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Developing the 21st Century Skills of Creativity, Collaboration and Information Fluency in a Kindergarten Classroom

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DEVELOPING THE 21ST CENTURY SKILLS OF CREATIVITY, COLLABORATION AND INFORMATION FLUENCY IN A KINDERGARTEN CLASSROOM

by

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To my Uncle Mark, who I know would have been
the number one fan of the iPad.

Technology is nothing. What's important is that you have a faith in people, that they're basically good and smart, and if you give them tools, they'll do wonderful things with them.

Steve Jobs

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CHAPTER ONE

Introduction

The Evolution of Technology

The world has been forever changed with the invention of the computer and its related technologies, such as the e-reader, iPad, smart phone and other 21st century devices. Communicating and creating with people in all parts of the world has never been easier. As a result of the ease with which people are able to communicate through technology and more specifically, social media sites such as Facebook, Instagram and Twitter, there appears to be room for everyone's voice on the Internet. Whether we like it or not, being a contributing part of this massive stream of information is becoming an essential component of being human. This is both an exciting and overwhelming time to be alive.

Clearly, education has also been altered by this influx of technology. Many teachers and students have access to the Internet as well as the use of SmartBoards, laptops, iPads and other technology to aid in their teaching, learning and research. As a result, traditional schoolwork and homework has been forever changed. Book reports are starting to be published on blogging websites instead of handed in on a single sheet of paper to a teacher, and classroom discussions no longer stay in the classroom but continue after the school day on websites such as Edmodo and My Big Campus. Additionally, students are being asked to produce new kinds of assignments in which they are creating multimedia texts using all forms of technology.

Although I use technology every day in my kindergarten classroom, I still feel very behind and overwhelmed by the possibilities of what I could have my young students working on with the technology we have access to, specifically iPads. Often, our classroom iPad work time is mainly spent just playing learning apps. The apps are definitely helping my students practice basic reading and math skills, but there is usually not an end product or any student work produced from these technology experiences.

Therefore, I am interested in finding out how I can better use iPads in my classroom to help my students to learn the 21st Century Skills of collaboration, creativity and information fluency. Practicing these skills, rather than just playing, is my ultimate instructional goal for student iPad use. I understand my students are growing up in an era where a different skill set is necessary to be an active member of society. They will be asked to publish their work online and collaborate with others using technology throughout their entire lives, which is a major change compared to older generations of learners. Therefore, I believe starting them early with this process will only be able to help them in the future. This has led me to my essential question: *How can I create a literacy based project that will help my kindergarten students develop the 21st Century Skills of creativity, collaboration, and information fluency?*

How Technology Has Shaped My Life

I would consider myself as growing up on the bubble of the technology boom. I have used technology for most of my life, but it was not until the last 10 years that it has become so widely used and part of my daily routine. In fact, I am able to say I knew life before the Internet, something that is hard to even fathom by my students these days.

When I think of technology as a young child, my earliest memories go to my Uncle Mark, who was always ahead of the curve in knowing about the latest technology inventions and gadgets. Being babysat by Uncle Mark was the best because it meant hours spent on his, at the time, state of the art computer and drawing pictures using the original Kid Pix program. At one point during my childhood, he was even working on building his own computer. I have a distinct memory of seeing his workshop desk covered with the inner cords and hard drive components of a mid-90's computer. How fascinating it was! Although I had this wonderful exposure to computers during the elementary years of my life, for the most part, they were mostly only used on special occasions and not a part of the natural routine of my daily life.

As I got older, technology and the Internet became more and more accessible, especially in schools. I can still remember the first day that I ever logged into the Internet. It was during our seventh grade weekly technology class where usually the class time was used to practice our keyboarding skills. This day was different from the rest because we were to do research "online." Looking back, it is amazing to think of how our teacher had to explain what "*www.*" or "*.com*" meant. My little sister, only six years my junior, still cannot believe that I had never used the Internet until I was in seventh grade. Just that six-year gap in age made a big difference as to how she and I have used technology during our educational careers. The speed in which new technologies have been developed means that so much can change in just short spans of time.

During these early years of the 2000s, as I continued through my education, I started using computers and the Internet more frequently to conduct research, word process papers and make simple Power Point presentations for school. Chat rooms and America Online

(AOL) Messenger became popular for a short stint while I was completing high school and beginning college. I also purchased my first cell phone during this time period because they were finally available to the masses. Access to technology, during this time period was starting to increase but, for the most part, computers were only used for word processing assignments and cell phones were only able to make phone calls.

Things really started to change with online communication when I was a senior in college. A brand new website had been developed which allowed college kids to create online profiles and become online "friends" with each other. Facebook was the buzz all through campus that year and everyone was quick to try out this new website. For many of us, myself included, this was our first foray into what is now referred to as social media.

In the nine years since I have graduated from college, technology and social media has exploded with new ideas, tools and applications. I now am able to access almost any information I need through the Google search app on my iPhone. Texting is my favorite way to communicate with my friends and family. Twitter is where I often get my news updates and I have a few blogs that I update frequently. I have not watched a music video on MTV in years because they are all available anytime on YouTube. In nearly half a decade, with the invention of the iPhone, iPad and other tablets, communicating through social media and texting has become a constant part of my life. I have checked Facebook and Twitter twice while writing this section alone.

The expansion of technology use has changed how I communicate at work as well. During my first few years of teaching, only eight to nine years ago, it was rare for a parent of one of my students to send me an email. I would send home weekly newsletters printed on paper in student folders and schedule by hand the assignments of my parent volunteers for

the year. Now I receive anywhere from 5 to 10 emails from parents a day, post classroom updates on our kindergarten program's Facebook page and use Sign Up Genius to schedule classroom volunteers. Although my technology workload has increased over time, I do feel like my school to home communication has improved as well as become more streamlined.

Two years ago, I began my coursework in the Masters of Literacy Education program at Hamline University. One of the first courses I took was called "New Literacies." Going into this class, I was thinking we would be learning about new, interesting books to use in our classroom and different teaching resources. Although new books and resources were shared during this class, it was not the main focus of our coursework. Instead, I was introduced to the concepts of digital literacy and the 21st century learner, both of which I will discuss more about in Chapter Two.

The greatest insight I learned from this particular course was the concept that a text is no longer just words on a piece of paper but instead, text can be pictures, movies, music and online blogs, just to name a few. Wow, was this eye-opening! Yet at the same time, it also made perfect sense. Of course there is a lot to comprehend and glean from a movie, a painting, or an interactive website. As humans, we are constantly taking in our surroundings, trying to comprehend and communicate with everything we come in contact with. After years of considering text as only printed words, this realization was a huge shift in my mindset of what defines learning.

Besides the concept of print changing with the increase in technology, my role as a classroom teacher has also shifted during my almost decade of teaching. Instead of being the sole purveyor of information in my classroom, I am finding myself more and more encouraging my students to find new ways to seek information and explore their interests.

One of my favorite activities to do with my class is to play "Google." This involves me typing student questions into the Google search engine to find the answers. There are no parameters to their questions, simply, what do you want to know? My students love this activity because they get to learn new information about things that they are interested about. I love this activity because I am learning new things right alongside my students. When we play "Google" as a class, we are working together, with the help of technology, to explore the world in ways that were not possible when I was in kindergarten.

For these reasons, I now understand that I need to teach my students to think, create and learn how to navigate this new landscape of communication and technology in order for them to become successful, contributing members of the 21st century. The world is a vastly different place than it used to be when I was a growing up, so I need to teach my students different skills than I was taught. As I have seen my own growth in technology understanding and use, again I wonder, *How can I create a literacy based project that will help my kindergarten students develop the 21st Century Skills of creativity, collaboration, and information fluency?*

Teaching and Technology

Over the course of my nine years of teaching, I have experienced the transition of having my students listen to books on tape and CDs to listening to digital files on an iTouch or iPad. About six years ago, I was fortunate to get a SmartBoard installed in my classroom. I also have had iTouches for a few years which students are able to use to listening to stories and play learning game apps. Technology time is not limited to a scheduled half an hour in the school computer lab but is instead integrated into my classroom daily.

A few years ago, my school began a one to one iPad program for our seventh and eighth graders. Students rent the iPads for the school year, paying a low monthly rental fee. At the end of their eighth grade year, the students are given the option to buy their iPad from the school. iPads that do not get purchased by the eighth grade students' families are kept by the school for use in the other grade levels. As a result, all teachers have been given their own iPads for professional use, as well as an additional iPad for regular classroom use. Two mobile carts of 25 iPads each have also been created for classroom teachers to use with their students as well.

In the time period that the iPad cart has been available for check out, I have probably used it a few dozen times or so a school year with my students. I mainly have found some fun learning apps for my students to use in which they practice their numbers or letters. One of the challenges I have found is finding the time to look for appropriate apps to use with my class. App creation for kids is a newer technology field that has really taken off the last few years but has not been of the best quality until recently. Now there seems to be almost too many apps available for kids, with new ones being published daily. It is challenging to find apps that are the most beneficial and appropriate to use in the classroom, which is a main reason why I am interested in researching iPads and apps for kindergarten.

In recent years, I was fortunate to have a parent of a student in my class who works specifically with iPads and education, come in and help my students use the iPads a few times during the year. This parent shared a few iPad apps with me that we used with the kindergarteners. Our most successful lesson was using the StoryKit app to have my students take a photo, draw a picture and record themselves talking about the picture they drew. It

was a very basic lesson, but was, nevertheless, a great opportunity for my students to create something with the iPads.

This year, I have made it a professional goal to use the iPads more often with my students. Besides just using the iPads to play learning games, I would like to focus more on the creation of work using the iPads. I also would like them to listen to stories, both professionally produced as well as their own, on the iPad. Basically, I see a huge potential for my students to improve their literacy achievement and express themselves more creatively through iPads. However, I struggle with the most effective way to use the devices. This is why I am interested in developing a curriculum that will give my students experiences using the iPads to be creative, collaborate and work on their information fluency.

One of the most popular components of my school's kindergarten curriculum is our partnership with the sixth graders, known as the Reading Buddies program. Every Friday throughout the school year, the sixth grade students partner up with kindergarteners to read a story and complete a short comprehension project. It is a well-loved, cherished part of our weekly class schedule that the sixth graders enjoy just as much as the kindergartners. It is also one area of the kindergarten curriculum that I have always wanted to invest more time and energy into because I see a lot of possibilities for collaboration between the sixth graders and kindergartners.

In the spring, the two sixth grade classes and the two kindergarten classes go on a field trip together to Mill City Museum in Minneapolis as an end of year activity. I love taking the Reading Buddies to the Mill City Museum. It's a great field trip where the kids learn a lot about the Mississippi River, how mills work, Minneapolis history and even how to bake bread. The problem I've always had with the trip is that I don't teach any curriculum

that goes specifically with the field trip; it's just been a place where we always go for this special Reading Buddies field trip.

This lack in any connection between the field trip and what we learn in the classroom is the reason why I wanted to create a curriculum for my kindergarten students about topics they learn at the Mill City Museum. I see huge potential for interactive lessons using the iPad for students to learn about Minneapolis and Minnesota history, farming and milling, the Mississippi River, and even baking bread. Because the topics are local and it is a field trip we go on with the sixth graders, I knew there would be a variety of ways I could have my students work on being creative, using apps to tell the story of the mill or maybe Mississippi River, collaborating with others, whether it is a 6th grader or a bread baker, and being able to practice information fluency by acquiring new knowledge about a variety of mill related topics. I believe the lessons I created will be able to help me answer my question: *How can I create a literacy based project that will help my kindergarten students develop the 21st Century Skills of creativity, collaboration, and information fluency?*

Conclusion

My interest in improving how I use iPads with my kindergarten students is not only a professional goal for me but also a necessary improvement to my teaching as I attempt to grow 21st century learners in my classroom. My students will need these technology skills for whatever their future brings, so it is best to start them early. The curriculum unit I designed around our field trip to Mill City Museum will give my students experiences learning about milling while working on 21st Century Skills.

In Chapter Two, I discuss what a 21st century learner looks like as well as what research reveals about using iPads in the primary grades levels. Chapter Three focuses on

my current teaching environment as well as my methodology for creating the curriculum. In Chapter Four, I present the curriculum for the Mill City Museum field trip, using iPads as the learning tool. I conclude this project in Chapter Five with reflections, limitations and future study on iPad use with young learners to teach the 21st Century Skills of creativity, collaboration and information fluency. I'm excited to present the outcomes of this mash up between iPads, the Mill City Museum and kindergarteners.

CHAPTER TWO

Literature Review

Introduction

In Chapter One, I discussed why I feel it is important to expand the use of iPads in my kindergarten classroom from a fun device to play games on to a tool that my students can use to learn, communicate, collaborate and create. I shared my background story of how I have personally seen technology use expand over my lifetime, from my first foray into the Internet to my current daily social media use. By looking at how technology is an important part of how I communicate and learn as an adult, I believe it will help me better understand the importance of teaching my kindergarten students how to navigate this new technology era. This leads me to my essential question: *How can I create a literacy based project that will help my kindergarten students develop the 21st Century Skills of creativity, collaboration, and information fluency?*

During the second portion of Chapter One, I looked at how, during my nine years of teaching, technology use in my classroom has evolved. I no longer have crates and crates of books on tape but rather story files on iPads and iTouches for my students to listen to. My first year of teaching, I had an overhead projector that I used to demonstrate math problems on using translucent math manipulatives. This past week, I was able to project the iPad app "Number Pieces" onto my Smartboard to practice number sense while my students used individual iPads to solve the problems on their own. What a shift in how I teach with

technology in less than a decade!

Towards the end of Chapter One, I shared my plans for starting the iPad and technology integration process by creating a unit to go along with one of our yearly field trips to the Mill City Museum in Minneapolis. Kindergarten students go on this field trip each year with their sixth grade Reading Buddies. The field trip is great fun, but it lacks any curriculum tie-in to what we are learning about at school. Because of the topics students learn about while at the museum, such as the Mississippi River, milling and farming, and Minnesota history, I felt like there is a lot of potential to create lessons where students are able to learn about and connect with the history and people in their community. Using certain apps on the iPad to create, share and learn about these topics will enhance the kindergarteners learning, the sixth graders' learning, and hopefully the greater community's understanding of milling and Minneapolis' history when their projects are digitally shared.

In the first section of Chapter Two, entitled The 21st Century Literacy Learner, I share what current research states about 21st Century students and the skills they need to learn in order to be successful, contributing members of the global community. The importance of the shift in the student and teacher dynamic is discussed. An examination of how literacy learning has changed with the emergence of the 21st Century Learner concludes this section. For the second portion of Chapter Two, 21st Century Skills, I take a closer look at what 21st Century Skills are and why they are essential to teach 21st Century Learners. This section begins with an overview of the skills and then a closer examination of the specific skills of creativity, collaboration and information fluency.

Finally, in the third section of Chapter Two, iPads in the Kindergarten Classroom, I take a look at why, specifically, iPads are an age appropriate technology-learning tool for a

kindergarten classroom. It is important to note that there are a variety of technology devices that can be used in educational settings to teach 21st Century Skills. For the purpose of this research, I am looking specifically at iPads because that is the device my school has chosen as the main technology tool for use in my classroom. More information on my school and classroom resources are discussed in Chapter Three.

As for the last section in Chapter Two, the discussion looked at the current rationale regarding why iPads should be a part of a young 21st Century Learner's educational experience and also why some people oppose iPad use in the early education classroom. This section will conclude by looking at how iPads teach 21st Century Skills to kindergarteners, including a list of apps that help students practice creativity, collaboration and information fluency. The purpose of this research is to help better understand my essential question: *How can I create a literacy based project that will help my kindergarten students develop the 21st Century Skills of creativity, collaboration, and information fluency?*

The 21st Century Literacy Learner

In this first section, I begin by explaining what defines a 21st Century Learner, who they are, how their life experiences with learning is different than learners in the past and why they need to be taught in a new way. This affects how teachers plan and implement learning in the classroom, which is discussed in the second portion of the section. A look at what literacy learning looks like with a 21st Century Learner is explained at the end of the section before moving on to examine what 21st Century Skills students need to be taught in this new age of education, specifically creativity, collaboration and information fluency.

Defining the 21st Century Learner. It's almost impossible to imagine a classroom in this day and age where students are required to write with only pencils and paper at all times.

Although this was the typical classroom environment for the past hundred or so years, with the advent of the computer and other technologies, learning, communicating and creating in an educational setting has been revolutionized. If a causal observer were to meander the halls of most schools today, they would witness students solving complex math equations on a SmartBoard, using FaceTime to work on a group project or creating a Prezis (digital PowerPoint) as part of their research project.

Long (2009) writes that this shift in how students learn, create and present using technology in schools is necessary because it mirrors their lives outside of school (p. 27). Students are tweeting their friends, blogging about their favorite bands and creating funny YouTube videos in hopes of being the next "viral" video. They are contributing to the world of information sharing that has no borders or age limits. Their voices and opinions are being shared with the global community, not just with their friends and families. When students are leading such engaging, interesting lives outside of the classroom, asking them to fill in worksheets in the classroom is not going to be the most successful way to motivate them (Long, 2009, p. 27).

There has been a great shift in how information is shared and available to an average person. Crookson Jr. (2009) explains that when we were in the age of print, what most people learned about was often determined by the great minds, those had the most access to information and knowledge (pg.12). In the past, philosophers and leaders were mainly the only people who were able to get their thoughts and ideas printed in books and newspapers. Their ideas would then be passed along and shared among the masses. Not many people before the invention of digital technology had the available resources to have their ideas massed produced and readily accessible to everyone.

Crookston Jr. (2009) goes on to say that this is no longer the case with the invention of technology and the Internet. Learning, creating, and sharing is now fast, constantly changing and very democratic, allowing for all sorts of people to share their ideas and thoughts with large audiences easily. Children of all ages, with very little assistance from adults, are also able to contribute their pictures, videos and voices to the stream of information on the Internet. This is a shift from the past where children's contributions and thoughts were not so easily published and shared with the global community (Cookson Jr. 2009).

Kindergarten students are part of a new wave of students entering the classroom that have entirely different life experiences and background knowledge with technology in comparison to the first wave of 21st Century Learners, those who were already in school when technology such iPads and tablets were introduced. Blair (2012) refers to these students as the "New 21st Century Learner" because they have had different experiences with technology and learning in comparison to the students slightly older than themselves. These learners are very connected and expect new information given to them at faster rates than many older students (Blair 2012). New 21st Century Learners are also able to engage in their learning in a unique way, making teaching then a completely different experience then students in the past (p. 8). It is hard to even imagine what is to come in the future with regards to technology and the youngest learners.

Because of the influence of technology in their daily lives, students are going to need a different set of skills in order to be successful in the 21st century. As a kindergarten teacher, I want to know how I can help my students learn the skills they need to navigate this new world of technology and communication. I am also curious to figure out what this

change means for my role as an educator in the classroom. The change in student and teacher roles in the classroom is what I will examine next.

The shift in student/teacher roles. In his book, *Who Owns the Learning*, November (2012) writes about how the history of education has changed as we have moved from a culture of farmers to an industrial community to now a technology driven society. He explains that in the days of one-room schoolhouses, older students were asked to help out and teach younger students. When schools shifted into having grade level classrooms, where students were more or less at the same place in their learning, the teacher's role in learning increased. It was up to the teacher to determine what the group of students was to learn and how they would go about the learning. As information has become more available with the invention of modern technology and the Internet, the role of the teacher as the provider of all learning is not longer necessary (p. 5).

Teachers need to adapt their teaching in order to help our students navigate this new world of digital literacy. Thoermer and Williams (2012) write that because we are now living in a digital world, the rules for how educators have been teaching students need to change (p. 445). The changes in these rules include how we use technology class time, the purpose of our technology time and allowing for students to have more control in their learning. The last item, allowing students to take a more active role in what they are learning, can be a difficult one for teachers to understand and put into practice in their classrooms. Richardson (2013) believes that now, "Teachers must be co-learners with kids, expert at asking great, open-ended questions and modeling the learning process required to answer those questions. Teachers should be master learners in the classroom" (p. 13). Hutchinson (2012) states that the focus on teaching with technology now must shift from

teaching students how to use technology to finding ways to use technology to meet curricular goals and teach 21st Century Skills (p. 17*)*.

Another challenge with using iPads and other technology is that students may think they are just playing and not really learning. It is important to make sure students understand what they are working on actually is teaching them something. Saine (2012) writes that its important to have well defined educational goals will help students focus on what they are learning while using iPads. Instruction has to be purposeful, not just for fun (p. 74). Educators have an important role by making sure that what activities and lessons they give to their students actually does have a purpose and education goal.

Blair (2012) believes that educators need to both give students more opportunities to use technology as well as more control over how the technology is used to reach the educational goals (p. 10). Teachers need to trust students to use technology in positive ways. Students need practice managing their own technology use in order to become contributing members of society. Part of the teacher's role now is to teach students how to treat technology respectfully, but at the same time, allow them to find their voice in the digital world. Finding this balance is essential for developing 21st century learners (Blair, 2012).

As someone who has only ever wanted to be a teacher for my entire life, this shift in the teacher and student roles is mind-boggling, slightly scary but, at the same time, very exciting. Richards (2013) writes that, although this change can seem overwhelming to teachers, it is an excellent time students. He states:

> "In fact, it's hard not to look at it as great news for kids, who will see growing availability of computers and access as a means to learn deeply and passionately

in ways the current system of school was never built for." (p. 10)

What Richards (2013) is saying that it is an exciting time to be a kid, where a world full of information is available at the click of a button and their ideas and opinions matter in the global conversation. No longer is knowledge only available to students via their school textbooks or teacher's lectures.

As the research shows, the role of the educator is changing (Richards, 2013) and, therefore, educators' decisions regarding the literacy needs of their students must change as well. It is important to look at how technology has changed how students read, write, collaborate and share their knowledge. Understanding what being literate in the 21st Century means helps make the connection between student learning and technology in the classroom. An educators' role in teaching and what students need to learn in regards to literacy has changed as well. This is what I will examine in the next section about 21st Century literacy learning.

A new take on literacy. Ohler (2009) writes that for most of the history of the printed word, a literate person was considered to be someone who was able to read words printed on a page, as well as write and speak their thoughts clearly, often about what they had read. Being literate was always tied to being able to comprehend the written word (p. 9). This has all changed with the advent of technology. Ohler (2009) shares that being literate in the 21st Century means being able to read and write in the new forms of media, including video, sound, and graphics (p. 9). Literacy in the 21st century is now about reading, writing and collaborating through digital media, as well as traditional print.

Professional education organizations have seen this change in literacy and are taking note. The National Council of Teachers of English (2012) released a position statement on what skills they believe 21st century learners need to be able to be proficient readers and writers. They state that, "21st century readers and writers need to be able to develop proficiency with the tools of technology" and that they should be able to "create, critique, analyze, and evaluate multi-media texts" (NCTE, 2012). Students should be given many experiences at school with digital, multi-media texts in order to practice these 21st Century literacy experiences.

The International Reading Association, now the International Literacy Association, (2009) published a position statement in which they express that many experts in their field have observed this change in literacy. The research found that teaching students about only book and print media is no longer considered best practice in the 21st Century. Traditional definitions of reading, writing and communication are insufficient for today's learner (IRA, 2009). The technology era has not only taken over our lifestyles, it has also changed how we need to learn and think. Ohler (2009) defines this new literacy as digital literacy, "the term du jour used to describe the skills, expectations, and perspectives involved in living in a technological society" (p. 9). Digital literacy is the new standard for what it means to be literate.

It should be noted that although being digitally literate is now essential to learning and thriving in our technological society, it does not mean that we should completely abandon teaching our students the traditional literacy skills. Crockett, Jukes and Churches (2011) believe that the skills of reading, writing, researching, communication and face-to-face social skills are still important to learn in today's world. As much as people

communicate digitally, they are still living in a world where they interact with real people and the traditional skills are essential to interpersonal communication (p. 18).

So what does reading, writing and collaborating look like in the 21st Century? Houge, interviewed in an article by Long (2009), states that we do not need to throw out classic novels or only require students to tweet assignments in order to teach 21st century literacy (p. 27). She goes on to say that there needs to be a balance between the traditional and digital learning experiences. The goal is for our students to learn how to communicate and comprehend well so they are prepared for the future. Each type of literacy, traditional and digital, plays a different role in preparing students for what is ahead of them and so each needs a place in the classroom curriculum (Long, 2009, p. 27).

Rogow (2015) believes that, as educators, we know that children do not learn to read by keeping print books away from them, and so we need to apply this same concept to digital literacy. Children will not learn 21st Century Skills by keeping them away from screens. Technology integration should be based on the sound pedagogy that students really need practice learning how to collaborate, be creative, think critically and communicate (p.94).

Teaching digital literacy, Rogow (2015) writes, is about helping children develop the life skills to think and create in the multimedia world they live in (p. 91). The more practice students get, starting at a very early age, with digital texts the better they will be at comprehending the variety of media they will encounter in their daily lives. Larson (2009) states that being literate in the 21st century means that a reader is able to process and comprehend the information presented to them in the multimodal experiences that technology offers them (p. 255).

One of the biggest shifts in reading has been the invention of digital books. Text is no longer just words on a page. Digital books have features that allow the reader to interact with the material in a completely different, engaging way. Videos and interactive games or pictures are often embedded in digital books. With a simple tap on the keyboard or screen, readers are able to highlight passages, find the definition of a word or link to web pages about the topic they are reading about. Readers are also able to change the font and size of the text to make it more user friendly (Larson, 2009, p. 25).

The invention of digital books and digital storytelling make reading fun, interactive as well as complex. Rowsell and Burke (2009) write that, "Digital media adds new layers, like complex visuals, the dynamism of the storyline, and the related texts and supporting genres that accompany the story" (p. 115). There is so much information available in digital text that it can make it complicated to comprehend what exactly is going on in the story. That is why Thoermer and Williams (2012) believe that educators need to reevaluate what is essential in teaching literacy because a "book" is not the same thing as it has in the past (p. 445). Educators need to teach skills to help students navigate this new kind of story.

Long (2009) writes that because social media and other internet technologies are so user-friendly, younger students are often writing more than they ever have in the past for their friends, family and peers all over the world (p. 27). Educators need to be able to use this new era of sharing to help students create content and writing that can be shared with the global community. Richardson (2005/2006) states that although many students use blogs or social media sites as basically online diaries, more and more teachers are using these online postings to teach critical thinking, reading and writing skills (p. 24). Student will be sharing their writing on social media and blogs their entire lives, so it is important that they learn at

an early age the best ways to manage and organize their thoughts and ideas in order to present their best self to the Internet.

Once again, this new kind of digital writing does not mean that traditional teaching of writing needs to go by the wayside. Ohler (2009) believes that both writing essays and writing blogs are important skills for students to learn. Essays help the writer develop a detailed argument on a topic while blogs are perfect for practicing brevity and clarity. The major difference is who the audience is for each type of writing. Essays are usually written for teachers and fellow classmates, while blogs are published for the larger online community (p. 11). Students need educational experiences with both kinds of writing in the 21st Century.

Besides writing new content for the Internet, Zawilinksi (2009) states that students need to know how to analyze, evaluate, and synthesize the information presented to them online. They have to learn how to take information that is shared with them in e-mails, blogs, text and other messaging sites and then communicate their own thoughts in response. Online reading comprehension and writing is a natural part of the digital interactions (p. 652). Many students today are already doing this at home on their own, but it would be very beneficial for them to receive additional, purposeful experiences with digital literacy at school as well.

Fisch, as quoted by Walker (2009), believes what it really means to be literate in the 21st century is that a person is able to use critical thinking skills to analyze and evaluation digital information, especially in our information-abundant society. Fisch goes on to say that a major component to this new digital literacy world is that it is a highly participatory culture. The fact that people are able to easily learn from and collaborate with people pretty much anywhere in the world is truly astounding and offers a plethora of opportunities grow

in knowledge (p. 24).

Reading, writing and communication has been forever changed with the emergence of digital literacy. Along with teaching the traditional literacy skills, educators are tasked with the challenge of also teaching students how to be digitally literate, to be able to share their opinions and ideas through digital media, and to collaborate with people from all over the world. In addition to being digitally literate, there is another set of skills that students need to learn in order to be a contributing member of the 21st Century. These skills, specifically creativity, collaboration and information fluency, are discussed in the following section.

21st Century Skills

In the last section, the focus was on how 21st Century learners are different than learners in the past due to the arrival of technology. I shared how the role of teachers and students needs to be adjusted to best teach these new learners, with the teacher being a guide to gathering information rather than the sole purveyor of knowledge. Finally, I explained the concept of digital literacy and how students need to be taught to read, write and collaborate in different ways in order to be considered literate in today's world.

For this second section, I take a look at specific 21st Century Skills that are important to teach 21st century students. I choose to focus on the specific 21st Century Skills of creativity, collaboration and information fluency for this paper because not only are these skills essential for students to learn, they are also developmentally appropriate skills for my kindergarten students to work on. Kindergarteners naturally love to be creative and share their ideas with others. They are also innately curious, always seeking new information. Giving my young students opportunities to work on these three 21st Century Skills is not only a natural experience for them but also beneficial for their future. My hope is that by taking a

closer look at each of these 21st Century Skills, I will better be able to understand the most effective ways to use iPads to teach my students these skills. The final section of this paper focuses specifically on kindergarteners and iPad use in the early education classroom.

Before I begin the section on 21st Century Skills, I would like to clarify the difference between skills and fluencies as I write about them for the purpose of this paper. I teach young students who are new to learning in a school setting who would not be expected to be fluent in any sort of 21st Century Skill at this point in their development. When I refer to information fluency as a skill in this paper, what I mean is that I want to give my students opportunities to practice the skill of finding and analyzing information so that one day the will be fluent in finding information (Crocket, Jukes, and Churches, 2011, p. 40). My goal is to give my students experiences with 21st Century Skills in hopes that one day they will become fluent in them. Now, let's take a closer look at these 21st Century Skills, specifically creativity, collaboration and information fluency.

Successful skills. The skills needed to communicate, read and share information with other people has changed since the start of the 21st century. Walker (2009) writes that to be literate today is more than reading printed pages and writing an essay for school (p. 24). Education needs to move beyond some of the basic drill and kill methods of learning from the past and focus more on developing creative and collaborating learners. With the invention of Google and other search engines, students (and people in general) no longer need to memorize facts and figures because they are able to access information with a few clicks on their computer or Smart phone. Richardson (2013) reflects on how universal access to such a large amount of general information has changed what students really need to learn by stating:

> We must be willing to consider that in a world full of access to knowledge and information, it may be more important to develop students who can take advantage of that knowledge when they need it than to develop students who memorize a slice of information that schools offer in case they *might* need it someday. (p 14)

What are the new skills needed for students to become literate in the 21st century? The Partnership for 21st Century Skills, as quoted by Blair (2012), state that a shift needs to be made to incorporate the three R's, reading, writing and arithmetic, with new necessary skills, the four C's: critical thinking, creativity, communication and collaboration (p. 10). Classrooms should be set up to allow students to explore topics they are interested in, to work with other people, both in the classroom and the outside world, and to have opportunities to share their work with the global community. Rogow (2015) agrees with expanding upon the three R's as well, stating that reasoning and reflection should be an essential part of student learning along with curiosity, creativity and collaboration (p. 91). This is a major shift in traditional teaching and learning, moving away from focusing on rote knowledge towards using the information available to create new ideas and outcomes.

As we prepare students for life in this technology driven world, it is no longer acceptable to use technology sparingly in a classroom for a bonus or special activity. It is unbeneficial for our students to not give them time in school to practice the technology skills they will need to become successful adults in the global community. Technology needs to be integrated regularly into the curriculum to meet the needs of 21st century learners

(Hutchinson, p. 17). Students need daily practice creating, collaborating and communicating about what they are learning.

Richardson (2011) takes this a step further stating that, "By the time they leave high school, students should be "Googleable"- that is, able to find themselves online- associating their full names with their best work for a global audience to see" (p 24). School curriculum should be designed to help students hone in on their interests and begin to develop their global digital presence before they graduate high school. Teachers should be helping students to create interesting, digitally shared work while they still have the safety net of their schools and teachers to support them. Richardson (2013) writes that it is more important that we are teaching students to become "learning ready" instead of "college ready" because it will be more beneficial as they venture out into the 21st century world (p. 14).

There are a variety of published lists that state what skills at 21st century learner should know but, as I have mentioned, for my research I have decided to focus on the skills of creativity, collaboration and information fluency. In the following three sections, I will describe each of these skills a little more in depth, focusing on why they are important skills for 21st Century Learners to master.

Creativity. The importance of teaching creativity has never been as relevant as it is in today's world. In fact, creativity is now considered the highest form of knowledge on the revised version Bloom's Taxonomy (Krathwohl, 2002, p. 214). Being able to analyze and evaluate information and create something new from what was learned is now the goal of learning. According to Trilling and Fadel (2009), a creative student is able to use a variety of creation techniques, such as brainstorming, can create novel and worthwhile ideas and is able to elaborate and refine their own ideas to maximize their work. Creative students are also

able to work with others effectively and be open to new and different perspectives. They also understand that failure can be a chance to learn and mistakes are just part of the process (p.59).

One of the most interesting ideas I came across during my research was from Crockett, Jukes and Churches (2011) who believe that in the 21st Century, creativity is the highest value currency we have as a society (p. 44). New ideas, not necessarily hard work, will be what drives our society. They write that this isn't in the future, it is already happening, with routine manufacturing jobs and call centers being outsourced to other countries regularly. It is possible that soon only higher level thinking, creative jobs will be available. As a nation built on industry, it may seem a bit far-fetched, but it also feels like a possibility in our technology driven world (p. 44).

Crocket, Jukes and Churches (2011) state "if our students are to survive, let alone thrive, in the 21st century culture of technology-driven automation, abundance, and access to global labor markets, then independent thinking and its corollary, creative thinking, hold the highest currency" (p. 2). There is room for everyone's ideas and opinions on the Internet, which means there are plenty of opportunities for sharing creativity and new ideas.

Richardson (2011) believes that social media is helping to make it easier for students to create "real work for real audiences for real purposes" (p. 26). Students no longer have to wait until after graduation to make their ideas and work meaningful. By interacting with the global audience through social media and other Internet sites, students are becoming leaders, inventors and great teachers on their own. Richardson (2011) writes that because of this, educators should be motivated to help students create a portfolio of work on the Internet if we want to best prepare them for a successful future (p. 26). Helping students publish online

work will also help them learn the 21st Century Skill of collaboration, which will be discussed in the next section.

Collaboration. In the 21st Century context, collaboration is people working together in any format to develop new ideas and make something unique. This could be anything from a viral video, a new social media app, a charity organization or the latest new must have toy. Trilling and Fadel (2009) write that students who know how to collaborate should be able to work effectively and respectfully with diverse groups, be flexible and willing to make compromises and understand the value of each member's contributions to the group's work (p. 55). The possibilities are endless with collaboration and the most important component is that the ideas are shared among a team working together.

The International Reading Association (2009), now the International Literacy Association, believes that educators should be providing students with opportunities to collaborate as well. In a statement released by the association, they communicate that teachers need to develop a literacy curriculum where students are able to collaborate through reading, sharing and creating new content with peers from around the world. This is a shift from the days when students were only expected to meet the requirements of their classroom teacher (IRA, 2009).

Collaboration offers exciting opportunities for students to work on real-world problems, something that is both interesting and motivating. Richards (2013) writes that "The transformation occurs in that participation, that connections with other learners outside school walls with whom we can converse, create, and publish authentic, meaningful, beautiful work" (p. 12). By teaching students at a young age to collaborate with people all over the world, we are setting up our students to be active, contributing members of society.

At the heart of education, this is really one of the main goals of teaching students, so that they are able to lead interesting, purposeful lives as members of our global community.

Students have a voice in all of this because the Internet is open to everyone. They are able to collaborate and share their opinions with the global community. Richardson (2005/2006) writes that the concept of literacy needs to be modified for the 21st Century because students now are editors and collaborators right alongside with becoming readers and writers. On their own students are already reaching out and collaborating with the global community, finding their own primary sources. Educators must understand this and adapt their curriculum to allow students more opportunities to collaborate with other via the Internet (p. 26).

Richardson (2013), in a later article, believes that this new literacy learning must also apply to teachers. In order to make decisions about how best to teach these 21st Century Learners, teachers also need to use these new literacies and technologies in our own lives. Our voices also need to be a part of the global conversation and we need to understand how these technologies work in order to best teach our students (p. 13).

With the ability to create and collaborate easily through technology and the Internet, there comes another challenge for 21st century students. New information is being published online every second, in staggering amounts. How do students, and even adults, manage to sort through all the information available to them? This is where the 21st century skill of information fluency, which I will discuss next, comes into play.

Information Fluency. There are two things to consider when discussing information in this age of information overload. First, with information being so readily available, what do students exactly need to memorize at school? Secondly, because published material is so

easy to do on the Internet, how do educators teacher students to establish what is of value? Students need to know both how to find information in the digital world as well as to determine its validity. This is why teaching information fluency to 21st Century Learners is essential. Remember, for the purpose of this paper, I am considering information fluency as a 21st Century skill in which my students need experiences practicing, not as a digital fluency they need to master.

Trilling and Fadel (2009) state that students who are information fluent should be able to access information in a timely and effective manner. They should also be able to examine the information critically and consider the source. Another facet of being information fluent is to be sort through the wide variety of material and sources available and evaluate the information critically (p. 67).

Another change to learners with the influx of technology and information is that students are able to access information very easily at any time, from pretty much anyway. This is a shift from years ago when the teacher was the main source of knowledge for many students. Lemke and Coughlin (2009) note that the prior knowledge students bring into the classroom is much more varied and unique than it has been in the past (p. 55). Educators should tap into the interests and knowledge of their students when creating their curriculum in order to make learning motivating and beneficial.

Possibly the greatest challenge to information access in the 21st century is that it is fluid and constantly outdated, making it almost impossible to be up to date. Crocket, Jukes and Churches (2011) write that a great example of this "age of disposable information" is the daily newspaper that still is delivered to so many doorsteps each morning. Because the paper needs to go to press hours before it can be delivered, many times new information or updates

on the published news stories is already available on Twitter or other websites. With so much information constantly changing, it is nearly impossible for anyone to be an expert in this day and age (p. 33).

Now that access to information is no longer an issue, Crockett, Jukes and Churches (2011) state, students need to be taught how to become consumers of information that is in constant flux. They explain that, "In this new digital reality, the application of higher-order thinking and independent cognitive skills in the context of real-world, real-life, and real-time tasks is of critical importance" (p. 3). Being able to quickly determine the validity of a source is essential, especially when any person in the world is able to contribute to the conversation.

The International Reading Association (2009), in a statement discussed the importance of teaching students to be critical consumers, so that they are able to critically evaluate the relevancy, accuracy, reliability and perspective of the information the find. The world is full of different ideologies, political stances, religions opinions and cultural backgrounds. Learning about other opinions and worldviews helps bring the global community together, but it is also essential that the context for the views is well understood (IRA 2009).

Richardson (2005/2006) writes that students "need to know how to identify the source of a piece of information, gauge that source's reputation, compare the information with what's already known, and make a judgment about its authenticity and relevance" (p.26). Baildon and Baildon (2008) found that when searching on the Internet, many students would use any information about their topic that they could locate, with little consideration for what the source was. They go on to write that determining what sources are trustworthy and

which ones to avoid is essential in this day and age, especially when there is no selection process for what is published online (p.636).

Being able to critically assess information is going to be more and more important as we move further into the 21st Century. Teaching this skill, along with creativity and collaboration, are going to help 21st century learners be better prepared for their future. In the following section, I discuss how using iPads in kindergarten is one way to help teach these 21st Century Skills to young children.

iPads in the Kindergarten Classroom

In the first section of this paper, I explained what a 21st Century Learner is, how they are the reason why there needs to be a shift in the student/teacher dynamic, and how being digitally literate is the new literacy. During the second section, I looked at what 21st Century Skills need to be taught to students in order for them to be successful in the future. The focus was on the 21st Century Skills of creativity, collaboration and information fluency.

For the third section of Chapter Two, I discuss the use of iPads in a kindergarten classroom and how they can be used to teach 21st Century Skills. The reason I am focusing on the iPad is because it is the device of choice for the school where I teach. There are an infinite number of other devices and options that educators could use to teach 21st Century Skills but for the purpose of my research, the iPad is going to be my choice for my curriculum. It is essential to remember that the learning outcome, not the tool, is the most important part of creating a curriculum.

In the following section, I will first explain some history of the iPad. I will then discuss the rationale, as well as the challenges, of iPad use in an early childhood classroom. Towards the end of the section, I will share a description of iPad apps that can help teach 21st

Century Skills to kindergarteners.

Why iPads in education? There are a plethora of technology options available for educators to use in their classrooms, from laptop computers to iTouches to SmartBoards to tablets. The kind of technology that ends up in a specific classroom often depends on school budgets, corporate sponsorships or grants. One of the most popular technology choices for schools in recent years is the Apple iPad.

During the spring of 2010, Apple Inc. released the first model of the iPad (Isaacson, 2011). In the five years since their creation, iPads have quickly made their way into classrooms all over. Lopresti (2012) writes that Steve Jobs, the co-founder and CEO of Apple Inc. until his death in 2011, envisioned a technology tool that would revolutionize how students and schools would access information. Jobs did not like the state textbook selection process, finding it too expensive and corrupt. He wanted to create a way for the information found in textbooks to be free so schools could get released from the state approved textbook. Creating a tool that would improve education was a top priority for Jobs during the last few years of his life. The iPad was created out of Jobs interest to transform education (p. 6).

Harmon (2012) writes that because the iPad is very simple to use, with a unique interface and familiar design, it creates a great excitement for learning. iPads, Harmon explains, engage learners in ways that makes learning not only fun, but puts the students in control of their learning. In Harmon's experience, no other teaching tool or technique engages student learning the same way as iPads (p. 31). Dobler (2011/2012) writes about how easy iPads are to use for learners, as well as educators. With a few swipes and taps of a figure, students can be working on the iPads without having to wait for a hard drive to boot up or games pieces to be organized. iPads help save time and energy in organizing materials

that now can be used for teaching with the iPad (p. 19).

It is important to note that although the iPad has the ability to change a lot of how learning is conducted in the classroom, it is not just about having the tool, but how it is used. Richards (2013) reminds us that adding expensive technology to traditional curriculum is not the goal. It's about using these new tools, like the iPad, to meet the needs of 21st Century learners in new ways (p. 12). In the following section, I explain why iPads can be an especially beneficial tool to use with younger students.

Rationale for younger students using iPads. Although research is still trying to figure out exactly how using technology and iPad affects children, there are a lot of people who are discovering what an easy and motivating tool iPads can be in helping teach young students early technology skills. iPads have been found to be useful in organizing learning materials, and they are easy for students to navigate as well as highly motivating for students. So far, the benefits of using iPads in early childhood classrooms seem to outweigh the challenges. Both viewpoints are discussed in the following two subsections.

iPads, when used correctly, can make learning and teacher organization so much more purposeful. Dobler (2012) writes that when teachers do some work on the front end to load the iPads with the correct apps and organization but once that is set up, students are able to access all types of apps and information very easily. This can help both teachers and students make better use of their time (p. 19). I have found that my students have very little trouble finding and using the apps on the iPad. Because so many of my students have experiences with iPads or iPhones at home, they are very comfortable using the iPad interface. This year especially, I barely had to explain how iPads work to my kindergarten students, mainly just how to use the specific app we were going to work with.

Siegle (2013) writes that iPads are especially a great learning tool for young children because the kinds of gestures used to manipulate the iPad, like tapping and swiping, are similar to the types of gestures children would use on objects in the real world. While young children often struggle with using a keyboard and mouse on a traditional computer, the ease of interacting with the iPad opens up a world of personal computing for them in ways that weren't possible before (p. 146). Personally, I think the invention of the touch screen is ingenious, especially for use with young children. Using a mouse and keyboard to work on a computer just added another layer of complexity that often made it difficult for young children to use, especially those with developing fine motor skills.

Another great feature of the iPad is the Home key button. Buckleitner (2015) writes that this simple button allows children, and adults, the ability to reset and start again when they get into trouble. He goes on to describe the Home key as a perfect example of technology-based constructivism, making it easier for children to control the technology more easily than they would a desktop computer (p. 61). I have seen first hand how easy it is for young children to work on iPads. From my observations, kindergarteners often have trouble using a mouse and keyboard on desktop computers, especially the function of clicking to select on a mouse. With iPads, the simple touch screen and Home key feature make exploring easy for young children.

As a result of their ease of use, Harmon (2012) believes iPads have opened a door to self-directed learning in new and exciting ways. The simplicity, yet uniqueness, of the iPad creates an excitement for learning that has not been seen before. Students are engaged and are able to take more control of their learning, which is motivating and exciting for them (p. 31).

Hutchinson, Beshorner and Schmidt-Crawford (2012) state that iPads are able to help students learn the same literacy skills as traditional education teaching using paper and pencils, but they also help students develop skills they need as 21st century learners (p. 16). Students are able to practice their basic facts, solve math equations and type essays on their iPads. The difference between traditional schoolwork and using iPads, is that iPads also provide a simple way for students to create, collaborate and communicate.

Using iPads in the early grades is also extremely motivating for young students. Getting and Swainey (2012), two classroom teachers from Minnesota, designed a curriculum to use iPads in their first grade classrooms' literacy groups. They organized their students in leveled reading groups and found apps that were appropriate for each group. Throughout their experience, they found that using iPads gave their students a sense of ownership, leadership and independence that was not always happening in their non-technology teaching. Discussions on the privilege of getting to use iPads to learn as well as immediate consequences for those students who did not follow directions added to student's interest and motivation for learning with their iPads. They found that students who were known to act out during other learning activities in the classroom exhibited positive behaviors when working with the iPads (p. 27).

The National Association for the Education of Young Children (NAEYC) released a position statement in 2012 on appropriate technology use for young children based on research done in conjunction with the Fred Rogers Center for Early Learning and Children's Media. NAEYC found that when used for "good," technology and giving kids screen time can be a valid and appropriate way for young kids to learn. They state that they believe

technology use with young children does need to be interactive, with students creating digital work, not just passively playing games (p. 3).

NAEYC (2012) continued to their statement to note that, just like how young children need experience holding and exploring books, they need these same kind of experiences with technology (p. 4). Giving young children opportunities to play and explore with iPads, and other technologies, will only help them prepare for living in a 21st century world. As I discussed in the earlier sections of this paper, 21st century learners, especially the younger ones, will grow up in a different sort of world than previous generations. This means that they will need different experiences and learning opportunities than students in the past. The iPad is one option for technology use that helps teach 21st century students in a new way.

Access to technology, the amount of screen time a child should be exposed to, and what technology use is developmentally appropriate for young children have always been questioned by researchers, educators and families. Not everyone believes that technology is improving and enriching children's lives. In the next section, I will discuss some of the reasons why some people oppose technology use in early education.

Challenges to iPad use with younger students. Technology and developmentally appropriate learning have been at odds since day one. It seems like there is always new research available about what is the appropriate amount of screen time for a 5 year old to have or how much exposure toddlers should have to T.V. Because so much of technology is so new, the long-term effects of early childhood technology use are not easy to determine. In their statement about early education technology use, the National Association for the Education of Young Children (NAEYC) supported using technology in early childhood classrooms, but stressed that technology should only be used for activities that are

developmentally appropriate and educationally sound (NAEYC, 2012, p. 4). They went on to say that more research needs to be conducted in order to understand how young children should best use technology and interactive media, as well as what the short and long term effects of this use could mean in the future (p. 11). This is one of the biggest challenges to early childhood use of technology, such as iPads: How much technology use is appropriate for young children?

Early education classrooms, such as a kindergarten classroom, are a different sort of environment then classrooms in the older grades. Young students have different learning needs because they are at a different stage developmentally. My kindergarten classroom is full of blocks, art supplies, sensory bins and hands on manipulatives that my students get to explore with daily. It is developmentally appropriate for kindergarteners to spend their days learning through play and exploration. (NAEYC- site)

NAEYC is firm on one stance in regards to technology and media use. They write that, "Technology and media should not replace activities such as creative play, real-life exploration, physical activity, outdoor experiences, conversation, and social interactions that are important for children's development" (NAEYC p. 5). In the early childhood classroom, technology use should add to traditional early learning, not replace it entirely. Dobler (2011/2012) agrees with this by stating that in order for technology to be best integrated into the classroom, the tool needs to be able to let the learner do something more efficiently and/or effectively than they are able to do without the technology (p. 18). Balance, it seems, is the answer to technology use in younger grades.

Another challenge of iPads is student access. Watters (2012) writes that iPads are typically not available to be taken home from school in the younger grades or even accessible

to younger students at some schools. It's understandable, since they are such expensive pieces of equipment, but what does this mean for the students who do not have access to technology at home? (p. 38). It's a hard question to answer because one of the overall challenges in education is equal funding and opportunities for all students. One hope is that as technology becomes more and more available, it will also become less expensive for school's to purchase.

Technology does not seem to be going anywhere anytime soon. Although there are some challenges for using technology in early childhood classrooms and with young children, it seems that the benefits of using technology outweigh the negatives. The iPad is able to provide easy technology learning experiences to younger students.

21st century skill apps for the iPad. Due to their easy of use and motivating features, iPads are quickly becoming a favorite learning tool in classrooms, especially in the younger grades. Hutchinson (2012) writes that besides being useful in teaching traditional literacy skills, like letter recognition or word families, iPads also allow students to learn new 21st Century literacy skills (p. 16). The high interest level and infinite learning possibilities the iPad offers to students is a major reason why I want to improve my classroom instructional use of iPads.

Before I share more about specific apps to use with iPads, I feel it is important to briefly explain what is an app. The word app is a shortened version of the word application. Google (2015) defines an app as software that can be used on computers, tablets or smart phones. Apps are downloaded from the "app store" on the Internet by the user and can have any variety of purposes. There are social media apps, news apps, game apps, fitness apps, etc. At this point in the technology era, it seems like you can find an app that does almost

anything.

Anyone who spends a few minutes on the Apple "App Store" education page will quickly discover that there are hundreds and hundreds of apps that teach basic skills, such as word building, counting, addition, the list goes on. Although these apps can help a student practice their basic facts, they do not always give the user opportunities to work on 21st Century Skills, such as creativity, collaboration or information fluency. To create a list of apps that give students opportunities to work on 21st Century Skills, I had to look a little closer at what types of tasks the apps were asking the user to perform.

The challenge with creating a list of apps is that, even as I type, new exciting apps are being added to the iTunes store. In their 2015 January press release, Apple shared that there are more than 1.4 million apps available to download in their App Store with 725,000 of those for use on the iPad (2015). I feel like it is safe to say that it would be nearly impossible to try out every app that is available. Therefore, the list of apps below is one that I've created from coworker recommendations, my own personal searches of the App Store or workshops I've attended. During the past few years, I have had the opportunity to attend the Hamline Literacy Institute, the NAEYC Annual Conference in Dallas, and a handful of workshops or online trainings at TIES (Technology and Information Educational Services). Through these workshops and trainings, I have had the opportunity to learn about as well as try out a variety of great educational apps.

I've chosen the following apps, listed in Figure 1, because they in some way or another allow the user to be creative, to collaborate or to gain new information. These are the apps that I will consider when planning my unit to go with our field trip to the Mill City Museum because they are kindergarten appropriate and teach 21st Century Skills. I have

Figure One: Apps for Teaching 21st Century Skills

App Name	Description
Creativity and Collaboration Apps:	
Pic Collage	Users create simple collages of pictures and text with a variety of background and digital sticker options available to enhance the collage. Collages can be saved or shared online.
Book Creator	Users create digital books with pictures, drawings, voice and video recordings. Books can be saved and shared online.
Story Kit	Users create simple digital books with photos taken in app, drawings and voice recordings. Books can be saved and shared online.
ChatterPix	Users turn a picture (either taken with iPad camera or found online) into a talking animation using their voice recording.
Prezi	Users make simple, sharable presentations.
Videolicios	Users are able to take footage they have taken and turn them into well-produced videos.
Thing Link	Users add links, videos and music to photos.
Paper Port Notes	Users are able to take notes, photos and voice recordings to organize and share information.
Puppet Pals	Users create animated videos using a variety of digital puppets.
Tellagami	Users create a "Tellagami" character and create an animated "Gami" video that can be shared.
Information Fluency Apps:	
Google	Users are able to search for information by simply typing a few keywords into the search engine.
Image Searcher	Users search a large database of images.
Social Media Apps:	
Facebook	Users share messages, images, links and photos with "friends."
Twitter	Users share "tweets" or messages of 140 characters or less. Photos and links can also be shared.
Instagram	Users share photos with brief captions with their followers.
Pic Stitch	A companion app to Instagram. Users are able to make simple collages of pictures to be shared on Instagram as opposed to the one image photo in the Instagram app.
Vine	Users create short six-second loops of video that can be shared.

used each of the following apps either personally or professionally. The descriptions for each app are written from my own experiences using the app.

Using apps in the classroom. As a teacher, I know that trying something new in a classroom full of eager students can be very overwhelming. The fear of the unknown can sometimes cause teachers to not integrate new activities or technology into their lessons. One of the major bonuses for teachers that has come out of the technology era is the online community of educator support that is easy to access and chock full of great ideas. Personally, I have no idea how I ever taught before the idea-sharing site Pinterest was created. When I need a new activity or project for my classroom, I always search Pinterest first. This is also a good example of how even adults are also benefiting from collaborating via the Internet.

When considering integrating technology into a classroom, I recommend checking out websites such as Edutopia (www.edutopia.com) or blogs such as Cool Cat Teacher (www.coolcatteacher.com). By simply searching for keywords on sites such as these, a variety of blog posts and online articles appear with great information for integrating technology. One major challenge in writing a Capstone paper in the technology era is that the information is constantly being updated on the Internet so it can be difficult to write about the newest recommendations.

The good news is that there are some valid, timeless recommendations for integrating iPads and apps into the classroom. In a blog for the Edutopia site, Hertz (2012) reminds teachers that it is not about the tool, but the learning goal. There are any number of apps that can record data, access information or create a product. The important part is matching the learning goal with an app that will help students reach the learning objective. Hertz also

writes that it is important to consider how students will be divided up among the devices to best meet the learning goal. They may need to work individually, in pairs or groups to complete the tasks. The amount of time needed to complete the task also needs to be considered (Hertz, 2012).

One of the best pieces of advice I've come across in regards to integrating technology is to keep it simple. Marinek (2014), in a blog post on Edutopia, recommends finding an app you like to use and then sticking to it. Switching apps too frequently only causes students to become confused. When you have to explain how to use a new app every time you use iPads with your students, it also wastes valuable learning time. This does not mean that new apps should never be introduced in the classroom but rather, that it is beneficial to both the teacher and student to have a few "go to" apps that are familiar to use (Marinek, 2014). Keeping the app learning curve to a minimum will allow students to focus more on the 21st Century Skills, rather than learning the technology.

Conclusion

In the first section of Chapter Two, I discuss how 21st century learners have a different set of learning needs than learners in the past. Technology is a major part of students' lives and will continue to be so as far into their future as we can reasonably predict. Besides learning the traditional skills taught in school to past generations, students will also need to learn a new set of skills, 21st Century Skills, which I discuss in the second section of this chapter, focusing on creativity, collaboration and information fluency.

The importance of teaching creativity to students cannot be stressed enough. The leaders and innovators of the 21st Century will be the ones who can create novel, outside the box ideas. As educators, it is important to give students opportunities to flex their creative

muscle in order to better prepare them for their life after school. Learning how to communicate and collaborate with all kinds of people is also essential in this day and age where ideas can be shared all over the world in seconds. Because there are so many ideas and information available, it is also essential to have students, even very young ones, learn how to critically evaluate the information they come across.

It is important to remember that technology is just a tool. How we use it to help learn and create is the important component for education. Dobler (2012) writes that if using the iPad is not helping students learn in a better way, it is not being useful (p. 18). Educators need to be mindful of how they are using iPads and other technologies to teach their students 21st Century Skills. As I wrote about in Chapter One, this is why I decided to conduct my Capstone research on using iPads in kindergarten. My goal, as stated in my essential question, is to find a better way to integrate iPads into my students' learning.

Understanding more about 21st century learners and the skills they need experience learning helps me to knowing more about my essential question: *How can I create a literacy based project that will help my kindergarten students develop the 21st Century Skills of creativity, collaboration, and information fluency?* As I wrote about in the third section of Chapter Two, iPads are an easy to use, motivational tool for young learners. Depending on the app selection, iPads allow the user the ability to practice traditional learning skills as well as 21st Century Skills such as creativity, collaboration and information fluency.

In Chapter Three, I give the background of my school setting as well as my method for creating my unit, which is about incorporating iPad curriculum into our field trip to Mill City Museum with our sixth grade Reading Buddies. Chapter Four includes my detailed curriculum and in Chapter Five, I share how my research and my Mill City Museum unit will

help me move my teaching forward so that I am doing my best to teach 21st Century Skills to my 21st Century students.

CHAPTER THREE

Methods

Introduction

In Chapter One, I discussed my personal journey with technology and how technology has become an integral part of my kindergarten classroom during my nine years of teaching. For Chapter Two, I shared current research about 21st Century Learners and why it is important for educators to incorporate technology into their classrooms. I also discussed 21st Century Skills students now need to learn in order to be successful in their future endeavors, focusing on creativity, collaboration and information fluency. Finally, in the last section of Chapter Two, I shared how iPads are an appropriate learning tool for kindergarteners and a list of apps can help teach 21st Century Skills to students.

For Chapter Three, I begin by explaining the background of the school that I teach at, including the technology resources that are available to the teachers and students. I describe my classroom setting and how I currently use iPads in my classroom. In the second portion of Chapter Three, I share my goals for my curriculum as well as the research-supported rationale on why it is important to incorporate curriculum that teaches 21st Century Skills into my classroom. In the third section of Chapter Three, I explain how I am going to develop, design and evaluate the iPad curriculum I intend to use in my classroom to help answer my question: *How can I create a literacy based project that will help my kindergarten students develop the 21st Century Skills of creativity, collaboration, and information fluency?*

This project is important to me because I have seen in my nine years of teaching how technology has altered how we create, collaborate and gather information as a society. I understand that the technology era has changed what it means to be a contributing member of the human race in a very short period of time. The skills I was taught in school twenty years ago are no longer enough for my young kindergarten students. How and what I taught during my first few years of teaching is needs to be modified to include technology and 21st Century Skills.

Change does not happen overnight but it has to start somewhere. This is why I decided to take an activity that my students already participate in, a field trip to Mill City Museum with their sixth grade Reading Buddies, and turn it into a unit of study with 21st Century Skills. I share more details on the field trip and Reading Buddies program in the following sections, but I wanted to mention how excited I am to create this unit.

I did not have a unit to go along with the field trip; we just went to the Mill City Museum for fun every year because it is an interesting and fun museum. As there is no precedent for this unit, it gives me a lot of room to develop something new and creative, just like what I want my students to be doing during the unit. Before I go further into my goals and the rationale for creating this Mill City Museum unit, I would like to share information about my school and classroom setting.

School Setting

I have been teaching kindergarten at the same school since the fall of 2006, after graduating from college the previous spring. It is a private, Catholic school located in a middle to upper class neighborhood in the city. There are approximately 500 students in grades Pre-Kindergarten to 8; two classrooms at each grade level. Most students live in the

neighborhood and are within walking distance school, but there are also a number of students who live in the surrounding suburbs. Tuition costs for the 2014-15 school year is approximately $4,500 per student if the family is an active member of the parish church or $6,000 per student for non-parishioners. Scholarships are available for families that qualify for financial aid.

The school has a long history in the neighborhood and is known for having a strong school community with very involved and supportive parents. It would be a rare day to not see at least a dozen parents in the school building helping out at lunch, tutoring a group of students, or planning the latest school fundraiser. One area where the parents are especially supportive is making sure that the school has materials needed to provide a top-level education for their children. School parents are continually developing new fundraisers to help purchase these supplies, as well as finding ways to donate their time to help improve the school. The school would not be nearly as successful in educating students without the parent involvement.

As technology has increasingly become an important tool for learning in the classroom, my school, with the help of the school parents, has found ways provide many technology opportunities for the teachers and students. Every classroom has a projector and almost every classroom has a SmartBoard. Teachers are provided with a MacBook and an iPad to help with their planning and teaching. This past year, all teachers were gifted an iPad projecting stand, which works like a document camera and allows teachers to display what is on their iPad through their classroom projector. This has been a great purchase because it allows students to share work they've created on their iPads very easily with the class.

A few years ago, a school technology committee was created to evaluate the use and access to technology in the school. The committee included the Technology Coordinator, parents, and teachers, myself included. Out of the work of the committee, a one-to-one iPad program was developed for the seventh and eighth grade students. The middle school students rent the iPads for approximately $18 a month with an option to buy out the remaining cost the iPad upon graduation from eighth grade.

Because not all students choose to purchase their iPads at the end of eighth grade, the remaining iPads have been set up by the Technology Coordinator for use in other parts of the school. After the first year of the one-to-one program, there were enough leftover iPads for each teacher to receive one for use in their classroom. Two years ago, the extra 25 iPads were put on a cart that was available for checkout for kindergarten to 6th grade classrooms. This current school year there are now two iPad carts available, one for use in the kindergarten to 2nd grade classrooms and the other for 3rd to 6th grade. Each grade level has also received two additional iPads for use with small groups or projects within the classroom.

Besides the two iPad carts, our school's Technology Lab also has a class set of MacBooks on a cart available for check out. The MacBooks are about 8 years old, so they are not the most updated computers but they get the job done. I tend to not use the MacBooks with my kindergarteners mainly because iPads are so much easier for my students to manage.

This winter, our Technology Department replaced the Computer Lab's older Mini Mac computers with new Chromebooks. They have also rearranged the lab to make it more of a collaborative space, with students sitting around larger tables instead of in rows. The Chromebooks are also much easier for students to move around compared to the Mini Macs,

making collaborating and creating in groups more productive. As part of the Technology Committee, I have heard plans form the Technology Department to continue to make the Computer Lab into a collaborative, 21st Century work-space over the next few years. It will be exciting to see how the space will be transformed.

As you can see, there are many technology options available to both students and teachers at my school. The challenge for our school is not having the resources, but rather knowing the best way to incorporate them into our teaching. This is why I want to create a unit that brings 21st Century learning opportunities into my classroom. But before I get more into that, let me share some background about my classroom setting.

My Kindergarten Classroom Setting.

The kindergarten program I teach in is a full day program with two classrooms, each with 20 students. Two part-time teaching assistants are shared between the classrooms to provide support to the two classroom teachers. Out of the 40 total kindergarten students, there are 19 boys and 21 girls. Most of the students come from middle to upper middle class families. Approximately half of the current kindergarteners attended preschool at the school's preschool program for at least two years before entering kindergarten.

I am very proud of the fact that our kindergarten curriculum is developmentally appropriate for young children. Our schedule includes two half-hour play times and two half-hour recess times each day. The classrooms are full of building blocks, dramatic play areas, art supplies and stacks of books. The kindergarten program, along with our preschool, is accredited by the National Association for the Education of Young Children. This means we meet all the early learning standards established by NAEYC and have shown that we offer a high quality early education experience for our students.

My kindergarten teaching philosophy is learning through play, exploration and hands on experiences. Our curriculum is taught in units of study, everything from apples, to ocean animals to fairy tales. I try to set up stations around the classroom based on these themes. For example, we just completed a unit on the life cycle of chickens. Besides having an incubator set up growing real chicken eggs, I also had a display of chicken related books, an Easter egg hunt station and a set of play eggs that showed the development of the chicken inside the eggs. My classroom is designed for my students to explore and experience learning in their own way.

Our kindergarten program is also very academic. We have math and language arts classes daily, science and social studies classes twice a week and other blocked off times to work on projects. One of the best times of the week is our hour-long center time where parents volunteer to help out at a station as the kids rotate through the centers. This time is great for mini-lessons, small group activities and also a nice opportunity for parents to help out in the classroom. Kindergartners also attend weekly classes with all of our school specialists: Physical Education, Spanish, Music, Art and Library. It is a busy place!

Kindergarten students are also exposed to a lot of technology. Each classroom has a SmartBoard that is used daily, a classroom iPad and a few iTouches that are used to listen to stories. Currently, we have a scheduled computer time once a week where we go to the lab and use the Chrome Books. I am also able to check out the iPad cart two to three times a week for use in my classroom.

This past school year, I would say that I have used the iPad cart approximately two times a month with my students. As I discussed in Chapter One, I had yet to develop an effective curriculum for using the iPads with my kindergarten age students beyond the usual

game playing or skills practice apps. The few times I have used iPads to have students create work has been very successful, yet I find it consumes a lot of time to plan and then share the work. That is why I wanted to develop curriculum that will move beyond the game playing on iPads and allow my students to work on the 21st Century Skills that will help them in the future.

Why the Mill City Museum?

The kindergarten program I teach in has many long-standing traditions, one of the most popular ones being the weekly Reading Buddies time with the sixth graders. Every Friday during the school year, the two sixth grade classes partner up with the kindergarten classrooms for a shared reading and activity time of approximately 30 minutes. The sixth graders read a book to their kindergartner partner and then completing a comprehension activity with them. Sometimes, this weekly partner time is used for the kindergartners and sixth graders to work on a project together, such as planting in the school garden or completing an art project.

In the spring, the kindergarteners and sixth graders go on a field trip together to the Mill City Museum in Minneapolis. During the field trip, the students learn about the history of Minneapolis as the "Mill City," complete a baking lab where they learn about how wheat is made into bread, and learn about how the Mississippi River made milling possible. Students are given time to explore the displays about the old mills and get a birds eye view of the Mississippi River from the 8th floor observation deck.

Having taught the Reading Buddies program, as well as organized the Mill City Museum Field trip, for the past nine years, I had always wanted to make the experience more meaningful for both the 6th graders and the kindergarteners. As I learned about teaching

students 21st Century Skills, I am realized that this school tradition is a great opportunity to have students work on creativity, collaboration and information fluency.

Curriculum Development Process

I designed eight lessons for this unit that allow students to practice creativity, collaboration and information while learning about topics associated with the Mill City Museum. During each lesson, except the last one, students will be creating some sort of digital work about the Mill City Museum using iPads. By the end of the unit, all of the digital work created from each lesson will be put together into one final product, a digital book, that will showcase what the student has learned during the unit and field trip. The final digital book can be published online and shared with student's parents and family as well as the school community and even the global community. In the next few sections, I will explain the timeframe, apps to be used, the lesson template and rationale for creating this unit. How I plan to evaluate the success of the unit will be discussed in the final section of this chapter.

Timeframe. The curriculum is eight mini lessons long. There are four lessons before the field trip, focusing on learning about the Mill City Museum, milling and the jobs and tools needed to produce flour. One lesson would be completed during the Mill City Museum field trip, allowing for students to collaborate with their sixth grade Reading Buddies and the museum staff. The final three lessons will be completed after the field trip so students can process and evaluate what they have learned from their research and the visit to the Mill City Museum.

Apps used for curriculum. As I mentioned in Chapter Two, Marinek (2014) advises that teachers keep their app choice in the classroom simple. Using too many apps or trying

new apps constantly only leads to frustration and time wasted learning the new apps. For my Mill City Museum unit, I have decided to stick to three apps: Pic Collage, Book Creator and Chatterpix.

All three of these apps are kindergarten appropriate and give students opportunities to practice the 21st Century Skills of creativity, collaboration and information fluency. Throughout the unit, students will be using Pic Collage and Chatterpix to display what they learned about certain topics. The final digital product will be created in the Book Creator app, which allows students to upload their work from the other two apps, as well as create new digital work and turn the whole thing into a digital book that can be shared.

Template for curriculum. I was not successful in finding a good template for technology integration lessons so I decided to create my own, shown in Figure Two. Because using technology in education is a relatively newer field, there are not any well-known lesson plan templates available.

My template includes the real world example, the iPad app to be used, the Minnesota ELA Common Core Standard, the 21st Century Skills and the student product. The steps for completing the lesson follow the chart. The template is not overly complicated because it doesn't need to be. Most of the lesson is going to be the students exploring and creating in the iPad; it is not teacher driven. Besides the initial instructions on how to use the app, there is not much more the teacher needs to do in order of directions. I see this template as an example of how the teacher's role in the classroom has shifted in the 21st Century from purveyor of information to guide. It's less about what the teacher needs to do and more about giving students time to work.

Figure Two: Template for Lesson

Title of Lesson: (In the form of a question)

Real World Example	
iPad App	
Minnesota ELA Kindergarten Common Core Standard	
21st Century Skills	
Student Product	

Lesson Steps:

1.

2.

3.

Rationale for curriculum. As I discussed in Chapter Two, technology has forever altered how people create, communicate and learn information. Crookson Jr. (2009) wrote that during the age of print, knowledge was only accessible to those who were considered leaders or great minds in society and their knowledge slowly trickled down to the larger masses (p.12). Now, with the Internet, people are able to access information from all over the world with just a few clicks and swipes on their keypad. Knowledge is no longer static but constantly changing and moving.

Adding to the global knowledge base has also been made so much easier in this age of technology. People from all over are able to contribute to the stream of information on the Internet, especially through social media sites and blogs. Because these sites are so user-friendly, Long (2009) states that young children can now easily contribute their thoughts and ideas with family and friends all over the world. Children and people of all ages are writing more than they ever have in the past through the social media pages and other Internet sites (p. 27).

Long (2009) goes on to write that schools need to adapt how they teach so that learning mirrors student lives outside of school where they are contributing to the global conversation (p. 27). The reason I wanted to create the curriculum around Mill City Museum for my kindergartners is because I want them to get as many quality experiences as possible working with technology.

The skills required to be a successful adult have also changed with technology. The Partnership for 21st Century Skills (as quoted by Blair) state that the new necessary skills for the 21st Century are the four C's: critical thinking, creativity, communication and collaboration (p. 10). I did not feel like I gave my kindergarten students enough opportunities to work on these skills. My students are at a great age where they are ready to learn and explore, so giving them opportunities to work on creativity, collaboration and information fluency is essential.

Creativity has now been placed on top of Bloom's Taxonomy as the highest form of thinking. Crocket, Jukes and Churches (2011) believe that creativity is going to be the highest form of currency in the future. Those who can create something new or take old ideas and refresh them are going to be in high demand in the global labor markets (p. 2). I

needed to give my students as much experience as possible being creative. The fun thing about teaching kindergarten is that five year olds in general are naturally very creative so the possibilities of what they can make are endless. I am excited to see what they do with the Mill City unit.

Information fluency is also essential for my 21st Century Learners to practice. Richardson (2013) writes that we need to develop students who know how to access the information they need, when they need it, instead of memorize facts for no reason (p. 14). Instead of doing rote worksheets, schools should be teaching students where to find the information, rather than give it to them. I want my students to explore all the information available about the Mill City Museum and find things that interest them to focus on. In the process, I hope to learn some things on the way too.

I am most excited about my students collaborating with each other, their sixth grade Reading Buddies and the greater community with my unit. I feel like collaboration is one of the most important skills I can help my students practice because it is so important to know how to do. Collaboration offers exciting opportunities for students to work with others, either in person or digitally to solve real life problems. Richards (2013) writes that when students are given opportunities to make connections with others, the result is authentic, meaningful work (p. 12). This is what I want my students to have at the end of the unit, a real product that they are excited about.

Goals for curriculum. Due to the vast number of apps available to use with iPads, I saw where my curriculum could go a variety of different ways without clear goals to keep me focused. It was important that I have a focused plan before I begin creating my unit

otherwise I would easily get lost in the allure of all that the iPad can do. I broke down the targets of my unit into five specific goals, which are as follows:

- The curriculum teaching the topic in a new way, appropriate for the 21st Century learner
- Students given opportunities to create something interesting and of value
- Students given opportunities to collaborate with others in and out of the classroom
- Students given opportunities to practice gathering information (information fluency)
- The lessons are appropriate and kindergarten friendly

I also wanted to make sure that my unit is very "doable" from a teacher's standpoint. Teachers have a lot of different lessons, tasks, emails and interruptions that they need to take care of throughout the day. This means that it can't take too much time to set up, organize or manage. Some organization and management is, of course, necessary, but it has to be in balance with everything else that I have to manage with my job. Overly complicated lessons are not going to work and lead to frustration.

Finding good apps that are kindergarten friendly and reasonably priced was also important. Apps that require too complicated of directions to use, have logins, or require a lot of reading in order to use them are not going to be best for my students to use. If I am going to need to spend more time getting the app ready then the students will be using the app, then I do not feel like it will be in the best interest to use with my students. The good thing is, there seem to be plenty of kindergarten friendly apps out there so avoiding complex apps should not be too hard. Also, because our school is on a budget for app purchasing,

apps that are relatively cheap, or even better, free, will be essential. I would like to avoid using expensive apps if possible.

Evaluating Curriculum's Effectiveness

To evaluate the effectiveness of my curriculum, I've decided to take my five goals of my curriculum and turn them into questions to be answered after the curriculum is developed. My curriculum effectiveness questions are as follows:

- **Is the curriculum teaching the topic in a new way, appropriate for the 21st Century Learner?** The way people learn and share information has changed with the invention of technology. Education needs to change how students are taught to help them grow into 21st Century Learners. Rogow (2015) believes that we need to teach students digitally literacy so that they can develop the skills necessary to think and create in the multimedia world (p. 91). Teaching traditional lessons using only paper and pencil is no longer appropriate in the 21st Century and my lessons need to reflect that change.
- **Are students given opportunities to create something interesting and of value?** Crockett, Juke and Churches (2011) state that, in the 21st Century, creativity is the highest value of currency we have as a society (p. 44). New ideas and innovative design are in high demand. I know that students need time at school to be creative in order to prepare them to be contributing members of the 21st Century society.
- **Are students given opportunities to collaborate with others in and out of the classroom?** Another way educators can prepare students to be active, contributing members of the 21st Century is to give students many

opportunities to collaborate with other kids in the classroom, the school and the greater world. Richardson (2013) states that when students collaborate and make connections with students outside the school, they can create authentic work that relates to real world problems (p. 12). My unit must allow opportunities for my students to share and work with others in order to practice the 21st Century Skill of collaboration.

- **Are students given opportunities to practice gathering information?** The International Reading Association (2009) shared in a statement the importance of teaching students to be critical consumers, meaning they are able to evaluate the relevancy, accuracy, reliability and perspective of information presented to them. Practically anyone can be an author on the internet, so I know it is important to give my students opportunities to practice finding valid information.
- **Are the lessons appropriate and kindergarten friendly?** It is no secret that kindergarten students are different than students in older grades. I know from my experience teaching kindergarten that I need to make sure my lesson are realistic of what a kindergarten student is able to accomplish and are developmentally appropriate. The National Association for the Education of Young Children (2012) reminds me that using technology in early education classrooms needs to focus more on interactive experiences, not just having students passively playing games (p. 3).

If I am able to give concrete examples and a whole hearted yes to each of these questions, I will feel that my Mill City Museum curriculum has been successful. Looking at

these questions, I think that they may be good questions to ask with all of the units I teach because teaching these 21st Century Skills are where education should be heading.

Conclusion

In Chapter Three, I began by sharing my school and classroom setting, specifically the technology resources that are available for my classroom use. In the next section, I discussed why I chose to create a unit around our annual kindergarten field trip to the Mill City Museum with our sixth grade Reading Buddies. The rationale and reasoning behind why creating this curriculum is important was also discussed in this section.

My goals for my curriculum were introduced in the next section of Chapter Three. The five goals of the curriculum focus on giving my kindergarten students experiences working on 21st Century Skills, specifically creativity, collaboration and information fluency. The final goal of the curriculum is that the lessons are appropriate for kindergarteners. I want to make sure that the apps chosen for the curriculum are not overly complicated so they do not frustrate my students.

Chapter Four is my curriculum, which I am excited to share. I will also evaluate the effectiveness of my curriculum and to see if it brings me closer to answering my essential question. Finally, in Chapter Five, I reflect upon my research and curriculum and how I see my research benefitting my teaching in the future.

Chapter Four

Results

Introduction

In Chapter One, I shared the story of how technology has changed during my lifetime, both personally and professionally. During Chapter Two, I explained current research about the influx of technology in education and the 21st Century Skills students need to learn in order to be successful in a technology driven world. The research supports my quest to provide my kindergarten students with high quality experiences using technology to learn and practice 21st Century Skills. This is why I decided to create a unit designed to give my students opportunities to practice the 21st Century Skills of creativity, collaboration and information fluency.

For Chapter Three, I laid out my plan to create a curriculum based on a field trip my kindergarten students go on each year to Mill City Museum. I described my school setting, the resources available and my plan to develop the curriculum. Now, in Chapter Four, I share the curriculum for kindergarten students that will integrate 21st Century Skills into the study topics around the Mill City Museum. The goal of this curriculum is to help answer my essential question: *How can I create a literacy based project that will help my kindergarten students develop the 21st Century Skills of creativity, collaboration, and information fluency?*

The unit I have created is divided into eight mini-lessons where kindergarten students use iPads to explore and learn about topics around the Mill City Museum. In this chapter, I

begin by explaining the overall purpose and logistics for the unit. The eight mini-lessons follow the introduction to the curriculum.

The Mill City Museum Curriculum

The purpose of this curriculum is to give kindergarten students genuine learning experiences working on the 21st Century Skills of creativity, collaboration and information fluency. Using an iPad as the technology-learning tool, students will create digital work about the Mill City Museum field trip to help them gain a better understanding of the history of milling, the Mississippi River and Minnesota. During the course of the lessons, kindergarten students will be collaborating with their sixth grade Reading Buddies, museum staff and other kindergarten students.

The final product the kindergarten students will create is a digital book that will include images, text, video and voice recordings that encompasses what they have learned during the unit. A piece of the digital book will be created each of the first seven lessons using the Pic Collage, Book Creator and Chatterpix apps. The digital book will be shared with classmates in the final lesson and could also be shared with parents, the school community and even the global community.

There are a few things to take note of before delving into the unit and lesson plans. First of all, it should be stated that there are many great iPad apps available that could be used in a similar way to teach these lessons. At some point a choice has to be made, so I have decided to use the apps Pic Collage, Book Creator and Chatterpix for this unit. I feel that these three apps have enough options and features that will allow students to have valuable experiences working on creativity, collaboration and information fluency. Using

only three apps for an eight-lesson unit will also reduce the amount of time needed to explain how to use the apps each lesson.

I also recommend that, if possible, students are given free exploration time using the apps before beginning the unit. In my experience, the more opportunities kindergarten students have trying out apps on the iPad, the easier it is to have them produce a quality product. Kindergarteners tend to have a natural curiosity to learn through exploration and it's better to work with that curiosity, rather than fight it. The Mill City Museum field trip is always in the late spring, which gives me a lot of time for students to have prior experiences with the iPads and apps used in this unit.

Finally, it is important to consider how student work will be stored and shared during the unit. My students do not have individual digital storage spaces like a Drive or Google account to save their work to. I have decided the easiest way to handle this issue is to assign each student a specific iPad to work with the entire unit. The iPads are individually numbered so it will be easy to match each student to the same numbered iPad for each lesson.

The eight mini lessons in this curriculum unit are listed in the Appendixes A through H. A checklist for the final project is presented in Appendix I. At the beginning of each lesson, I present a chart that explains the purpose, iPad apps, the kindergarten technology standard and 21st Century Skills the lesson covers. I also list what product the student should have created by the end of each lesson. Here is a brief summary of each of the eight mini-lessons:

- **Lesson One: Why is flour important?** (Appendix A) The students will create a Pic Collage of how they use flour in their lives.

- **Lesson Two: What is the Mill City Museum?** (Appendix B) The students will create a Pic Collage of the topics they will learn about at Mill City Museum including the Mississippi River, bakers, flour and a wheat field.
- **Lesson Three: What jobs help make flour?** (Appendix C) The students will create a Pic Collage about one of the following jobs: farmer, grain elevator operator, mill worker, grocery store clerk or baker.
- **Lesson Four: What am I most excited to learn about at the Mill City Museum?** (Appendix D) The students will work with their sixth grade Reading Buddies to research the Mill City Museum and create a page or two in Book Creator of what they are excited to see at the museum.
- **Lesson Five: What did I see at the Mill City Museum?** (Appendix E) The students will create a video at Mill City Museum of some of their favorite things at the museum. Kindergarten students will collaborate on this lesson with their sixth grade Reading Buddies.
- **Lesson Six: Why is my job important to making flour?** (Appendix F) The students will create a Chatterpix describing why the job they chose to study is important to the mill and flour production.
- **Lesson Seven: What have I learned about mills and flour making?** (Appendix G) The students will create a video or write about three things they have learned about milling and flour production.
- **Lesson Eight: How can I share what I learned?** (Appendix H) The students will share their digital book about the mill and flour making with another kindergarten student.

Please note, lessons one to four are taught prior to the Mill City Museum Visit, lesson five is completed on the field trip and lessons six to eight are taught after the museum visit. Also, a checklist of the items to be included in the final project at listed in Appendix I.

Reflection of Curriculum

In Chapter Three, I determined that I would consider my curriculum a success if I could answer "yes" to all five of these questions:

- Is the curriculum teaching the topic in a new way, appropriate for the 21st Century learner?
- Are students given opportunities to create something interesting and of value?
- Are students given opportunities to collaborate with others in and out of the classroom?
- Are students given opportunities to practice gathering information?
- Are the lessons appropriate and kindergarten friendly?

Now that the curriculum has been developed, I feel that I have successfully answered all of these questions. The curriculum is innovative, allowing my students to work on 21st Century Skills in ways that have not been done in the past, at least in my classroom. I feel that the final product student's create at the conclusion of the curriculum unit, the digital book, is something novel yet still demonstrates what my students have learned.

Every lesson, except the final one, has an opportunity for students to create something new using the iPad. Throughout the unit, they are making picture collages, videos, voice recordings and creating their very own digital book. Each student's book will be unique, a reflection of their learning and creativity. There are also many opportunities for students to collaborate with each other, their sixth grade Reading Buddies and the Mill City Museum

staff. While creating these digital books, students are also learning new information about milling and how flour is produced.

From my experience of nine years as a kindergarten teacher, I also believe that the expectations of the lessons are very age appropriate. The tasks are simple and the apps chosen are very easy to use. Students will love all of the fun choices for backgrounds and digital stickers in the apps, making the whole learning experience very fun and engaging. Overall, I would say the Mill City Museum is successful in giving kindergarten students developmentally appropriate experiences working on 21st Century Skills using iPads.

Conclusion

I am really happy with how this curriculum unit has come together. I feel that it offers authentic learning experiences for my students to work on the 21st Century Skills of creativity, collaboration and information fluency. It will be exciting to see what my student's final products look like at the end of the unit. I have a feeling they will all be interesting and different in their own way. Exactly what 21st Century school project should look like.

In Chapter Five, I reflect on what I've learned through my research and creation of my Mill City Museum unit and how I feel my work will benefit my students. I also share the limitations and how I plan to share what I've learned and create. My work on this curriculum brings me closer to answering my question: *How can I create a literacy based project that will help my kindergarten students develop the 21st Century Skills of creativity, collaboration, and information fluency?*

CHAPTER FIVE

Conclusions

Introduction

In the last chapter, I shared the curriculum I developed to go along with my kindergarten classes' annual field trip to the Mill City Museum. The curriculum focused on giving my students experiences working on 21st Century Skills using the iPad as the learning device. The purpose of creating the curriculum was to help explore my question: *How can I create a literacy based project that will help my kindergarten students develop the 21st Century Skills of creativity, collaboration, and information fluency?*

Throughout the process of creating this curriculum, I discovered a lot about what my students need to learn to be successful members of the 21st Century society. I also discovered how my job as a teacher has been altered in this technology driven world. In this chapter, I will reflect on how my research will benefit my work as an educator, along with the students I teach. I will share limitations that can arise when merging kindergarteners and technology together. One important thing I have learned on this journey is that information is meant to be shared, so I will end this chapter with a reflection on how I can go forward and share this information with others.

Major Outcomes

Even with the challenges of staying up to date in the ever-changing world of technology, the benefits of incorporating technology driven lesson into the classroom far

outweigh the challenges. Through my development of the Mill City Curriculum, I have discovered that creating interactive, iPad lessons is actually fun. I was able to create some of my own Pic Collages, digital books and other app creations as I was experimenting with options for the curriculum. If it was engaging to me, an adult, to use the apps, I know my kindergarten students will love them as well.

I also came to the realization that it would not be very difficult to incorporate more iPad use into my kindergarten curriculum in general. There are infinite possibilities for using iPads within the curriculum I already teach, I just need to alter how I go about the process of planning my units. I now envision having my students make a Gingerbread Man Chatterpix during our winter unit or having them make a Pic Collage of 3-dimensional shapes in real life during math. Simply, yet effective ways to give my students authentic experiences using iPads and practice 21st Century Skills.

The greatest outcome I realize after my research is that my role as an educator has drastically changed. I am not doing what's best for my students if I continue to teach in the traditional way. Incorporating opportunities for my students to work on21st Century skills into my lessons is essential if I want my students to be successful in the future. It seems to me that it may be a good time for teachers to remember why they chose education as a career path and to ask themselves, "Am I doing what is best for the children I teach?" I know I do not have a great interest in word families and skip counting, but I do have a passion for helping children grow and learn.

Limitations

The Mill City Museum unit I've created is exciting; using iPads and apps in a way that is engaging yet still provides purposeful learning experiences. The greatest limitation I

see is that this is only one of the many, many units I teach during the school year. To create a dynamic, technology focused unit for each of the units I teach would be a challenge at this point. I think the important thing to consider is that even one small step forward is better than nothing. Although it would be hard to completely transform my entire kindergarten curriculum, it would not be that difficult to incorporate an iPad lesson or two in each unit I teach or to just transform a handful of units each school year into something similar to the Mill City one. As I have discovered during this project, the more opportunities I can give my students to work on 21st Century Skills, the better.

Another limitation of this curriculum is just the basic struggles that come with using technology. Because the iPads are shared between many grades, it is hard to guarantee that student work will always be saved, even when extra precautions are made. Although technology is becoming more and more reliable, iPads can also crash or run out of battery power.

Technology is also always updating and changing. The three apps used in my curriculum are very popular ones, but I cannot guarantee that they will be around in a year, or even next week. In the time that I have written this curriculum, our school has purchased a subscription to the website/app Wixie, which does a lot of similar things as the Book Creator app yet saves the work to each individual child's own digital folder, something that can't be done on Book Creator yet. Using Wixie could be a possibility to improve upon how students' work is saved from lesson to lesson. It amazes me that you can never get ahead when using technology, there is always something new coming down the pike. Another reason why teaching 21st Century Skills to students is essential.

By far the biggest limitation is that technology and kindergartners are both unpredictable. As much as I can plan out a perfect lesson, it is very possible that the battery on the iPad dies or a kindergartener is crying. There are so many X factors that cannot be planned for when working with both technology and young children. The important thing to remember is to be flexible and to not give up on incorporating technology just because a lesson doesn't go as planned. Sometimes the best learning comes out of the unplanned moments.

Going Forward and Sharing

When completing a large project such as a Capstone, it would be frustrating if they energy and effort put into the research was never put to good use. I feel that I have learned a lot about teaching in the 21st Century during my Capstone journey and it would be wasteful to not share what I have learned. The most relevant place to start sharing this information would be with my co-workers, and most importantly, my fellow kindergarten teaching partner. I need to share what I've learned and collaborate with her on ways we can add authentic learning experiences with iPads into our kindergarten curriculum. She is a young, just out of college new teacher, so I know she will be on board with my plans to expand iPad use.

The next step would be to share what I've learned with my fellow teachers at my school. I hope to have the opportunity at a faculty meeting or during workshop week to present some of the information I have researched. I am also interested in hearing their thoughts and collaborating with them on how we can use this information on 21st Century learners to help improve our teaching practice as a school. My hope is that my Capstone

project can be a stepping-stone into further discussions and ideas about using iPads to teach 21st Century Skills.

I am also interested in sharing what I've learned about teaching in the 21st century and the unit I've created with the broader educational field. TIES, Hamline, and the Minnesota chapter of NAEYC all hold annual conferences where I could present my Mill City Museum curriculum and the research I've conducted. Creating a classroom blog is another possibility I'm considering for sharing this information with the greater public. I am excited to see where this project will go in the future.

Conclusion

The main reason I knew I wanted to write my Capstone on using iPads in the kindergarten classroom was because it was frustrating to me that I mainly used iPads with my students to play learning games. I leave this experience with a completely different outlook on what iPad use should be like in my kindergarten classroom. Writing this Capstone has been a long and often overwhelming experience but the knowledge I have gain along the way is invaluable.

As I end my Capstone journey, here is a major conclusion I have reached: technology has forever altered how we communicate as humans. It would be unfair to my students if I do not help them prepare for this changing world. How and what I teach my students needs to reflect the 21st Century we are living in and that means giving them plenty of experiences working on the 21st Century Skills of creativity, collaboration and information fluency.

APPENDIX A

Lesson One

Lesson One: Why is flour important?

Real World Example	The students will create a Pic Collage of how they use flour in their lives.
iPad App	Pic Collage
Minnesota ELA Kindergarten Common Core Standard	0.8.8.8 With prompting and support, create an individual or shared multimedia work for a specific purpose (e.g., to share lived or imagined experiences, to present information, to entertain, or as artistic expression.)
21st Century Skills	Creativity and Information Fluency
Student Product	A pic collage of products made from flour.

Lesson Steps:

1. Discuss in a large group what flour is (food/ingredient), how it's used (to bake/cook with), where it's found (variety of foods, especially desserts).
2. Demonstrate how to make a Pic Collage on iPad. Show how to change the background, add text and search for images.
3. Brainstorm a list of words students could use for their image search (cake, bread, cookies, etc.) and display where students can easily see them while they work.
4. Let the kids create. Monitor and assist as needed.
5. Have students save collage image to camera roll for later lessons.

Example of product from Lesson One:

APPENDIX B

Lesson Two

Lesson Two: What is the Mill City Museum?

Real World Example	The students will create a Pic Collage of the topics the will learn about at Mill City Museum including the Mississippi River, bakers, flour, and a wheat field.
iPad App	Pic Collage
Minnesota ELA Kindergarten Common Core Standard	0.8.8.8 With prompting and support, create an individual or shared multimedia work for a specific purpose (e.g., to share lived or imagined experiences, to present information, to entertain, or as artistic expression.)
21st Century Skills	Creativity and Information Fluency
Student Product	A Pic Collage about Mill City Museum topics.

Lesson Steps:

1. Begin with a teacher talk (approximately 10 minutes) about the Mill City Museum. Explain to the class about the field trip to Mill City Museum. Explain that at the Mill City Museum students will learn about how the mill, powered by the Mississippi River, turned wheat into flour.
2. Explain to the class that they will be making a Pic Collage about what they will learn at the museum. They will need to include in their collage at least one picture of each of the following:
    - The Mill City Museum
    - The Mississippi River
    - Wheat
    - Flour
    - An item made from flour, such as bread

They should also include the title: Mill City Museum. Display all of the search words clearly in the room so students can easily see them.

3. Let the kids create. Monitor and assist as needed.
4. Have students save image to camera roll for later lessons.

Example of Product from Lesson Two:

APPENDIX C

Lesson Three

Lesson Three: What jobs help make flour?

Real World Example	The students will create a Pic Collage about one of the following jobs: farmer, grain elevator operator, mill worker, grocery store clerk or baker.
iPad App	Pic Collage
Minnesota ELA Kindergarten Common Core Standard	0.8.8.8 With prompting and support, create an individual or shared multimedia work for a specific purpose (e.g., to share lived or imagined experiences, to present information, to entertain, or as artistic expression.)
21st Century Skills	Creativity and Information Fluency
Student Product	A Pic Collage of one of the jobs related to milling and flour production.

Lesson Steps:

1. Introduce the jobs involved in making flour: farmer, grain elevator operator, mill worker, grocery store clerk and baker.
2. Have students select one of the jobs they would like to further research and have them create a Pic Collage with images of the job.
3. Let the kids create. Monitor and assist as needed.
4. Have students save image to camera roll for later lessons.

Example of Product from Lesson Three:

APPENDIX D

Lesson Four

Lesson Four: What am I most excited to learn about at the Mill City Museum?

Real World Example	The students will work with their sixth grade Reading Buddies to research the Mill City Museum and create a page or two in Book Creator of what they are excited to see at the museum.
iPad App	Book Creator
Minnesota ELA Kindergarten Common Core Standard	0.8.8.8 With prompting and support, create an individual or shared multimedia work for a specific purpose (e.g., to share lived or imagined experiences, to present information, to entertain, or as artistic expression.)
21st Century Skills	Creativity, Collaboration and Information Fluency
Student Product	A page or two in a digital book on the Book Creator app.

Lesson Steps:

1. Briefly describe some of the artifacts related to milling/flour that students will see at the Mill City Museum.
2. Have the kindergarteners teach the sixth grade Reading Buddies about what they learned in lesson two about the Mill City Museum.
3. Working with their sixth grade Reading Buddies, have students research the Mill City Museum online. Recommend the Minnesota Historical Society website as a good resource for their search.
4. Kindergarten students, with the help of their Reading Buddies, will create a page or two about what they are interested in seeing at Mill City Museum in a new digital book using the Book Creator app. These research pages can include any combination of images, videos, drawings and text.
5. Let the kids create. Monitor and assist as needed.

6. Have the Reading Buddies help the kindergartners import their three Pic Collages from the first lessons into their digital book.

APPENDIX E

Lesson Five

Lesson Five: What did I see at the Mill City Museum?

Real World Example	The students will create a video at Mill City Museum of some of their favorite things at the museum. Kindergarten students will collaborate on this lesson with their sixth grade Reading Buddies.
iPad App	Book Creator
Minnesota ELA Kindergarten Common Core Standard	0.8.8.8 With prompting and support, create an individual or shared multimedia work for a specific purpose (e.g., to share lived or imagined experiences, to present information, to entertain, or as artistic expression.)
21st Century Skills	Creativity, Collaboration and Information Fluency
Student Product	A video as part of their digital book on the Book Creator app.

Lesson Steps:

1. Bring iPads with on field trip.
2. During the free exploration time students have in the Mill City Museum gallery, have the sixth graders record video of the kindergartners standing next to some of their favorite parts of the museum. Sixth graders should help the kindergartners brainstorm what they are going to say before recording. Signage and museum staff can also be used as a resource for the video.
3. Videos should be uploaded into kindergarten student's digital books in Book Creator upon return from the field trip.

APPENDIX F

Lesson Six

Lesson Six: Why is my job important to flour making?

Real World Example	The students will create a Chatterpix describing why the job they chose to study is important to the mill and flour production.
iPad App	Chatterpix
Minnesota ELA Kindergarten Common Core Standard	0.6.2.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
21st Century Skills	Creativity and Information Fluency
Student Product	A Chatterpix of their mill related job that will be imported into their digital book on the book creator app.

Lesson Steps:

1. Demonstrate how to use the Chatterpix app to students.
2. Have them find an image of a person doing the mill related job (farmer, grain elevator operator, mill worker, grocery store clerk and baker) they selected earlier in the unit on the Internet and save to the camera roll.
3. Have them create a Chatterpix of the "person" talking about their job and how it relates to the mill.
4. Let the kids create. Monitor and assist as needed.
5. Have students save Chatterpix to camera roll and import into their digital book on Book Creator.

Example of Product from Lesson Six:

APPENDIX G

Lesson Seven

Lesson Seven: What have I learned about mills and flour making?

Real World Example	The students will create a video or write about three things they have learned about milling and flour production.
iPad App	Book Creator
Minnesota ELA Kindergarten Common Core Standard	0.6.7.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).
21st Century Skills	Creativity, Collaboration and Information Fluency
Student Product	A final page in their digital book with three things they have learned about the mill and flour making. It could be in the form of a video, pictures or text.

Lesson Steps:

1. Have students open their digital books about the mill in Book Creator and add a final page.
2. On the page, students should share three things they have learned during the unit about the mill. They can create a video, use pictures or text to show what they've learned.
3. This is a good time to check to make sure they have all the pages in their digital book. It should include:
    a. Pic Collage about Flour Products
    b. Pic Collage about Mill City Museum
    c. Pic Collage about their mill related job
    d. A page or two made in Book Creator about their mill artifact
    e. A video filmed at Mill City Museum about their artifact
    f. A Chatterpix about their mill related job

g. A final page in Book Creator with three things they have learned during this unit

APPENDIX H

Lesson Eight

Lesson Eight: How can I share what I learned?

Real World Example	The students will share their digital book about the mill and flour making with another kindergarten student.
iPad App	Book Creator
Minnesota ELA Kindergarten Common Core Standard	1.8.1.1 Participate in collaborative conversations with diverse partners about *kindergarten topics and texts* with peers and adults in small and larger groups. 1. Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion). 2. Continue a conversation through multiple exchanges.
21st Century Skills	Collaboration and Information Fluency
Student Product	Nothing new created but digital books shared between kindergarten students.

Lesson Steps:

1. Partner up students and have them share the digital book they created with each other. Best if the partnered students learned about different jobs and artifacts.
2. Digital books can also be shared with entire class. Can be displayed through a projector, SmartBoard or Apple TV.
3. Further Collaboration: Student's digital work can be shared with the global community through the kindergarten class Facebook page, the school website, parent emails and school Twitter pages.

APPENDIX I

Checklist for Final Student Product

Checklist for final student product:

The final product each kindergarten student creates in the Book Creator should include the following:

Pic Collage about Flour Products	
Pic Collage about Mill City Museum	
Pic Collage about their mill related job	
One or two pages made in Book Creator about what they are excited to see at Mill City Museum	
Video filmed at Mill City Museum about their favorite parts of the museum	
Chatterpix about their mill related job	
Final page in Book Creator with three things they have learned during this unit	

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