schunk, 2011, p. 83). This is increased when a student is able to watch and critique himself. Technology provides many resources for students to implement this. They can record themselves for practice, or film themselves during their performance to increase their self-efficacy. Finally, the mentoring part is the most important to the social

cognitive theory. Students are no longer limited to the tutors or mentors within the school community, instead they have the opportunity to learn something from somebody anywhere in the world. Overall, students that require this kind of learning can be positively affected while using the resources that technology provides such as YouTube, online tutorials, educational websites, and so much more.

Information Processing Theory

The information processing theory focuses on student's attention, perception, storage of knowledge, and encoding of skills and information. This theory emphasises that each student has a different processing capacity. This means that students each retain a different amount of information in their short and long-term memory. This theory states that a student must automate some function in order to provide more cognitive resources to learn effectively. Technology has created apps which provide students with practice and drills which provides students with changing and new ways to automate their essential skills: "CAM (Computer-aided manufacturing) skill and cognitive learning can cultivate learner motivation in the aspects of attention, relevance, confidence, and satisfaction, and can increase cognitive loads" (Jeng-Chung, 2014, p. 303).

Conditions of Learning

Gagne theorized that each student is different and that the pre-requisite skills acquired by students differ. Therefore, instruction needs to meet the need of each student. In order for a student to master complex intellectual skills, they must master lower level skills that would promote deeper understanding. Although Gagne proposes a fixed learning sequence, students do not master the same levels, and some students begin

lessons as different entrance points. In order for students to develop mastery of the skills, they need to work at their own pace and use instructional activities that would give them the prerequisite skills to learn the goal.

Creating Multiple Means- Universal Design for Learning

The Universal Design for Learning is a framework that seeks to improve and optimize teaching and learning based on how each human learns. It is an approach to curriculum that aims to minimize barriers, and maximize the learning opportunity for all students. Universal means it can be used and understood by anyone. Each student that comes into the classroom has a different background, strengths, needs, and interests. A scientific approach to this design states that learning is conducted of three brain networks; engagement, representation, and recognition.

Engagement —the Why of Learning

Classroom techniques that engage experience consists of: activating prior knowledge, investigation, group interactions, collaboration, freedom of choice, etc. Engagement in the classroom enables teachers to capture the interest of students while they absorb skills and concepts that will help them in the future. Once a student engages in learning it can be a lifelong gift. One of technology's greatest accomplishments is the increased engagement rates. A study found that authentic activities within online learning environments creates many benefits for students in online courses. This is due to the renewed interest and opportunity to problem solve with realistic situations: "Our ongoing research seeks to explore the design principles that can accommodate and support these

learning outcomes in online settings where the need for learner engagement is paramount to learning success" (Herrington, Oliver, & Reeves, 2002, p. 7).

Representation —the What of Learning

Howard Gardner is a common name heard in the world of education. He identified different learning styles that students receive information. Learning occurs when information is received by the students; however, there are many barriers that hinder students from accessing this information. In order to ensure equally perceptibility, students must be able to receive the same information through different modalities and formats. These multiple representations such as enlarging texts or increased sounds, can allow learners to access the information despite sensory or perceptual disabilities.

Since every learner is different and perceives things differently, it is important to note that there must be more than one form a representation. A line drawn might mean one thing to one person, and something else to another. A major instructional strategy that ensures learners to comprehend across the board is alternative representations. Technology has many different facets that cater to each individual that appeases the auditory, kinesthetic, visual, etc.

One of the main purposes of education is to teach students to transform accessible information and turn it into useable knowledge. In order for students to construct this knowledge to use for the future they must have, "active information processing skills such as selective attending, integrating new information with prior knowledge, strategic categorization, and active memorization" (CAST, 2011).

Action & Expression —the How of Learning

Information and Communication Technology, also referred to as ICT, is a universal system in which students and teachers from all over the world are able to have a more efficient education experience: "ICT integration is a comprehensive process of applying the emerging technologies to the educational processes to improve all aspects of education. Its success in teaching learning depends not only on the availability of technology, but also heavily on the pedagogical design" (Paily, 2013, p. 49). Schools have paid little attention to a teacher's pedagogy, which is an extremely foundational aspect to a teacher's career. Pedagogy defined is the act, process, or art of imparting knowledge and skill. Technology is simply one of these processes that might allow students to develop the appropriate knowledge and skills needed for the future. When a teacher can successfully infuse technology within their pedagogy, they will be able to reach a larger amount of students.

Hypothetical Case Study

Suppose a fifth grade student has been having difficulties keeping up with course material. Each day the class is moving on to the next lesson, however they are still trying to grasp the previous lesson and require a bit more practice. There may still be a small part to the lesson that they have yet to grasp and need an alternative explanation for it. With technology, this student can be assisted with an iPad that may be able to explore the lesson in different ways. It could produce the lesson in a way that appeals to their specified learning style. They could be given an activity or app that could provide the student with extra practice so that they can catch up before they receive the next lesson in

class. If the student goes home and needs clarification on an assignment, they can still communicate with the teacher via email or phone. Suppose the student comes from a low-economic background, they would still be able to access a computer or internet in a nearby library or school. The student would still be able to communicate with peers and collaborate over homework assignments. Ultimately, technology can provide the student with the necessary means in order to receive proper instruction and practice so that they can reach their educational goals regardless of how the rest of the class is doing.

For the Future

Although it seems as though technology is at its peak, it has only just begun. There is an endless amount of opportunities for new technology software to be invented. People have already begun creating new ideas that will greatly enhance the future. Students will be given an entirely new experience in the world of education. Biometrics is a technology that can recognize a person based on behavioral or physical traits. The science can recognize physical and emotional dispositions of students within the classroom and use that to alter course material in order to tailor to each student's needs.

Another new idea Google is working on is Augmented Reality glasses where there is a layer of data on top of what one naturally sees. This is used to produce a more interactive learning experience for some students who may be visual learners. An example would be a student wearing the glasses could sit and have a chat with somebody such as Thomas Edison. Ironically, it was Edison who stated, "Books will soon be obsolete in schools. Scholars will soon be instructed through the eye" (cited in Saettler, 1968, p. 98).

Finally, a multi-touch surface is about to grow and enhance dramatically throughout equipment. The most commonly used multi-touch surface is on the iPhone today, however this is soon going to be found in desks or workstations. This can enable students to collaborate with others not only in the classroom but also around the world. Students will be able to stream videos and other virtual tools in order to have an interactive learning experience like never before. Kinesthetic learners will be able to thrive using this kind of learning experience.

In conclusion, technology will not be able to solve every problem, however, it does have the capability to increase every individual student's academics. The overall goal of education is so that each and every student receives the best learning experience and can reach their full potential. With technology, students are able have a personalized learning experience. Often times a classroom has a thirty to one ratio of students to teacher, therefore, a teacher does not have enough time to spend one on one with each student. Technology gives students the attention that they need and require. Students can be directed and corrected instantaneously. They can have a learning experience that pushes them to reach their full potential. Students are able to receive the type of instruction that will reach their cognitive ability. Technology will allow the students to explore concepts on their own and take control of their own learning. A variety of students can be reached using technology as there are resources that can help English language learners, or students with special needs flourish in a classroom. No one student is similar, and no one student learns the same. Education can no longer be a one-size-fits all environment, it needs to cater to all needs of the students in order to be impactful. All

in all, technology has the potential to create student-centred classrooms that allow learners to receive endless amounts of learning opportunities that best fit their needs.

References

Abbott, C., & Shaikh, A. (2005). Visual representation in the Digital Age: Issues arising from a case study of digital media use and representation by pupils in multicultural school settings. *Language & Education: An International Journal, 19(6),* 455-466.

Banitt, J., Theis, S., & Van Leeuwe, L. (2013). The effects of technology integration on student engagement. Masters of Arts in Education Action Research Papers. Paper 7. Retrieved from http://sophia.stkate.edu/maed/7

Blanchard, A. L., & Cook, J. R. (2012). *Virtual learning communities centered within a discipline: Future directions*. In *K. Buch* & *K. E. Barron* (Eds.), *New Directions for Teaching and Learning: No. 132. Discipline-centered learning communities: Creating connections among students, faculty, and curricula* (pp. 85–97). San Francisco, CA: Jossey-Bass.

Brookhart, S. & Nitko, A.J. (2015). *Educational assessment of students* (7th ed.). Upper Saddle River, NJ: Prentice Hall. ISBN-10: 0133436497

Brown, E. A., Thomas, N. J., & Thomas, L. Y. (2014). Students′ willingness to use response and engagement technology in the classroom. *Journal of Hospitality, Leisure, Sport & Tourism Education, 15,* 80-85. doi:10.1016/j.jhlste.2014.06.002

CAST (2011). *Universal Design for Learning Guidelines version 2.0.* Wakefield, MA: Author.

Dede, C. (2005). Planning for neomillennial learning styles. *Educause Quarterly, 28*(1), 7-12.

Driscoll, K. (2007, May-June). Collaboration in today's classrooms: new Web tools change the game: the new-generation Web 2.0 solutions are easier and more engaging to use, and they are proving to have a larger impact on collaboration and communication in the classroom than complex technologies of the past. *Multimedia & Internet@Schools, 14*(3), 9+. Retrieved from http://p2048-ezproxy.liberty.edu.ezproxy.liberty.edu/login?url=http://go.galegroup.com.ezproxy.liberty.edu/ps/i.do?p=ITOF&sw=w&u=vic_liberty&v=2.1&it=r&id=GALE%7CA204544295&sid=summon&asid=ed2914b2378bdeb9d2ded388c0349f38

FernáNdez-LóPez, Á., RodríGuez-FóRtiz, M. J., RodríGuez-Almendros, M. L., & MartíNez Segura, M. J. (2013). Mobile learning technology based on iOS devices to support students with special education needs. *Computers & Education*, *61*, 77-90.

Ferry, A. (2002). "Anonymity": The Literary History of a Word. *New Literary History, 33(2),* 193-214. Retrieved from http://www.jstor.org/stable/20057720

Golian-Lui, L. M. (2005). Internet Resources for Education Reference. *Journal Of Library Administration*, *43*(3-4), 195-208. doi:10.1300/J111v43n0315

Herrington, J., Oliver, R., & Reeves, T. C. (2002). Patterns of engagement in authentic online learning environments. *Australian Journal of Educational Technology*, 19(1), 59-71.

Huang, Y., & Hong, Z. (2015). The effects of a flipped English classroom intervention on students' information and communication technology and English reading

comprehension. *Education Tech Research Dev Educational Technology Research and Development, 64*(2), 175-193. doi:10.1007/s11423-015-9412-7

Jeng-Chung, W. (2014). Digital game-based learning supports student motivation, cognitive success, and performance outcomes. *Journal of Educational Technology & Society, 17*(3), 291-291?307. Retrieved from http://ezproxy.liberty.edu/login?url=http://search.proquest.com.ezproxy.liberty.edu/docview/1556991746?accountid=12085

Leacox, L., & Jackson, C. W. (2014). Spanish vocabulary-bridging technology-enhanced instruction for young English language learners' word learning. *Journal of Early Childhood Literacy, 14*(2), 175-197. doi:10.1177/1468798412458518

Markoff, J. (2013). Essay-grading software offers professors a break. *The New York Times*, *20*(3), A1.

Martinez, S. L., & Stager, G. S. (2013). INVENT TO LEARN: Makers in the classroom.*The Education Digest, 79*(4), 11-15. Retrieved from http://search.proquest.com/docview/1464619032?accountid=163975

Muir-Herzig, R. G. (2004). Technology and its impact in the classroom. *Computers & Education*, *42*(2), 111-131.

Moe, T., & John, L. (2009). Virtual Schools - Education Next. Retrieved June 23, 2016, from http://educationnext.org/virtual-schools/

Neel, K. C. (2014, October 20). WiFi grows beyond cellular shadow: MSOs see tech as a revenue, stickiness driver. *Multichannel News*, *35*(39*)*, 8+. Retrieved from http://p2048ezproxy.liberty.edu.ezproxy.liberty.edu/login?url=http://go.galegroup

.com.ezproxy.liberty.edu/ps/i.do?p=GRGM&sw=w&u=vic_liberty&v=2.1&it=r&id=GALE%7CA388662345&sid=summon&asid=abb092766d112027ed3419a45bd165dd

Paily, M. U. (2013). Creating constructivist learning environment: Role of "web 2.0" technology. *International Forum of Teaching and Studies*, 9(1), 39-50, 52. Retrieved from http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1346942900?accountid=12085

Pierson, C. (2014). Visual dictionary online. *Reference Reviews, 28*(5), 30-31. Retrieved from http://ezproxy.liberty.edu:2048/login?url=http://search.proquest.com/docview/1625604806?accountid=12085

Piper, B., Zuilkowski, S. S., Kwayumba, D., & Strigel, C. (2016). Does technology improve reading outcomes? Comparing the effectiveness and cost-effectiveness of ICT interventions for early grade reading in Kenya. *International Journal of Educational Development, 49*, 204-214. doi:10.1016/j.ijedudev.2016.03.006

Poll, H. (2015, June). Pearson Student Mobile Device Survey 2015. Retrieved November 3, 2016, from http://www.pearsoned.com/wp-content/uploads/2015-Pearson-Student-Mobile-Device-Survey-College.pdf

Saettler, P. (1968*). A history of instructional technology*. New York: McGraw Hill/

Singer, S. (2015, March 1). Partnering to advance learning in a technology-enhanced world. Retrieved June 20, 2016, from

http://er.educause.edu/articles/2015/3/partnering-to-advance-learning-in-a-technologyenhanced-world

Stenger, M. (2015). 5 Research-based tips for providing students with meaningful feedback. Retrieved from http:// www.edutopia.org/blog/tips-providing-students-meaningful-feedback-marianne-stenger.

Wardlow, L. (2015, January 26). Educational technology connects students. Retrieved from http://researchnetwork.pearson.com/learning-science-technology/educational-technology-connects-students

West, Darrell. (2012) *Digital schools: How technology can transform education*. New York, NY: Brookings Institution Press.

Wosley, T., & Grisham, D. (2014). Vocabulary Plus Technology. Retrieved April 19, 2016, from http://onlinelibrary.wiley.com/doi/10.1002/trtr.1331/full

Young, A. F., & Bloor, J. (2009). Stay up to date online. *Student BMJ, 17*doi:http://dx.doi.org/10.1136/sbmj.b2396

Zimmerman, B. J., & Schunk, D. H. (2001). Self-regulated learning and academic achievement. *Theoretical Perspectives*. Doi:10.1007/978-1-4612-3618-4_4