USE OF CELLPHONE TECHNOLOGY IN HIGH SCHOOL ENGLISH CLASSES

by

KRISTI L. GAMMON

(Under the Direction of Jami Royal Berry)

ABSTRACT

This action research (AR) case study addressed the use of cellphone technology and applications in high school English Language Arts (ELA) classes. The AR implementation team (ARIT) formed a Professional Learning Community dedicated to examining student use of cellphones in classes. Comprised of six high school English teachers, the ARIT designed instruction and lesson plans to incorporate student use of cellphones in support of content mastery. The research team explored how cellphone technology might benefit high school ELA classes and how the presence of student cellphones in class might influence instruction and learning. Ultimately, the teachers participating in the study determined whether student use of mobile devices during class instruction could increase student engagement in the content.

As part of the action research process, the team of teachers identified cellphone applications they viewed as complementary to their curriculum and content and incorporated the technology into classroom instruction. Each team member observed colleagues teaching the lessons in which students used cellphone technology and took notes on their observations. Team member notes and reflections informed the subsequent PLC meetings and plans for the next steps in using the cellphone technology. Findings included the following: (1) when used intentionally with specific content, cellphone technology can increase student engagement in instructional

activities, (2) on-task behavior is difficult to monitor when cellphones are part of a lesson, (3) use of cellphone technology can accentuate student engagement but should not be the only means of cultivating student interest in the class activities, and (4) consistent classroom practices facilitate effective incorporation of daily use of cellphone technology.

INDEX WORDS: Action research case study, Cellphone technology, Cellphone technology in high schools, Cellphones in English classes, Cellphones as instructional technology

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DOCTOR OF EDUCATION

ATHENS, GEORGIA

2021

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May 2021

DEDICATION

To my husband and children, my endless gratitude for your unfailing love, faith, and support. You ensure my sense of humor remains intact and healthy. To my parents, who truly believe I can do anything, my work is not in Russian, but perhaps it will suffice.

We started somewhere about here:

The Road Not Taken

Robert Frost - 1874-1963

Two roads diverged in a yellow wood,
And sorry I could not travel both
And be one traveler, long I stood
And looked down one as far as I could
To where it bent in the undergrowth;

Then took the other, as just as fair,
And having perhaps the better claim,
Because it was grassy and wanted wear;
Though as for that the passing there
Had worn them really about the same,

And both that morning equally lay
In leaves no step had trodden black.
Oh, I kept the first for another day!
Yet knowing how way leads on to way,
I doubted if I should ever come back.

I shall be telling this with a sigh
Somewhere ages and ages hence:
Two roads diverged in a wood, and I—
I took the one less traveled by,
And that has made all the difference.

ACKNOWLEDGEMENTS

I would like to extend my deepest appreciation to my committee for the singular opportunity of learning from you throughout the dissertation process. I am deeply indebted to my dissertation committee chairperson Dr. Jami Berry who provided unwavering encouragement, endless patience, and invaluable technical expertise, without which the end product would never have existed. Exceptionally supportive of our entire class, Dr. Bryant shared her unfailing, extensive knowledge and practical guidance, motivating us all to work for the "BAM!" in every class. The images of graduation she created and helped us maintain in the most challenging times enabled us to persevere. While the depth of analysis in Dr Swain's assignments frequently made me grit my teeth, I would be remiss not to acknowledge gratefully the incredible insights into diversity he taught; these both informed my study and illuminated my daily work at my school.

Instrumental to my program completion, my work family has proven to be the best administrative team of all time. The entire team—Jeff, April, Darius, and Borato—never missed a beat covering down on things when I did, in fact, miss a beat. Or two. Thank you to my principal Mrs. Misty Cooksey for giving me the flexibility to complement my work with a commitment to the quality research program of the University of Georgia.

Finally, endless thanks to the members of the UGA 2021 LEAP Doctoral Cohort. The cohesiveness of our class and the resulting mutual support were vital components in my learning experience in the program. I cannot wait to see all the great things we do! Don't delete the text group; I have a feeling we will need each other again soon.

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CHAPTER 1

INTRODUCTION

As high school teachers attempt to harness student attention by incorporating instructional use of cellphones and social media, the battle for maintaining focused learning and on-task behaviors creates a classroom dynamic that mimics the economic law of diminishing returns. In the ongoing struggle for student focus, teachers face the daily task of determining when instructional technology becomes a time investment that distracts from instead of complementing instruction. The broad expansion of device functionality and proliferation of ownership by students have placed web-browsing, email, and audio/video capabilities at their fingertips. Until now, the decision to use personal, handheld devices for instructional purposes has been left to the discretion of teachers, with many electing to avoid the challenge of distraction or cellphone misuse on off-task activities by using technology-free instruction. The risk of refusing to stay abreast of contemporary learning tools is losing student interest in lessons, resulting in a dearth of real engagement and true learning.

The Problem

The problem addressed in this action research study is the inconsistent approach to the use of cell phones in high school English classes. Generally perceived as a distraction, cell-phones are emerging as powerful tools for integration of technology into instruction, but only the rare teacher has embraced the potential of mobile phones as a technological resource instead of a distraction to be battled daily (Mendoza et al., 2018, p. 53). Currently, a lack of continuity in use of instructional technology yields inconsistent outcomes in student learning and preparedness for

subsequent English classes. This is evident in student performance in later classes as well as on End-of-Course (EOC) Exams. High school English teachers express concerns regarding availability of computer labs for instruction; some teachers utilize mobile computer carts with laptop computers while others rely strictly on labs with desktop computers. The variations of hardware influence the speed at which students access programs or features for lessons which, in turn, makes the time investment in instructional technology prohibitively greater. Where seamless transitions to and from technology-based lessons should be the norm, classes waste time moving to labs, logging onto computers, and accessing the software the lessons require. In the meantime, students bring to school and access handheld devices that could be used for many facets of instruction much more efficiently than laptops or desktops and with greater learning impact. However, unless mobile phones are used with intention and students are given purpose and direction, lessons using technology will continue to be cumbersome and ineffective.

The Problem in the Context of the Setting

Central High School (CHS) is located in the one of the fifteen largest school districts in Georgia. Situated in a suburb of Atlanta, the school district has struggled to keep up with the expansion and contraction of population reflective of the economy over the past two decades. During the 2020-2021 school year, CHS served over 1,500 students and was the smallest of five high schools in the district (See Figure 1); CHS was the only high school expected to decrease in enrollment in the coming school years. Students ranged from ninth to twelfth grade. With a Free or Reduced Lunch Program participation rate of over 47%, the student body was comprised of approximately 72% minority enrollment. The student-to-teacher ratio was about 18:1, and the four-year graduation rate was 82%. Students with Disabilities (SWD) making up approximately 14% of the population, a concentration expected to exceed 18% in the coming school years

despite the anticipated decrease in enrollment.

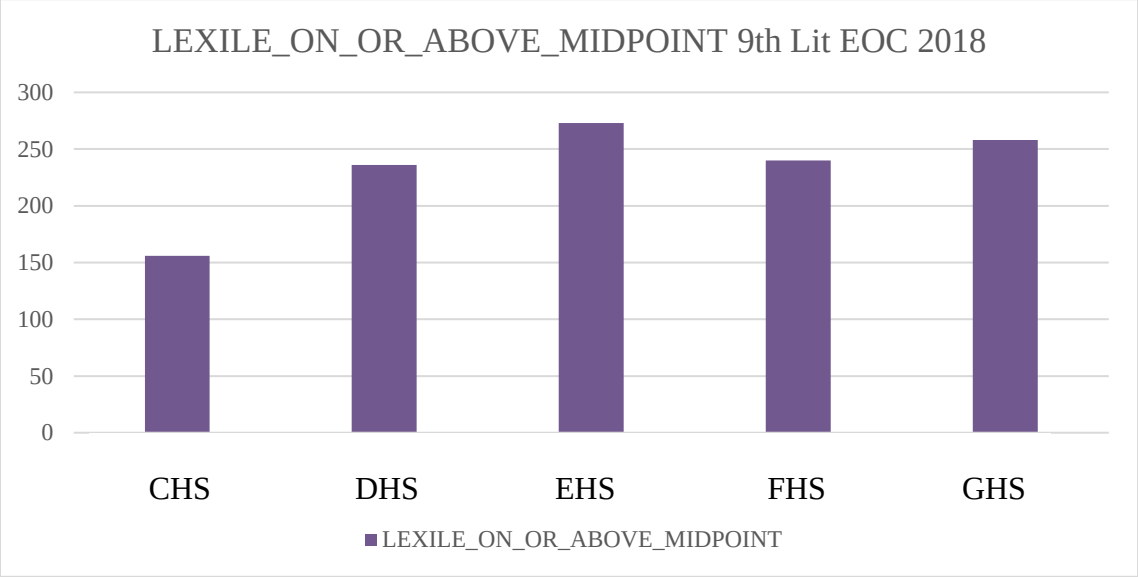
CHS's economically disadvantaged (ED) students performed lower than the state average on Algebra I EOCs. This reflected the category of All Students performance for school, district, and state. The state ED/Non-ED achievement gap remained static at about 33%, but the CHS gap decreased to less than 1%. A decline in overall proficiency reflected the likelihood that national initiatives failing to address economic disparity of students may hold schools accountable with little improvement of educational quality (Ladd 2012). The SWD/Non-SWD subgroup gap showed similar dynamic compared to state gap; however, CHS overall performance decreased while SWD achievement increased. In contrast, state Algebra I EOC achievement increased, but the SWD/Non-SWD gap slightly increased as well.

Compared to the other four high schools in the district, in terms of access to technology CHS had the smallest and most economically disadvantaged student body with the least access to computers. Enrollment was approximately 1,500 with a transient population rate of 12%; however, only four computer labs were available for technology-based instruction. At the beginning of the 2018-19 school year, one mobile computer cart with thirty laptops was purchased for each hallway of about ten classrooms; while availability of technology increased to once every tenth day of school, this access remained inconsistent with the technology use colleges and careers demand of high school graduates.

One result of inadequate and inconsistent access to instructional technology was lower achievement on Ninth Grade Literature EOC exams with lower Lexile scores, measured by EOC exams; 34% of HHS students scored Proficient or higher compared to 58% of students in the district and 52% in the state in 2018 (See Figure 1, Lexile On or Above Midpoint on 9th Literature EOC 2018).

Figure 1

Lexile On or Above Midpoint on 9th Literature EOC 2018



When scored on College and Career Readiness, 48.4% of CHS twelfth grade students were considered prepared while 56.1% of district and 57.1% of state twelfth grade students met the same criteria. Both student achievement and College and Career Readiness were measures influenced by the quality and effectiveness of student learning, and one of the tools by which students were most actively engaged is technology. Increasing frequency and diversity of use of instructional technology can lead to more interactive lessons and more consistent and predictive outcomes for student learning. The resulting increases in EOC scores and more thorough college and career preparation led to better scores, overall, for CHS. For the 2017-18 school year, CHS lagged in CCRPI score with 69.8% compared to the district score of 75.4% and the state score of 76.6%. While the depressed scores spoke volumes, the potential of handheld technology to increase student learning daily remained a silent promise of educational benefits for teachers, classrooms, and students who dared to engage.

At the time of the study there were no minimum expectations established for integration of technology into instruction. A lack of expectations left use of technology to the discretion of each ELA teacher, resulting in classrooms where instructional technology was limited to typing and printing essays or, on the opposite end of the continuum, expected as a weekly part of student performance. Inconsistent practice yielded inconsistent results.

The Purpose of the Study

The purpose of this study was to explore the potential for cellphone use as a classroom source of technology for high school English classes in one rural high school.

Research Questions

To address the purpose of this study, the following research questions guided this inquiry:

1. How can cellphone technology benefit instruction in high school ELA classes?
2. What are the inherent impacts of cellphone presence and use on instruction and learning?
3. How can classroom teachers maximize the instructional impact of using cellphones as a part of effective daily instruction?

Definition of Terms

Cellphone policy	School or district policies that address acceptable use of mobile devices such as cellphones
Cellphone technology	Any technology application accessed on a mobile telephone
Digital immigrant	A person born before the proliferation of individual, handheld computing devices and cellphones; most teachers
Digital native	A person born after the proliferation of individual, handheld computing devices and cellphones; most students
Instructional technology	Any technology used to complement a lesson and intended to facilitate student learning
Social media	Websites or applications enabling users to create and share content or engage in networking
Student engagement	Active student participation in an instructional activity or lesson

Theoretical Framework

Effective instruction depends on sustained student engagement in the lesson, a responsibility appropriately placed on teachers. However, teachers can best create and deliver relevant, meaningful instruction if they are invested in the professional learning and collaboration with their professional learning communities (PLCs). Ultimately, providing professional learning and facilitating collaboration are expectations of school leaders, and, in the constantly changing realm of classroom technology, building-level administrators face the challenge of offering teachers effective strategies that complement instruction and engage students.

Elliott (1991) established the context of action research in education with a focus on professional learning as a means of transforming instruction. Developing professional learning for teachers as a component of Theory of Action framed the foundation for improving student engagement in instruction by enabling teachers to envision the intentional inclusion of handheld technology in lessons. If school leaders ensure the professional learning opportunities are both designed to engage adult learners, specifically teachers, and include relevant content and literacy strategies that model use of handheld technology, teachers will strive to adapt instructional methods similarly.

With exposure to instruction and models of handheld technology use, teachers develop a depth of professional knowledge on which they can construct effective lessons. When they work as part of small professional learning communities, teachers collaborate to build instructional plans to meet the needs of their students. Teachers bring content knowledge and classroom experience to PLCs as a background for analyzing current classroom data and considering the learning needs of students. The combination of education, professional learning, and classroom

experience makes teachers uniquely positioned to design relevant and meaningful lessons that deliver the curriculum in ways that both engage students and cultivate their responsible use of handheld technology.

Conceptual Framework

At HHS, English/Language Arts (ELA) classes inconsistently incorporated technology, and some teachers engaged in a daily battle with students regarding the distraction of handheld devices, namely, cellphones. Rather than continuing a fruitless war or conceding defeat, teachers, with strategic professional development and collaboration, could transform specific classroom activities into learning experiences that connect students with content and, simultaneously, develop student awareness of the usefulness of handheld technology as a learning tool.

Because technology has increased the speed of change in the world, instruction that does not attempt to keep pace becomes increasingly irrelevant to students. This action research team was comprised of ninth grade ELA teachers and other ELA teachers seeking to harness the instructional potential of cellphones in the classroom. The team established and developed a recursive practice based on an adaptation of their current PLC structure. The recursive practice enabled teachers to acquire technology-inclusive instructional strategies for literature lessons; teachers then worked to develop content-specific lessons and activities using the strategies. After teachers taught the lessons, they met with the team to discuss the effectiveness of the instruction, including whether students were fully engaged, and determine subsequent steps for using the technology. Subsequent to each AR cycle, teachers reflect3ed on the Constructing, Planning, Taking Action, and Evaluating Action phases.

Based on their perceptions of successful technology implementation, the literature teachers discussed lesson components that went well and issues with activities that needed

further work. The team identified next steps for using cellphone technology in subsequent lessons, and the process for incorporating cellphones into lessons began again based on the prior successes or adjustments described by the teachers.

Overview of the Methodology

Collaborative Action Research offered the ideal combination of teacher involvement via practice and reflection to address the problem of using cellphones as a resource for instructional technology. Coghlan and Brannick (2014) described action research as "a family of related approaches that integrate theory and action with a goal of addressing important organizational, community and social issues together with those who experience them" (p. xix). Creating the space and time for teachers to work collaboratively on a common instructional issue mirrored the lesson study cycle outlined by Zepeda (2015). In this instance, although the topic and problem were already identified by the design team, teachers could choose to participate on the implementation team or opt out without repercussion. The teachers who volunteered expressed an eagerness to focus on the issue of the presence of cellphones in the classroom and the hope that they could devise ways to use the devices productively and positively. In addition to allowing for critical teacher input as members of the design team, action research based on teacher collaboration built the capacity of teachers by giving them a forum in which to express the issues they encountered with the pervasive presence of cellphones in their classrooms and by validating their experiences as they grappled with ways to address the matter while maintaining relationships with students. The development of a professional learning community allowed a facilitator, the researcher, to "guide the teachers through the process, asking probing questions along the way and facilitating the data collection process as well as allowing teachers to discover the data trends and make adjustments based on that data" (Zepeda, 2015, p. 111).

Intervention

The intervention designed and implemented in this action research study was based on the model of a professional learning community (PLC) formed to address specific instructional issues. This approach allowed the experts in the building to create a space for discussion and collaboration on an issue they face daily of how to change the current narrative of cellphones as the enemy in the classroom. The PLC met twice in each of three research cycles to plan cellphone strategies for their upcoming instruction and reflect on the successes and challenges of each attempt in their classes. In each of the research cycles, teachers were asked to observe a colleague and provide specific feedback on the use of cellphone technology in the lesson. Each team member submitted written observation reflections prior to the subsequent PLC meeting.

Significance

This study was designed to examine the challenges teachers face with the presence of student cellphones in classes. Specifically, given the continued evolution of cellphones and their growing influence on teenagers, this action research was intended to enable teachers to begin viewing the devices through a lens that focuses on their potential for use as a means of accessing technology. Cellphones will continue to evolve as powerful, compact devices that can either detract from or complement instruction and learning. Educators, as a result, must evolve in their approaches to integrating mobile devices into their repertoire of instructional strategies. This research created space and time for professional educators to grapple with the issues surrounding use of cellphones as instructional technology and moves them one step closer to a more progressive and unified approach to their views of the devices.

Organization of the Dissertation

Structured in six chapters, this dissertation begins with Chapter 1 as introduction to the

Action Research study. The review of literature in Chapter 2 establishes the foundation of context for the problem in existing research, while Chapter 3 provides an overview of the research design and methodology including details of data collection during the action research project. Chapter 4 offers rich, specific description of the context in which the study is situated as well as a chronological account of the progression of the three recursive research cycles that comprise the intervention. A thorough account of the findings of this research, Chapter 5 includes the methods of data collection specific to the research questions in addition to results of data analysis from each of the three Action Research cycles. The concluding section of the dissertation, Chapter 6 contains a summary of the findings and the key discoveries related to both the reviewed literature and the research questions; Chapter 6 outlines limitations of this study along with implications and recommendations for practitioners, researchers, and policy makers. Following Chapter 6 is an exhaustive list of references and sequence of appendices.

CHAPTER 2

LITERATURE REVIEW

Varied strategies using handheld devices to implement classroom level instructional technology have led to varied outcomes in student achievement (Creer, 2018, p. 138). Use of handheld devices in the classroom has emerged as a method for reaching reluctant learners and engaging digitally savvy students; however, with access to technology comes responsibility (O'Bannon, et al., 2017, p. 125). This literature review will explore themes including common current practices with handheld instructional technology, learning opportunities and risks with technological multitasking, and methods and benefits for establishing classroom routines and procedures for handheld device use.

Cellphones emerge as a significant presence in the classroom. With proliferation of cellphone use to all demographics and the simultaneous increase in the expectation that high schools produce graduates prepared for any future they choose, the need for diverse instructional strategies and more inclusive school policy has also arisen. The broader use of cell phones outside of schools has affected classroom practices, as well. White (2021) noted, "The wide-spread use of cell phones has changed in lock step with their usefulness and connectedness to all the parts of modern life" (p. 186). Keeping pace with social acceptance and use of cellphones, public education has felt the impact of the presence of cellphones, and classroom teachers, in particular, have recognized that cellphones are efficient, low-cost technology tools that can be incorporated into daily lessons (Chiverton, 2017, p. 4). Because an increasing number of students bring cellphones to school, the expectation of use has grown in response. Sarlo (2020) stated,

"Given the availability of the devices by students in middle school, high school, and college, students are seemingly always connected and receiving notifications" (p. 3). Similarly, Salleh et al. (2020) observed, "Communicating with mobile phones has become a daily routine by most students. They are motivated to do almost anything that involves mobile technology" (p. 17). Two of the most frequently used facets of mobile technology are text messaging and social media. Lu, Newman, and Miller (2014) explained the commensurate emergence of social media in public and private life as "common ground for many high school and college students [with] the potential to impact learning" (p. 54). Felisoni and Godoi (2018) noted that these applications of cellphone technology can be used for instructional purposes to accentuate the more traditional methods of teaching.

A factor contributing to the inclination to use cellphone technology in the classroom is the dearth of available traditional, and often prohibitively expensive technology. Lowe (2017) claimed, "Since cellphones entered into mainstream use, they have often been overlooked as tools of classroom instruction" (p. 5). The practicality of using a tool already in the hands of most students and teachers is indisputable; Chiverton (2017) concluded that because cellphone technology is accessible even in remote places, it can provide access to information, content, and research students would otherwise have no way of obtaining (p. 11). Regardless of the reason for the proliferation of cellphones in schools, the undeniable reality of their presence has forced educators to grapple with what to do about them and with them. Ribeiro, Nunes, and Amorim (2017) suggested that the initial discord between teachers and students over cellphone use in class has propelled educators to examine whether cellphones can be more than a distraction and to search for ways to use the devices as effective, supplemental technology for the benefit of teaching and learning (p. 1986).

Akpan (2017), noting the usefulness of the cellphone as a classroom tool, indicated "When a teacher or student is in doubt in the classroom all he/she needs to do is to pull out his pocket device and consult. He can phone an expert, a colleague or connect to the internet and get the necessary up to date information that is required" (p. 6). Looking ahead to the long-term usefulness of teaching students to use cellphones in practical application, Sarlo (2020) observed, "Integrating technology into any and all facets of education can be helpful for students to assimilate into a world where connectivity and access to technological devices is seemingly everywhere" (p. 15).

While teachers and students negotiated the impact of cellphone presence on their classroom relationships, administrators struggled with adapting school policy and behavior codes to reflect the changing practices. The first to identify threats to student attention and engagement, teachers observed the waning focus of students on their content when cellphones became the vehicle for entertainment that could be brought to class and enjoyed both overtly and covertly. Gao et al. (2017) examined the perspectives of teachers, students, and parents in regard to school cellphone policies and concluded that teachers view cellphones as a disruption, students see cellphones as a technology tool, and parents are divided almost equally on the matter (p. 23). When given the opportunity to develop autonomous classroom policy to address cellphone use and transgressions, Holley and Park (2020) found that although teachers value the ability to set their own classroom parameters, the supporting structures for addressing escalating issues involving student cellphone use were often inadequate or absent (p. 85). In addition, Mupinga (2017) noted that while some school policies reflect contemporary social practice and embrace incorporation of cellphone use in learning, "other school policies are vague, silent, or outright prohibit the use of mobile technologies in school settings" (p. 71). To cultivate the use of

cellphones as an effective tool for technology integration, schools face the issue of constructing cellphone policy that encourages and informs teachers without sacrificing the educational fidelity of classroom instruction threatened by the inherent potential distraction of the devices.

Cellphones have become a positive instructional force despite their potential to impede student focus,. As teacher use of the devices has increase, many teachers have begun to adapt instruction to normalize the use of cellphone technology to benefit student learning. Stachowski et al. (2020) noted, "cellphones, when used for academic purposes, may enhance and promote learning" (p. 1). In removing the behavioral stigma initially associated with cellphone use in class, teachers have translated cellphones into a medium for integrating the most recent and relevant technology into learning. O'Bannon et al. (2017) observed, "It is also important for educators to remember that mobile phones are a resource, and like any resource, their focus needs to be on the applicability and functionality of the device to improve teaching and learning" (p. 136). To honor the onus of teaching responsibility to addressing students at the appropriate developmental levels, educators, as Salleh et al. (2020) asserted, must recognize students as part of the millennial generation having "grown up surrounded by technology" which they use extensively for nearly every aspect of their lives from interacting with peers socially to completing schoolwork to practicing favorite hobbies such as watching movies and listening to music (p. 19). Thomas and Munoz (2016) found that students use core technologies accessible via cellphone such as internet access for research both in and out of class (p. 27). In schools where teachers openly embraced cellphone technology as a resource for learning, Lowe (2017) observed that students prefer lessons that incorporate the technology because they use similar technologies in the real world as they engage socially and cultivate employability skills (p. 4). Similarly, Creer (2018) pointed out that teachers are challenged with identifying ways to

promote learning using methods that are relevant and practical for their students who are considered digital natives (p. 139).

Understandably, teacher concerns regarding cellphones in class have typically arisen from the potential of the devices as distractions. Sarlo (2020) noted, “While technology has been hailed as beneficial as a learning tool and perhaps a cost-effective method of content creation and delivery, some claim that its pervasiveness has contributed to student delinquency and a distraction from course content” (p. 2). However, the prospects for student engagement are as limitless as teacher creativity in designing lessons. Chiverton (2017) explained, “Creating learning activities that take advantage of basic video and voice-recording features is a way teachers can use cellphones to make tasks relevant to students” (p. 12). The sweeping expansion of device functionality and proliferation of ownership by students have placed web-browsing, email, and audio/video capabilities at their fingertips. Riberio et al. (2017) stated, “Thus, the use of the cell phone in the classroom can become a useful tool for the teaching and learning process; it can re-signify the identities of teachers and students in the school space, since the use we make of this mobile device is ubiquitous and engenders new habits, practices, [and] multiple interactions that do not fail to impact our identity” (p. 1986).

Ever in pursuit of the best ways to reach students, educators are only now beginning to view cellphone technology as a potential resource for differentiation. However, Stachowski et al. (2020) found, “cell phones can afford opportunities to engage with material in different ways” (p. 1). Chiverton (2017) delineated content-specific strategies for using cellphone technology in mathematics and language instruction using applications such as “Talk and Text” and “Create a Cellphone Story” (p. 5). Leaning heavily on components of motivation theory, Salleh et al. (2020) asserted, “Students in this generation are so motivated on internet technology. Most of

students have their own smartphones and computers. They spend most of their time with the technology gadgets. Technology gadgets make them alert and motivated" (p. 20). Viewing the motivational value of cellphones through the lens of instructional potential, the authors concluded, "Thus, educators and students need to embed technology in teaching and learning in order to keep students motivated and hence help them achieve the learning goals" (p. 20).

Cellphone technology, in fact, has provided the incentive for students to engage texts in alternative ways. Creer (2018) observed that even as student blur the lines between social, leisure interactions and formal, educational interactions in digital media, the everyday use of digital media can help students connect daily literacy practices with school-assessed literacy practices (p. 139). In addition, Lowe (2017) claimed, "Using cellphones in the classroom bridges the gap between a student's life in the classroom and the one they live the second they walk out" (p. 11). By taking advantage of students' natural interest in cellphones, teachers can engage students in timely, meaningful lessons while finally accomplishing the ever-elusive task of building for the transfer of learning to real life. Salleh, Khairudin, Muhammad, and Khairudin (2020) noted that teachers who integrate technology into class projects and activities enable students to find the meaning in the content and purpose in the lesson (p. 19).

During the COVID-19 pandemic, failing to address the significance of mobile-learning (m-learning) is both irresponsible and illogical. The years just prior to the pandemic bore witness to a new kind of opportunity gap; specifically, as the world became increasingly dependent on the latest and greatest technology, the division between the people who had access to current technology and those who did not became more pronounced. In fact, Helsper and Reisdorf (2017) found strong links between populations traditionally experiencing exclusion based on social and economic disadvantages and those who were digitally excluded (p. 1254). Cellphones

often served as a lifeline to families experiencing digital exclusion. Perrin and Turner (2019) stated, “Mobile devices play a larger role for black and Hispanic people when it comes to their online access options. Some 25% of Hispanics and 23% of blacks are ‘smartphone only’ internet users—meaning they lack traditional home broadband service but do own a smartphone. By comparison, 12% of whites fall into this category” (p. 2). In addition, Lake and Makori (2020) highlighted the fact that “nearly half of all parents with lower incomes say it is very likely or somewhat likely their children will have to do schoolwork on a cell phone (43 percent)” (p. 2). The digital gap deepened and broadened with the forced shift to digital learning all public schools faced in the spring of 2020, redefining the role of the cellphone as a veritable lifeline to everything from healthcare to employment to education.

Teachers and students have, as the product of necessity, been forced to pivot from face-to-face instruction to virtual teaching and learning. With the closure of public schools in mid-March of 2020, teachers were asked to devise instruction under unfathomable circumstances. Dunn (2020) observed, “Teachers were tasked with providing instructional resources, providing instruction remotely, and finding means to connect with parents and students that had previously been un- or underutilized” (p. 9). Some students had adequate hardware, software, and internet access to make virtual learning possible; many did not. Students in the latter category struggled to keep up using cellphones as their primary means for accessing content and assignments, placing a higher priority than ever on mobile devices for internet access. Kimani (2020) noted, “The innovative use of mobile phones in learning has been exacerbated by the outbreak of covid 19 pandemic in the country” (p. 118).

The variable nature of public education in a pandemic and the resulting shift to and from digital learning to supplement, or sometimes even supplant, face-to-face instruction continuously

focuses attention on the potential for practical use of student cellphones especially for populations struggling to attain internet access. Perrin and Turner (2019) also documented the disparity in likelihood of families to own computers, noting, “Roughly eight-in-ten whites (82%) report owning a desktop or laptop computer, compared with 58% of blacks and 57% of Hispanics” (p. 2). The obvious conclusion along with this difference is that “mobile devices play a larger role for black and Hispanic people when it comes to their online access options” (p. 2).

Effective implementation of cellphone continues to evade teachers. Although increasing numbers of teachers attempt to integrate instructional technology, the inherent struggle with exactly how to use mobile devices in class continues to daunt and deter. Riberio et al. (2017) noted that although teachers have often been categorized as “digital immigrants” or “digital illiterates,” residence in the world of mobile technology has forced their transformation to accepting roles as life-long learners, often alongside their students (p. 1087). Even the most traditional teachers must now consider blending classic methodology with contemporary technology, allowing the best of both worlds to inform new pedagogy as they teach and inspire students.

Several undeniable barriers to implementation slow or sometimes even prevent classroom use of cellphones as instructional technology. Gomez-Garcia, Soto-Varela, Moron-Marchena, and Pino-Espejo (2020) observed the obstacles to use of mobile phones in instruction as well as in class-related assignments outside of classes, noting the “difficulty in standardizing their use in the classroom” (p. 2). These problems with implementing cellphones as sources of classroom technology have led teachers to reject completely their potential benefits. A staunch detractor of the rigorous classroom practices in which teachers take away student cellphones, Rhoades (2021) criticized, “Phone jails, as they are lovingly called, are lauded throughout faculty meetings and

development sessions all over the country. The proponents of this incarcerate state would attempt to kill me with their eyes whenever I would bring up how much I love cell phones in the classroom" (p. 87). Many high school English teachers, however, are not yet prepared to look beyond the off-task, distracted behaviors they have seen in their own classes. Hagerman (2021) observed that the most common distracted behaviors are often "calling or receiving calls, texting, examination cheating, sexting, game playing, listening to music, interacting with social media, and others" (p. 165). Because mobile phones can distract more than just the individual using the device, teacher resistance to accepting cellphones in class may not be unfounded. The devices can often claim the attention of students near the user as well as the teacher (Pulliam, 2017, p. iv).

Even with the obstacles, the potential benefits of cellphones to classroom instruction and learning, including beginning to close the digital divide, are unmistakable. Student enthusiasm for in-class use of the devices and the resulting engagement in lessons can only assist with the learning process. Thomas and Munos (2016) stated, "Students were most excited about the benefits associated with reducing the digital gap, providing learning opportunities, and increasing digital fluency" (p. 27). As more cellphone applications and flexibility of the technology evolve, employers have begun to expect that high school graduates know and practice useful, effective cellphone skills as part of their employability. As a result, the need to incorporate cellphones into lessons is becoming more incumbent upon classroom teachers. Salleh, Khairudin, Muhammad, and Khairudin, R. (2020) noted the need for teachers to maintain student engagement in pursuit of these employable skills, remarking, "The traditional classroom where teachers are the primary source of information will not keep students engaged in the scholarship process" (p. 19).

Akpan (2017) commented on the importance of the roles of teachers in developing effective lessons that both meet the instructional needs of the students and provide learning experiences with relevant mobile technology (p. 2). Although skillful integration of cellphone technology can take time and practice, teachers should view the use of mobile technology as the next step in preparing students for their future careers. Akpan (2017) summarized the considerations teachers should engage when constructing plans to incorporate student use of the devices, noting that teachers must, "ensure that lessons are well prepared with clearly stated behavioural objectives, maintain good classroom management, decide when the cellphones will be required in the lesson, state in his notes the search engines that will be used to browse the internet and ensure that there are no idle moments for any one in his class" (p. 1).

School administrators influence both school culture and instructional practice. As instructional leaders, school administrators face the task of developing policy and practice that maintains the order and structure of an environment conducive to learning but also allows the flexibility of a nurturing, educational setting. O'Bannon, Waters, Lubke, Cady, and Rearden (2017) cited the results of a 2013 Bradford Networks survey as evidence that "89% of colleges and universities and 44% of K-12 schools have incorporated BYOD [Bring Your Own Device] and currently allow students to bring their own devices to use on school networks" (p. 125). Regardless of the policy adopted, teenagers will bring the devices to school.

The presence of cellphones in high schools has created a great deal of discourse about the devices with policies ranging from school-wide bans to teacher-determined incorporation. The variety of approaches number as many as the myriad outcomes expected of such diverse practice. With the growing pressure for high school graduates to possess advanced technical skills in multiple media, teachers, by necessity, must up their levels of technology use. Thomas and

Munoz (2016) noted, “By allowing students to bring personal computing devices like smart phones into the classroom, schools can achieve a previously unattainable level of technological integration” (p. 29).

Adopting policy to allow students to use cellphones in class may be going too far, however, if teachers are not on-board with the initiative. Before teachers can help develop school policy, they may need professional development and time to consider the potential benefits and deterrents to free use of cellphones. Ribeiro, Nunes, and Amorim (2017) stated, “Most of teachers are unprepared to deal with these demands that emerge from the digital age, needing to reflect and act on their practice to meet the aspirations of digital natives and contemporaneity” (p. 1968). Conquering, or at least quelling, the concerns educators have for including cellphones as classroom technology is a vital step in establishing best instructional practices. Lowe (2017) acknowledged, “While cellphones can offer an abundance of beneficial tools, many educators and administrators today still believe they serve a great distraction to the students operating them (p. 8). The range of obstacles to student engagement and focus include off-task behaviors and cheating. Gomez-Garcia, Soto-Varela, Moron-Marchena, and Pino-Espejo (2020) detailed, “Students quite often use mobile devices (especially their mobile phones) not for accomplishing tasks, not for working with the needful program, but for accessing the personal social sites or network links, or game programs (p. 382). The mere presence of cellphones in classes can detract from instruction and learning to a degree that students may not fully grasp. Stachowski, Hamilton, and Bertram (2020) stated, “Research suggests that although students often engage in unconscious multitasking in the classroom, most may not be aware of the decrements in their ability to encode information as a result of this divided attention, nor are they likely to realize that there is not an instant switch in attention” (p. 1).

To-date, classroom cellphone policies have attempted to mitigate the possibility of students being distracted by the devices with efforts to restrict contact or use. When cellphones began appearing in classrooms, teachers tried to forbid students to use them at all. Soon, however, teachers realized that the growing numbers of students with cellphones made a total ban impractical to enforce, and they became more and more tolerant of the devices in class. Stachowski, Hamilton, and Bertram (2020) noted, "…as policy leniency increased, cell phone use increased and enforcement decreased" (p. 1). This tug-of-war between policy and practice in addition to the proliferation of mobile devices in schools created the need for continuous updates to cell phone policy.

A consequence of the need to develop effective policy to address digital natives, the mistrust teachers, as digital immigrants, experience threatens efficient teaching and learning of the content. Tatum, Olson, and Frey (2017) surmised, "Noninstructional cellphone use compromises classroom relationships" and "distracts students from fully engaging in the learning process" (p. 226). School leaders face the challenge of fostering the development of their school faculties to keep teachers focused on the ultimate goal of preparing students for the future without becoming too bogged down in minor behavior transgressions. Elmore (2017) stated, "Since technology is not going away, I believe we must harness it for constructive purposes. We've got more to do than whine about kids being in front of screens all the time. We must redeem it by finding ways to use it to mature them and develop them as career-ready graduates and leaders" (p. 101). As building-level instructional leaders, school administrators bear the responsibility for ensuring the continuous evolution of instructional integration of technology. Ugur and Koc asserted, "Principals must be leaders of technology in their mission and vision for

schools. They must get involved with planning and infrastructure to ensure their schools are properly equipped with technology tools" (p. 64).

Despite the possibility that students may behave irresponsibly with cellphones in class, the need for policy allowing, at a minimum, for teachers to begin incorporating their use is needed. Salleh, Khairudin, Muhammad, and Khairudin (2020) stated, "Communicating with mobile phones [has] become a daily routine by most students. They are motivated to [do] almost anything that involves mobile technology" (p. 17). With the freedom of cellphone use, however, comes the onus of responsibility for students to commit to developing the self-discipline to stay on-task while in class. Teachers, in turn, may cultivate this commitment to staying focused by having students help to develop classroom cell phone policies (CPPs). Tatum, Olson, and Frey (2017) observed, "Increasing students' role in establishing CPPs could diminish the potential for reactance. If students collaborate with their instructors to establish the CPP that is enforced, their freedom would be threatened less, as students had a choice in deciding which freedoms should or should not be taken away" (p. 240).

With the current fluidity of education between in-person and digital instruction, students must be invested in and open to using mobile devices for educational access. Darling-Hammond, Edgerton, Truong, and Cookson (2020) described the pedagogical supports needed by students to facilitate digital learning, whether via computer or cellphone; specifically, interactions between the teacher and students must be "frequent, direct, and meaningful" (p. 12). In addition, "self-management strategies should be explicitly taught…because many students need help managing work time and productivity" (p. 13). By teaching students the skills to self-manage and navigate content and assignments, teachers prepare students for subsequent learning and life experiences. Along with embracing the teaching of life-skills with respect to mobile phone use, teachers have

to recognize the dynamic nature of student learning and reject the temptation to die, figuratively, on the hill of rejecting cellphones outright. Refusing to evolve in thinking and practice about mobile devices as learning tools sacrifices the potential benefits for students preparing for futures that will include, if not depend, on using cellphones. Lancaster (2018) observed, "…students may not learn less by being able to check the occasional text message, update their Twitter, or browse Facebook during class time. Traditionally, these actions have been considered a distraction to learning, but students may not necessarily fail to grasp course content by using their phones outside of academic pursuits in class" (p. 4).

Another component in developing cellphone policy and practices school administrators must consider is the array of instructional approaches teachers employ in the classroom. Having the autonomy to create and develop instruction that best meets the needs of their classes is privilege many teachers take for granted, and with the liberty to make instructional decisions, teachers prefer to establish classroom rules that align with both their personalities and pedagogy. Holley and Park (2020) observed that teachers enjoy having the autonomy to determine how the devices will be used in their classes but need the support of administrators to enforce consequences for students who elect not to comply with classroom rules (p. 85). Especially in high schools, the balance of power and influence in classes becomes critical as a result of the emerging development of children into young adults with corresponding egos. Given the developmental stages high school students experience, teachers must strategically enforce cellphone policy whether it is established at the district, school, or classroom level. Tatum, Olson, and Frey (2017) posited, "…instructors should attempt to enforce [cellphone policies] in a manner that reduces student perceptions of freedom threat, as results suggest that instructors who reduce threat should witness marked declines in students' noncompliant behaviors" (p. 240).

Finally, school leaders were obligated to foster the development of their school faculties with regard to student engagement and rigor. Elmore (2017) stated, “Since technology is not going away, I believe we must harness it for constructive purposes. We’ve got to do more than whine about kids being in front of screens all the time. We must redeem it by finding ways to use it to mature them and develop them as career-ready graduates and leaders” (p. 101). As instructional leaders, school administrators bore the onus of responsibility for ensuring the continuous evolution of instructional practice to reach each new generation of students. Ugur and Koc (2019) charged, “Principals must be leaders of technology in their mission and vision for their schools. They must get involved with planning and infrastructure to ensure their schools are properly equipped with technology tools” (p. 64).

Chapter Summary

Literature on the issue of student cellphones in class delineates a clear evolution of the devices as a significant presence with which teachers compete for the attention of students (Hagerman, 2021, p. 165). Determining best practices for integrating use of mobile devices as a part of sound instruction challenges teachers as digital immigrants to sustain engagement of their digital native students (Elmore, 2017; Gao et al., 2017). In spite of issues of overly multitasking and distracted learning, students increasingly view cellphones as beneficial access to technology that complements their educational pursuits (Mendoza et al., 2018; Rhoades, 2021).

However, a gap in the literature exists when building administrators attempt to assist teachers in finding the opportunity to examine best practices for incorporating cellphone use into instruction. In particular, as the COVID-19 pandemic increased the educational burden on teachers, the need for effective use of cellphone technology emerged as a potential means of student access to education. This action research study sought to contribute to the body of

research by exploring effective uses of student cellphone technology in conjunction with high school English content and providing the setting for collaboration and collegial exchange required to establish best practices.

CHAPTER 3

ACTION RESEARCH METHODOLOGY

The purpose of this action research study was to explore the potential for cellphone use as a classroom source of technology for high school English classes. The team of teachers formed a PLC committed to delving into instructional approaches that would best accentuate their teaching styles and the content the students needed. The three guiding questions for this inquiry were:

1. How can cellphone technology benefit instruction in high school ELA classes?
2. What are the inherent impacts of cellphone presence and use on instruction and learning?
3. How can classroom teachers maximize the instructional impact of using cellphones as a part of effective daily instruction?

This chapter of the study details the methodology and contains the rationale for using action research as the design. It specifies how the members of the action research team were solicited and selected, and it focuses on ways the fidelity of the study supported and strengthened the action research process. Finally, the chapter delineates the means of data analysis, limitations of the research, and the position of the researcher within the parameters of the study.

Theoretical Framework

Without sustained student engagement in the lesson, a responsibility appropriately placed on teachers, learning cannot happen (Elmore, 2017, p. 6). Teachers best discover effective instructional strategies for student engagement from other teachers through collaborative planning and subsequent discussions of what works and does not work in the classroom. Zepeda (2015) noted, “Teachers want to grow professionally; they desire ongoing learning opportunities

in spaces nestled within their own schools so that they can improve their practices" (p. 16). The optimum time and space for such work is in small professional learning communities (PLCs) with a shared focus (Coghlan & Brannick, 2014, p. 54). Ultimately, providing professional learning and facilitating collaboration are expectations of school leaders, and, in the constantly changing realm of classroom technology, building-level administrators face the challenge of offering teachers effective strategies that complement instruction and engage students (Ugur & Koc, 2019; Somekh & Zeichner, 2009). School administrators bear the responsibility of providing teachers the opportunity to develop focused PLCs that can establish common goals and strategize instructional planning (Cookson et al., 2020; Elliott, 1991).

Elliott (1991) established the context of action research in education with a focus on professional learning as a means of transforming instruction. Developing professional learning for teachers as a component of Theory of Action framed the foundation for improving student engagement in instruction by enabling teachers to envision the intentional inclusion of handheld technology in lessons. (See Figure 2, Theoretical Framework). If school leaders ensure the professional learning opportunities are both designed to engage adult learners, specifically teachers, and include relevant content and literacy strategies that model use of handheld technology, teachers will strive to adapt instructional methods similarly (Zepeda, 2015; Coghlan & Brannick, 2014).

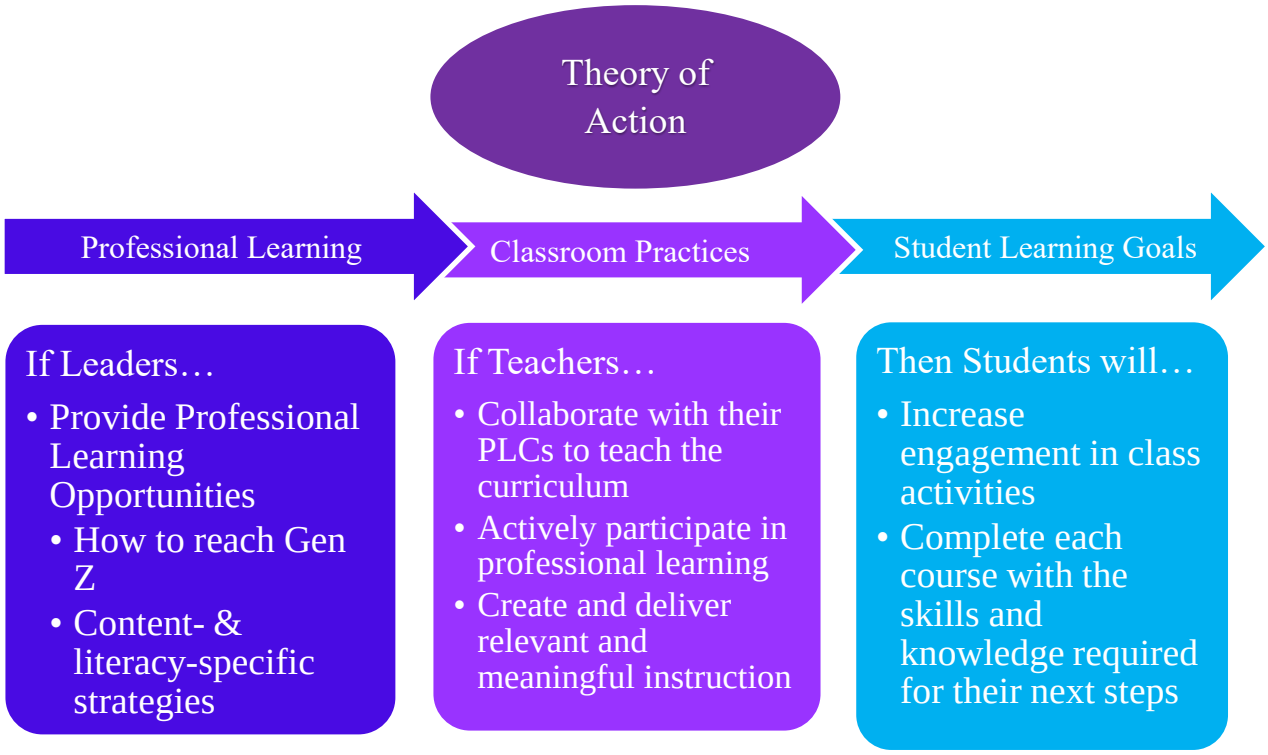
With exposure to instruction and models of handheld technology use through peer observations, teachers develop a depth of professional knowledge on which they can construct effective lessons (Zepeda, 2015, p. 47). As part of small professional learning communities, teachers collaborate to build instructional plans to meet the needs of their students. Teachers bring content knowledge and classroom experience to PLCs as a background for analyzing

current classroom data and considering the learning needs of students. The combination of education, professional learning, and classroom experience makes teachers uniquely positioned, in their daily work, to design relevant and meaningful lessons that deliver the curriculum in ways that both engage students and cultivate their responsible use of handheld technology (Elmore, 2017; Zepeda, 2015).

If administrators provide effective, meaningful professional learning and opportunities for teachers to collaborate in their PLCs, teachers, as experts in the building and in keeping with the Theory of Action, will avail themselves of the decades of experience of their colleagues and collaborate to plan instructional strategies using cellphones in their classes (Zepeda, 2015, p. 1). As a result, students will benefit from the efforts of their teachers and will experience increased motivation and focus for sustained engagement in the content of the planned lesson (Creer, 2018; Chiverton, 2017). See Figure 2, Theoretical Framework.

Figure 2

Theoretical Framework: Theory of Action



Conceptual Framework

English/Language Arts (ELA) classes at CHS inconsistently incorporated instructional technology, and some teachers engaged in a daily battle with students regarding the distraction of handheld devices, namely, cellphones. Rather than continuing a fruitless war or conceding defeat, teachers, with strategic professional development and collaboration, can transform specific classroom activities into learning experiences that connect students with content and, simultaneously, develop student awareness of the usefulness of handheld technology as a learning tool.

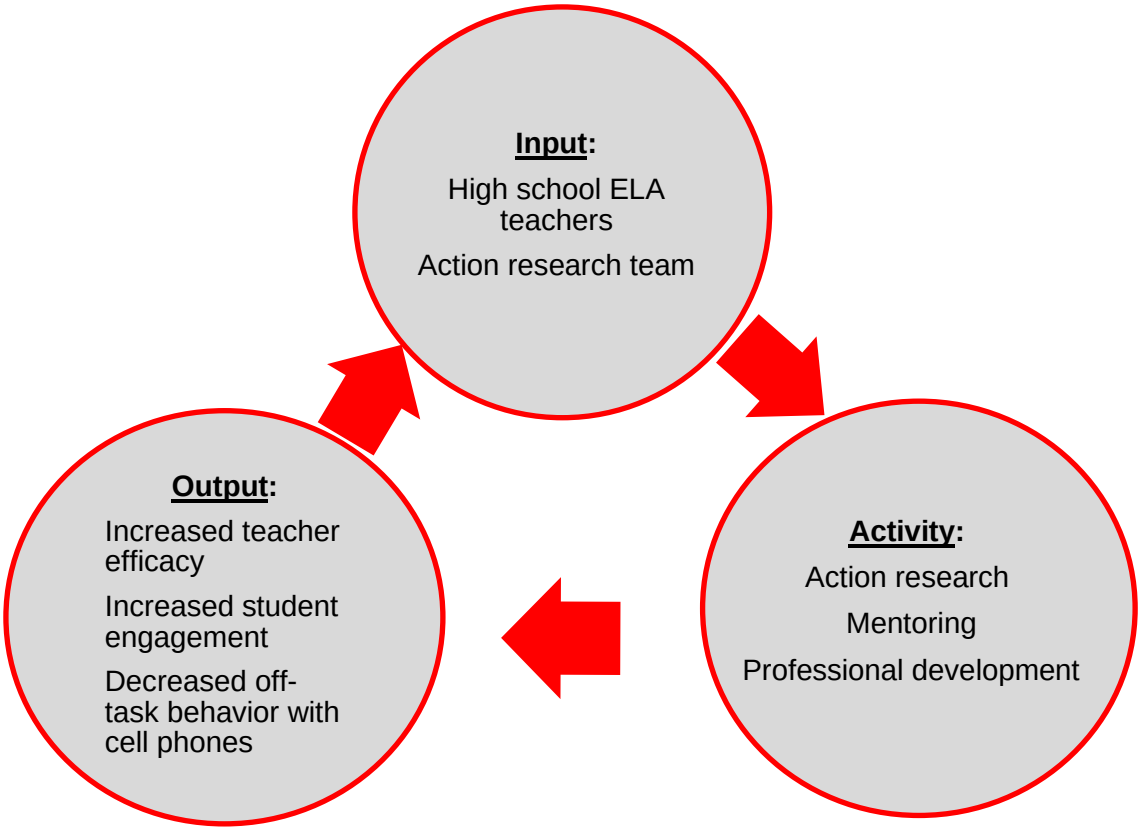
Because technology has increased the speed of change in the world, instruction that does not attempt to keep pace becomes increasingly irrelevant to students. This action research team

was comprised of ninth grade ELA teachers and other ELA teachers seeking to harness the instructional potential of cellphones in the classroom. The team established and developed a recursive practice based on an adaptation of their current PLC structure. The recursive practice enabled teachers to acquire technology-inclusive instructional strategies for literature lessons; teachers then worked to develop content-specific lessons and activities using the strategies. After teachers taught the lessons, they met with the team to discuss the effectiveness of the instruction, including whether students were fully engaged, and determined subsequent steps for using the technology.

Based on their perceptions of successful technology implementation, high school literature teachers discussed lesson components that went well and issues with activities that need further work. The team identified next steps for using cellphone technology in subsequent lessons, and the process for incorporating cellphones into lessons began again based on the prior successes or adjustments described by the teachers. The reiterative process is reflected in Figure 3, Conceptual Framework.

Figure 3

Conceptual Framework



Action Research

Determining the type of research is based on the kind of research problem and purpose (Bloomberg & Volpe, 2019, p. 38). This study was best suited to qualitative research, in general, due to the constructivist paradigm with a focus on the priorities Bloomberg and Volpe (2019) describe as "exploration, discovery, and description" (p. 39). Within the parameters of qualitative inquiry, this action research was based on a case study in which the researcher was actively involved.

Action Research Design Team

Table 1

Action Research Design Team

Member	Role in the School	Role in the Study	Years of Experience
Principal	Principal	ELA teacher; Special Education Teacher	Over 20 years
Researcher	Assistant Principal	ELA teacher; Special Education Teacher; Technology Grant Writer	Over 20 years
Retired high school ELA teacher	External to School	ELA teacher; High School Administrator	Over 35 years

The members of the Action Research Design Team were the school principal, a retired high school English teacher, and the researcher. See Table 1, Action Research Design Team. The school principal, a former special education English teacher, contributed longevity of knowledge of the English department within the high school as well as familiarity with the context of the study in terms of availability and use of technology. The retired high school English teacher acted as a reference point for the teachers, providing insight, as the study was developed, into the perspective of English teachers who would be part of the implementation team. For example, the retired teacher advised that the cycles of research be limited to no more than two PLC meetings each to avoid placing excessive constraints on the time of the teachers who, at the time of the study, also faced the usual writing teacher workload combined with frequent pivots to digital learning due to the pandemic. The researcher was an assistant principal in the school who taught high school English and special education English for ten years and supervised the English department at Central High for seven years.

Action Research Implementation Team

Table 2

Action Research Implementation Team

Member	Role in the School	Role in the Study	Years of Experience
Ables	Teacher	World Literature Teacher	Over 15 years
Brown	Teacher	9th Grade and World Literature Teacher; Special Education Teacher	Over 10 years
Cordero	Teacher; Department Chairperson	9th Grade Literature Teacher; Reading Enrichment Teacher; Advanced Composition Teacher; ELA Department Chairperson	Over 25 years
Drayton	Teacher; Head Coach	Honors and General World Literature Teacher	Less than 5 years
Edwards	Teacher; Class Sponsor	Advanced Composition Teacher	Over 15 years
Ford	Teacher	American Literature Teacher	Over 20 years

The Action Research Implementation Team (ARIT) was comprised of six English teachers at Central High School and the researcher. See Table 2, Action Research Implementation Team. The teachers were assigned pseudonyms to provide anonymity. A teacher whose twenty-seven years have been invested primarily at Central High School, Mr. Ford taught all grade levels of high school English, working with upper grades in American literature and advanced composition at the time of the study. Ms. Edwards taught at CHS less than ten years but volunteered extensively to support student extracurriculars for the school. Mr. Drayton was with CHS for approximately five years and sponsored student extracurriculars; he taught primarily ninth and tenth grade English classes. Mrs. Cordero served as the English department chairperson and, as the most experienced teacher in the department, taught struggling ninth grade

students in a reading enrichment class as well as seniors in advanced composition. Ms. Brown was a special education teacher who taught both small-group and co-taught classes of student in ninth and tenth grades. Mr. Ables taught ninth and tenth grade English at CHS for more than ten years. In addition to serving as the administrator for the English department, the researcher implemented a technology grant in a ninth grade English class as a third-year high school English teacher and wrote and implemented a school-wide technology grant as a second-year high school assistant principal.

Action Research Timeline

This Action Research began with a planning and recruitment phase of two weeks from August 31, 2020, through September 13, 2020. The ARIT was engaged in the work over three recursive cycles of approximately three weeks each. Cycle One began with the initial PLC meeting on Zoom on September 14, 2020. Team members planned cellphone strategies and devised lesson plans in the subsequent two days, and peer observations took place from September 17, 2020, through October 2, 2020, with an intervening fall break September 21, 2020, to September 25, 2020. A PLC meeting via Zoom concluded the first cycle on October 5, 2020, providing post-observation reflection and commentary in the first half of the meeting.

The second half of the Zoom PLC meeting marked the beginning of Cycle Two when the team discussed the schedule of peer observations and cellphone strategies they intended to pair with their next instructional units. The second round of peer observations took place between October 5, 2020, and October 23, 2020, with the intervening week of October 12, 2020, to October 16, 2020, being early release on an abbreviated schedule to allow teachers to contact parents. In the absence of the pandemic, this would have been Parent Conference Week with early release schedule each day. Cycle Two concluded with the first half of a Zoom PLC meeting

on October 26, 2020, to summarize teacher feedback on the cellphone technology strategies used.

The second half of the PLC meeting served as the kickoff for Cycle Three with brainstorming next steps for teachers using strategies they had learned from each other, researched independently, or solicited from the researcher for specific content support in an up-coming lesson. Peer observations for Cycle Three were conducted from October 27, 2020, through November 6, 2020, and the cycle ended with a final, post-observation Zoom PLC on November 9, 2020. Upon the conclusion of the three research cycles, the ARIT was asked to review their peer observation notes in anticipation of a final PLC Zoom on December 7, 2020, to address any "take-aways" or ideas and next steps for using cellphones productively in classes. In the final Zoom PLC meeting, team members were asked specific questions about their experiences in this study and how likely they were to use cellphone technology in their classes in the future.

Intervention

The intervention of this action research study was the creation of space, time, and purpose for a Professional Learning Community that would never otherwise have been devised. The researcher, as the administrator for the English department, was uniquely positioned to facilitate the exploration of the subject of integrating cellphone technology into high school English classes. Teacher members of the ARIT brought past experiences and knowledge of cellphone technology to the discussions of plans for ways to integrate technology into the English curriculum. In each of three research cycles, team members observed a colleague implementing the planned cellphone technology strategy and took notes on a common observation instrument. See Appendix C, Peer Observation Instrument. Punctuating the

beginning and end of each research cycle, Zoom PLC meetings offered the team a window for planning, reflecting, and remarking on their own challenges and success with the technology integration as well as that of their peers.

Research Design

Termed "inductive," the design of the study allowed for the generation of ideas within a PLC of high school English teachers and encouraged a flexible approach to the process (Bloomberg & Volpe, 2019, p. 40). In addition, as a PLC of colleagues, the research took place in the natural context of the school to permit examination of questions, challenges, and issues as they arose. This case study of the development of a high school English teacher PLC focused on cellphone technology integration and took place in the natural context of the school schedule.

Contextual Setting

The contextual setting of this action research case study was a rural high school in a mid-sized school district in the southeastern United States. Specifically, the ARIT was a group of English teacher volunteers in the school who identified the presence of student cellphones in class as a potential detractor to instruction.

Selection

The invitation to participate in the study was sent via email to each teacher in the English department including the CHS teacher recently assigned to the virtual school to serve students opting for digital instruction due to the current pandemic. (See Appendix B, Email of Invitation). Six teachers expressed interest in the study due to their individual struggle to address the presence of cellphones in their classes, a general interest in the topic, or the desire to assist a colleague in research. Apart from the rewards of collaborative learning and *esprit de corps,* no incentives were offered for participation; similarly, no penalty was threatened for electing not to

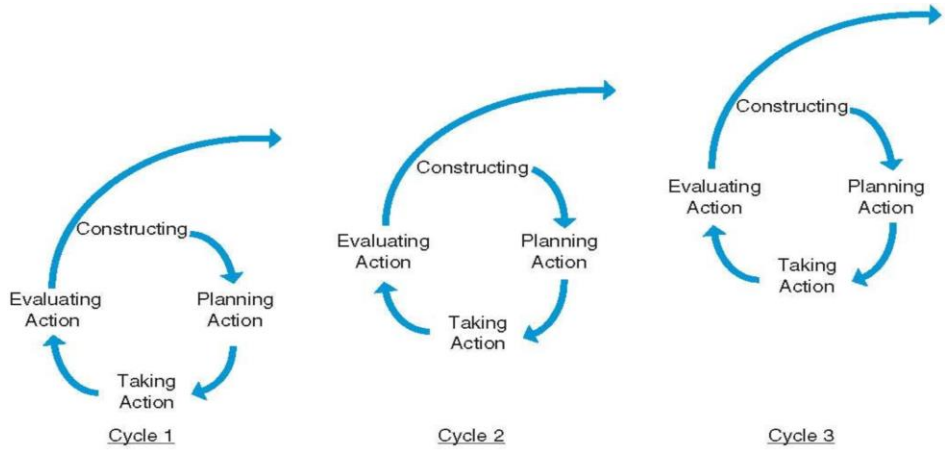
participate in the work. All teachers who expressed interest and volunteered for the ARIT were selected and were informed of the time commitments and expectations before the study began.

Data Collection Methods

The data collection methods in action research both comprise and inform the intervention. Coghlan and Brannick (2014) observed, "In action research data comes through engagement with others in the action research cycles" (p. 89). Because action research emphasis the generating of data, versus the gathering, the three cycles of this study form the methods by which data was collected. In Cycle One, the constructing phase consisted of a PLC team meeting to orient members to the process and brainstorm cellphone strategies with which the teachers had some familiarity. The planning action phase led teachers to collaborate in the construction of lesson plans marrying the cellphone strategies to the content they planned to teach. In the taking action phase, teachers taught their planned lessons and were observed by a colleague on the team. Evaluating action occurred in the first half of the subsequent PLC meeting; the second half of the meeting addressed the constructing phase of Cycle Two. See Figure 4, Spiral of Action Research Cycles (Coghlan and Brannick, 2014, p. 11).

Figure 4

Spiral of Action Research Cycles from Coghlan and Brannick (2014)



PLC Meeting Transcriptions. Each of the five PLC meetings was conducted via Zoom and transcribed using Sonix, a paid, online transcription service. The researcher reviewed each transcription and polished the scripts to reflect the contributions of each member. Bloomberg and Volpe (2019) described PLCs that function as focus groups in terms of the advantages they bring to a qualitative study, explaining, "One strength of focus groups is that this method is socially oriented, studying participants in an atmosphere that is often more natural and relaxed than a one-to-one interview" (p. 195). In this study, the PLC or focus group was made up of teachers who have worked together for at least three years and collaborated on other focus groups in the past.

Peer Observation Notes. In each of the three cycles of the study, ARIT members were asked to observe a colleague implementing the cellphone technology strategy previously selected. Observations were a minimum of twenty minutes and lasted as long as the observing teacher deemed necessary to capture feedback in writing. The observer then wrote a brief reflection indicating any points of success or challenge that emerged in the observation period. Describing the importance of peer observations, Zepeda (2015) noted, "Peer observations play an integral part in numerous professional development models including, for example, lesson study, peer coaching, cognitive coaching, critical friends groups, and other system improvement strategies such as learning walks, instructional rounds, and walk-throughs" (p. 47).

Triangulation of data collection is inherent in the pairing of PLC meetings and peer observations. Participation in PLC meetings encouraged brainstorming and sharing of strategies using cellphones for instruction, and peer observations validated both the teacher providing the instruction and the observer. Because the written observations and reflections were shared verbally and only by the observer in the PLC meetings, the observer could select key points from

the feedback, leaving the written commentary confidential between observer and researcher. This response triangulation allowed for reflective critique and gave the researcher the opportunity to introduce any challenges in a neutral way that focused on the cellphone strategy rather than the individual teacher who presented. See Table 3, Triangulation of Research Methods.

Table 3

Triangulation of Research Methods

Research Questions	Data Collected & Reviewed	Analysis Approach	Timeline
RQ1. How can cellphone technology benefit instruction in high school ELA classes?	Zoom PLC Orientation Meeting and PLC 1, Planning Phase and Evaluating Phase recorded and transcribed	Coded for Themes	September 2020
RQ2. What are the inherent impacts of cellphone presence and use on instruction and learning?	Zoom PLC Meetings Planning Phase and Evaluating Phase recorded and transcribed	Coded for Themes	September 2020-December 2020
	Observations	Coded for Themes	September 2020-December 2020
RQ3. How can classroom teachers maximize the instructional impact of using cellphones as a part of effective daily instruction?	Zoom PLC Meetings Planning Phase and Evaluating Phase recorded and transcribed	Coded for Themes	September 2020-December 2020
	Observations	Coded for Themes	September 2020-December 2020
	Member Checking	Narrative Reflection	January 2021
	Researchers Journal	Narrative Reflection	August 2020-Ongoing

Data Analysis

Bloomberg and Volpe (2019) described, “The process of data analysis begins with putting in place a plan to manage the large volume of data you collected and reducing it in a meaningful way” (p. 199). Reviewing transcripts of PLC meetings and peer observation notes for recurring ideas regarding cellphone technology strategies formed the basis for coding themes. The data were coded by hand using descriptive coding to capture recurring themes. Data gleaned from the PLC transcriptions and peer observation notes from each teacher were analyzed using this method to extrapolate codes from which recurring words and phrases were identified; from the recurrences, themes emerged upon which answers to the research questions were constructed. This means and level of data analysis enabled the researcher to identify uniformity in the data feedback, or, if uniformity was lacking, to ensure any discrepancies that emerged were discussed collaboratively in subsequent PLC meetings. Qualitative observation data as well as reflections from the PLC meetings informed each subsequent action research cycle.

Themes generated in the PLC transcriptions of the evaluating action phase of each meeting and peer observation notes were compared with transcriptions from the planning phases of the research cycles to triangulate the data. When the data were analyzed, the action research design team reviewed the accuracy of the findings. Based on qualitative data analysis, specifically, descriptive coding, this study answered the three research questions applicable to the English department of Central High School as well as any department in a high school wishing to harness the potential of cellphone technology as an instructional learning tool.

Reliability and Validity

Bloomberg and Volpe (2019) distinguished the reliability and validity of quantitative research from the “issues of trustworthiness” in qualitative research including credibility,

dependability, confirmability, and transferability (p. 202). In this study, trustworthiness was ensured in the following ways:

Credibility. Inherent in this, and any, study is an amount of researcher bias that poses a threat to credibility. Acknowledging potential bias helps to establish credibility of the study. As a former English teacher who implemented various technology initiatives in two different high schools, the researcher may possess bias including a favorable perspective of instructional technology integration and the belief that student engagement can be increased using mobile devices. The researcher also grew up with a parent whose career was educational and instructional technology integration and could potentially be biased to favor technology use in the classroom. To control for bias, triangulation of data was used in which notes from three distinct phases of each research cycle were compared. The planning action phase and evaluating action phase were captured in PLC meeting transcriptions, and the taking action phase was summarized in written peer observation notes.

Dependability. The dependability of this research is evident in the three consistent and detailed cycles of work that informed the study. As recursive iterations of the intervention, the cycles were designed to allow the thematic data to emerge naturally and transparently. Similar, repeated concepts emerged in the three sets of data constructed in the processes, and, ultimately, the dependability of the study is clarified in the answering of the research questions.

Confirmability. Mirroring the quantitative evaluation of objectivity, confirmability draws a clear connection between the data and findings with a sharp depiction of how the conclusions were drawn (Bloomberg and Volpe, 2019, p. 204). The evolution of recurring themes in both planning and evaluation phases of PLC meetings as well as in the observations

teachers conducted independent of the researcher helped to establish the confirmability of the study.

Transferability. Known in quantitative studies as the external validity, transferability of this qualitative research was ensured through thick description and detailed information. Thick description of the setting, research participants, and related classroom experiences gave the study elements of relatability allowing readers to access the findings and transfer the understandings to similar contexts. The findings, in this case, were applicable to other high school English departments seeking ways to incorporate cellphone technology into daily lessons.

Chapter Summary

This chapter of the study examined the methodology employed beginning with the Theoretical Framework depicted in the Theory of Action followed by the Conceptual Framework and the justification for using action research as the vehicle for qualitative inquiry. Because the study addressed questions to guide a focus group PLC in a specific purpose, to use cellphone technology in high school English instruction, the reasoning for selecting this design team and this implementation team to address this problem were appropriate and effective. Using sound data analysis via coding descriptive analysis, the researcher established trustworthiness in the process, and, by acknowledging and controlling for inherent bias, she further contributed to the reliability and validity of the research.

CHAPTER 4

CASE STUDY

The Context

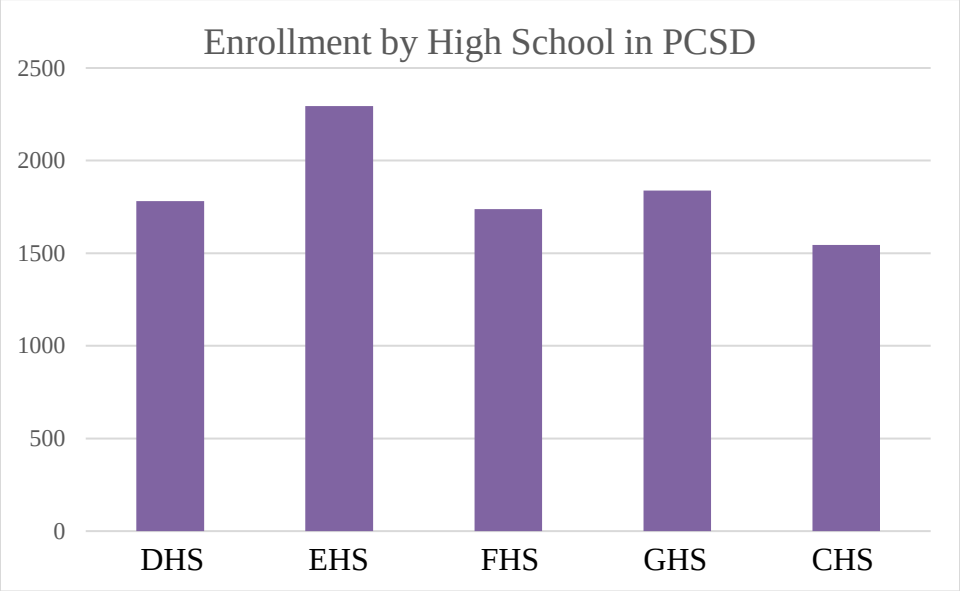
The context of the action research for this case study was Central High School (CHS), located in the one of the fifteen largest school districts in Georgia. The action research design team was made up of two administrators in the school and one retired teacher, all with English teaching backgrounds. The action research implementation team consisted of six current CHS English teachers, each of whom struggled both with technology access for their classes and the distracting presence of cellphones during instruction.

Central High School

Situated in a suburb of Atlanta, the school district struggled to keep up with the expansion and contraction of population reflective of the economy over the two decades prior to the study. CHS served over 1,500 students and was the smallest of five high schools in the district (See Figure 5); CHS was the only high school expected to decrease in enrollment in years following the study.

Figure 5

Enrollment by High School in PCSD



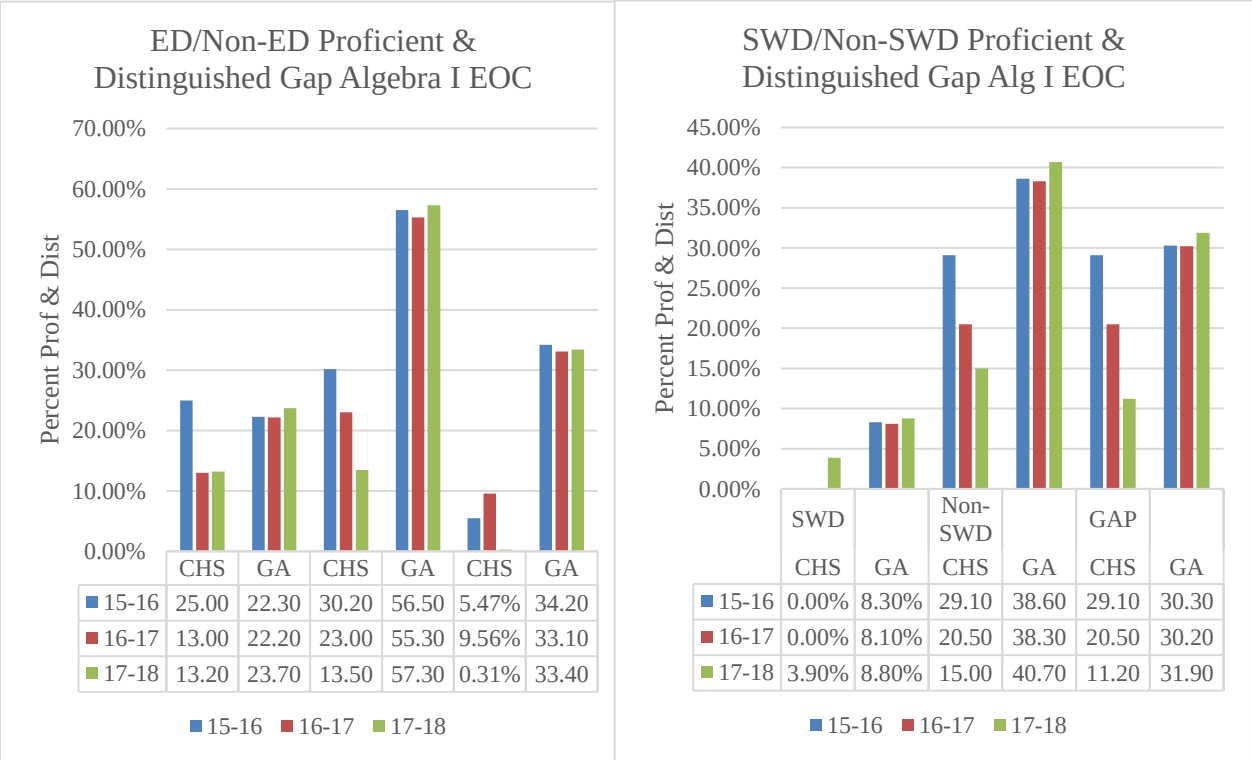
Students ranged from ninth to twelfth grade. With a Free or Reduced Lunch Program participation rate of over 47%, the student body was comprised of approximately 72% minority enrollment. The student-to-teacher ratio was about18:1, and the four-year graduation rate was 82%. Students with Disabilities (SWD) made up approximately 17% of the population, a concentration expected to exceed 18% in the years following the study.

Description of the school, context, and setting. CHS's economically disadvantaged students performed lower than state on Algebra I EOCs. This reflected category of All Students performance for school, district, and state. The state ED/Non-ED achievement gap remained static at about 33%, but the CHS gap decreased to less than 1% (See Figure 6, ED/Non-ED Proficient & Distinguished Gap Algebra I EOC). Decline in overall proficiency reflected the likelihood that national initiatives failing to address economic disparity of students may hold schools accountable with little improvement of educational quality (Ladd 2012). SWD/Non-SWD subgroup gap showed similar dynamic compared to state gap; however, CHS overall

performance decreased while SWD achievement increased. In contrast, state Algebra I EOC achievement increased but the SWD/Non-SWD gap slightly increased as well.

Figure 6

ED/Non-ED Gap on Algebra I EOC and SWD/NonSWD Gap on Algebra I EOC

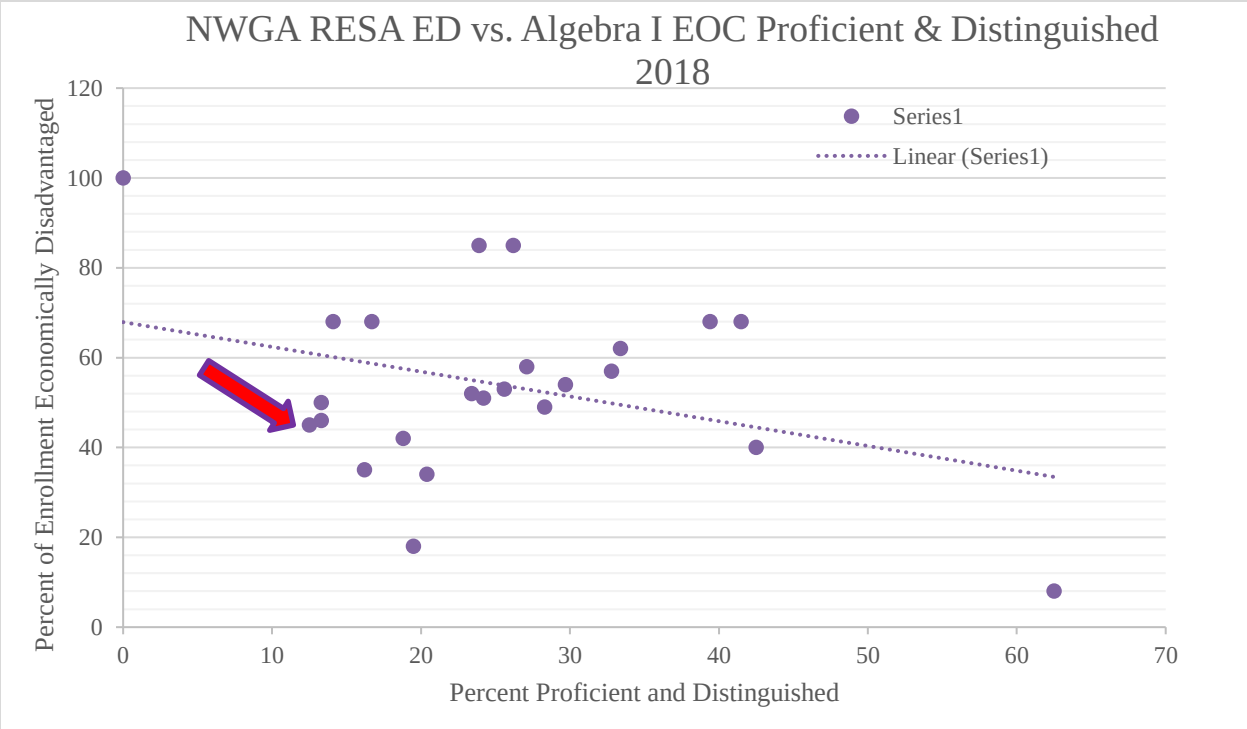


Compared to other high schools in the service area, CHS performed well below the trendline. Given the concentration of socioeconomically disadvantaged families in the northwest Georgia area, this outcome aligns with the Reardon (2011) premise that the ED/Non-ED achievement gap was due not only to household income but also to the larger context of social conditions, policy choices, and educational practices (See Figure 5. NWGA RESA ED vs. Algebra I EOC Proficient & Distinguished 2018). CHS was located in the heart of several low- to moderate-income neighborhoods. Many families were single-parent or single-income families, and many were first- or second-generation immigrants. These were the families who attempted to

provide increased opportunities for their children by increasing investment in their children's cognitive development (Reardon, 2011). Ultimately, there was room for growth at CHS despite the low SES context.

Figure 7.

NWGA RESA ED vs. Algebra I EOC Proficient & Distinguished 2018

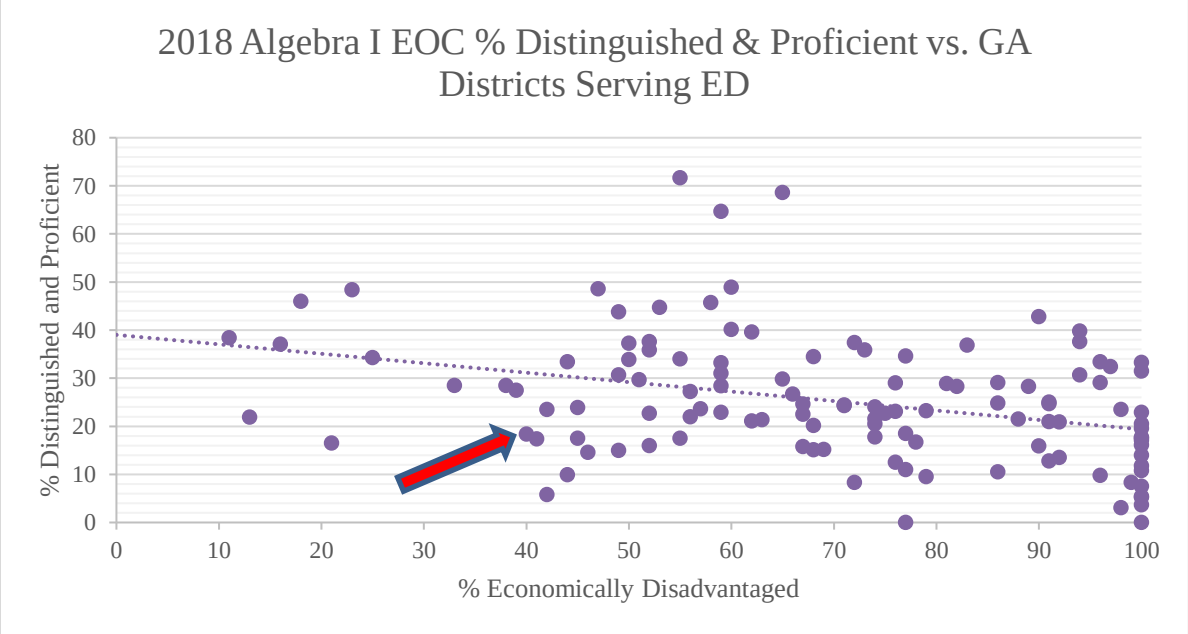


Given the relative socioeconomic disadvantage of students, Pullman County School District performed lower than districts across the state on Algebra I EOC (See Figure 8. 2018 Algebra I EOC Distinguished & Proficient vs. Georgia Districts Serving ED). In part, this was attributable to the economic segregation, residential segregation, and high mobility rates within the district. Chasing the ever-rising level of proficiency and higher-ordered thinking left students of less affluent areas of the district with more depth and breadth of content to master than their peers who, due to their affluence, have had more opportunity for consistent and deep learning over their lifetimes (Duncan and Murnane, 2016). In addition, the district often

expressed the expectation that schools perform as Duncan and Murnane (2016) termed "beat the odds" schools without the realization that the biggest return on educational investment was "creating the conditions for systems of effective schools rather than by relying on exceptions" (p. 155). The ongoing battles in the district between cultivating meaningful, innovative practices and practicing archaic comparisons for accountability prevented true advancement of students as a priority. This left the onus of responsibility for prioritizing education on parents; when families were economically and residentially disadvantaged, opportunities for educational advancement remained elusive. One of the most obvious solutions could have lain in redistricting, a very controversial subject in the district.

Figure 8

2018 Algebra I EOC Distinguished & Proficient vs. Georgia Districts Serving ED



For 2018, CHS achieved a College and Career Readiness Performance Index (CCRPI) score of 69.8 with 58.5 on the Content Mastery indicator, 85.1 on the Progress indicator, 45.2 on the Closing Gaps indicator, 65.1 on the Readiness indicator, and 83 on the Graduation Rate

indicator. Only 48.4% of CHS graduates were considered “College and Career Ready.” On each indicator, CHS scored lower than the other four high schools in the district and lower than the state average. The researcher for this study was assistant principal and scheduler. She was the school data management coordinator and oversaw data input and maintenance for Full Time Equivalent (FTE) and Office of Civil Rights (OCR) reporting. As CHS struggled to close the gaps in achievement, student growth needed to occur at a pace higher than other schools to enable students to enter subsequent life phases as viable and competent contenders in the social and economic realms.

Problem Framing in the Context

The problem addressed in this study was the inconsistent use of technology including cellphones in Ninth Grade Literature instruction. A lack of continuity in use of instructional technology yielded inconsistent outcomes in student learning. This was evident in both student skills demonstrated in subsequent English/Language Arts (ELA) classes and End-of-Course (EOC) Exams. Ninth Grade ELA teachers expressed concerns regarding availability of computer labs for instruction; some teachers utilized mobile computer cards with laptop computers while others relied strictly on scheduling labs with desktop computers. The variations of hardware influenced the speed at which students accessed programs or features for lessons which, in turn, made the time investment in instructional technology greater than it had to be. Where seamless transitions to and from technology-based lessons should have been the norm, classes wasted time moving to labs, logging onto computers, and accessing the software the lessons require. Simultaneously, most students brought to school and accessed handheld devices that could be used for instruction much more efficiently than laptops or desktops and with greater learning impact. However, because the handheld devices,

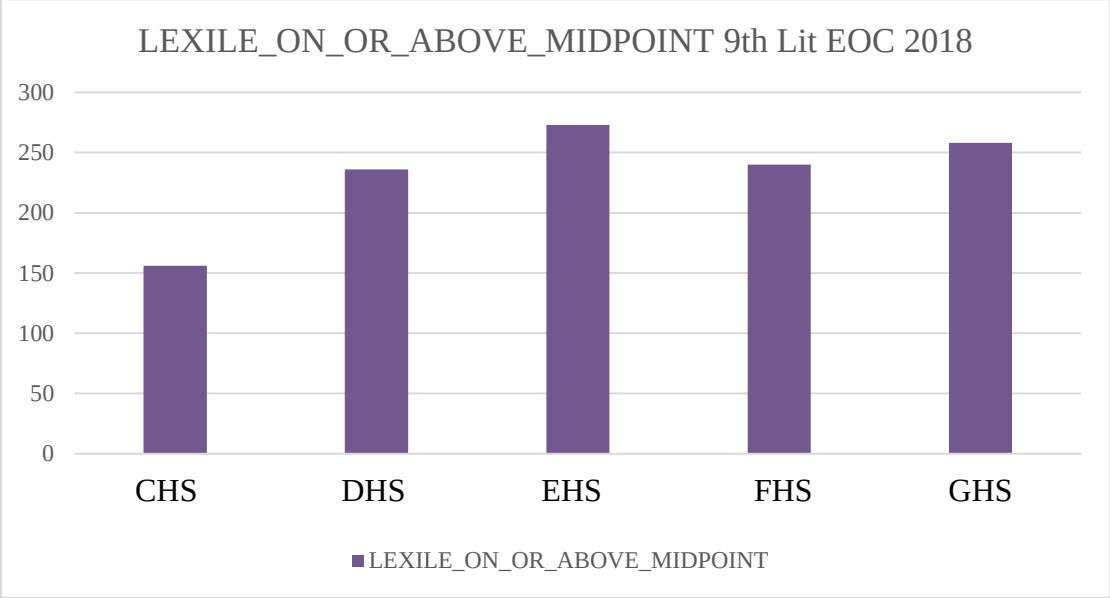
cellphones, specifically, were not used with intention and students were not given purpose and direction, lessons using technology continued to be cumbersome and ineffective.

Compared to the other four high schools in the district, in terms of access to technology CHS had the smallest and most economically disadvantaged student body with the least access to computers. Enrollment was approximately 1,500 with a transient population rate of 12%; however, only four computer labs were available for technology-based instruction. At the beginning of the 2018-19 school year, one mobile computer cart with thirty laptops was purchased for each hallway of about ten classrooms; while availability of technology increased to once every tenth day of school, access was still inconsistent with the technology use colleges and careers demanded of high school graduates.

One result of inadequate and inconsistent access to instructional technology was lower achievement on Ninth Grade Literature EOC exams with lower Lexile scores, measured by EOC exams: 34% of CHS students scored Proficient or higher compared to 58% of students in the district and 52% in the state in 2018 (See Figure 9, Lexile On or Above Midpoint on 9th Literature EOC 2018).

Figure 9

Lexile On or Above Midpoint on 9th Literature EOC 2018.



When scored on College and Career Readiness, 48.4% of CHS twelfth grade students were considered prepared while 56.1% of district and 57.1% of state twelfth grade students met the same criteria. Both student achievement and College and Career Readiness are measures influenced by the quality and effectiveness of student learning, and one of the tools by which students are most actively engaged is technology. Increasing frequency and diversity of use of instructional technology can lead to more interactive lessons and higher, more consistent and predictive outcomes for student learning. The resulting increases in EOC scores and more thorough college and career preparation could lead to better scores, overall, for CHS. For the 2017-18 school year, CHS lagged in CCRPI score with a 69.8% compared to the district score of 75.4% and the state score of 76.6%. While the depressed scores spoke volumes, the potential of handheld technology to increase student learning daily remained a silent promise of educational benefits for teachers, classrooms, and students who dared to engage.

At the time of the study, there were no minimum expectations established for integration of technology into instruction. A lack of expectations left use of technology to the discretion of each ELA teacher, resulting in classrooms where instructional technology was limited to typing and printing essays or, on the opposite end of the continuum, expected as a weekly part of student performance. Inconsistent practice yielded inconsistent results.

This action research study identified some best instructional practices integrating student use of cellphones to access technology. These resulting practices were recommended by the research implementation committee for use in the English department and, where applicable, in other departments schoolwide.

Problem Framing Based on the Site

The literature provided a backdrop for the emerging challenge teachers face in creating an appropriate class setting and relevant curriculum-based activities for incorporating student cellphone use. Handheld technology in the form of MP3 players began appearing in student hands in the late 1990s. With the evolution of handheld technology cellphones became cheaper and more accessible to everyone of all age groups and socioeconomic backgrounds. Soon high school students joined the race for the latest and greatest devices, and cellphones emerged as a significant presence in the classroom. As the pressure increased for high schools to produce graduates who are prepared for any future they choose, the need for diverse instructional strategies also rose. Lu et al. (2014) explained the emergence of social media in public and private life as “common ground for many high school and college students [with] the potential to impact learning” (p. 54). Because individual computing devices such as cellphones were created and continued to be developed to connect people via social media, handheld technology has become a pervasive classroom presence, threatening to distract even the most diligent students.

Rosen et al. (2013) examined the amount of time student spend on-task studying before changing to another task using social media or texting; “Participants averaged less than six minutes on task prior to switching most often due to technological distractions” (p. 948).

Faced with the challenge of maintaining student attention and engagement, however, some educators believed that cellphones could be used productively in the classroom. Chiverton (2017) described some of the possibilities stating, “Creating learning activities that take advantage of basic video and voice-recording features is a way teachers can use cell phones to make tasks relevant to students” (p. 12). The sweeping expansion of device functionality and proliferation of ownership by students placed web-browsing, email, and audio/video capabilities at their fingertips. Until immediately prior to the study, the decision to use personal devices for instruction was left to teacher discretion with many teachers electing to avoid the potential threats of distraction or cellphone misuse on off-task activities by omitting the technology component from lessons. Technology-free lessons, however, did not adequately prepare students for life beyond the high school classroom, and teachers essentially cheated students out of the opportunity to learn responsible behavior and useful application when no technology was used.

Effective implementation of cellphone technology into classroom instruction continued to evade many teachers. Mendoza (2018) stated, “Using cellphones for social media or other non-academic activities might pose a threat to learning in the classroom” (p. 53). The distinction was needed between using cellphones for instructional purposes and tolerating their presence as an ongoing distraction. Ugur and Koc (2019) proposed rebranding of social media from viewing it as a harmful classroom influence to using it as a medium for student engagement, explaining, “The teacher is able to integrate the social media into the curriculum and the student learns first-hand how to use the program without any penalties” (p.61). Furthermore, Mendoza (2018)

explained that the same features that create concerns regarding cellphones in classrooms could also be viewed as advantages; these features included broad ease of accessibility and unlimited potential as an instructional tool (p. 54). Creer (2018) argued, “introducing digital media into the classroom needs to be carefully considered at a micro-level, so that it may have a positive pedagogical impact,” a position that departed from previous school procedures and policies against even the presence of handheld technology in classrooms.

From a broader, school-wide perspective, Gao et al. (2017) examined mobile phone policies as viewed by teachers, parents, and students. Given their varied experience and proficiency with cellphones, these groups demonstrated expected, unsurprising perspectives. “Teachers, as policy makers and implementers, often view mobile phone use as a disruptive factor that has to be constrained or even prohibited in the classroom as opposed to a powerful tool for learning” (Gao et al, p. 14). Students, on the other hand, saw cellphones as critical components of their academic and social existence. Parents demonstrated views on cellphone use in the classroom ranging from ambivalence to appreciation to questioning, frequently failing to grasp the impacts, positive or negative, of cellphone use on daily instruction (Gao et al, 2017, p. 15).

In the varied roles of school leaders, administrators influenced both school culture and instructional practice, and the pervasive presence of cellphones in schools added another element for consideration. In light of the range of opinions regarding cellphone use in instruction, high school administrators are uniquely positioned to cultivate the evolution of instructional strategies based on individual technology devices. O’Bannon et al. (2017) cited the results of a 2013 Bradford Networks survey as evidence that “89% of colleges and universities and 44% of K-12 schools have incorporated BYOD [Bring Your Own Device] and currently allow students to

bring their own devices to use on school networks" (p. 125). Less than half of the surveyed high schools surveyed kept pace with the practices of the colleges and universities their graduates attended. Better college and career preparedness coupled with higher productivity and student motivation made integration of cellphone technology a critical need for high schools.

The Story and the Outcomes

Following approval by the University of Georgia Institutional Review Board and subsequent district approval for the planned action research study, the action research design team (ARDT) met to finalize the proposed timeline for the work. The researcher discussed the intent to complete three research cycles based on the spiral of action research cycles (Coghlan & Brannick, 2014, p. 11). The other team members had specific questions regarding the timeline and the burden the additional work would place on the ARIT, especially given additional duties and responsibilities teachers experienced in the pandemic-driven pivots between face-to-face and digital instruction. The design team approved the timeline with the understanding that, in this qualitative action research inquiry, real-world situations would be studied as they naturally unfolded (Bloomberg & Volpe, 2019, p. 40).

When the timeline was settled with the ARDT, the researcher sought volunteers in the English department to participate as part of the action research implementation team (ARIT). The invitation was sent via email and requested a response in either the affirmative or negative. See Appendix B. Every recipient of the email replied, with six affirming the wish to participate in the study and five opting not to join. Each of the six volunteers agreed to commit to participation in and completion of the project and received an emailed message confirming their place as part of the ARIT. See Appendix C.

Action Research Implementation Team

Mr. Ford, an CHS English teacher of more than fifteen years, taught primarily eleventh and twelfth grade classes and held a Specialists degree in Secondary English. He wrote, received, and implemented several classroom grants for technology which his classes used for access to books to encourage literacy. However, he periodically expressed frustration when students refused to put phones away during instruction.

Ms. Edwards, like Mr. Ford, was an educator for over fifteen years but spent the first years of her career teaching middle school special education and language arts. With a Masters of Education degree and Reading endorsement, at time of the study, Ms. Edwards taught mostly juniors and seniors. Apart from the purposes of presentations and essays, Ms. Edwards did not typically incorporate a great deal of instructional technology into her instruction and seldom reported off-task behaviors of students due to cellphone use.

Also holding a Masters of Education, Mr. Drayton had the fewest years of experience with CHS and taught fewer than ten years; he was endorsed in Gifted education. He taught mostly younger high school students and claimed to have few, if any, issues with students using cellphones in class. However, Mr. Drayton made a point to incorporate cellphone technology into instruction daily, especially since the COVID-19 pandemic made digital learning a priority for many students and teachers.

Dr. Cordero, the English department chairperson, an educator for over twenty years, held a Doctorate of Education in English as well as a Reading Endorsement. In addition to her work at CHS, Dr. Cordero taught English classes at a local college. With a strict “no cellphone” class rule for classes of mostly younger students, Dr. Cordero reported occasional behavior infractions of students distracted by their cellphones. In her only class of older students, Dr. Cordero had

fewer reported behavior issues due to cellphone use.

Ms. Brown has taught special education English at CHS for approximately five years and held a Masters degree in Education; she was endorsed in English as a Second Language and Gifted education. As a special education teacher in both co-taught and small group settings, Ms. Brown reported a moderate occurrence of off-task behaviors due to cellphones in class; however, she typically handled any issues herself rather than report them to administration.

Mr. Ables, a high school English teacher of over fifteen years, taught at CHS for most of his career. He held a Masters degree in Secondary English and taught mainly younger high school students. Mr. Ables was known as a dynamic classroom teacher with high levels of student engagement; in fact, he noted that he made few, if any, referrals for off-task behaviors because students were usually engaged in the lesson.

The researcher also served as a member of the implementation team. With over twenty years in education, the researcher had about equal number of years of experience in the classroom and as a high school administrator supervising English departments. Her background included technology implementation in her own high school English classes and at the school level, all in schools other than CHS. Part of the researcher's duties and responsibilities involved assigning behavior consequences for students who refused to refocus on instruction due to cellphones.

The Action Research Cycles

This action research study was initially scheduled to begin in May 2020; however, the COVID-19 pandemic and resulting closure of public schools in March created unavoidable postponements. Beginning in July 2020 and continuing through December 2020, the process began with a meeting of the ARDT during preplanning. The researcher was also the scheduler

for CHS, and, as a result of pandemic-related changes to the format of education offered in the district, was unavailable to continue the research until September. The changes in format included the option for students to enroll as virtual learners through the district virtual academy, and approximately half of the students at CHS opted to move to digital learning. The corresponding loss of teaching allotments led to significant changes to the master schedule with some members of the ARIT scheduled for classes they had not previously planned to teach in the fall semester. All classes were significantly smaller, given the loss of almost half of the students to the virtual school.

Action Research Cycle One. After two planning sessions conducted by conference call in July, the ARDT finalized the plan for the three research cycles of the study in on August 28, 2020, by Zoom meeting. The ARIT met for the first time via Zoom on September 14, 2020, for an orientation to the study and proposed timeline. This marked the beginning of Cycle One of the action research study. Following the orientation part of the meeting, the team discussed past experiences with cellphones in their instruction including their self-assessed amount of cellphone technology integration, frequency of overall instructional technology use, and specific applications they had used. The team examined a draft of the peer observation tool and made suggestions for minor adjustments agreed upon by consensus. Each member of the team agreed to email their preferred class in which to be observed to the research to serve as a basis for an observation schedule.

The researcher developed a schedule for peer observations, and each teacher member of the ARIT conducted a twenty-minute observation and took notes using the instrument on which they had agreed. See Appendix E. The Observation Guide posed six questions on which observers took notes during the observation and to which they composed responses after

reflecting on the lesson. Team members were paired for observations either with a fellow team member for whose instruction they expressed a wish to observe or with a teacher who would be using cellphone technology in a class occurring simultaneously with the planning time of the observer. Each observer submitted notes from her/his observations within three days after the observations were completed.

When the initial round of peer observations was complete, the ARIT met via Zoom on September 28, 2020, to review the strategies used in the first cycle and analyze the success and challenges each teacher encountered in having students use cellphones as part of instruction. The meeting was conducted in three parts with the first serving as the conclusion to the first action research cycle. Teacher members volunteered to summarize which cellphone technology application was paired with specific content and commented on how the students in either their own class or the class observed had responded to being asked to use their phones. Members of the ARIT tended to self-identify challenges they had experienced teaching lessons that incorporated cellphones, while their colleagues gave more positive details about the successes of the strategies used.

The meeting naturally flowed into identifying common challenges from the first round of instruction using cellphone technology, serving as the constructing phase of the first cycle. During this part of the meeting, teachers identified measures they intended to take in their own classes to address components of the instruction that had not met their own standards of success. This constructing phase opened conversation for colleagues to make suggestions for adjusting instructional approaches or class routines and rituals for more effective mobile phone technology integration.

Action Research Cycle Two. When team members finished making recommendations for modifications for the strategies used in round one, each teacher identified the content she/he would be teaching in the second cycle in the action research study. The transition to planning the subsequent lesson marked the beginning of Research Cycle Two, and teachers identified and described cellphone technology applications they would like to research or use in their classes. This also began the planning action part of the second research cycle, as teachers brainstormed ideas for their upcoming lessons in which they would use another cellphone application as instructional technology. The researcher solicited input on the next round of peer observations and made minor adjustments to the process but, again, honored teacher requests to observe a particular colleague and sought to protect both instruction and planning time of the teacher members in establishing the observation schedule. The only deviation from the schedule in the second cycle was that one teacher could not conduct an observation because she was quarantined at home as a close contact of someone who tested positive for the COVID-19 virus.

When as many observations as possible were completed in the second round of the action research cycle, the ARIT reconvened via Zoom on October 15, 2020. The PLC meeting again consisted of three distinct parts with the first part serving as the evaluating action phase of Research Cycle Two. In this part of the meeting, teachers reflected on their own instruction in the class during which they had been observed. As teachers shared their estimations of their own struggles and successes implementing the cellphone technology application they had selected, the observing teachers offered feedback from their perspectives as classroom visitors. The dialogue evolved into discussion of whether the chosen cellphone applications were paired with content in purposeful ways that made sense rather than using cellphones for the sake of using them or for the sole purpose of entertaining students.

Based on the discussion of pairings of cellphone applications with content, the teachers of the ARIT began discussing adjustments they would make to their instructional delivery when they revisited the mobile device strategies they had implemented in the second research cycle. The natural flow of the meeting led to initial conversations about the lessons and strategies for the final action research cycle.

Action Research Cycle Three. The beginning of Action Research Cycle Three occurred as the second of three parts of the October 15, 2020, PLC meeting. In this part of the meeting, teachers of the ARIT began the constructing phase of the final cycle. The preceding experiences of the team in the first and second cycles informed the constructing phase and allowed the teachers to move fluidly into the planning action phase of Research Cycle Three, the third part of the PLC meeting. During this part of the meeting, teachers outlined the content they were preparing to teach. By this point, teachers were more comfortable with the Zoom PLC format and seemed more confident in sharing their plans and followed the sharing of content plans with speculation about which cellphone strategies might work best for their classes. Although there were no restrictions or limitations placed on the cellphone technology strategies teachers of the ARIT could implement in their instruction, none of the teachers elected to use a strategy they had implemented in either of the two previous research cycles; all the teachers enthusiastically discussed their planned approaches for their subsequent instruction. A few teachers elected to borrow ideas from their colleagues and used mobile device applications used in other classes with content that differed from their own.

The meeting concluded with a brief exchange in which the researcher asked for any needed or desired adjustments to the draft observation schedule she shared. Each member of the ARIT expressed satisfaction with the schedule and eagerness to begin the final round of peer

observations. The only deviation from this schedule was that one teacher could not conduct her observation due to being quarantined home for most of the research cycle because she was identified as a close contact of a family member who tested positive for the COVID-19 virus.

The observations for Research Cycle Three were scheduled from October 26, 2020, through November 13, 2020. However, due to increasing numbers of close contacts in classes and some adjustments and rescheduling of observations, the peer observations were finally completed on November 19, 2020, just prior to the Thanksgiving break. Teacher members of the ARIT submitted peer observation notes before leaving for the holiday.

The final PLC meeting took place as a Zoom on December 7, 2020. This culminating event allowed the ARIT to evaluate the action taken in Research Cycle Three. Each teacher volunteered a brief, informal self-assessment of the effectiveness of her/his lesson with mobile device technology as well as a discussion of the instruction and strategy observed in the class of a colleague. By the end of the peer commentary, teachers had begun referring to the next time they would use cellphone technology as an integral part of their lessons.

This meeting created time and space for members of the ARIT to reflect on the cycles. Each teacher provided commentary on what, if anything, she/he had gained from participating in the research study. In addition to recapping the strategies they had used, teachers focused on the techniques for incorporating cellphones that had seemed most enjoyable and effective for their students. Finally, teachers explored the purpose of the study and provided reflection on whether they intended to continue to attempt to use cellphones as instructional technology or try to forbid the presence of the mobile devices as distractions from the intent of the class.

Each of the PLC meetings was conducted as a Zoom meeting and transcribed using Sonix, a paid, online transcriptions service. Each meeting transcription was reviewed by the

researcher who identified the speakers by voice, ensuring that each participant was accurately identified in the records.

Peer Observations

As one of the main sources of data for this study, sixteen peer observations took place over the three research cycles. Six observations occurred in the first cycle, five observations occurred in the second research cycle, and five observations occurred in the third research cycle. See Table 4, *Research Cycle One Observation Schedule.* The second and third cycles each had a teacher who missed the assigned observation due to being quarantined as a close contact of someone testing positive for the COVID-19 virus. Peer observations were at least twenty minutes in duration and were recorded using the Peer Observation Guide. See Appendix E, Peer Observation Guide.

Table 4

Research Cycle One Observation Schedule

Observer	Instructor	Grade Level
Ables	Edwards	12th grade
Brown	Ables	9th grade
Cordero	Ford	11th grade
Drayton	Cordero	12th grade
Edwards	Drayton	10th grade
Ford	Brown	9th grade

In Research Cycle One, Mr. Ables observed Ms. Edwards allowing students to lookup background information on Edgar Allan Poe to build context before engaging a poem and short story. Sharing the details they discovered, the twelfth grade students discussed prior knowledge of Poe and made comparisons with their new knowledge. Ms. Edwards asked students to

formulate their opinions of Poe based on the recent research. Mr. Ables suggested linking the lesson to Modern Languages Association (MLA) formatting as well as contemporary, cellphone-specific skills such as how to bookmark an identified webpage on the device.

Ms. Brown noted in her observation of Mr. Ables that using the cellphone application Padlet allowed students to react to their reading. Because students were reading different texts in their literature circles, the activity was, by necessity, standards-based instead of text-specific. Students were asked to respond to their reading with a Graphics Interface File (GIF) and one sentence reflecting how they felt about their texts at their current point in the reading. Ms. Brown noted that this lesson would serve well as a closer or opener to an ongoing lesson. In their post-observation discussion, Ms. Brown and Mr. Ables concluded that the Padlet platform was not conducive to activities requiring more depth and should be recognized as a means for engaging students in a fun and easy way to construct a response-to-text. Ms. Brown included in her observation notes that students were given a Quick Response (QR) code if they encountered difficulty accessing the Padlet platform. Her suggestion for subsequent lessons was to allow students the opportunity to respond to the GIFs of their peers as a way to encourage reading another text.

Also in the first Research Cycle, Dr. Cordero indicated Mr. Ford used Kahoot as a formative assessment for a senior class. In previous classes, students had reviewed components of MLA format that were emphasized as basics for constructing a Works Cited page. Dr. Cordero witnessed one student experiencing difficulty connecting to the Wireless Fidelity (WiFi) network and two students whose cellphones froze. These issues slowed the lesson briefly, but the assessment was soon in place to allow engagement of each student. Using the assessment-generated class statistics, Mr. Ford reviewed each item on the quiz, and students discussed

previous versus corrected understandings. Dr. Cordero made suggestions for subsequent lessons to sustain student enthusiasm for the activity including recognizing accuracy on particular questions.

In Dr. Cordero's class of seniors, Mr. Drayton observed the class participating in a survey using the Canvas platform. The survey was designed to encourage text-to-life connections prior to engaging in reading *The Tempest.* Mr. Drayton remarked on the high level of excitement students exhibited at being allowed to use their phones, something they were rarely, if ever, permitted to do in this very traditional classroom. The survey strategy was a preassessment and activating strategy to a later lesson intended to extrapolate themes of self-realization.

Ms. Edwards observed Mr. Drayton teaching a class of sophomore students who were journaling on their cellphones. Students in the class journaled daily and appeared accustomed to using the devices. As students took out their cellphones, Mr. Drayton had them to view the topic he had posted in Canvas that he had projected on the board. He explained the intent of the topic and reworded some of the vocabulary for clarification. After writing for ten minutes, students were randomly chosen to share their entries. All students were engaged in the task and appeared comfortable sharing their writing. Ms. Edwards recommended that subsequent lessons have designated students be responsible for reading the journal topic to the class and clarify the intent and vocabulary.

Mr. Ford observed Ms. Brown. The cellphone technology used was the Google search engine. Students researched individually assigned questions related to how Americans feel about the Vietnam War and shared findings with the class to enable students to construct a social context for the text they were preparing to engage *Inside Out and Back Again.* As students

shared their discoveries, the information they encountered sparked questions leading to further conversation and exploration of the subject. Students were asked their take-away understandings of the Vietnam War; every student was engaged with a different question, and, as a result, had a strong piece of the class discussion. Students were actively involved and confident in their participation. Ms. Brown linked the lesson to characters in the book to provide students an understanding of point-of-view of the main character.

Research Cycle Two followed the same Peer Observation structure as Research Cycle One. See Table 5, Research Cycle Two Observation Schedule. In the second round of Peer Observations, Mr. Ables observed a class of eleventh grade students whom Mr. Ford asked to access electronic book (e-book) applications. As students accessed the e-book resources, they skimmed through openings to any of 1,500 titles in the Kindle library based on any they found to be interesting. Mr. Ables noticed that every student was engaged in reading. Students then transitioned to completing their reading logs in the Canvas platform using their cellphones to access. He reported that students claimed to enjoy reading days because they were allowed to access Kindle e-books on their cellphones. Mr. Ables suggested that subsequent lessons include using cellphones to facilitate review and discussion of student reading.

Table 5

Research Cycle Two Observation Schedule

Observer	**Instructor**	**Grade Level**
Ables	Ford	11th grade
Brown	Edwards	12th grade
Cordero	Brown	9th grade
Drayton	Ables	9th grade
Edwards	Missed due to close contact quarantine	
Ford	Drayton	10th grade

Ms. Brown attended a twelfth-grade class in which Ms. Edwards used the cellphone application Linoit.com in a warmup activity for Mary Shelley's *Frankenstein.* She had students to find one picture of Frankenstein and one fact about the book to post on the Linoit board. Ms. Brown stated that the Linoit.com board looks like a bulletin board, allowing anyone to post their own work and read the work of other students. She indicated that students appeared engaged in the warmup activity, and it seemed to be a valuable way to begin the class. Ms. Edwards solicited student input into subsequent use of the collaboratively created bulletin board, asking if students would like to use their product as a foundation on which they might later construct questions for their summative assessment. Ms. Brown reflected that students seemed eager to participate in writing items for the summative assessment.

Dr. Cordero visited a small group ninth grade English class focused on poetry. In the class, Ms. Brown asked students to use their cellphones to access an application called Magnetic Poetry to create a six-word poem. Several students gathered the courage to share their poems that Ms. Brown displayed on the Recordex. All students were engaged in either individual or paired work to construct the poems. Ms. Brown indicated that some students wanted to work outside the bounds of the six-word limit, but, when she explained that poetry is the use of specific language to create an impression in a limited space, they redoubled their efforts to use the provided vocabulary. Ms. Brown further noted that she would be sure to provide a QR code in subsequent lessons to allow students quicker access to the Magnetic Poetry application.

Mr. Drayton, in an observation of a class of ninth grade students, saw Mr. Ables use Linoit.com to demonstrate organization of ideas in prewriting. Students accessed Linoit and brainstormed ideas for an essay advising eighth grade students of what to expect in high school. Mr. Ables displayed the ideas on the Recordex and asked students to identify which ideas could

be grouped into similar themes. Using themes the class had extrapolated, Mr. Ables demonstrated how the themes could be ordered into an essay outline for the narrative students were about to begin writing. Mr. Drayton recommended allowing students to repeat the brainstorming and constructing process in small groups using Linoit.com and following the same steps Mr. Ables had modeled.

Mr. Ford, observing Mr. Drayton, witnessed a tenth-grade class using a secure posting cellphone application that he did not identify by name. Stating that Mr. Drayton used both a wheel of names displayed on the class Recordex to randomly select student volunteers, Mr. Ford saw students choosing topics to write a class poem. In this activity, students could use their cellphones to post to the class poem they were collectively writing. As students completed a line for the poem, they could upload and add them to the work. Every student was actively and loudly engaged in the lesson, and they became very excited to see their work added to the collaborative product.

Similar to Research Cycle Two, the final round of Peer Observations included only five observing teachers due to close contact quarantine of one team member. See Table 6, Research Cycle Three Observation Schedule. In Research Cycle Three, Mr. Ables observed Ms. Brown in her small group of ninth grade students. Using a combination of cellphone applications, Google and Padlet, students were researching articles related to the Adnan Syed court case as preparation to view the serial podcast. Ms. Brown asked students to use Padlet to post fundamental elements of the case as well as evidence for and against Syed. Students did not appear as engaged in this lesson as in other classes Mr. Ables had seen. He indicated that the problem appeared to have more to do with student reluctance to engage the articles they found rather than resistance to using the cellphone strategy; students were engaged in clicking rather

than reading. He recommended approaching this content using a literacy strategy without cellphone technology as a precursor to attempting this class. This, he claimed, might allow students to access the content before processing the more advanced details of the case.

Table 6

Research Cycle Three Observation Schedule

Observer	Instructor	Grade Level
Ables	Brown	9th grade
Brown	Cordero	12th grade
Cordero	Ables	9th grade
Drayton	Edwards	12th grade
Edwards	Ford	11th grade
Ford	Missed due to close contact quarantine	

When Ms. Brown observed Dr. Cordero, she saw students using an unnamed nonsense word generator on their cellphones. Students had to produce five different nonsense words and construct their own meanings for each word. After students shared their terms and corresponding definitions, they ranked their class favorites. Dr. Cordero then had students use the terms to write a story together. Using the product of the class collaboration as a launch, Dr. Cordero opened a unit on Shakespeare, focusing on the bard's poetic license in creating language and his unique wordplay. Ms. Brown remarked that the lesson was a fun way to engage seniors in a study of Shakespeare and suggested that one way to extend it might be to have students identify the part of speech of each nonsense word they created. She additionally observed that many teachers use cellphones for openings and closings but rarely for the instruction or work session of a lesson. Further, she speculated that this use could be attributable to inexperience of the teacher or depth limitations of the cellphone technology.

Dr. Cordero observed Mr. Ables using a cellphone application called Logo Quiz in his class of ninth graders. Students played the logo identification game as an introduction to a project in which each student would design a logo to reflect herself or himself. All of the students were engaged and transitioned to a journal entry in which students wrote about images or symbols reflecting their family or ethnic heritage, dreams, beliefs, or hopes for the future. Dr. Cordero noticed some students having trouble accessing WiFi, and two other students were on restriction from their cellphones by their parents. In cases where students needed assistance, they shared access with a neighboring student.

Mr. Drayton attended a class in which Ms. Edwards used Linoit.com to have students, using the sticky notes feature, to construct a collective poem. Individually, students posted full lines of poetry and then came to a consensus about ordering the lines into an entire poem; the lesson appeared to appeal to the socioemotional learning needs of students, allowing them to engage both socially and academically while accessing the content. Mr. Drayton recommended allowing students the opportunity to select the topic for the poem in subsequent lessons.

Finally, Ms. Edwards witnessed senior students of Mr. Ford using Google and Linoit.com to research career possibilities and then play a related matching game on their cellphones. First, students researched career possibilities on the Google search engine. Then, based on the results from a randomly generated list of the careers students in the class had identified, Mr. Ford had students to research interesting facts which they, in turn, posted on Linoit.com. Students were very engaged in the lesson and demonstrated increasing confidence in their contributions to the class discussion. Ms. Edwards recommended having a student responsible for facilitating the class discussion of interesting facts on each career.

Action Research Team Artifacts and Reflections

As the action research study progressed, several team members sought out the researcher to request guidance on exploring new mobile device applications to use in their classes. These requests were documented in emails to the researcher. Similarly, some ARIT members elected to conduct additional, informal observations of their colleagues who had not elected to participate on the team. The ARIT member feedback of non-member colleagues generally reflected team member enthusiasm for having cultivated, encouraged, and collaborated with another teacher to use strategies for student use of cellphone technology in the classroom. Another team member expanded the use of mobile devices in the classroom adding a metacognitive component for students by way of asking students how they perceive cellphones in class, as helpful access to technology or as a distraction to learning. The teacher shared student responses via email with the researcher.

Chapter Summary

The problem of using cellphone technology in English classes productively is not unique to CHS or, in truth, to this department. However, in this school and district, the Action Research Implementation Team explored ways to begin changing their own perceptions of the devices as distractions to learning. In three action research cycles, the team collaborated to plan and provide effective lessons using cellphones as a resource for student access to instructional technology. Teachers of the ARIT participated in a focused PLC committed to exploring the potential educational advantages of incorporating student cellphone use as part of their instruction instead of competing for engagement of student attention. Through collaboration, instruction, and reflection, the teachers conducted classes using mobile device technology and participated in peer observations to provide meaningful, nonthreatening feedback to colleagues. Using a focused

PLC in conjunction with peer observations helped establish the opportunity for examination and contemplation of the problem and potential approaches to ameliorate the issue.

CHAPTER 5

FINDINGS

Introduction

The purpose of this action research study was to explore common, effective practices for high school English teachers to employ to maximize the benefits of cellphone technology in a rural high school. Collaborating as a PLC, teachers implemented cellphone strategies as part of the lessons they taught; each teacher observed peers modeling instruction using the mobile devices and gave them specific feedback about the effectiveness of the lessons. The three research questions addressed in this study were:

1. How can cellphone technology benefit classroom instruction in high school English classes?
2. What are the inherent impacts to instruction and learning of using cellphone technology in English classes?
3. How can high school English teachers maximize the instructional impact of using cellphone technology as a part of daily instruction?

This chapter focuses on both analysis of data from several sources to determine findings for each of the research questions and specific data collected in each of the three Research Cycles. A comprehensive summary of findings accompanies the detailed data analysis.

Data Collection Aligned with Research Questions

According to Bloomberg and Volpe (2019), one pathway along which a case study can be developed is "interpretive constructivist philosophy, with the goal of describing and explaining

how everyday practices in specific places are connected to larger structures and processes" (p. 50). In this case study, the emerging themes support the evolution of best practices using cellphone technology in high school English classes. After the initial reading of all the data, the researcher used inductive analysis to code each of the three data sets. From this open coding process, the researcher grouped similar codes to develop categories of information, and, subsequently, used conceptual analysis to establish the existence and frequency of recurring ideas emerging as themes.

Collected data addressing Research Question One included categories emerging as teacher priorities based on frequency of mention. The most frequently mentioned categories of response to the question of potential benefits of cellphone use in high school English classes included Increase Student Engagement, Increase Student Confidence, Facilitate Idea Generation, Facilitate Student Participation, and Facilitate Research. The three most often addressed categories across all three data sources were Increase Student Engagement, Facilitate Research, and Increase Student Confidence. These categories emerged as teacher priorities of focus throughout the three Research Cycles, arising repeatedly in PLC conversations and Reflections.

Research Question Two asked about specific impacts of cellphone technology use on instruction and learning in the English classroom. Categories emerging from the data included Distracted Students, Enhanced Critical Thinking, Refined Digital Citizenship, and Decreased Depth of Knowledge. Five of the six teacher participants in the study identified Refined Digital Citizenship as an impact of frequent use of cellphones in their classes. In contrast, two teachers noted that the limited robustness of cellphone technology did not allow for exploring depth of knowledge in the content; however, no teachers noted this limitation in their observations. A great deal of conversation in PLC meetings addressed the possibility that students would be

distracted by their cellphones during class. While no teacher noted off-task behaviors in their Peer Observations, three teachers mentioned in Reflections the occurrence of distractedness in their own classes when they were not being observed.

Research Question Three sought to explore ways high school English teachers could maximize the instructional impact of using cellphone technology as part of instruction. Five categories emerged with teachers focusing primarily on three as possible best practices. The categories included Establishing Class Rules and Routines, Selective Effective Cellphone Strategies, Taking Phones Away from Students. Using Contrasting Traditional Strategies, and Developing Digital Immigrants. Because District and School cellphone policies do not allow teachers to take devices away from students, Taking Phones Away from Students was mentioned only in speculation. Teachers acknowledged Using Contrasting Traditional Strategies in their instruction but expressed in PLC minutes their belief that this was an inherent part of instruction and not an intentional practice they used to complement cellphone use.

The data analyzed for the study were generated from Peer Observation Notes, PLC meeting minutes, and Teacher Reflections. Peer Observation Notes were examined first to screen for emerging themes, as that was the setting for the Constructing and Planning Action phases of the Research Cycles. Each data source was hand-coded using descriptive coding as a means of analysis. The recurring concepts emerging in the Peer Observation notes were summarized in phrases or tag lines forming the codes or categories; the same thematic categories formed the basis for analyzing the PLC transcriptions and Teacher Reflections. The frequency each code or category arose in the data is reflected in Table 7, *Categories Developed from Data Sources.*

Table 7

Categories Developed from Data Sources

RQ1. How can cellphone technology benefit classroom instruction in high school English classes?					
Categories	Frequency	Participants *n=6*	Peer Observation	PLC Notes	Reflections
Increase Student Engagement	16	6	yes	yes	yes
Increase Student Confidence	8	5	yes	no	yes
Facilitate Idea Generation	7	4	yes	yes	yes
Facilitate Student Participation	7	5	yes	no	yes
Facilitate Research	9	6	yes	yes	yes

RQ2. What are the inherent impacts to instruction and learning of using cellphone technology in English classes?					
Categories	Frequency	Participants *n=6*	Peer Observation	PLC Notes	Reflections
Distracted Students	4	3	no	yes	yes
Enhanced Critical Thinking	6	3	yes	yes	yes
Refined Digital Citizenship	10	5	yes	yes	yes
Decreased Depth of Knowledge	4	2	no	yes	yes

RQ3. How can high school English teachers maximize the instructional impact of using cellphone technology as a part of daily instruction?					
Categories	Frequency	Participants *n=6*	Peer Observation	PLC Notes	Reflections
Establishing Class Rules & Routines	15	5	yes	yes	yes
Selecting Effective Cellphone Strategies	10	6	yes	yes	yes
Taking Phones Away from Students	3	2	no	yes	yes
Using Contrasting Traditional Strategies	8	6	no	yes	yes
Developing Digital Immigrants	11	6	no	yes	yes

Finally, the categories that emerged in the analysis were grouped to establish the themes in the data or the findings, and the findings were aligned with each research question. The summary of this alignment of findings with research questions is shown in Table 8, *Summary of Research Findings.*

Table 8

Summary of Research Findings

Research Questions	Findings
RQ1. How can cellphone technology benefit classroom instruction in high school English classes?	Theme 1: Increase Student Engagement and Participation Theme 2: Increase Student Confidence Theme 3: Facilitate Idea Generation Theme 4: Enable Students to Research Anytime/Anywhere
RQ2. What are the inherent impacts to instruction and learning of using cellphone technology in English classes?	Theme 1: Cellphones Can Distract Students and Enable Cheating Theme 2: Cellphone Strategies Enhance Critical Thinking Theme 3: Digital Citizenship Becomes a Priority
RQ3. How can high school English teachers maximize the instructional impact of using cellphone technology as a part of daily instruction?	Theme 1: Establish Clear Class Routines and Rituals Theme 2: Select Cellphone Strategies to Complement Content Theme 3: Alternate Cellphone and Traditional Strategies Theme 4: Train Digital Immigrants (Teachers) to Keep Pace with Digital Natives

Results from Action Research Cycle One

Because the three Research Cycles were both recursive and cumulative, isolating the evolution of themes and progression of ideas to individual cycles was challenging. However, following the four-phase structure of the research cycle allowed the researcher to determine in which cycle each emerging theme was addressed. Research Cycle One began with a PLC

meeting focusing on Constructing and Planning Action. Teachers each observed one colleague and wrote down observation notes describing the cellphone strategy used in the content that was presented. When peer observations were completed, teachers met as a PLC to complete the Evaluating Action phase, and the minutes were transcribed to facilitate analysis. Finally, at the end of the cycle, teachers submitted their individual reflections on ideas from each of the phases in the cycle from Constructing and Planning Action to Taking Action to Evaluating Action. The researcher coded the reflections, developed categories of information, and used conceptual analysis to group concepts and identify emerging themes. Table 9, *Research Findings in Cycle One,* shows the specific themes extrapolated from Cycle One data.

Table 9

Research Findings in Cycle One

Research Questions	Data Collected & Reviewed	Extrapolated Themes
RQ1. How can cellphone technology benefit instruction in high school ELA classes?	PLC Meeting Minutes Peer Observation Notes Teacher Reflections	Theme 1: Increases Student Engagement & Participation Theme 4: Enables Anywhere/Any-Time Research
RQ2. What are the inherent impacts of cellphone presence and use on instruction and learning?	PLC Meeting Minutes Peer Observation Notes Teacher Reflections	Theme 1: Cellphones Distract Students & Enable Cheating Theme 3: Digital Citizenship is Needed for Students
RQ3. How can classroom teachers maximize the instructional impact of using cellphones as a part of effective daily instruction?	PLC Meeting Minutes Peer Observation Notes Teacher Reflections	Theme 1: Establish Routines & Class Rules Theme 3: Participate in PL to Keep Up with Digital Natives

In Cycle One, teachers focused on two themes that aligned with Research Question One with regard to potential benefits of using cellphone technology as part of instruction. First, teachers stated their belief that using cellphone technology in class could increase student engagement and participation. Second, teachers asserted that using cellphone technology in class facilitates research of key concepts by allowing students to explore content anywhere at any time. These two themes were key components of the dialogue from the Cycle One PLC meeting and recurred in both Peer Observation Notes and Teacher Reflections.

Cycle One data illuminated an additional two themes in response to Research Question Two regarding the inherent impacts to teaching and learning when mobile devices were used as part of instruction. Initially, teachers expressed concerns that cellphones would distract students from assignments; they argued that students would be more inclined to cheat on assessments if they had access to their devices. Three teachers observed that there appeared to be a missing component in content to teach students to be good digital citizens. The themes revealed in Cycle One as answers to Research Question Two arose from discussions in the PLC meeting; however, no teacher noted off-task behaviors in Peer Observations, and distracted behaviors were not mentioned in Teacher Reflections.

Research Question Three asked how teachers can maximize the effectiveness of cellphone technology in class. The response on which all teachers agreed in Cycle One indicated the need for classroom routines and rules established in the first week of class. Teachers expressed the need for formal professional development to enable them to keep up with their students known as digital natives.

Results from Action Research Cycle Two

Action Research Cycle Two differed from the other two research in that two teachers missed part of the cycle due to forced quarantine in the COVID-19 pandemic. However, several themes emerged from the data. In response to Research Question One, teachers noted increasing student confidence in classroom participation when cellphone technology was incorporated into the lesson. Although this theme was not part of the Constructing and Planning phases of the cycle, teachers wrote of the phenomenon in their Peer Observations and discussed it in the Evaluating Action phase at the subsequent PLC meeting. Another common thread that developed in response to Research Question One was the potential for cellphones to facilitate class-wide

idea generation, as several teachers used the devices as a vehicle for student input in creating class poems. In the Evaluating Action phase of Cycle Two, more than half of the teachers remarked on the demonstrated student need for education as responsible digital citizens to include subjects ranging from everyday social etiquette to sustained and undivided attention when the devices were in use.

Cycle Two of the research brought teachers to two responses to Research Question Three with regard to identifying ways they can capitalize on the potential for classroom learning cellphones represent. In this cycle, teachers expressed an acute awareness of the need to be intentional and purposeful in selecting cellphone technology strategies to pair with content standards. To inform their choice of planned cellphone strategies, teachers, known as digital immigrants, realized they need more formal training on specific technology applications in order to stay abreast of the knowledge their digital native students possess. The themes that emerged in Research Cycle Two are reflected in Table 10, *Research Findings in Cycle Two.*

Table 10

Research Findings in Cycle Two

Research Questions	Data Collected & Reviewed	Extrapolated Themes
RQ1. How can cellphone technology benefit instruction in high school ELA classes?	PLC Meeting Minutes Peer Observation Notes Teacher Reflections	Theme 2: Increases Student Confidence Theme 3: Facilitates Student Idea Generation
RQ2. What are the inherent impacts of cellphone presence and use on instruction and learning?	PLC Meeting Minutes Peer Observation Notes Teacher Reflections	Theme 3: Digital Citizenship is Needed for Students
RQ3. How can classroom teachers maximize the instructional impact of using cellphones as a part of effective daily instruction?	PLC Meeting Minutes Peer Observation Notes Teacher Reflections	Theme 2: Practice Intentional Selection of Strategies to Complement Content Theme 3: Participate in PL to Keep Up with Digital Natives

Results from Action Research Cycle Three

The final research cycle opened with a PLC meeting demarking the Constructing and Planning phases. Teachers each observed a colleague and made detailed notes on the use of cellphone technology in the lessons, and, as a culmination to the last cycle, teachers met as a PLC to Evaluate Action. As a culminating activity, each participant in the study reflected on the progress both in Research Cycle Three and in the study overall. The themes discussed most

frequently by teachers in the PLC meetings, Peer Observation Notes, and Teacher Reflections are shown in Table 11, *Research Findings in Cycle Three*.

Recurring concepts that evolved into themes answering Research Question One included increased student engagement and participation. In Cycle Three, this theme originated in the Constructing and Planning phases occurring in the initial PLC meeting of the cycle, and it echoed in both the Peer Observation Notes and Teacher Reflections. Teachers again found that allowing students to use cellphones to complete coursework helped the class to generate ideas for whole-group activities such as collaborative writing assignments. Finally, teachers reaffirmed their belief that incorporating cellphone technology into lessons offered students the opportunity to conduct research at any time during the lesson and anywhere the class happened to be, whether they were in the Media Center or the classroom.

In Cycle Three, teachers articulated, for the first time, the potential of cellphones to enhance critical thinking skills as an inherent impact of class use. While this possibility was discussed in the PLC meetings and stated in Teacher Reflections, no participating teacher observed this impact first-hand. Whether this was due to the challenge of identifying change in critical thinking skills in a twenty-minute observation or the phenomenon not occurring in Cycle Three was inconclusive.

Research Cycle Three highlighted two primary themes answering Research Question Three. Specifically, to maximize the effectiveness of using cellphones in class, teachers believed they need to establish class routines and rules within the first week of their classes. This theme arose consistently from the PLC meeting or the Constructing and Planning phases through the Peer Observations or Taking Action phase, and, ultimately, through the Evaluating Action phase consisting of Teacher Reflections. Of equal importance throughout the phases of the research

cycle was the theme “Intentional Selection of Strategies.” The frequency and repetition of codes for this theme led the teacher-driven commentary to the consensus that teachers must practice purposeful identification and selection of cellphone technology strategy to complement English Language Arts content standards.

Table 11

Research Findings in Cycle Three

Research Questions	Data Collected & Reviewed	Extrapolated Themes
RQ1. How can cellphone technology benefit instruction in high school ELA classes?	PLC Meeting Minutes Peer Observation Notes Teacher Reflections	Theme 1: Increases Student Engagement & Participation Theme 3: Facilitates Student Idea Generation Theme 4: Enables Anywere/Any-Time Research
RQ2. What are the inherent impacts of cellphone presence and use on instruction and learning?	PLC Meeting Minutes Peer Observation Notes Teacher Reflections	Theme 2: Enhances Critical Thinking Skills
RQ3. How can classroom teachers maximize the instructional impact of using cellphones as a part of effective daily instruction?	PLC Meeting Minutes Peer Observation Notes Teacher Reflections	Theme 1: Establish Routines & Class Rules Theme 2: Practice Intentional Selection of Strategies to Complement Content

Research Question 1: How Can Cellphone Technology Benefit Instruction in High School English Classes?

Using a qualitative measure via PLC agenda and minutes to ascertain teacher perspective of the potential benefits of using cellphone technology in English classes, the researcher opened

the orientation meeting by having teachers discuss cellphone technology strategies with which they were familiar and ways they thought the strategies might benefit their students. The responses echoed in the subsequent Peer Observations and Teacher Reflections and evolved into the following themes:

1. Increase student engagement and participation
2. Increase student academic confidence
3. Facilitate student idea generation in class
4. Enable students to research concepts anywhere at anytime

Theme 1 – Increase Student Engagement and Participation

Each of the six teacher members of the ARIT expressed the belief in PLC meetings that the use of cellphone technology strategies in class could increase student engagement and participation. Referring to specific applications, Mrs. Edwards observed:

> *We sometimes use Dictionary.com because, for some reason, they find it very odd to actually pick up an actual dictionary, and a lot of them researching on their cellphones…When I check their work, they really are typing in search terms and looking things up on their phones, or they are in a Word document typing their papers on their little, tiny screens.*

Another instructor affirmed the increase in student participation in the research process, reporting that her students sometimes use cellphones to extend learning by searching for unfamiliar concepts they encounter during free reading time. She stated, *I've been trying to get them to extend their learning with their cellphones and get back to us [the class] on what they learned by exploring things they search from their reading.* Student engagement appeared to increase in special education classes served in a small group setting. In an observation of a

particularly challenging ninth grade class, one teacher described use of a poetry generator students used to create a one-line poem based on a defined list of words. She noted,

> *Students were looking on their phones to find that they had access to a list of words. They could only use the words in the poetry generator to create a one-line poem, and all were engaged. They seemed to really enjoy doing that…and it really made them think.*

In one PLC meeting, Dr. Cordero reflected on a class in which she had observed cellphone use as part of the lesson, noting, *Everybody was engaged, and they all did what they were supposed to be doing. I didn't see anybody off-task, and they were asking really good questions.*

By the final PLC meeting, two teachers began expressing some frustrations with students straying off of their assigned work in classes where cellphones were used. One of the frustrated teachers realized, *I don't have great classroom management when it comes to cellphones.* The other teacher weighed the benefits with the investment in change required to incorporate mobile phones; he stated, *For the most part, while we were using the strategies, I did see the engagement I wanted to see.* However, when the class transitioned away from using cellphones, the same teacher observed that the competition he experienced trying to engage students continued.

In contrast to the expressed frustration with wandering attention of students, every observing teacher in 100% of the observations conducted noted the increased engagement of students in all of the classes. One teacher, observing a class collaborating to write a group poem, stated, *Students were extremely engaged, yelling out topics to the spinner, in order to write a class poem.* In another class using Linoit.com to compose a class poem, the observing teacher wrote, *All students were active. Students were engaged, contributing, and having a wonderful time. Students were laughing and having conversations that pertained to the lesson.* In another

class, students working individually or in pairs using the Magnetic Poetry application created six-word poems from a word bank. The teacher visiting the class commented, *All students were engaged, either singly or working with a nearby classmate, as Ms. Brown walked around the room providing support and access to more words, as needed.*

One observer noted some limitations of one cellphone application called Padlet, despite the overall interest of students in the lesson, remarking, *While students were engaged and the strategy was very accessible, this was a quick and easy assignment with very little depth.* Visiting a class also using Padlet as a cellphone strategy, Mr. Ables expressed, *Students were engaged in 'clicking' (finding the articles and posting to Padlet) but not in actually reading the articles*.

Overall, the increase in student engagement when cellphones were used outweighed, by far, the incidence of noted, distracted behaviors or instruction that sacrificed depth to incorporate the devices. Although teacher concerns about distracted behaviors and depth of knowledge are serious enough to merit note, the findings of this study indicated that the benefits make implementing cellphone applications worth consideration.

Theme 2 – Increase Student Academic Confidence

Accompanying the increase in student engagement, the confidence of participating students increased as they contributed more consistently to class activities. Ms. Brown observed, *The class was using Linoit.com, an interactive bulletin board, as a warm-up for a lesson on* <u>*Frankenstein*</u>*. The advantage is that the kids got to see each other's ideas and questions, and the teacher even advised them to make a study guide out of the activity*. When students participated in class, their peers validated their contributions which, in turn, led to more engagement and participation. Another teacher concluded that, when given the opportunity to read the work of

classmates using a cellphone application, students pay more attention to the precision of their responses. She stated, *When I put my students' [statements] on a discussion board, they have to pay attention to what someone has just written, really consider it, think about how they are going to fight back, and then say exactly what they want to say.* The shared input strategy using cellphones helped increase student confidence in one English class by encouraging students to refine their input. In terms of student self-esteem, one teacher observed, *They get embarrassed; they want their writing to be good in front of their friends. So, when it's public, they make sure it's polished.*

To reinforce the confidence-boosting strategies she used in class, one teacher attested in the first PLC meeting that she allowed students to use their cellphones to look up vocabulary as they engaged the class text; she complemented this activity with an extension to the lesson in which students used their cellphones to search for images they could associate with their new terms. A colleague who used technology nearly every day of the semester described ways her students use cellphones for journal-sharing; she stated, *Some of them type right into the journal thing on their phones, or some of them get scared and use the notes app to compose. Then they copy and paste into their journals. By the time they finish my class, they are pretty much doing everything on their phones.*

When faced with waning student attention, teachers supported each other with suggestions for content-cellphone strategy pairings. Specifically, one teacher advised a colleague struggling with waning student attention in activities on a dry, serious text:

> *I think you can get them more engaged if you talk about lessons [the main character] learned from having been through this bad experience… Then you can get them writing on their cellphones about the psychology of the situation the character is in. Their*

*involvement with the way the character's mind works and using cell*phones *will help build the momentum of the lessons on the text.*

Three of the English teachers observed increased student confidence in their writing when students were allowed to take breaks in engaging a lesson that did not include cellphone applications. As students typed on laptop computers, they took scheduled breaks in which they could access what they needed on their cellphones and return to the assigned work. In addition to using scheduled "tech" breaks, the teachers noted, *Students appeared better focused on their writing when they were allowed to listen to their music, and they produced more writing.*

For students, academic confidence resulted from the increased engagement and participation that were natural results of using cellphones as part of daily instruction. Mrs. Drayton added, *If we teach the students to use cellphones as part of their lessons instead of seeing them as distractions, they have a greater chance of succeeding in classes where we are not there to tell them to put away their phones.* Ultimately, five of the six participating teachers came to a consensus in the belief that effective use of mobile phone technology in their classes leads to higher levels of student confidence in their academic pursuits.

Theme 3 – Facilitate Student Idea Generation in Class

Four of the teachers who incorporated cellphone strategies into instruction noted the advantage the devices bring to facilitating generation of student ideas. In one class, students shared detailed information about the setting of the story they were preparing to read; based on guiding questions, the conversation resulted in a compiled description of the social context of the story. Ms. Ford noted, *Each student had a different question so were able to have a strong piece of the discussion.* In one of the classes writing a group poem, one teacher observed, *Students post to the class poem through their cellphones. They collectively write a poem. When students write*

lines on their own, it is very effective to have them compose on their phones rather than paper. Their lines are uploaded onto the screen, and they can all see them this way.

As an activating strategy, Dr. Cordero used a cellphone survey to help students create text-to-life connections; her observing colleague described the benefits of using the cellphone survey by commenting on the high level of enthusiasm students showed *because they are used to a more traditional classroom*. The same observing teacher in another classroom summarized the benefits of cellphones in capturing student-generated ideas using the application Linoit.com. She stated, *The strategy was effective in student learning because students were able to create something together and socialize with their peers to reach a consensus when deciding the poem's finality*.

For another activating strategy in a lesson based on literary circles, Mr. Ables used the cellphone application Padlet to allow students to react to their reading. Ms. Brown detailed, *To track reactions, and to see if the students are reading, [the teacher] asked students to respond in Padlet with a Graphics Interface Format (GIF) [image] about how they feel about the story at this moment and a one sentence response*. To introduce students to Shakespeare, a teacher had students to generate a compiled list of nonsense words generated in cellphone application; according to the observing teacher, *Students produced five nonsense words and came up with their own definitions for each word. They shared their words and definitions. After sharing, they ranked their favorite nonsense words*. This form of idea generation using a cellphone application introduced students to diction in Shakespeare.

Theme 4 – Enable Students to Research Concepts Anywhere at Anytime

Beyond warm-ups and activating strategies, cellphone technology allows students to research any concept in any location, day or night. Each of the six teacher-participants

commented on the value of being able to have student access the internet for research via student cellphones, and they made nine mentions of planning to use or having used student cellphones as internet access for research in their classes. In one class, Ms. Edwards saw students using cellphones to *research career information and play a career matching game*. Another class lesson had students to research logos on their mobile devices before creating a logo representing themselves; ultimately, this evolved into the focus on symbolism as the learning target of the day. To construct a collaboratively developed context for the novel they were about to read, one class researched pictures of the title character accompanied by one fact about the text.

Yet another class, in which students were charged with finding five interesting facts about an author, the observing teacher detailed the benefit students have of researching on their cellphones. He noted, *By having students do research themselves, rather than receiving a lecture/PowerPoint, the teacher was able to provide instruction on research skills as well as teach about [the author's] life.* The benefit of having students engaged in the content versus simply receiving the content is undeniable.

In one PLC meeting, a teacher explained a favorite approach to *examining setting through research* when students attempt to engage a challenging text such as *Beowulf*. He had students to write down unfamiliar concepts in their reader response log and then research the cultural or historical elements on their cellphones; he advised his students, *...you have a computer right there in your pocket*. By the final PLC meeting, a teacher, initially frustrated by the distraction cellphones presented, described her increase in use of cellphones as an effort to get students refocused on their classwork, asking them, *'Hey, who wants to look that up?' Because they have their cellphones out, and I want to get them to do something productive with it.*

In conclusion, based on the observation notes and PLC transcriptions of teacher reflections and input, the benefits of cellphone use in class on student engagement and participation as well as higher levels of student confidence in their academics are more than adequate to validate use of the devices. When coupled with the additional advantages of allowing teachers to compile student-generated ideas and the opportunity to research anywhere at any time, cellphones emerged as powerful tools with endless potential for lesson integration.

Research Question 2: What are the inherent impacts to instruction and learning of using cellphone technology in English classes?

Over the course of the three Action Research Cycles, three predominant themes aligned to form responses to the second Research Question which sought to identify the impacts to instruction and learning of using cellphone technology in English classes. These three themes emerged throughout the four phases of each cycle:

1. Cellphones Can Distract Students and Enable Cheating
2. Cellphone Strategies Enhance Critical Thinking
3. Digital Citizenship Becomes a Priority with the Addition of Cellphone Use

Theme 1: Cellphones Can Distract Students and Enable Cheating

In the initial conversation between teachers at the first PLC meeting, teachers offered stream-of-consciousness responses to the question of how the simple presence of cellphones in class can influence both teaching and learning. Teachers most emphatically stated that cellphones can represent a distraction, regardless of how they are used in class. Mr. Ables stated, *The mere existence of phones in class is enough to distract my students. The endorphin rush they get from the buzz of a group text alert or social media notification is not something we can compete with.*

Another teacher concurred with the assertion, adding, *It seems to me it's a constant battle…where [the students] are supposed to be doing one thing and you catch somebody doing something that they shouldn't be. It's a daily issue.* Mr. Drayton relayed, in his reflections on Cycle Two, the ease with which one student plagiarized the journal entry of another student. He noted, *I could tell the work was copied; it looked like one student wrote his journal entry, as assigned, and the second student changed some of the words. Props, at least, I guess, for using the Thesaurus feature on his cellphone.* Still, the one or two isolated incidents of academic dishonesty combined with no observed off-task behaviors in Peer Observations were insufficient to lead the teacher-participants to want to abandon the potential advantages students stand to gain via cellphone use as instructional technology.

Theme 2: Cellphone Strategies Enhance Critical Thinking

Serving as a counterpoint to the potential for off-task behaviors or cheating, three teachers posited that specific cellphone strategies could be used to enhance critical thinking skills for students. In her third Peer Observation, Ms. Edwards described, *Students were on-task, but, more importantly, they were exploring possible future careers on their phones. Without them, the class would not have had real-time access to the Internet to complete the assigned research tasks.* Mr. Drayton observed students using their cellphones with a survey application to respond to questions about their own set of beliefs, allowing them to make text-to-life connections; he noted, *The cellphone technology strategy was a pre-assessment for a subsequent lesson leading to self-actualization for each student.*

Not every teacher experienced classes engaged in higher levels of critical thinking, however. In his first Peer Observation of a class assigned to do sustained, silent reading, Mr. Ables noticed, *Students are very engaged! Everyone is reading…I don't imagine there would be*

much difference in learning between reading on a cellphone versus reading a traditional print copy. His second Peer Observation notes contained description of students who were less enthusiastic about reading. Ables noticed, *Students were engaged in "clicking." The problem had little to do with cellphone strategy but rather that students were reluctant to read the articles they'd found.* In later dialogue in the Evaluating Action phase of Cycle 3, one teacher stated that cellphone strategies *have to lead students to the higher-ordered thinking. The application can't be so restrictive that it limits either the thought or the conversation that accompany the content standards in the class.*

Theme 3: Digital Citizenship Becomes a Priority

Although initially the term "digital citizenship" did not arise in the PLC meeting or the first round of Peer Observations, it was articulated in the second Research Cycle as teachers began noticing the need for students to behave courteously when they used their cellphones. Mr. Drayton emphasized the most pressing priority with digital citizenship, *First and foremost, we have to teach them to be polite.* Ms. Brown had students to use their own names as search terms in Google to explore the exact information other people would be able to see. She described, *When I had my students Google themselves, some of the results were not pretty, and I asked them if they wanted their mothers, grandmothers, and future employers to see the things that were associated with their names.*

Recognizing the need for students to be educated on digital citizenship, three teachers in the study acknowledged that identifying time and space in an already packed curriculum and overloaded class could be next to impossible. With regard to teaching digital citizenship in English class, Mr. Ables explained in the PLC meeting where the ARIT Evaluated Action for Cycle Three, *I think that is a lot of curriculum that I don't know belongs in our department.*

Although holistic child education, where kids learn to control their impulses with technology, is important, I am trying to get my kids to compose and to read critically, and to think. I just don't know how they can do that with the constant buzz on their desk. However, adding a separate class to address digital citizenship may not be an option, and the responsibility of preparing high school students for postsecondary plans continues to fall on the shoulders of the teachers. Mr. Drayton commented,

> *We can't be relying on others to [teach digital citizenship] for us, and we can't rely on the teachers students have before us to teach digital responsibility. So, if we are not going to have a technology class that teaches them those types of things, we, as teachers, are going to have to figure out how to compensate for that to give the students what they need. Maybe that means we talk to teachers throughout the school to see how they are using cellphones and what is working for them, and then we use that data to come up with some ideas to use universally.*

Research Question 3: How can classroom teachers maximize the instructional impact of using cellphones as a part of effective daily instruction?

Three overarching themes emerged in the research cycles in response to Research Question Three:

1. Establish Class Rules and Routines for Cellphone Use
2. Practice Intentional and Purposeful Selection of Cellphone Strategies
3. Seek Professional Learning on Specific Cellphone Applications

Theme 1: Establish Class Rules and Routines for Cellphone Use

Over the course of the three research cycles, one recurring concept arose that developed into a key theme in response to Research Question Three. Several teachers came to the

realization that establishing consistent practices with classroom rules and routines was an integral component of successful use of cellphones in their classes. In a Peer Observation in Cycle One, a teacher noted, *Students moved fluidly between traditional forms of work with paper/pen and using their cellphones. It was evident that class rules had been set early in the semester.* Ms. Edwards, in a subsequent PLC meeting, stated that she had much greater success with cellphones usage in class when she establishes clear expectations ahead of time. She added, *Whatever I do, I want to start it at the beginning of the semester and let all those expectations be known at the very beginning instead of trying to add it midway.*

Peer Observations allowed teachers to view the effects of setting clear expectations. In her observation of Ms. Edwards, Ms. Brown remarked, *The students are very well-managed when getting on their cellphones and getting off their cellphones. When [Ms. Edwards] asked them to put their cellphones away, they did without issues. This shows a combination of a well-run classroom and the maturity of the students.* Another teacher noted in her reflections at the end of Research Cycle Three,

> *I am really big on talking about what I expect of students. When I observed Mrs. Drayton's class, I noticed the cellphone use was so ingrained in [students]. You can tell they've been doing it, so she has been talking about appropriate use, and she's been working with them. I really feel like if you talk with them about expectations with cellphone use and behavior, it will be easier.*

The action research study gave teachers the affirmation that their best practices for establishing a classroom environment conducive to learning were equally applicable to using cellphones as instructional technology.

Theme 2: Practice Intentional and Purposeful Selection of Cellphone Strategies

Research Cycles Two and Three gave teachers insight into the manner in which they select cellphone strategies to complement specific content. Mr. Ford commented about his own choices in the Planning Phase of Cycle Three, *I'm not sure I'm using [cellphone strategies] as purposefully as I can. To be honest, sometimes it's just telling kids, "Hey, who wants to look that up?" Because they have their cellphones out, and I want to get them to do something productive with it.* In the third PLC meeting, Mr. Ables described a successful reading strategy using cellphones he had seen in a class noting, *What we are doing is capitalizing on something that is in [students'] environment and in their wheelhouse and their experience anyway. We're tricking them into doing the things that we want them to do, and I thought that using the phones was a really creative and sneaky way to get them to read.*

In the final PLC meeting, teachers noted ways they might more purposefully select cellphone strategies to support classroom instruction. One teacher reflected, *I want to build in more routine, daily activities from the beginning like journaling. I think this will give students a chance to make text connections and use their phones regularly.* Another teacher complimented a colleague on the cellphone strategy used in the second round of Peer Observations, *Students were able to post to the class poem through their cellphones to collectively write a poem. This allowed them to write individual lines on their own and decide when to share them. Once shared, the lines were visible to everyone so the collaboration could continue. The Anonymous application is powerful because it allows students to explore without fear.* By the end of the third research cycle, the general consensus among participating teachers was that careful planning of specific cellphone strategies, like most lesson planning, yielded greater success for instruction and learning.

Theme 3: Seek Professional Learning on Specific Cellphone Applications

Three research cycles over the course of a semester gave teachers opportunity to reflect not only on their Peer Observations but on their own classroom practices, as well. With the reflections came the realization that specific cellphone applications students use may be transferrable to use in the classroom, but teachers may not have had training or experience with the applications. In her reflections, a teacher observed, *My problem is that the students are so far ahead of us technologically, you know. They know how to use tools that we didn't even know were there.* One teacher stated in the last PLC meeting, *I think as technology keeps changing, educators have to learn with the kids. Teach-the-teacher lets kids have a chance to more than the teacher, and they love that. It helps you be able to interact with them more, and they like being able to show us something they know.*

The ultimate conclusion teachers drew in their dialogue in the second research cycle and third PLC was that there has never been a feasible means for teachers to keep up with their digital native students when it comes to cellphone technology. One teacher noted, *We may not be able to keep up with what students know and can do on their cellphones, but we can teach them how to consider them as tools for learning as opposed to seeing them strictly for social purposes. When we reach the point where they use them for learning, we win.*

Chapter Summary

Conceptual analysis of the ideas emerging from the data provided a basis for thematic responses to the research questions. Specifically, teachers realized that potential benefits of incorporating cellphones in instruction could lead to increase student engagement and participation. While the increase in student confidence in the classroom was a less discernable benefit, teachers noted the value of using the devices to facilitate capturing student ideas in

whole-class activities. A final advantage of using cellphones in the classroom was access to research tools anytime and anywhere.

In terms of inherent impacts on teaching and learning, teachers initially expressed concerns about opening the door for distracted learning and possible academic dishonesty, but these concerns were not noticed in Peer Observations or Teacher Reflections. Teachers observed the potential for cellphones to be used to enhance critical thinking when accompanying literacy strategies. The most commonly arising theme in response to the second research question, however, was the need for students to be taught how to be good digital citizens; teachers identified some of the challenges to adding responsible technology use to an already packed curriculum and given the range of skills students possess by the time they reach high school.

Finally, the teacher-participants in the study determined the need for early establishment of class rules and routines concerning cellphone use. They noted that intentional, purposeful selection of cellphone strategies can accentuate content for effective instruction, and planning frequent, detailed activities can prevent off-task or distracted behaviors. Ultimately, teachers recognized deficiencies in their knowledge base of particular cellphone applications and expressed the hope to participate in subsequent professional learning on the use of current applications with which the students are already familiar.

CHAPTER 6

ANALYSIS, CONCLUSIONS, AND IMPLICATIONS

Summary of the Findings

Preparing students for postsecondary education or employability includes teaching them to access and use the technology with which they have the most contact. Cellphones moved to the forefront of accessible technology when ownership of the devices and corresponding connectivity began accompanying students into the classroom. The emerging challenge for teachers is how to harness the potential learning of the devices so they become tools for instruction instead of learning distractions; the challenge for educational leaders, in turn, is to establish appropriate, effective policies to support learning and instruction.

To develop sound, enduring policy on cellphone technology, districts and schools must first acknowledge the educational potential of the devices and then consider establishment of guidelines that both provide structure to support instruction and allow flexibility to accommodate evolution of best practices. This action research case study sought to understand how action learning, a process of learning by engaging, could be used to provide teachers opportunity to explore the issue of student off-task behaviors due to distraction by cellphones commonly cited as both recurring and problematic in their classes. This chapter will report conclusions explicated from analysis of current literature in Chapter 2 and the findings from Chapter 5. Including a description of limitations of the study, the chapter concludes with implications and recommendations for practitioners, researchers, and policy makers.

Major Findings Related to the Literature

The purpose of this action research was to understand how action learning could be used to enable teachers to identify best practices using cellphones as instructional technology devices. The following conclusions align the findings of the study with the reviewed literature.

Cellphones Continue to Emerge as a Significant Presence in the Classroom

The proliferation of cellphones into nearly every facet of society carries implications for classrooms and schools. The era of wholesale banning the devices has passed, and it is now incumbent on teachers and leaders to develop strategies for the intentional implementation of cellphones as complements to teaching and learning (Creer, 2018; Gao et al., 2017; White, 2021). The pandemic has emphasized the critical need to provide alternative approaches to education that allow teacher creative options with asynchronous learning (Rhoades, 2021). Because cellphones are often the only access many families have to technology, and, in the pandemic, to education, banning them is no longer an option.

Before this study, opinions of teacher participants ranged from lauding a total ban of cellphones to daily use of the devices for student assignments. Although not every teacher concluded the study as a fan of using mobile phones as part of daily instruction, most agreed that cellphones have become and will continue to be permanent fixtures in their classrooms. All of the teachers in the study expressed the belief that establishing best practices with the use of technology may be the most beneficial path forward.

Cellphones Have Become a Positive Instructional Force

As numbers of students bringing cellphones to school has increased, the lure of engaging students to learn with their own devices has called some teachers to begin incorporating the technology into learning (Akpan, 2017; Dunn, 2020). The COVID-19 pandemic focused more

attention than ever before on instructional delivery as teachers grappled with how to teach their students when face-to-face classes were no longer a daily given (Dunn, 2020). The teachers involved in this study observed the crucial role of cellphones in education as they discovered many families could not supply students with the technological access required for digital learning. This first-hand realization affirmed the role of cellphones as a means of "bridging the digital divide for the 'haves' and 'have nots'" (Burney & Graham, 2020). In the context of this school, where a high percentage of students fall into the category of "have nots" of traditional technology, the understanding of the potential use of cellphones as a positive learning tool could not be more important.

Effective Implementation of Cellphone Technology Evades Teachers

Accompanying the siren song of student engagement via cellphone, however, is the risk that students will veer off-task, and this possibility often precludes teacher attempts at using cellphones to enhance instruction (Gao et al., 2017; Hagerman, 2021). The deterrent of off-task student behavior coupled with the challenge of providing instruction to a class of digital natives forces teachers into the role of learner alongside their students (Riberio et al., 2017). Teachers in this study all concluded that using cellphone technology productively in class requires an additional layer of purposeful strategizing and intentional planning; teachers in the study already using the devices at least weekly attested that while further planning is necessary, the dividends earned in impact on student learning made the investment well worth the effort.

School Administrators Influence Cellphone Policy and Instructional Practice

As creators and implementors of school policy, administrators must devise guidelines that support digital immigrant teachers in practice and digital native students in behavior, simultaneously giving creative flexibility to the former and consequences to the latter

(Stachowski et al., 2020). School leaders, ultimately, must focus both teachers and students on the goal of preparing for the future, an understanding held by each teacher participant in this study. One life skill school leaders can encourage teachers to cultivate in the classroom is the use of class cellphone rules developed in collaboration with students. Tatum, Olson, and Frey (2017) noted the benefits of student participation in establishing class cellphone practices, and over half of the teachers in the study agreed that working with students to set the rules at the very beginning of the semester would benefit subsequent instructional use of the devices.

Major Findings Related to the Research Questions

The key findings from this action research study highlighted several conclusions revealed in the action learning process. Thematic conclusions from the study include the following:

Research Question 1: How can cellphone technology benefit classroom instruction in high school English classes?

Because some of the teachers began the work of the study in almost complete denial of the potential benefits of cellphones in the classroom, teachers were asked in the first research cycle to brainstorm and discuss any possible benefits that might exist. This activation of prior knowledge allowed teacher-members with more experience using the devices in class to share successes while less experienced teacher-members took advantage of a safe space and dedicated time to ask questions and explore ways they might use the devices. Benefits teachers highlighted from their own classes aligned with those emerging in the literature. Subsequent research cycles of the study affirmed that using cellphones in high school English classes can increase student engagement, participation, and confidence (Creer, 2018; Elmore, 2017; Stachowski et al., 2020). Cellphone technology brings to the high school English classroom the capability of capturing individual student contributions to whole-class collaborative writing and brainstorming (Riberio,

2017; White, 2021). Finally, teachers in the study posited and affirmed the value of the instant access to internet research cellphones hold (Gomez-Garcia, et al., 2020; Lancaster, 2018).

Research Question Two: What are the inherent impacts to instruction and learning of using cellphone technology in English classes?

Three priority implications regarding the use of mobile devices as instructional technology emerged over the course of three research cycles in the study. The concern vocalized most often and vociferously by the teacher-participants echoed the reviewed literature: cellphones in the class can distract students and enable them to cheat (Creer, 2018; Gao et al., 2017; Hagerman, 2021). However, as the recursive cycles continued, and teachers both implemented and observed students using cellphones as part of their lessons, two other impacts on instruction and learning outweighed the possible negative impacts. Specifically, teachers found that cellphone strategies can enhance critical thinking for students, affirming the conclusions of Akpan (2017) and Sarlo (2020) that higher-ordered thinking can be facilitated by allowing students to access concepts using a familiar platform.

The final understanding teachers in the study gleaned from the work was the critical need for students to learn responsible digital citizenship and best practices as future professionals developing an online presence that could follow them into adulthood (Chiverton, 2017; Elmore, 2017; Salleh et al., 2020). Whether the lifelong skills associated with good digital citizenship should be taught as part of high school English curriculum remains to be seen.

Research Question Three: How can high school English teachers maximize the instructional impact of using cellphone technology as a part of daily instruction?

Most of the participating teachers began the study with a view of cellphone technology as an infrequently used strategy of questionable effectiveness; however, at the end of the study,

only two teachers maintained a firm opposition to using the devices daily. All of the participants involved in the work agreed that if cellphones are to be used effectively, teachers must establish clear expectations for behaving, participating, and working in the classroom. Aligning with the findings of O'Bannon et al. (2017) and Rhoades (2021), teachers in this action research agreed that both selecting specific, complementary cellphone strategies for their content and alternating use of traditional and cellphone technology are beliefs they would consider to be best practices for future use of the devices. The concluding request teachers made for establishing consistency of implementation was that they be trained on specific cellphone technology applications so they can stay current with their students' understandings and functionalities (Elmore, 2017; Stachowski et al., 2020).

Limitations of the Current Study

The purpose of using action research in this case study was to allow the participants to use processes organic to their natural setting to identify, explore, and establish consistent practices for cellphone technology integration into classroom instruction (Coghlan & Brannick, 2014). The case in this study was how to create the time and space for high school English teachers to collaboratively identify best practices for using cellphones as part of daily classes. The participants were self-selected from the English department and had only to express a desire to work to be part of the team exploring ways to use mobile devices as instructional technology.

In light of these limitations, care should be given when trying to generalize the findings of the study to other contexts. Bloomberg and Volpe (2019) noted the difficulties in generalizing action research to other populations if the selected participants are not collectively representative of a larger population and if the study participants are not trained in research (p. 21). However, Anderson et al. (2007) described, "All competent practitioners engage informally in these cycles

of reflective action, but action research makes such reflection mor intentional and systematic (p. 20). For this study, the goal was to create a Professional Learning Community focused on generating "rich contextual description" of classroom experiences on which teachers could reflect, analyze, and construct a path forward, toward more consistent and effective practice.

Implications and Recommendations for Practitioners

The specific context of this action research case study was Central High School in the Pullman County School District. Thus, the findings and conclusions may have limited validity for extrapolated application to other content departments or school-wide populations. The study does, however, contain implications for school and district leaders as well as recommendations for policy makers concerned with how to deal with cellphones in the hands of students during class.

School and district leaders in education have an absolute interest in sustaining current practice to ensure teachers can provide engaging instruction for students. Identifying the advantages, impacts, and best approaches to using cellphone technology in the classroom could enable schools and districts to establish the flexible but enduring policy the ever-evolving area of technology requires, and, simultaneously, empower teachers to experience a paradigm shift from viewing the devices as distractions to using them to educate and prepare students for postsecondary experiences in technical schools, colleges and universities, the military, or the work force. The conclusions of this study indicate that establishing a focused professional learning community allowed high school English teachers to begin establishing best practices for cellphone use as part of daily instruction; the action learning approach gave them the structure through which they could comfortably and effectively explore and share experiential knowledge gained both before and during the study.

Students have cellphones, and there is little, if anything, educators can do to influence that fact. Because the devices appear to be as permanent and pervasive to classes as the students themselves, local schools and school districts should consider the following suggestions.

Recommendations for Local Schools

Central High School continued to host the action research implementation team as a professional learning community with a focus that differed from the grade-level- and content-focus of the other PLCs. Although any school data team could use a similar conceptual framework as the one in this reiterative process (See Figure 3), this study accentuates the effectiveness of using action research in conjunction with job-embedded professional development in which teachers, as professionals, determine what works best in their classrooms. Specifically, the use of the phases of the action research cycles from constructing and planning to taking action and finally to analyzing action allowed teachers to use the results from each research cycle to inform the subsequent cycles. Adherence to the same phases in each cycle reinforced the structure and efficiency of the action learning process.

Local schools will continue to grapple with inconsistency of practice in using cellphones in the classroom; it is recommended that school leaders consider establishing a focused Professional Learning Community of teachers to use action learning via action research to examine an existing instructional challenge relevant to their teachers. In addition, specific, on-going interventions combined with identified job-embedded professional learning will support the teacher-members and ensure fidelity of practice for the cycles of action research.

Because related research and study findings affirmed the potential benefits of cellphones as instructional technology devices, it is recommended that schools take the lead in establishing the policy and supports teachers need as they attempt to keep their pedagogy current with use of

cellphone technology. School leaders are uniquely positioned to know and understand the needs of their teachers and students, and, as a result, can make the most timely and useful cellphone policies for instruction to balance the behavioral requirements the policy must also contain.

Recommendations for School Districts

Central High School is located in Pullman County School District. As one of the fifteen largest school systems in the state, proliferation and use of personal technology should not stand as a challenge to classroom teachers. Currently, existing grants focus on literacy and numeracy at almost all levels, the same levels where nearly all students bring cellphones to school every day. Instead of forcing the exclusion of mobile devices from learning, districts with grants and improvement initiatives focusing on classroom instruction could add a component incorporating cellphone technology as part of student learning at every level. This would result in students starting high school with a higher level of preparedness, increased personal responsibility, and deeper understanding of appropriate use of cellphones as learning tools. To further support school initiatives to make use of mobile devices part of daily instruction, districts might also consider options for moving to one-to-one computing initiatives, especially ones that include bring-your-own-device options.

Implications and Recommendations for Researchers

Researchers interested in examining the implementation of cellphone technology into daily instruction may be interested in continuing the work begun in this study. At the school level, one pathway for exploration would be to research how a team of high school English teachers uses the best instructional practices identified in the study to complement the content curriculum. Because studies revealed teacher concerns about student behavior when cellphones were used, another pathway could include a study on the impact of setting behavioral

expectations for students in the first week of class and the subsequent student behaviors as they use the devices for learning.

At the district level a subsequent study could focus on how the action research design structure can be used for instructional improvement plans for targeted issues and specific results. In turn, this research could enable principals to begin cultivating increased distributed leadership using action learning in focused PLCs. Although the practice of distributed leadership is becoming more widely practiced, it does not currently encompass all facets of school improvement at all schools. Finally, more in-depth research is desperately needed on the subject of equity of educational technology resources in high needs schools. Even in a pandemic, a cellphone should never be the only educational access a student has; educators need all the data they can compile to address this staggering gap in digital resources.

Implications and Recommendations for Policy Makers

In light of the findings of this study and the varied levels of experience teachers possess in using cellphone technology, it is recommended that schools and districts use action research with components of peer observations, small-group professional learning communities, and teacher reflections to construct school-specific policy for cellphone use in instruction. Finally, policy makers could ensure that districts and schools seek processes for adopting specified standards for digital citizenship for students. Although the concept of setting standards for good behavior in the technology realm is not new, the recent pandemic requiring increased mobility into and out of digital learning has reemphasized the need for cultivating these lifelong skills in students.

Chapter Summary and Final Thoughts

This chapter offered a brief summary of the findings as well as major findings related to the literature review and the research questions. The purpose of this action research case study was to explore ways to use cellphone technology as part of daily high school English instruction and establish best practices for future use. The study results supported the conceptual framework in which specific input by the Action Research Implementation Team and subsequent activity by the teachers providing and observing instruction led to an outcome of collaboratively determined best practices for cellphone use and increased teacher awareness of the need for consistent practice in high school English classes.

Of the conclusions that could be drawn from the findings of the study using action learning to explore the instructional use of cellphone technology, several emerged as themes:

1. Cellphones in class can increase student engagement, participation, and confidence by facilitating generation and research of ideas.
2. Although cellphones can distract students, they hold great potential for leading students into higher levels of thinking when effectively paired with appropriate content.
3. Teachers must begin classes with clearly established rules and routines for cellphone use and enforce these ideals consistently every day.
4. Both students and teachers need to be educated on tenets of good digital citizenship and current technology applications for the best opportunity to use cellphones in instruction.

In light of these conclusions, implications emerged for both districts and schools seeking to incorporate cellphones as personal computing devices in daily classes. School leaders may choose to consider the following:

1. Creating an action research team focused specifically on establishing best instructional practices using cellphone technology in other core departments;
2. Creating an action research team focused on identifying and implementing standards for good digital citizenship for students with supports for teachers to provide instruction on the lifelong skills.

School district leaders may want to consider these recommendations:

1. Establish the common practice at each district high school for identifying a complex instructional issue as part of the school improvement plan and use the action learning through the action research process to demonstrate measurable progress toward a specific, measurable, attainable, relevant, and time-bound (SMART) goal.
2. Use action research cycles to create opportunities for job-embedded professional development at every school to capitalize on the teacher expertise in the building and build teacher buy-in through shared learning.

Subsequent, on-going research could support the findings of this study in other contexts and could help establish consistently used action research cycles relying on action learning to create meaningful, long-term school improvement. Ultimately, the educational paradigm in which teachers feel threatened or annoyed by student use of cellphones could shift to the point where students use the devices to learn and teachers view them as the instructional technology access tools they can be.

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Appendix A

Empirical Findings Table

Author & Date	Title & Research Question	Methodology	Findings	Analysis
Chiverton, S. (2017). English teaching forum, 55(2), 2-13. www.americanenglish.state.gov/english-teaching-forum.	Cell phones for low-resource environments.	Journal article (non-Empirical)	• Cell phones are efficient, low-cost tech tools for education • Cell phones reach remote places • Used effectively in math and language instruction • "Talk and Text" • "Create a Cell Phone Story"	RQ1-Cellphones provide tech access for schools with limited computer access. HHS has 4 labs of 30 computers for over 1500 students. RQ3-Study suggests specific instructional strategies using handheld devices in ELA classes.
Creer, A. (2018). Journal of New Approaches in Educational Research, 7 (2), 131-139.	Introducing everyday 'digital literacy practices' into the classroom: An analysis of multi-layered media, modes and their affordances.	Qualitative (Case Study)	• Study based on college students • Most literacy practices of students are digital • Students blur lines between social/leisure interactions and formal/educational interactions in digital media. • Disjuncture between everyday texts and college-assessed texts	RQ1 Students use both digital and traditional media when they engage texts; this opens many alternatives for content reading in the ELA classroom. RQ2 Using digital media can help students connect everyday literacy practices with school-assessed literacy practices.

Author & Date	Title & Research Question	Methodology	Findings	Analysis
Felisoni, D. D., & Godoi, A. S. (2018).	Cell phone usage and academic performance: An experiment	Mixed methods	• Outlines history of association between internet usage/gaming and decreased GPA • Can be used as a learning tool in instruction • Specific applications can be beneficial in specific academic settings	RQ1 To be used effectively in ELA classrooms, technology must serve a specific purpose in the lesson. RQ2 If students are not given clear, exact directions for handheld technology use, cell phones can detract and distract from the content.
Gao, Q., Yan, Z., Wei, C., Liang, Y., & Mo, L. (2017) Computers & Education, 106, 13-25. doi:10.1016/j.compedu.2016.11.007	Three different roles, five different aspects: Differences and similarities in viewing school mobile phone policies among teachers, parents, and students	Qualitative (Questionnaire/Survey)	• Based on K-12 students, parents, and teachers • Teachers view cell phones as a disruption • Students view cell phones as a tech tool • Parents divided almost equally on view of cell phones Students, parents, and teachers agree that banning phone use in class and during exams is a good idea	RQ2 Teachers must transition to a more open mindset in which cell phones are no longer considered “taboo.” RQ3 Students agree that classroom structures must be introduced and enforced by teachers during tests and exams.

Author & Date	Title & Research Question	Methodology	Findings	Analysis
Lu, M., Newman, R. E., & Miller, M. T. (2014).Educational Leadership and Administration: Teaching and Program Development, 25, 54-64.	Connecting secondary and postsecondary student social media skills: Recommendations for administrators.	Qualitative (Survey)	• High percentage of high school and college students use social media at least once per day • Students indicated they value social media for cultural/idea diversity, exposure to new ideas, school work, and stress relief • Study concludes administrators need to offer social media workshops for teacher and students to facilitate effective use and management in the classroom	RQ1 Harnessing social media via cell phones give teachers leverage with teenage students. RQ 3 Teachers must be provided effective and relevant professional development on ways to use cell phone technology effectively as a component of a lesson.
Mendoza, J. S., Pody, B. C., Lee, S., Kim, M., & McDonough, I. M. (2018). Computers in Human Behavior, 86, 52-60. doi:10.1016/j.chb.2018.04.027	The effect of cellphones on attention and learning: The influences of time, distraction, and nomophobia	Quantitative	• Study examines how cell phone presence, text message distractions, and nomophobia impact learning during classroom lecture. • Study aligns with "bottle neck theories of attention" that claim learning slows when students multitask • Conclusions include the statement that "educators and students can plan ahead and use appropriate methods to prevent distractions in the classrooms as well as implement break intervals to restore attention."	RQ2 Impact of handheld technology could be detrimental; educators and students must examine patterns in attention-loss or distraction to minimize the negative influence of handheld technology and optimize the opportunities

Author & Date	Title & Research Question	Methodology	Findings	Analysis
O'Bannon, B.W., Waters, S., Lubke, J., Cady, K., & Rearden, K. (2017). Computers in the schools, 34(3), 125-141.	Teachers and students poised to use mobile phones in the classroom.	Qualitative (Perception Survey)	• "It is also important for educators to remember that mobile phones are a resource, and like any resource, their focus needs to be on the applicability and functionality of the device to improve teaching and learning."	

Appendix B

Email of Invitation

We are doing this research study to learn more about the use of cellphones as instructional technology devices. The purpose of the study is to establish common, effective practices for teachers to employ to maximize the benefits of cellphone use as a component of instruction in high school English/Language Arts classrooms. Cellphones currently serve as distractions in classes and present complications to student engagement; however, they hold the potential to serve as access to technology to complement daily learning activities. The research questions are 1) How can individual, handheld technology benefit instruction in ninth and tenth grade English classes? 2) What are the inherent impacts to instruction and learning of handheld technology? 3) How can classroom teachers maximize the instructional potential of handheld technology as a part of daily instruction?

You are being invited to be in this research study because you are a high school English/Language Arts teacher facing the challenge of student engagement and the complicating presence of student cellphones in class.
If you agree to participate in this study:

- We will collect information about your current beliefs regarding student possession of cellphones or other handheld technology devices in your classes.
- We will ask you to participate in a separate Professional Learning Community designed to study ways to incorporate cellphones into daily instruction. The PLC will meet weekly in May, August, and September 2020, and participation will require you to attempt to use cellphone technology in some of your instruction. You will be asked to observe and discuss the instruction of some of your colleagues in the PLC and make recommendations for subsequent use of cellphones as instructional technology devices.
- We will follow up in 2 months by email to share the findings of the research. There will be no access to any personal records. The only data will be captured in your open-ended reflections of the process and implementation and the minutes from the PLC meetings.

Participation is voluntary. You can refuse to take part or stop at any time without penalty. Your decision to participate will have no impact in your participation in any programs, curricular or extracurricular at Hiram High School. Each PLC meeting will last no longer than one hour. There will be twelve meetings total with three in May, four in August, and five in September. You will be asked to collaborate with your colleagues to decide on a strategy for using cellphones in a lesson, write a lesson plan demonstrating use of the identified strategy, and teach the lesson. You will be observed by a colleague, and you will be expected to conduct an observation of a peer for at least thirty minutes.

Your responses to this project and participation may help us understand ways to use cellphones to benefit student learning in the English/Language Arts classroom and how to encourage students to become responsible digital citizens.

Appendix C

Follow Up Email for Volunteer

Dear [teacher's name],

Thank you for agreeing to participate in the project designed to explore the potential for using cellphones as instructional technology devices. Our first meeting will be after school on Wednesday, May 6, in Room 206 and will last no more than one hour. I am delighted to be working with you on another concept that will serve the dual purpose of facilitating access to instructional technology and making class more engaging both for you and your students.

Sincerely,

Kristi Gammon

Appendix D

UNIVERSITY OF GEORGIA
CONSENT FORM

Use of Cellphones in Secondary Instruction and Their Impact on Learning

You are being asked to take part in a research study. The information in this form will help you decide if you want to be in the study. Please ask the researcher(s) below if there is anything that is not clear or if you need more information.

Principal Investigator:
Dr. Jami Berry
LEAP Department, UGA
JamiBerry@uga.edu

Co-Investigator:
Kristi Gammon
Student, LEAP Dept., UGA
kgammon@paulding.k12.ga.us

We are doing this research study to learn more about the use of cellphones as instructional technology devices. The purpose of the study is to establish common, effective practices for teachers to employ to maximize the benefits of cellphone use as a component of instruction in high school English/Language Arts classrooms. Cellphones currently serve as distractions in classes and present complications to student engagement; however, they hold the potential to serve as access to technology to complement daily learning activities.

The research questions are 1) How can individual, handheld technology benefit instruction in ninth and tenth grade English classes? 2) What are the inherent impacts to instruction and learning of handheld technology? 3) How can classroom teachers maximize the instructional potential of handheld technology as a part of daily instruction?

You are being invited to be in this research study because you are a high school English/Language Arts teacher facing the challenge of student engagement and the complicating presence of student cellphones in class.
If you agree to participate in this study:

- We will collect information about your current beliefs regarding student possession of cellphones or other handheld technology devices in your classes.
- We will ask you to participate in a separate Professional Learning Community designed to study ways to incorporate cellphones into daily instruction. The PLC will

meet weekly in May, August, and September 2020, and participation will require you to write and deliver a lesson plan to attempt to use cellphone technology in some of your instruction.

- There will be three meetings in May (3 hours total), four meetings in August (4 hours total), and five meetings in September (5 hours total). The total meeting time will not exceed twelve hours or one hour per meeting.
- You will be asked to observe and discuss the instruction of some of your colleagues in the PLC and make recommendations for subsequent use of cellphones as instructional technology devices. The observation will be at least 30 minutes and no more than 60 minutes of a class.
- We will follow up in 2 months by email to share the findings of the research. There will be no access to any personal records. The only data will be captured in your open-ended reflections of the process and implementation and the minutes from the PLC meetings.

Participation is voluntary. You can refuse to take part or stop at any time without penalty. Your decision about whether or not to participate will have no impact on your employment or evaluations at Hiram High School.

There are questions that may make you uncomfortable due to the requirement that you self-reflect on your professional practice of instructional delivery. You can skip these questions if you do not wish to answer them.

Your responses may help us understand ways to use cellphones to benefit student learning in the English/Language Arts classroom and how to encourage students to become responsible digital citizens.

We will take steps to protect your privacy, but there is a small risk that your information could be accidentally disclosed to people not connected to the research. To reduce this risk we will only collect information related to the implementation of the strategies the PLC devises and your impressions of the success of the implementation. We will only keep information that could identify you until the study is complete and the results have been documented. Your name, school, and other identifying information will never be used; only pseudonyms will be published with the findings of the research. If you answer questions or provide information by email, note that confidentiality during online communication cannot be guaranteed.

No information about individual students should be collected during observations or shared when answering questions.

The information will not be used or distributed for future research, even after identifiers are removed.

Please feel free to ask questions about this research at any time. You can contact the Principal Investigator, Dr. Jami Berry at 404-6XX-5XXX, JamiBerry@uga.edu. If you have any complaints or questions about your rights as a research volunteer, contact the IRB at 706-542-3199 or by email at IRB@uga.edu.

If you agree to participate in this research study, please sign below:

_____	_____	_____
Name of Researcher	Signature	Date
_____	_____	_____
Name of Participant	Signature	Date

Please keep one copy and return the signed copy to the researcher.

Appendix E

Peer Observation Guide

1. How did students use technology in this unit?

2. How did the teacher address off-task behaviors related to cellphone use?

3. What cellphone applications were used in this unit to complement the instruction?

4. What obstacles arose to students using cellphones as part of the lesson? How can we mitigate or eliminate the potential obstacles for subsequent lessons?

5. How were elements of responsible digital citizenship highlighted in this unit/activity?

6. What suggestions can you make for the next lesson that includes this use of cellphone technology as a supplement to instruction?