



**21st Century Co-teaching with an integrated
Technology Specialist**

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Abstract

21st century skills drive educators to provide clear and consistent learning goals to help prepare students for college, career, and life. Educators are expected to infuse their lessons with technology to provide students an equitable education; educators state that they are ill prepared to deliver lessons that rely on technology integration. This action research project examines the collaborative practice of general elementary educators co-teaching with computer integration educators to enhance in-person and virtual lessons. A review in the literature revealed a gap in information related to the collaborative co-teaching model between these two types of educators. The participants in this research project included students in the special education program, basic skills program and many other personal challenging situations. Pre- and post-test data were collected to determine if the collaborative efforts impacted the participants' performance. The results indicated that the majority of participants showed growth.

Chapter 1: Introduction

Background

Past research on identifying the integration of 21st century skills in public school classrooms, shows that teacher's attitudes toward technology play a vital role in determining how, and to what extent, they integrate technology (Pittman, 2015). Due to recent Covid-19 social distancing restrictions, general elementary educators are trying to turn low-tech, in-person instruction into high-tech online/hybrid learning with the same level of rigor. With inconsistent training on technology use, varying beliefs about the benefits of technology, and perceived importance of technology for teaching (Miranda, 2011), many elementary educators struggle to find stability in their new classroom settings due to the realization that their students are not as tech savvy as perceived. Understandably, many students lack knowledge of 21st century skills and the ability to manipulate technology integration programs to produce quality work. In general terms, 21st century skills refer to core competencies such as: collaboration, communication, creativity, critical thinking, digital literacy, and problem solving, just to name a few (Rich, 2020). While co-teaching is not always successful due to the lack of time to plan, interruptions, transfer of knowledge due to difficulty of the concept being covered, problems accepting technology, behavioral challenges, scheduling, and teaching methods, it can be a rewarding teaching model when those challenges are met and overcome. Because of this, it is worth researching a model of co-teaching with an integrated technology specialist.

This capstone project will explore collaborative practices of co-teaching practices with the general elementary education classroom teachers and computer teachers to integrate both sets of state standards into a module of learning within the reading program. The action research

component will focus on understanding to what degree collaboration between elementary general education educators and computer educators benefit student achievement. Research on identifying the low level of technology in the public schools' classrooms shows teacher's attitudes toward technology play a vital role in determining how, and, to what extent, they integrate technology (Pittman, 2015). This topic has never been more important: Covid-19 social distancing restrictions created a massive restructuring of educational pedagogy. A general elementary educator was left to figure out how to turn low-tech, in-person instruction into high-tech online/hybrid learning with the same level of rigor. With inconsistent training on technology use, and teacher's beliefs about the benefits of technology and perceived importance of technology for teaching (Miranda, 2011), many elementary educators struggled to find stability in their new classroom settings. Educators also grappled with the realization that their students were not as tech savvy as perceived. The students lacked knowledge of 21st century skills and/or the ability to manipulate tech integration programs and produce quality work. With this in mind, the research will target the population of third graders at a Mid-Atlantic elementary school.

Overall Purpose

The primary goal of the action research project will be to identify if collaboration between the two teachers on a reading module, within the "Wit and Wisdom" program, helps to increase student achievement and engagement in both the reading class and the technology class. Research suggests that regular reading comprehension lessons taught with design-based projects, highlighting a strong focus on science and technology, yield a rewarding approach to learning (van Keulen, 2020). Based on the research conducted, it appears that a collaborative teaching partnership will be an effective model for designing special area practices. However, there are

limited published studies done in the United States which is why it is important to conduct this research project.

Justification of Approach

To determine whether collaboration between these two types of teachers is beneficial for students, the researcher will complete an action research project. This research will be similar to the micro-documentation research published in *Teacher Librarian*, 2014. The research conducted showed the success rate to be extremely significant when a librarian co-taught a unit of study, in comparison to when the classroom teachers taught alone (Loertscher, 2019). A similar study from Taiwan investigated the effects of a collaborative teaching approach and inquiry-based learning with the librarian, social studies teacher, and computer teacher. This study also indicated a positive impact on the development of different dimensions of the students' information literacy and IT skills (Chu, 2011). The proposed capstone format is best suited for this project because it will give educators the data they need to understand and create better lesson plans. As pointed out in research published by Harkki (2020), teachers need to master 21st century skills. Besides developing effective pedagogical models to teach those skills, schools must become learning centers for both students and teachers alike. The action research proposed would provide a reflection process they can use to implement changes in their classrooms and determine if those changes result in the desired outcomes.

Significance

For the past five years, the researcher has worked with the elementary school population building a digital literacy program. During the school year of 2019-2020, the researcher was reassigned to a 3rd grade classroom as a general education teacher. As the researcher struggled with the curriculum change, the researcher realized that they could use support from the special/related arts teachers. At first, the researcher reached out to the art teacher because they

had many lessons that focused on the students building knowledge on three main art pieces. While the researcher wanted to dedicate students' class time to creative projects thereby expanding the curriculum and topics we were reading about, they were not able to do so because of the limited time constraints. The researcher approached other special/related art teachers and asked them to support my students by focusing on the same themes that they were presenting in the researcher's classroom. For example, the music teacher working within the NJCCSS (New Jersey Common Core State Standard) identifying patterns of rhythm incorporated the reading module focus question, "How People Explore the Sea?" The music teacher sourced music from the Polynesian Islands to accommodate the module theme while maintaining her curriculum's integrity. This collaboration was happening informally for many weeks; eventually, it was apparent that the students seemed to have a better understanding of the material as they were exposed to it in the related arts' settings. As a previous special education teacher, the researcher has firsthand experience that co-teaching and collaborative planning improves student achievement in the classroom.

The action research will focus on creating a consistent co-teaching partnership and evaluate to what degree this collaboration of cross-curricular educators benefits the students' achievement in reading. A 3rd grade class in a public elementary school in the Mid-Atlantic region will participate in their typical reading program with the crossover projects being presented in their Computer classroom. The contribution this project will provide is a North American experience in a public school setting. This will be beneficial for the countless other educators in the United States who are looking for a co-teacher to enrich the instruction through the related arts curriculum. The researcher hopes to create an open dialogue with the

school/district to investigate the idea of co-teaching partnerships with related arts teachers, while maintaining state-mandated curriculum expectations in both settings.

Research Questions

- To what degree would collaboration between elementary general education educators and computer educators benefit students' achievement in reading?
- To what degree would students feel motivated by working in an environment with co-teachers who expand their knowledge and exposure of content?
- To what degree would students make connections between the presentation of instruction in both settings: classroom instruction and related arts?

Definition of terms

- Co-teachers - two, or more, teachers working together with groups of students; sharing the planning, organization, delivery, and assessment of instruction, as well as the physical space (Bacharach, Heck & Dank, 2004)
- Digital Literacy - Digital literacy refers to an individual's ability to find, evaluate, and compose clear information through writing and other media on various digital platforms.
- Hybrid learning - combines online educational materials and opportunities for interaction online with traditional place-based classroom methods. It requires the physical presence of both teacher and student.
- 21st century skills - a broad set of knowledge, skills, work habits, and character traits that are believed to be critically important to success in today's world.

Chapter 2: Literature Review

Educators working in the 21st-century schools are accustomed to change. Each year, a new group of students flood the classrooms and challenge educators to find the right techniques to reach each student's individual learning style. Beyond the students' learning needs, the educator also must balance curriculum changes, lesson planning, and scheduling times to deliver instruction, grading, meetings, and so on. With the inclusion of technology into the current educational landscape, educators, known as "digital immigrants," are a population who did not grow up using the technology of the moment. Educators had to adapt to the use of technology later in life, and, therefore, sometimes believe that students have a set of assumed digital skills (Evans & Robertson, 2020). Students born after the 1980's are considered "digital natives"; they earn this distinction because they have grown up in a society where they are surrounded by technology (Kirschner & Bruyckere, 2017). While students may appear to have the ability to adapt to new forms of technology with a nonchalant attitude, what educators are looking for and trying to improve upon can be defined as digital literacy skills.

Digital literacy can be loosely defined as a person having competence in technology applications so that they can contribute to society both creatively and productively (Nelson et al., 2011). Enthusiasts contend that using the National Educational Technology Standards better prepares students for the 21st century by improving their information and communication skills (Johnson et al., 2012). With the recent Covid pandemic, the issue of student's digital literacy skills have been magnified. In order for educators to teach effectively during remote learning time, they need to focus on delivery of the curriculum using available technology systems. As observed by the researcher, educators focus their lessons on reading and math core curriculum while the students also need instruction and guidance on the application of digital literacy skills

in their lessons. According to Anagün (2018), infusing 21st century skills with subject area content, and especially cross-curricular content, provides students with strong learning capacity and helps them retain the learning for ongoing use. Both educators and students would both benefit from the support of a technology integration specialist, who can provide support and guidance on the delivery of instruction using technology and guide the students to use digital literacy skills within the curriculum. Over the past two decades, there has been little published empirical evidence supporting one position or the other in regard to using a co-teaching model composed of an integrated technology educator in the classroom teaching along with the general educator. This literature review will explore a proposed collaborative practice of general elementary educators co-teaching with computer integration educators to enhance in person and virtual lessons. Articles were sourced by using OneSearch from the University of the Arts collective database and Google Scholar along with internet searches on key terms.

Problem of Practice

The articles collected for this review consist of research based on key terms; co-teaching models, project based learning, 21st century skills, and technology integration in the elementary level classroom. Past research on identifying the low level of technology in public school classrooms show that a teacher's attitude toward technology plays a vital role in determining how, and to what extent, they integrate technology (Pittman, 2015). This topic has never been more important: Covid-19 social distancing restrictions created a massive restructuring of educational pedagogy. How to turn low tech in-person instruction into high tech online/hybrid learning with the same level of rigor is a challenging task often expected to be done by educators who have little or no professional development training in this area. Minimal training focused on educational technology use, and a varying belief about the benefits of technology and perceived

importance of technology for teaching (Miranda, 2011), some elementary educators struggle to deliver their lessons digitally and are frustrated when students are not as tech savvy as previously perceived to be. Understandably, without proper instruction K-12 students lack knowledge of 21st century skills and the ability to manipulate tech integration programs to produce quality work. In general terms, these skills refer to core competencies such as collaboration, communication, creativity, critical thinking, digital literacy, and problem-solving, just to name a few (Rich, 2020). Regardless of the challenges that co-teaching presents, it can be a rewarding teaching model when those challenges are met and overcome. Because of this, it is worth looking into the model of co-teaching with an integrated technology specialist.

Co-Teaching or Coteaching

In the 1970's, Public Law 94-142, now known as IDEA, created a new framework for educators to deliver instruction. The new framework, known as Co-teaching, involves two or more certified professionals who share instructional responsibility for a single group of students. Teaching occurs primarily in a single classroom or workspace for specific content or objectives with mutual ownership, pooled resources, and joint accountability (Friend & Cook, 2016). Co-teaching, (hyphenated) describes the relationships of a general education and special education teacher working together to deliver instruction to students in a heterogeneous classroom. Coteaching, (unhyphenated) is defined as two general education teachers working together to deliver instruction. Coteaching can also be known as team teaching, cooperative teaching, and collaborative teaching. These educators also commit to sharing in the planning, organization, delivery and assessment of instruction, as well as the physical space. As a service delivery option, co-teaching is designed to meet the educational needs of students with diverse learning needs. Students at all academic levels benefit from alternative assignments and greater teacher

attention in small-group activities (Friend & Cook, 2016). Educators can expand the definition of coteaching to include cross curricular academic areas and the related arts classroom, i.e., Art, Music, Foreign Language, and Computers. In working closely with these related arts areas, coteachers can create an immersive experience that presents topics with a multi-sensory approach.

Models of Coteaching

The teachers involved in coteaching also benefit from the professional support and exchange of teaching practices as they work collaboratively. There are many models of coteaching: (a) One Teach, One Observe (b) One Teach, One Assist (c) Parallel Teaching (d) Station Teaching (e) Alternative Teaching (f) Team Teaching (Loertscher, D. V., & Zepnik, J., 2019).

One of the advantages of the one teach, one observe strategy is that more detailed observation of students engaged in the learning process can occur. With this approach, for example, coteachers can decide in advance what types of specific observational information to gather during instruction and can agree on a system for gathering the data. Afterward, the teachers should analyze the information together. One Teach, One Assist is a second approach to coteaching where one person would keep primary responsibility for teaching while the other circulates through the room providing unobtrusive assistance to students as needed (Bryant Davis, Dieker, Pearl, & Kirkpatrick, 2012; Cartey & Farrell, 2018). In parallel teaching, the teachers are both covering the same information, but they divide the class into two groups and teach simultaneously (Friend et al., 2010). In Station Teaching, the teachers divide content and students. Each teacher then teaches the content to one group and subsequently repeats the instruction for the other group. If appropriate, a third station could give students an opportunity

to work independently (Friend et al., 2010). This approach is often found useful to differentiate the instructional needs of all students. Occasions arise in which several students need specialized attention. In the virtual world, this option may provide the best application of practice. The computer teacher can use a breakout room to work on the application of computer skills while the general education teacher works on the core curriculum (Friend et al., 2010). In the research, (Friend et al., 2010) also mentioned the use of alternative teaching; one teacher takes responsibility for the large group while the other works with a smaller group. During team teaching, both teachers are delivering the same instruction at the same time. The researcher observes this approach may be the most complex, but a satisfying way to coteach.

Computer Integration by the General Educator

Technology is only as good as when it works at the right time and place. This statement is echoed throughout the personal and professional worlds. In the classroom, there is an ebb and flow required by teachers and students to facilitate a positive and productive work environment. When technology use impedes this flow, it can be very frustrating for both the user and the participant. Lawrence (2013) states that teachers are still not keeping pace with students outside of school practice by using digital tools and technologies to enhance classroom practices. There has been a steady increase in the 1-1 device initiative across school districts. With more students carrying some form of device to connect them to the internet, some teachers are hesitant to use this technology to drive their lessons. Instead of using Chromebooks for meaningful learning opportunities, it has been this researcher's observation that uninformed teachers tend to rely on them for positive incentives and rewards with free game choices.

Pitman and Gaines (2015) report that the strongest barrier to technology integration with general education teachers was a lack of available computer hardware, followed by factors

relating to the time required to develop and implement lesson plans that incorporate technology. It is also noted that the teachers who used technology at a higher level reported having no significant increase in technology support and resources outside of the classroom than the group who used technology at a lower level. Teachers' attitudes toward technology play a vital role in determining how and to what extent they will integrate technology into their classrooms (Miranda & Russell, 2011). A strong predictor of teacher-directed use of technology stems from the teacher's experience with technology, belief that technology is beneficial to meet instructional goals, and the perceived importance of technology for teaching. According to Ertmer et al. (2012), experiencing obstacles with the integration of technology appears to be one deterrent for teachers using technology in the classroom.

Miranda & Russell (2011) aimed to identify predictors of teacher-directed student use of technology in the elementary classrooms. Their research looked at the factors that contribute to classroom instructional technology use and the strongest predictors of teacher-directed student use of technology. The researchers pointed out that either a micro-level or macro-level approach by itself may limit fusion of innovation if districts use a macro level approach in isolation because teachers are likely to limit or resist adoption altogether. If districts use a micro-level approach, its adoption will be limited to a few innovators or clusters of instructional technology users because of inconsistencies and the accessibility of instructional technology resources.

Teachers who believe technology is valuable and beneficial for learning are more likely to use technology more frequently than teachers who do not hold such beliefs (Ertmer & Ottenbreit-Leftwich, 2010). Teachers' access to technology and experience and comfort level with technology are also mentioned as possible predictors of technology use (Miranda, 2007). The most noteworthy relationship found by researchers was the total effect a teacher's experience

with computer technology had on perceived importance of technology for teaching. At the elementary level, training application was a significant predictor of integration. Experiencing these positive outcomes with integration may increase teacher's confidence as computer users and reinforce beliefs of the instructional potential of computers.

Nelson et al. (2011) suggests the ambiguous use of technology in society and its importance dictates that American students become proficient as critical users of technology. However, this can be achieved if the students use technology in the classroom (Puentedura, 2013). Puentedura developed the SAMR Model as a way to encourage the use of technology in the classroom setting. The four classifications of the SAMR Model: substitution, augmentation, modification, and redefinition. Through conversations with the researcher, educators were excited to use technology, but were only comfortable using a substitution form during classroom activities. For example, instead of using paper and pencil to encourage note taking, educators opted to have students use word processing programs. Educators who apply technology in the classroom need to make sure that the technology is augmenting or modifying the learning activities, but with functional improvements. The researcher is led to believe that to support the educators transition of lesson to a redefinition model, as defined by (Puentedura, 2013), a coteaching model with a technology specialist would be warranted.

Collaboration with a Computer Specialist

The computer integration educator, often referred to as the "computer teacher," requires a degree in teaching, strong computer training, and an all-encompassing attitude about educating children with the use of technology. A computer educator can be at one time a classroom teacher, an educator of other teachers, a technology consultant, and depending upon the needs of the classroom teacher and the children at the time, a technology wizard. Finding research data on the

collaborative practices of this teaching pair is challenging. However, there are articles and empirical research on other related arts educators who participated in a coteaching model with success. A replication of the studies with a computer integration teacher and general education teacher should yield the same positive results.

Loertscher & Zepnik (2019) used a micro-documentation approach to reveal any patterns between co-teaching with the librarian on a unit of study. After volunteers were acquired, they investigated co-teaching in twelve schools across the United States with all grade levels asked to participate. In order to establish a baseline, the librarians were asked to reach out to five to ten classroom teachers. There were 100 responses from all grade levels. The teachers surveyed reflected on recent learning experiences and they estimated approximately 50% of their students met, or exceeded, their expectations for a unit of instruction. In the same schools, the researchers asked the librarian to select a recent unit of instruction that was co-taught by the classroom teacher and the librarian. Each partner was asked to identify the learning experience topic, the number of students in that experience, and the number of students who met or exceeded both adults' expectations using their normal assessments. Researchers noted the result across grade levels ranged from 70% to 100% success rate. The success rate was judged as extremely significant in comparison with the 50% success rate when classroom teachers taught alone. Data shows that across all the schools, a total of 2,107 students were co-taught in this study. The success rate was 84%, or 1,776 students. In the conclusion of the study, the authors muse that if the classroom teacher taught a unit of study alone, they could foresee that about half of the students would meet or exceed the teacher's expectations. However, if the classroom teacher co-taught a unit of instruction with the librarian, they anticipated that 70% to 100% of students would meet or exceed the adult expectations (Loertscher et al., 2019).

There is no known data or published studies that show a computer integration educator providing the same level of support as in the librarian study mentioned above. The researcher believes that based on the coteaching model and the success of previous coteaching partnerships, a general education teacher and a computer integration educator can replicate the same level of success. Working collaboratively, a computer integration specialist can provide the technology support and the unique digital platforms of 21st Century skills while the general education teacher can focus on the content standards.

21st Century Skills

Data collected by PEW Research on children's engagement with digital devices and the internet found that 54% of students start using mobile devices when they are 5 to 8 years old (Auxier et al., 2020). However, it has been a misconception that students of all ages, due to their exposure to technology, are more proficient than their instructors. What students are good at is consuming the application of media using technology. When taught how to use the technology to consume media, via smartphones, Smart TV's, or personal computers, students appear to excel in technology. As students begin to develop technology habits, it is important to teach them how to effectively use the digital tools available to them in a safe and ethical way. Students need to learn more than just basic keyboarding skills. They need to learn how to apply 21st century skills into their current schoolwork so that they are also prepared to contribute to society and in the workforce. Often used in a station rotation approach from the general educator are programs and app-based games that focus on educational concepts however, these are not enough to fuel students' curiosity and promote the meaningful use of technology. Students need to know how to communicate, collaborate, and show critical thinking and creativity in their work. The World Wide Web is at their fingertips, but students do not have enough time and/or exposure in the

classroom to work, practice, and apply the digital skills. Arming students with 21st century skills can help prepare them for success in higher education and the workforce alike (Boss, 2018).

The researcher's school district has invested steadily in building technology-based classrooms. Recently, students in grades 2-8 were given Chromebooks to use; web-based support programs were purchased for instruction; and classroom overhead projectors were replaced with large Smartboards. With these technological advancements, one may whistle low and profess that this is a school district which is on its way to creating a 21st century learning environment, but the idea of what learning in the 21st century should look like is open to interpretation. Today's learners are fortunate to have powerful learning tools at their disposal that allow them to locate, acquire, and even create knowledge much more quickly than their predecessors, but simply being able to Google information is no substitute for true understanding.

Proponents believe that schools need to teach these skills to help students thrive in today's world. It is simply not enough to equip a classroom, or learners, with devices. When educational stakeholders promote the ideals of 21st century skills along with state standards, they will see that early exposure at the elementary level can provide a strong foundation for future learners (Anagün, 2018).

School districts spend a majority of the budget on core content material and programs. There have been many changes in curriculum over the years, however, few of these programs have incorporated 21st century skills as the main focus. It is up to the classroom teacher to provide the time and instruction, for which many feel ill equipped to do. Therefore, the technology skills are put off to the side while the teacher uses technology to only present the curriculum. In March 2020, when Covid-19 flipped the world upside down, a majority of schools had the technology to begin remote learning, but the students did not have the skills to

use the devices independently while also understanding new materials presented, leading to a long and difficult end of the 2020 school year. If the district had invested more time in training educators on 21st century ideology, focusing on the main 4C's, Communication, Collaboration, Creativity, and Critical thinking in the primary grades, perhaps remote learning would have yielded less stress and more triumph.

Communication

Communication online is a skill we take for granted, especially during remote instruction. As educators transitioned to in-person, whole group, lessons to learning management systems like Google Classroom due to the Covid pandemic, some of the early complaints were the fact that the students didn't seem to know how to use the learning management system, nor could they find a way to contact the teacher. Many elementary schools never exposed or taught these communication tools while in school. For adults, the Internet is an access point to the World Wide Web, and for children, it often means email, chat, games (Jenkins, et.al., 2006). Educators shouldn't be surprised when learners struggle to communicate remotely, as we ask them to quietly observe the media when they are in the classrooms. Our learners are the most tech-savvy generation yet, spending hours regularly communicating via social networks, but the communication tools that these learners use are social and informal. They struggle to use these same tools to actually communicate more formally with others. We need to make certain that the learners have a basic understanding of how to reach and communicate effectively with their educators and classmates while working in the classroom. Teaching emailing, video conferencing, and collaborative spaces like Google Docs should be introduced during the writing process. If educators had taught this prior to quarantine, communication between teachers and students would have been more effective once remote learning started.

Collaboration

In the 20th century classroom, whole instruction and group work are commonplace, and learners are not given a choice in how to participate. Due to the pacing of lessons, collaboration is often grasped quickly by the higher-level learners who dominated the core content assignment. Much like crowdsourcing in a video game, collaboration in the classroom encourages students to learn through failure. The researcher has observed that experiences of failure can lead to valuable learning opportunities while in the classroom, however the educator's main goal is to teach accurate information. The students are required to produce the correct responses when called upon, thus leaving students little, or no, choice in how to participate without failure. Equity in 21st century classrooms must also be at the forefront of our minds. Twenty-first century learning must include the 20th-century ideals of *Brown v. Board of Education* (Rich, 2009). Sadly, we have failed to deliver on that promise. It is promising that educators who have been forced to continue teaching remotely have begun the process to provide 21st century skills. This is working to build a stronger foundation for learner's collaboration skills which will enhance their remote learning experience.

Creativity

In this researcher's opinion, educators in the 20th century used more hands-on projects and allowed for more creativity within the learning process. Today, however, creativity, which is an important 21st century skill, seems to die in schools from the 4th grade on, due to time constraints with curriculum structure, and an emphasis on preparation for standardized testing. Beyond curricular issues, classrooms today typically lack 21st century learning and teaching in part because high-stakes tests do not assess these competencies (Dede, 2005). Educators struggle to find the place for creativity within core subject integration as they are focused on student

achievement on standardized tests. By including creative opportunities to produce, educators could shift from learners as a participatory culture to creative participants. Learners then believe their contributions matter and feel some degree of social connection with one another, solving the accountability issue when it comes to inherently striving to better oneself. We know that learners care what other people think about what they have created online. According to Boss (2018), this type of creativity can be seen across the digital platforms which include: online communities centered around various forms of media, such as Facebook, message boards, and metagaming. For instance, Blake Ross was 14 years old when he was hired for a summer internship at Netscape. At this young age, he had already developed computer programming skills and published his website. Ross was frustrated by many of the corporate decisions made at Netscape, therefore, he decided to design his own web browser. Through the joint participation of thousands of other volunteer youth and adults working on his project worldwide, the Firefox web browser was born. By age 19, Ross had the venture capital needed to launch his own start-up company. His interest in computing was sparked by playing the popular video game, SimCity (Jenkins, et al, 2009). Learners like Blake Ross are already collaborating and creating on their own as they develop these 21st century skills outside of the classroom. Educators need to make sure that all learners are exposed to, and have access to being creative while working online. To close the equity gap we need to provide the opportunities to do this in the classroom as well. Both teachers and students can benefit from the instruction and support a computer integration teacher can provide.

Critical Thinking

Due to the availability of information and communications technologies, people are inundated by the enormous amount of data that they must access, manage, integrate, and

evaluate. Rather than rummaging through library stacks to find a few pieces of knowledge, users of modern search engines receive thousands or even millions of “hits.” Many of these resources are off-target, incomplete, inaccurate, inconsistent, and perhaps even biased. An online search may be both limiting and limitless, and the amount can be overwhelming. Critical thinking is so imperative; learners must be able to analyze and synthesize information on their own in order to be successful. Young learners need to know how to include the internet skill of curating, evaluating, and distilling information. If learners were able to rely on critical thinking skills, the lessons presented during remote learning would have focused more on the understanding of the content and less on the facility of the technology.

A lack of time spent on professional development and time constraints within class presentation often leads to educators filtering, collecting, and presenting the research to save valuable time. Educators are focused on delivering lessons based in the core subjects like Reading, Math, Science and Social Studies. Most lesson plan formats follow the Common Core State Standards (New Jersey CCSS, 2020) rather than unmeasured 21st century skills which enable students to make informed decisions that prepare them to engage as active citizens in a dynamic global society and to successfully meet the challenges and opportunities of the 21st century global workplace.

We need to provide a shift of mindset on how we curate curriculum. While altering deeply ingrained and strongly reinforced rituals of schooling takes more than the typical half-day “make and take” professional development or school board meetings, we have an undeniable need to reprogram our current educational philosophies. Educators, business executives, politicians, and the general public have much to unlearn if 21st century understandings are to assume a central place in schooling (Partnership for 21st century Skills, 2006). 21st century

community learning centers participation has a positive and statistically significant effect on math test score outcomes and no detectable effect in reading. This is promising data. The State of New Jersey has revised and acknowledged this need and has adopted a 21st century curriculum into state standards recognizing the importance within the educational community (NJDOE, 2020)

The inclusion of 21st century skills are no doubt needed in elementary learning communities. Educators saw that there is a significant gap of 21st century skills during the remote learning experiences this past spring 2020. Previous generations are experiencing the lack of skills in technology as consumers and producers outside the parameters of the educational model. With the coteaching model approach, the sooner computer integration educators can begin working and presenting technology skills as part of the whole curriculum, these teams can begin to mold and shape the future leaders of tomorrow. If educators could harness that creativity, collaboration, communication, and critical thinking within the digital walls of education, learners could reach heights never imagined. Conducting more research and applying it to lesson plans where there is a need to build the skills into the early foundation of the elementary programs is needed. A future action research component will explore and study to what degree collaboration between elementary general education educators and computer educators benefit student achievement. With these foundations, the researcher can hypothesize that the students will be better prepared and continue to participate in higher educational opportunities.

Chapter 3: Methodology

The primary goals of the action research were to investigate and collect data on the following questions:

- To what degree would collaboration between elementary general education educators and computer educators benefit students' achievement in reading?
- To what degree would students feel motivated by working in an environment with coteachers that expands their knowledge and exposure of content?

Gaps in research suggest the need for additional research studies. For instance, past studies fail to provide data on related arts collaboration with elementary teachers in cross curricular lessons with students in the United States. Methods including student-participant surveys and direct instruction provide the coteaching team with additional insight when considering the technology teacher's impact on the cross curricular process, indicating their use would be meaningful. Due to the nature of my class structure, the research moved forward as more of a quasi-experimental study design because non-participants in class act as a control.

Participants

The participants in the research study were current third graders in the Mid-Atlantic region of the country during the 2020-2021 school year. There were a total of twenty students who participated. Of those twenty participants, twelve were boys and eight were girls ranging in age from eight to nine years old. The class was selected due to the academic schedule aligning with the research timeframe. Only half of the participants and guardians gave assent and consent to have their data used. The general education teacher is a first year teacher in the district. The researcher/computer teacher has 20 years of experience in the elementary school classroom. The researcher also has experience using the coteaching model in the special education capacity.

Procedure

The research project was conducted in 15 school days in the Spring of 2021. Due to the Covid-19 pandemic, the school was working on a hybrid schedule and a quantitative study was used to investigate the coteaching model between the general education teacher and the computer teacher. The participants were divided into two cohorts (A/B). The A cohort attended school on Monday and Tuesday while the B cohort attended on Wednesday and Thursday. During the at home days, the students were expected to participate synchronously with the students in the classroom. All students participated remotely on Fridays. The computer class duration was 45 minutes for 15 consecutive school days. The instruction was divided into three sections; introduction of technology skills, individual application of skills, and wrap up review of assignments. The testing instrument was derived from question sets that the "Wit and Wisdom" program developed for the program (appendix A). The researcher used the question sets to determine understanding of the presented lessons. Informal observations by the researcher were made and discussed with the general education teacher after each class. At the end of the cycle, the coteacher was asked survey questions about their observations of the coteaching model and how it affected their learning environment (appendix D). A sample question asked the coteacher to reflect on if they found the coteaching experience between the related arts teacher similar to other experiences of coteaching? Another question asked about the co teacher's perception of student engagement in their lessons, Did you notice any change in student's engagement in your reading lessons? If so, how?

Materials

All students used a personal Chromebook lent to them by the school district. Students used the Google Suite for education apps along with the literature from the "Wit and Wisdom"

reading program. The researcher created a variety of activities from the Google Apps for education suite including Doc, Slides and Presentations to present technology standards for the participants to practice the 21st century skills application. Along with online internet based sites like Flipgrid and Jamboard. The lessons on the researcher's webpage mimicked the lesson and skills presented in the ELA program "Wit and Wisdom." The lessons included vocabulary skills, reading materials and followed the essential question: "How do people learn about space?" The researcher collaborated with the general education teacher to provide continuity of the material and ideas being presented during the general education teachers lessons. The researcher used a pretest (Google Form) to collect data which assessed the students' understanding and ability at the start of the research project (see appendix A) The researcher's observations of the participants were noted daily and as well as informal conversations with the general education teacher. In addition to the scores from the pretest used to analyze and collect data on the research questions that are being posed, the researcher also surveyed the coteacher after completing the lessons. The answers to the survey helped the researcher analyze how the coteacher felt about the cross-curricular assignments and the students' overall participation in the research project. The general education teacher informally shared scores from assessments given in the classroom to compare progress made during the time frame students participated in computers class cycle.

Analytical Process

The data collected was analyzed using descriptive statistics growth was made in the reading curriculum from the beginning to the end of the computer cycle. The researcher looked for significant growth in the participant's pretest and post test scores.

Ethical Considerations

Because this study involved students under the age of 18, assent was garnered from the students and consent granted from a parent or legal guardian to take part in the study.

Information was presented to students using grade appropriate language so that they understood what the study entailed as well as their part in it. Students could technically be considered a captive audience however, they were informed that their participation was not mandatory.

Despite being a relatively captive research population, participants were given several choices surrounding the study. Student participants did not have to take part, were able to leave at any time during the study and were not expected to complete work any differently than their non-participating peers. While working with minors, special precautions were taken to ensure that the participants understood the research and their responsibilities. The reading level of assent forms were below a seventh-grade reading level, and participants' parents/guardians were informed of all research activities.

Chapter 4: Data Analysis and Results

Research Questions

In analyzing the data, the researcher was looking to investigate to what degree collaboration between elementary general education educators and computer educators would benefit students' achievement in reading. Based on the results from the posttest and using a one tailed T-test, the scores showed that there were significant gains in the student's achievement within the reading program made by the whole class. The qualitative data provided by the coteacher suggests that the project was successful in helping students to make connections between the presentation of instruction in both classrooms. However, due to the personal relationship formed prior to the research project the research feels that the information collected in the qualitative data is biased. Due to the inconsistent participation of the students in the hybrid model, it was difficult to assess if the students felt motivated by working in an environment with coteachers.

Quantitative Data

All the participants in the study took the pre- and post-test in the computer class; however, only 10 participants gave assent and consent to have their scores included in this study. The researcher grouped these participants into smaller subgroups based on pretest results to compare the subgroups growth with each other. The criterion for the low group was a pre-test score of 0% - 26%. The low group had five participants. The middle group criterion was a score range between 31% - 52%. The middle group had three participants. The criterion for the high group was a score range of 68% - 73%. The high group had two participants.

When comparing the pretest and post test score the low group's average growth rate was 41.06% (see figure 1), the middle group's average growth rate was 47.37% (see figure 2) and the

high group's growth rate was 23.69% (see figure 3). The overall average growth from the 10 students was 38.95%. (see figure 4) An independent T-Test was performed on the post-test achievement scores to determine if a significant difference exists between the pre- and post-test results. The p value ($p=0.0002$) confirmed that there was significant growth.

Figure 1

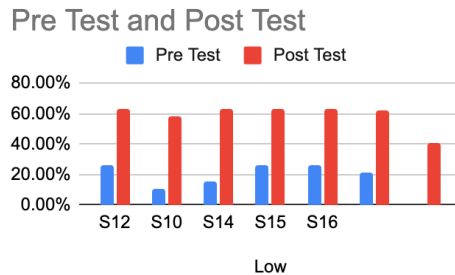


Figure 2

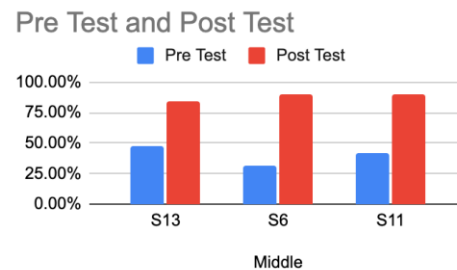


Figure 3

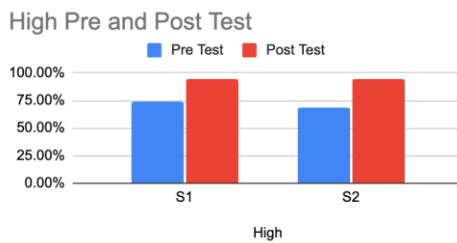
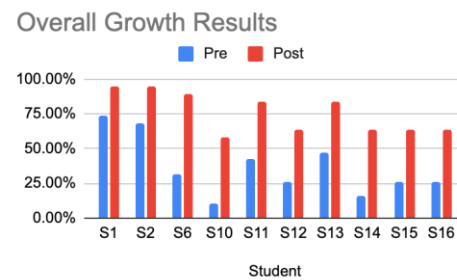


Figure 4



Qualitative Data

Using a structured interview, the researcher asked the coteacher to evaluate their views and experiences from participating in the research project. The coteacher was asked, "What was your personal experience and thoughts during the 15 days of study?" The coteacher responded, "Overall, my personal experience during the 15-day study was positive. I believe that it was beneficial for not only the students, but me as well. Due to our constant communication, we were able to plan together and build upon our instruction by pacing lessons, communicating learning goals, building student background knowledge, and adding rigor to our lessons. Due to

this cross-curricular teaching I noticed lessons were not as “dry” because students already had some background knowledge on the topic. Also, students were able to correctly recite key events in the story.” The coteacher was asked, “Did you find the coteaching experience between the related arts teacher similar to other experiences of coteaching?” Response: “No, I actually found it quite different. I believe both versions of co-teaching are beneficial in their own ways. Co-teaching in the classroom is obviously beneficial and I found that this cross-curricular co-teaching was beneficial as well. The students were learning the same thing except in a completely different learning environment taught by a completely different teaching style. It was very unique and effective!”

The data collected in both the quantitative and qualitative areas was very interesting. The next chapter will focus on discussing the results from the quantitative data and the qualitative research data.

Chapter 5: Discussion and Conclusion

The collaborative relationship a teacher has with their colleagues is valuable. For without collaboration, growth is limited to our own perspectives. The collaborative relationship between the 15-day study allowed the paired teachers to rely on each other's strengths to best serve the students. The general education teacher expressed that the collaboration was a positive experience for and felt supported not only by the computer teacher's ability to provide technology support, but also, the cross-curricular approach the computer teacher applied to assist students' performance in the reading program.

The data suggests that the students themselves were prepared and capable to participate in the reading program while in the reading classroom. The classroom educator informally observed that the students appeared to feel safer in the classroom, as they were more willing to participate in the discussion. This was due to the review of content knowledge and vocabulary usage they had in their computer class lessons. When students feel safe in their knowledge, they are more likely to participate in Socratic seminars sharing ideas and learning from each other.

Based on observations the researcher made, one of the biggest flaws to implementing the co-teaching model with the general education teacher was not sharing the same planning time. A tremendous amount of time is needed to plan out activities, discuss student progress, and the hybrid schedule, due to the Covid-19 pandemic, does not easily lend itself to that professional collaboration. As a result of this schedule, the participants were grouped into two cohorts for social distancing precautions due to the Covid-19 pandemic. Each group attended two in-person lessons and remote lessons via Zoom calls three times a week, three special education students were allowed to attend in person instruction four days a week. During the 15-day rotation, the cohorts at home, scheduled to join the Zoom call, did not participate consistently. Issues arose

due to family schedules, students in noisy day care environments, WiFi issues, technology issues, and reports of covid-related interruptions. While there were pre-recorded instructional videos that allowed the students to participate after-hours, there were many assignments that were not completed due to lack of participation. Once the students returned to the classroom, we spent time catching the students up on the lessons that they missed.

Future Research

A limitation to this study was the effect that the Covid-19 pandemic placed on the social distancing structure of the school year. The current data would be more valuable if instruction was presented in-person in a controlled classroom environment, in a year-long study. As with educational research in general, sampling is limited to available populations and parental permissions. Clearly a greater sample size with some option for randomization would address sampling limitations presented in this study. A larger study would also help, as the significant values may have been influenced by the smaller number of participants in the study.

Recommendations for future research include investigating the effects of student motivation while working in an environment, in person or remotely online, with coteachers and how that expands their knowledge and exposure of content.

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Appendix A
Computer Class- Starry Messenger

Computer Class- Starry Messenger

* Required

1. Email address *

Select the vocabulary word to match the definition.

2. 1 point a collection of things brought together *

Mark only one oval.

assemblage

effect

tradition

recount

3. 1 point a reaction or event that happens in response to another action or event *

Mark only one oval.

assemblage

effect

tradition

recount

4. 1 point to grow with great health or success *

Mark only one oval.

assemblage

effect

thrive

recount

5. 1 point a scientist who studies space *

Mark only one oval.

astronomer

spyglass

genre

condemned

6. 1 point a force or event that makes something happen *

Mark only one oval.

astronomer

spyglass

genre

cause

7. 1 point a type of writing *

Mark only one oval.

astronomer

spyglass

genre

cause

8. 1 point to think something might not be true *

Mark only one oval.

doubt

spyglass

genre

cause

9. 1 point skillful *

Mark only one oval.

doubt

accomplished

genre

cause

10. 1 point ordered to be punished *

Mark only one oval.

condemned

assemblage

accomplished

cause

11. 1 point tell a history of events *

Mark only one oval.

recount

assemblage

accomplished

cause

12. 1 point the beliefs, customs, and morals of a culture *

Mark only one oval.

recount

assemblage

accomplished

traditions

13. 1 point a telescope *

Mark only one oval.

doubt

assemblage

spyglass

astronomer

Starry Messenger Comprehension

Directions: Read pages 6–8 of *Starry Messenger* by Peter Sís, beginning with “Italy was a quilt of city-states” and ending with “His parents named him Galileo.” Then answer each item.

Quilt: A blanket made of many different pieces of fabric sewn together City-State: State made up of a city and its surrounding area influence: Something that has control over people

14. 1 point What is the meaning of the phrase Italy was a quilt of city-states? *

Mark only one oval.

Italy had more cities than states.

Many great artists made quilts in Italy.

The government was like a blanket covering the city-states of Italy.

Italy had many different places that came together to make one country.

15. 1 point Which statement best describes the city-states in Italy when Galileo was born? *

Mark only one oval.

The city-states were home to people of many different religions and cultures.

The city-states had the same laws and government and followed the same religion.

The city-states were all the same size and were all ruled by the same powerful government.

The city-states had their own laws and government but were all influenced by the Catholic Church.

Directions: Read pages 24–25 of *Starry Messenger* by Peter Sís, beginning with “His fame grew” and ending with “the highest ruler of the land—the Pope.” Then answer each item.

Words to Know:

Extravaganza: A large event like a festival, party, or show

Upholding: supporting

Philosophers: thinkers

Summoned: Called upon

16. 1 point In this passage, what is the author’s point of view about Italy?

Mark only one oval.

The people of Italy had too much faith in the church.

Italy's city-states had too many different laws.

Italy was at a high point in its support of art and learning.

Italy was behind other countries in the development of culture.

17. 1 point Why was Galileo summoned to appear before the pope? *

Mark only one oval.

- a. He went against the teachings of the church.
- b. The pope asked him to come for a celebration.
- c. The pope wanted to meet him because he was famous.
- d. He asked to show his scientific findings to the pope.

18. 1 point What worried the Catholic Church about Galileo? *

Mark only one oval.

- a. Galileo became very famous and popular.
- b. Galileo agreed with the ideas of the ancient philosophers.
- c. Galileo began to hold huge celebrations in honor of himself.
- d. Galileo said that the earth was not the center of the universe.

Read pages 30–32 of *Starry Messenger* by Peter Sís, beginning with “Galileo was condemned” and ending with “probably—in fact, surely and absolutely, right.” Then answer each item.

Words to Know:

Condemned: Given a serious punishment

Pardon: To forgive or excuse

19. 1 point What happened after Galileo was punished by the church? *

Mark only one oval.

- a. Galileo pardoned the church.
- b. Galileo decided not to leave his house again.
- c. The church helped spread Galileo's ideas.
- d. Galileo continued to share his thinking.

20. 1 point What is the main idea of this passage? *

Mark only one oval.

- a. Galileo went blind after he was condemned by the church.
- b. No one can prevent an idea from spreading and living on.
- c. While Galileo was locked in his house, a guard was watching him.
- d. The church punished Galileo but much later admitted he was right.

Appendix B: Waiver, Consent and Assent Forms

PARENTAL CONSENT FORM

[To what degree would collaboration between elementary general education educators and computer educators benefit students' achievement in reading?]

Purpose and Duration

Your child is being asked to participate in an Action research project. I am currently working in my last class of my graduate studies for a Masters in Educational Technology. The purpose of this action research project is to gather an understanding on how a coteaching model with the general educator and the technology integrated specialist can improve student achievement in the classroom. The duration of this research project will be no more than 30 school days.

Selection of Subjects

I have invited Mr. Colucci's 3rd grade class to participate in this study. They are scheduled to have computers during the time frame the research project is to be conducted.

Description of Study

The study will begin by asking students about their understanding of how scientists explore and study space. The data collected from this assessment will serve as a starting point. Then the students will work on computer technology skills using a Hyperdoc. A HyperDoc is a term used to describe a Google Doc that contains an innovative lesson for students- a 21st Century worksheet, but much better. With one shortened link, students can access a lesson that contains instructions, links, tasks, and many clever ways to get kids thinking. Each assignment on the Hyperdoc will be themed to concepts and ideas taught in the reading program. This will mimic a coteaching model called Station Teaching. At the conclusion of the last computer class, students will be asked to complete a post assessment. The data collected will be used to see if growth has been made. All information collected will be stored in a password protected file and will only be shared with the course instructor. The data will be stored for one year and then will be deleted.

Risks

The only foreseeable risk is the discomfort of the participants during the study. Students will be reminded frequently that they can at any time discontinue being part of the study, however the classwork will still be expected to be completed as they are part of the computer curriculum lessons. If students do experience discomfort, they or their guardians will be encouraged to speak to myself, a school administrator (Mr. Alex Ferrante) or the graduate advisor (Sarah Eckert) There will be no increased risk of exposure to COVID-19 due to participation in this project.

Benefits

The students participating in this research study will receive additional support in the reading program with the computer teacher. All students will have the opportunity to explore the curriculum with additional time and projects that present the information using technology.

Alternatives/Standard Treatment(s)

Students will be expected to complete the computer lessons, those who do not wish to participate will not be asked to complete surveys.

Confidentiality

All student information will be kept confidential. Data will be stored securely and will be made available only to the researcher. No reference will be made in oral or written reports that could link participants to the study. All paper records will be stored in locked cabinets/drawers in the classroom and all electronic records will be protected by a password.

Refusal or Withdrawal of Participation

Participation in this project is voluntary, if you do not grant permission or your child declines to participate there will be no impact on your child's grades or class involvement. Your child may discontinue participation at any time for any reason without penalty.

Students who are absent for more than 7 days when data collection is taking place will be removed from the study.

Subject's Rights

You can obtain further information from the study investigator **Kristina Roehr** at (856) 227-9510 or from their university advisor Sarah Eckert, Director of Med Programs at the University of the Arts via email at seckert@uarts.edu. If you have questions concerning your rights as a research subject, you may contact the IRB administrator at irb@usciences.edu or 215-596-7490.

Any significant new findings that develop during the course of the research that may relate to the participant's willingness to continue participation will be provided to the participant.

Consent

I have been informed of the reasons for this study. I have had the study explained to me. I have had an opportunity to ask questions and have had them answered. I have read this consent form, have initialed each page, and have received a signed copy. I agree to my child's participate in this study voluntarily.

Subject Name

Subject Signature

Date

Witness Name

Witness Signature

Date**Investigator's Affidavit**

I have carefully explained to the subject the nature of the above project. I hereby certify that to the best of my knowledge the person who is signing this consent form understands clearly the nature, demands, benefits, and risks involved in his/her participation and his/her signature is

legally valid. A medical problem or language or educational barrier has not precluded this understanding.

Signature of Investigator

Date

Subject's Initials



CHILD ASSENT FORM

I am Mrs. Roehr from The University of the Arts and your computer teacher from Blackwood Elementary School. I am doing a research study to figure out if working with your teacher will help improve your understanding of the Wit and Wisdom reading program. I am asking you to take part in the research study because there is not a lot of information on how teachers working with computer teachers together will help you learn and grow.

For this research, I will present you with a variety of technology projects that focus on the essential question: How do people learn about Space? I will keep all your answers private, and will not show them to your teacher or parent(s)/guardian. Only people from my class at The University of the Arts will see the results.

I want you to be open and honest with how you feel during the assignments. I don't think that any big problems will happen to you as part of this study. I am excited to see how you grow and learn.

You can feel good about helping teachers to make things better for other kids who might have problems understanding the reading program.

You should know that:

- You do not have to be in this study if you do not want to. You won't get into any trouble with (The University of the Arts, your teacher, me, or the school) if you say no.
- You may stop being in the study at any time. (If there is a question you don't want to answer, just leave it blank.)
- Your parent(s)/guardian(s) were asked if it is OK for you to be in this study. Even if they say it's OK, it is still your choice whether or not to take part.
- You can ask any questions you have, now or later. If you think of a question later, you or your parents can contact me at kroehr@gloucestertownshipschools.org or my teacher at seckert@uarts.edu

Sign this form only if you:

- have understood what you will be doing for this study,
- have had all your questions answered,
- have talked to your parent(s)/legal guardian about this project, and
- agree to take part in this research

Your Signature

Printed Name

Date

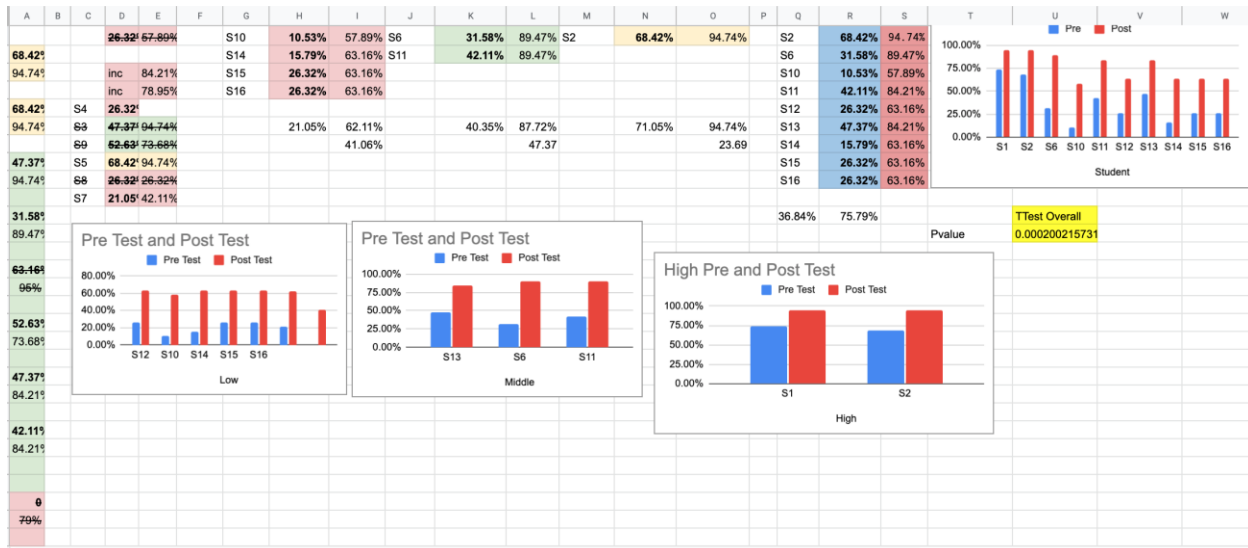
Name of Parent(s) or Legal Guardian(s)

Researcher's Signature

Printed Name

Date

Appendix C: Pre and Post Assessment Data



Appendix D: Coteacher Questionnaire

Years teaching: 5 years teaching

Grades previously taught: kindergarten, 1st, 3rd and 4th grade

Have you ever participated within a co-teaching model prior to this study? If so when and with whom?

- Yes, I co-taught in grades 1 and 4 in my past district.

Have you ever been officially trained to participate in a Coteaching experience?

- Yes, my past district put us through training together but not specifically for co-teaching.

Was your prior experience a positive experience? If not, why? What prevented you from feeling successful?

- I've had three experiences so far with a co-teacher including my current position. My first experience was positive while my second experience was not a positive one. During my second experience, I didn't feel successful because we didn't compliment each other and our relationship was professional and not at all personal. I have noticed that if you have a personal relationship with your co-teacher than your experience has a higher chance of being a positive one.

Due to the COVID-19 pandemic, how prepared did you feel to teach your students?

- I did not feel as prepared to teach compared to other years. I feel as if the pandemic was a very difficult obstacle to overcome in the classroom because of its various circumstances.

Were you provided with professional development on using technology to enhance your teaching during this year or previous years?

- I was provided professional experience on using technology in my past district but it was not a useful experience for me.

What type of professional development would you request to make your teaching more successful?

- I believe I could benefit from professional development in using technology, pacing strategies, and effective planning strategies.

-----Reading and Computer Coteaching Research Project-----

What was your personal experience and thoughts during the 15 days study? (as much detail here as possible)

- Overall my personal experience during the 15 day study was positive. I believe that it was beneficial for not only the students but also the teachers as well. Due to our constant communication, we were able to plan together and build upon our instruction by pacing lessons, communicating learning goals, building student background knowledge, and adding rigor to our lessons. Due to this cross-curricular teaching I noticed lessons were not as “dry” because students already had some background knowledge on the topic. Also, students were able to correctly recite key events in the story.
- I wish we had more time to talk to each other about planning. The data may say another story however I believe that it was beneficial to teacher and students alike.

Do you feel this collaborative effort was beneficial? What worked and what didn't?
(Communication, Planning time, lesson formats, technology issues, Covid related issues)

- Yes, this was beneficial to students and teachers. I believe it is an effective strategy.
- Communication, lesson formats, technology all were aspects that I believe went very well. It would have been nice to have more time to communicate but we communicate as much as we possibly could.
- Planning time and Covid issues were aspects that did not go very well. These two aspects go hand in hand. I wish this study was implemented during a year without Covid as I am curious to see the different data it may show.

Do you have suggestions to improve the outcome for the above issues?

- I suggest that the teachers have more time to sit with each other and plan out the lessons however this is the single most difficult aspect of teaching. Also, maybe have a written pacing plan to follow.

How would you describe the communication between the teachers and examples of what worked or suggestions to improve for future collaborative teams?

- The communication was great. We were able to meet as much as we possibly could to talk about our placement and learning goals. I would suggest a written pacing plan for

future collaborative teams as this may ease the issue of not having enough time in the day to always meet.

Did you find the coteaching experience between the related arts teacher similar to other experiences of coteaching?

- No, I actually found it quite different. I believe both versions of co-teaching are beneficial in their own ways. Co-teaching in the classroom is obviously beneficial and I found that this cross-curricular co-teaching was beneficial as well. The students were learning the same thing except in a completely different learning environment taught by a completely different teaching style. It was very unique and effective!

Do you feel that your students possess the level of technical skills to learn virtually?

- I do feel as if they have the skills to learn virtually. I suggest teachers be taught additional technical skills to further the student's skill.

-----Perception of Students' engagement and participation-----

Did you notice any change in student's engagement in your reading lessons? If so, how?

- Yes, students had high engagement because they felt safe answering. This was directly related to their background knowledge on the topic.

Was there any change in the student's behavior?

- I noticed some behavioral issues were non-existent. They felt safe in the learning environment and wanted to participate.

Do you think your students enjoyed the collaboration between the classes? If so, how?

- Yes, as I mentioned earlier the students were highly interested and were able to communicate with each other due to various reasons already mentioned.

Additional thoughts: While the data may not suggest the same, I believe this strategy is highly effective and beneficial. Covid was an enormous obstacle and may have flawed the data in many ways. I wish this was a longer study and was implemented in a year without Covid.

Curriculum Vitae

Kristina M. Roehr

EXPERIENCE

Blackwood Elem. School, NJ — *Computer Literacy teacher*
Sept. 2020- Present

- Instructor : Computer literacy skills, grades K-5
- Leader: District Synchronous Learning Initiative

Union Valley Elem. School, NJ — *Digital Literacy teacher*
Sept. 2015- 2020

- Instructor : Digital and media literacy skills, grades K-5
- Developer: Curriculum for the Digital Literacy, K-8
- Organizer: EdcampGlotown (2016 and 2017)
- Instructor: Coding club 5th
- Coordinator: Passion Project, 5th grade
- Coordinator: Student lead Edcamp

Gloucester Township BOE, Blackwood — *Technology Trainer*
Sept. 2015-PRESENT

- Manage and maintain 400+ Chromebooks within the building
- Develop and present a variety of in person and online workshops for staff members

Union Valley Elem. School, NJ — *Special Education*
Sept. 2002- June 2015

EDUCATION

University of the Arts, PA — *M.Ed. in Educational Technology*
May 2019-May 2021

Springfield College, MA — *Bachelor of Science*
August 1999-May 2002

SKILLS

Curriculum Developer /
Presenter

Organized

Self-Motivated

Active Listener

Problem solver

AWARDS

**Nominee: Educator of
the Year- 2016**

**Young Alumni
Community Service
Award, Gloucester
Township -2005**

