TEACHERS WHO TECH AND THE TETHERED CLASSROOM:

AN ACTOR NETWORK FILMIC ETHNOGRAPHY

by

WILLIAM JOSEPH FASSBENDER

(Under the Direction of Sara B. Kajder)

ABSTRACT

The purpose of this qualitative study was to better understand the pedagogies and practices of tech-savvy secondary English teachers, or teachers who "tech." A new literacies framework was used to look at the out-of-school literacy practices of teachers and the impact it had on their approach to English instruction. In addition, a new materialist theoretical perspective, specifically Latour's Actor Network Theory, was put to work in order to better understand complex entanglements presented when humans, technology, and other school matter come together in classrooms in a 1:1 Chromebook setting. Video ethnographic research approaches were employed to collect and analyze data. In addition to this written portion, a short form documentary was produced as a means of animating the embodied practices of teachers and students in the study. Findings indicated that English teachers who tech often engage in new literacies practices that impact their teaching identities and their understanding of how to create student-centered activities using digital tools in their classrooms. Findings from the study also helped in producing the concept of the *paradox of tetheredness* which explores the ways wireless technologies are capable of mediating connections between humans through the

affordance of greater mobility. By attempting to understand the pedagogies and practices as well as educational experiences of teachers who tech, teacher preparation programs and school districts might be better positioned to understand how to support pre- and in-services teachers in producing teaching identities that recognize the potential for technology.

INDEX WORDS: new literacies, 1:1 technology, teaching identity, secondary English, new materialism, Actor Network Theory, video ethnography.

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DEDICATION

Dedicated to the memory of Pops—the first Dr. William Fassbender. Your ceaseless love and support for me was written into every word of this dissertation.

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Although the writing of a dissertation is a rather solitary and at times isolating process, I recognize that none of this would not have been possible without an incredible coterie of supporters who cheered me on as I tackled this project. First, I would like to thank Sara B. Kajder for her guidance throughout this long and strange journey during my doctoral program. Your willingness to take time and share your wisdom over the past five years have helped me become the academic I am today. You always treated me like a colleague and an equal. More than a mentor, I am honored to call you a friend and someone I look forward to collaborating with for years to come.

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you both so dearly and I know that none of this would have been possible without the myriad ways you demonstrated your love for me during these five years.

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PREFACE

The study of technology in schools has often centered around the hardware and software that helps teachers develop strategies for helping students make academic gains. The tools that are used in learning ecologies have historically been positioned as devices that can help demonstrate learning gains and, at its best, help teachers, students, and researchers better refine the concept of literacy in a digital age. This study attempts to tell the story of technology in a middle school and high school English classroom by focusing on the literacy practices present when students work with teachers who tech and whose savviness with digital tools is reflected in their teaching philosophies and pedagogies. In an attempt to study both embodiment and the materiality associated with such literacy practices, visual research approaches were used as a means to study how bodies and technology become entangled in meaningful ways. More importantly, the video data was collected with the intent of producing a filmic interpretation of the data through the production of a short form documentary. Taking seriously Marshall McLuhan's (1964) belief that "the medium is the message," it was important that the findings of this study were composed in order to tell the stories of these classrooms through a recognition of the multiple modalities these teachers used to create classrooms that centered student interest and creativity. Because this study takes seriously the multimodal, sociomaterial nature of literacy and composition, it seemed appropriate to produce a dissertation that honored textual diversity.

This dissertation study is comprised of two parts: a short form documentary and a written companion to the video. The video itself is a roughly 30-minute production that not only uses the visual capabilities of the camera to study the embodied literacy practices in the classroom, but attempts to give voice to participants by including segments of interview footage in order to allow the teachers to tell the narratives of their classrooms and their personal histories as educators. Furthermore, the film was produced with the intent of illustrating the vibrancy of secondary classrooms that integrate technology in ways that allow for voice, choice, and creative production through the use of digital tools.

What follows in this written portion might be considered as a companion to the video. In recognizing that there are certain limitations to video, the six chapters lay the groundwork for this study, by providing the background as well as describing the theory and research approaches applied throughout this work. A findings and implications section is included in order to describe in greater detail the events of each classroom as well as how each teacher helped develop the concept of a teacher who "techs." Both the video and the written portion should not be viewed as different projects, rather they are two different modes that converge and fill in the gaps left by the other. My suggestion to the reader is to not disregard or privilege one mode of the study over another. While I believe the documentary does a nice job of providing a visual component to this study, there are certain limitations to video that prevent it from doing some of the thoughtful, citational, scholarly moves we have come to expect from academic publications. On the other hand, the writing, particularly in the findings section, would likely seem lacking without being able to see and hear the teachers, students, and technology immersed and

drawn together through these literacy practices. If you find this work interesting, dear reader, it is my hope that you will take the time to engage in both the visual and written interpretations of this study.

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CHAPTER 1

INTRODUCTION

Since the dawning of the digital age in the late 1990s, the concept of literacy has become a slippery term as new online spaces created opportunities for new socially-driven literacy practices. The internet created new possibilities for reading, writing, and viewing, as well as communicating. As a result, definitions that viewed foundational literacy as, "word recognition, vocabulary, comprehension, inferential reasoning, the writing process, spelling, response to literature, and others required for the literacies of the book and other printed material" (Leu, Kinzer, Coiro, Castek, & Henry, 2013, p. 1159) seemed too limiting to describe the expansive and multifarious literacies that people were engaging in through the use of burgeoning technologies. As more people started connecting in online spaces through email, instant messenger and eventually text messaging, video games, and social media, it became evident that there was a need to re-define what it means to be "literate" in modern times and how schools, specifically English classrooms, were going to prepare students to develop the literacies requisite for being engaged digital citizens.

Digital tools became an integral part of creating "21st Century learning" initiatives aimed at preparing American students for an increasingly technological professional landscape during the turn of the century. Recent history has proven Moore's Law (1965) to live up to its theory that technologies advance exponentially while, at the same time, becoming more affordable for consumers. As a result, computers, phones, tablets, and

other forms of mobile technologies have become a ubiquitous part of the social lives of more and more young people (boyd, 2014). Subsequently, schools have been exploring ways to include students' out-of-school literacies and digital identities into the classroom. This cultural shift has resulted in exciting research into the use of mobile technologies, making the call for the purposeful inclusion of technology all the louder and clearer, specifically in English language arts classrooms in the US.

However, in spite of current research around the urgency of digital tools in modern classrooms (Jenkins, Purushotma, Weigel, & Clinton, 2009; Turner et al., 2017), the bridge from theory into practice has been a difficult one for teachers and schools to traverse. Issues of the "digital divide" and access to technology (D. Epstein, Nisbet, & Gillespie, 2011; Rowsell, Morrell, & Alvermann, 2017) and lack of pre-service (Caughlan et al., 2017; Pasternak et al., 2016) and in-service teacher training (Mourlam & Montgomery, 2015; Ruggiero & Mong, 2015; Zhao, Pugh, & Sheldon, 2002) pervade and provide educators with myriad excuses for not including technology into their daily teaching practice. In my ongoing work with Dr. Sara Kajder, we are often alarmed at not only the lack of confidence but the amount of resistance expressed by pre-service teachers when discussing the need for English teachers to integrate digital tools into their future classrooms (Kajder & Fassbender, 2018). Our work with teachers over the past year and a half has forced us to examine what we, as teacher educators, could be doing to prepare future English language arts teachers for the challenge of helping their students become more digitally literate.

This study investigates in-service secondary English language arts teachers identified by school and district level leadership as being particularly tech-savvy as a

means of attempting to understand their literacy practices and what impact, if any, they have on their teaching practice. In addition, by focusing on digital tools as a subject of study in these English classrooms, I attempt to better understand the role of technological materiality in 1:1 classrooms that have access to technology. Through the observation of classroom practices, this project focuses not only the making of the tech-savvy teacher but the composition of the techie classroom.

Statement of Problem

We have reached an inflection point in the field of English education with regard to technology's role in secondary classrooms. We know that technology not only increases engagement with school content (Sawang, O'Connor, & Ali, 2017; Tay, 2016), but are essential for providing students with the literacy skills needed to enter an increasingly technological world (Molin & Lantz-Andersson, 2016; Singer & Alexander, 2017). We also know that English teachers who use technology in purposeful ways are the exception rather than the rule (Corn et al., 2010; Vannatta & Fordham, 2004; Wright & Wilson, 2007). However, very little work has been done around understanding what literacy practices make teachers particularly tech-savvy and what experiences they have had, both inside and out of school, that led them to a more techno-centric approach the teaching of English language arts. My study is a response to the literature that explicates why pre-service and in-service teachers resist technology by focusing instead on teachers who use technology in effective ways (Kist & Pytash, 2015; Tallvid, 2016). By investigating their dispositions and classroom practices, I attempted to determine what makes an English teacher more willing and able to use digital tools in effective ways.

Significant scholarship has been devoted to describing the critical need to prepare students for a more technological and globally connected future (Ito et al., 2013; Jenkins et al., 2009; Livingstone, 2012; Maher & Twining, 2017). This study draws on new literacies adding to the argument that technology is a means by which many literacies are mediated. As a result, secondary English teachers in middle and high schools are on the front lines of preparing students to develop literacies practices that will allow them to be actively engaged digital citizens in online spaces. Because of this, our nation's schools need teachers who subscribe to this concept of literacies as being driven by online social practices. By learning more about tech-savvy-teachers in schools, teacher preparation programs might be able to better understand how they became advocates of technology. While much of the work in the field of digital literacies and instructional technology focuses on the technical skills and competencies of teachers (Derbel, 2017; Sauers & McLeod, 2018; Spires, Wiebe, Young, Hollebrands, & Lee, 2012), by delving into the personal and professional literacies practices of teachers who "tech," scholars might be able to understand, not only the practices of techie-savvy teachers, but the experiences that led to these teachers' unique orientation toward the inclusion of digital tools into their secondary English teaching philosophy. As a result, this study attempts to inform teacher education programs and school leaders as means of better preparing pre-service teachers and supporting in-service teachers in order to recognize the critical need for the integration of digital tools in the secondary English classroom.

Background and Rationale

This dissertation study investigates important considerations of if/how the new literacies practices of secondary English language arts teachers have played an integral

role in their technological approach to teaching English content. In addition, it explores what other parts of these teachers' personal and professional histories have helped inform their willingness to use technology when many of their colleagues are reticent to use digital tools. There is a surfeit of research that discusses the value added by technology in English classrooms, arguing that school should be reflective of the modern world (Jenkins, Ito, & Boyd, 2016; Kimbell-Lopez, Cummins, & Manning, 2016; Turner et al., 2017), engage students in digitally mediated civic conversations (Ito et al., 2015; Pangrazio, 2016), and be culturally relevant to the new literacies that students practice outside of school (Coiro, Castek, & Quinn, 2016). However, there seems to be even more scholarship devoted to explaining why English teachers are reticent to use digital tools with students (Erbes, Lesky, & Myers, 2016; Kist & Pytash, 2015). This study attempts to describe teachers integrating technology in effective ways, not only to demonstrate what technology does for learning, but to begin to understand critical factors—such as of personal technology use, mentors, and school initiatives and supports—that helped in the production of their techie teaching identities. Additionally, this study was structured in the hopes that it would inform instruction on a local level, providing participants and their schools with important insight on how they might improve their technology pedagogies and policies.

In addition, this study explores uncommon formats of qualitative educational research by harnessing the potential of video as a form of academic reporting. This project attempts to demonstrate that video does not merely have to serve as a form of raw data to support the typographic publication. Instead of being a means to an end, video can open up possibilities for research to not only take a different direction but engage new

audiences of both scholars and teachers alike in order to *show* what happens in classrooms. It is my hope that by doing a different type of dissertation, I open the discussion for what is possible with qualitative research.

Statement of Purpose

Pam Grossman (1990) studied six secondary teachers in order to understand the experiences that "make" a teacher. This study builds on this line of inquiry by trying to determine what makes a teacher who "techs." This work expands on the body of research about teacher efficacy and classroom practices related to technology by studying tech-savvy teachers and what they do with technology outside of the classroom and how their literacies practices make them better teachers with digital tools inside the classroom. This study takes a closer look at many of the issues addressed by the literature on technology practices and pedagogies in secondary English classrooms by addressing some of these questions from a different angle. While I am interested in teacher education, this study focuses on in-service teachers to gain a stronger understanding how tech-savvy teachers are "produced" and the critical experiences that led them to understand how to integrate technology effectively into their English classroom practices.

In addition, this study employs multiple theoretical perspectives, interrogating this issue from both a humanist and new materialist approach by focusing not only on the teacher and students in the classroom, but the technology, classroom space, and related discourses. By attending to embodied practices related to technology use, this project studies the impact of digital tools and how a teacher's beliefs and values related to

technology are reflected in their[1] pedagogical praxis. Through the use of video ethnography, I attempt to tell the story of teachers and their close connection to students and technology using methods and theories that have rarely been used to convey research on technology in the classroom.

Research Questions

Based on what we already know about the issues and concerns related to the lack of technology practices in secondary English classrooms, I have developed questions that undergird this study. The main objective of this project deals with the making of the tech-savvy teacher, or, as I will refer to them as, teachers who "tech," by considering what factors impacted their increased willingness/ability to use technology in the classroom. However, I do not believe one can investigate a teacher without considering the impact of their values on the classroom space and the students. As such, I have crafted the following questions to guide this study:

1. What new literacies practices are used by teachers who tech in and out of their classrooms? What is their digital footprint and how does it relate to their instructional decision making?
2. What do teachers who tech value about new literacies practices and how does it impact their approach to teaching?
3. What impact does technology have on the classroom space? What are the critical actants (both human and non-human) present in "techie classrooms?"
4. How do less visible actants (including discourses) impact classroom

[1] I acknowledge that there is a gender spectrum and that myriad pronouns exist that I can use when referring to individuals in my writing. Throughout this article I will use the gender-neutral pronoun "they" in an effort to recognize the fluid nature of identity and to not make assumptions about the ways that individuals identify or refer to themselves.

pedagogy, specifically related to technology?

The goal of this study is to add to both the practical and theoretical literature on educational technology in secondary English classrooms and new literacies in English education. By understanding what skills, experiences, interests, and practices contribute to making a tech-savvy teacher, I hope to contribute a different perspective on some of the deficit approaches that focus on the resistance to incorporating technology in English classrooms.

Definition of Terms

Before proceeding, defining the terms that will be used throughout this dissertation seems critical. In the field of digital/new literacies concepts are constantly evolving with the advent of new tools, as are the fields of research that study them. While this often works to the benefit of the field by opening new opportunities for digital pedagogies in the classroom, it also turns the definitions of various terms into moving targets, developing nuanced differences in meaning for many concepts. As such, the following section will include some terms that underpin the nature of this study and should assist in narrowing the scope of this study.

According to van den Hoonaard (1997) "a sensitizing concept is a starting point in thinking about the class of data of which the social researcher has no definite idea and provides an initial guide to her research" (p. 2). In other words, before I can begin conducting a study on teachers who tech, I must provide some parameters for terminology. Schwandt (2007) identifies sensitizing concepts as terms that provide a starting point for any research study. These terms guide the study as it progresses, understanding that definitions of sensitizing concepts may shift as the research process

unfurls. With regard to this project, certain terms are central in grounding the discussions of new literacies studies and thus require clarity.

Defining Difference in Technology Use in English Classrooms

Changing entire school cultures to make teachers more receptive to technology can be incredibly difficult. This might explain why educational technology scholarship tends to gravitate toward the study of the "tech-savvy teacher" rather than the "tech-savvy school" (An, Bakker, & Eggen, 2017; Corn, Tagsold, & Patel, 2011; Derbel, 2017). These studies highlight the competencies and skills that teachers possess that make them effective facilitators of technology-infused lessons. However, what is typically lost in these studies is a clear definition of what it means to be "tech-savvy." There is great variation of what teachers and their students do with technology, so perhaps this teacher who techs is a hard one to pin down. Moreover, the techie, connected classroom looks different across school communities and learning contexts, so determining the essential characteristics of such a school is often dependent on the community, values, and needs of the students.

In educational technology circles, frameworks such as SAMR (Puentedura, 2009) and TPACK (Mishra & Koehler, 2006) are often used to determine the effectiveness of a teacher's implementation of a digital tool. These can be useful in thinking about technology and pedagogy, but they disregard the background and literacies practices of the teacher as well as the teaching context. The International Society for Technology in Education (ISTE), crowdsourced teachers to determine seven functions of tech-savvy teachers: learner, leader, citizen, collaborator, designer, facilitator, and analyst (International Society for Technology in Education, 2017). This general framework

serves as useful starting point because, unlike some studies that highlight the work of identified tech-savvy teachers in the classroom, these seven tenets not only highlight what teachers *do* but what they *know* about themselves as digital citizens and how this impacts their understanding of their students and subsequent pedagogy. It also charges them with being conduits for cultural change, taking on leadership to help support other teachers to help them integrate technology into their own classrooms. In addition, these functions are not tool-specific; they can be applied to a broad array of schools with varying levels of access to technology.

Focusing on the field of English education, The National Council of Teachers of English (NCTE) (2005) published a position statement on multimodal literacies, defining it as "the interplay of meaning-making systems (alphabetic, oral, visual, etc.) that teachers and students should strive to study and produce." In addition, The NCTE Definition of 21st Century Literacies, which was adopted in 2008 and updated in 2013 states,

> As society and technology change, so does literacy. Because technology has increased the intensity and complexity of literate environments, the 21st century demands that a literate person possess a wide range of abilities and competencies, many literacies. (National Council of Teachers of English, 2013)

Both position statements express the need for English language arts teachers to provide students with opportunities to work with multimodal texts, particularly in digital formats, in order to make learning relevant to the types of content students will encounter outside of schools. NCTE's recognition of new and evolving texts demonstrates the ways

in which professional organizations understand the primacy of technology in English classrooms, as our concept of literacy changes with every new cultural digital movement.

The NCTE Definition of Literacy in a Digital Age was updated in 2019. In addition to a range of skills and competencies, the new definitions states that a literate person must possess "dispositions" as well as a recognition that literacies are "interconnected." These two amendments to the definition are significant because it insists that literacy, particularly as it relates to technology, requires an orientation and openness to believing and understanding that literacy exists in many facets of our lives beyond typographic text. And yet, one must also be willing to see how the various literacies we encounter on a daily basis, whether we recognize them or not, are entangled and worthy of further exploration in English classrooms.

Perhaps the starkest contract between the latest version of the position statement is the critical stance the authors take up in defining literacy as a means to advocate for "equitable access to and accessibility of texts, tools, and information," "counter unproductive narratives," "promote culturally sustaining communication," and "honor the multilingual identities and cultures experiences individuals bring to learning environments" (National Council of Teachers of English, 2019, n.p.). In meeting the needs of the current political landscape, this definition attempts to show how literacy, while still defined as both a skill and competency, is itself a technology that can serve as a means of battling social injustices. If social media platforms and news media outlets are partially responsible for creating and propping up fake news stories and reports that only seek to extend single-story narratives about our worlds' most vulnerable communities, this definition suggests that it is imperative that global citizens possess the literacies

necessary to combat such devious attempts to undermine our democratic ideals through the leveraging of online networks. Literacy is the ability to be self-determining. When technology shifts into digital platforms it provides the literate person with access to power so long as they recognize how to leverage their networks appropriately.

These position statements have been bolstered by a long line of scholarship that spans from the turn of the 21st century to today. Pope and Golub (2000) provided seven principles that English teachers need in order to effectively "infuse" technology into their classrooms. This seminal article started conversations regarding the ways in which technology opens classrooms up to consider the types of texts that matter most to students. In it, they argue that English teachers must be prepared to engage students with technologies if ELA classrooms are to be places where students gain relevant skills and knowledge. Pope and Golub wrote a call to arms for ELA teachers and English educators, outlining that, if the nineties were any indication of the trajectory of technological advancement, then 21st century English classrooms must be spaces where English curriculum and pedagogies extend well beyond analog spaces and honor the need to develop critical readers of burgeoning modalities of texts. Five years later, a group of leaders at the Conference on English Education (CEE) came together to write an update Pope and Golub's piece. In it, the English educators defined a list of relevant technologies, highlighting the extant digital mediums in which students were composing and producing content outside of school (Swenson, Rozema, Young, McGrail, & Whitin, 2005). As a result of these significant shifts, the authors argue for greater professional development and increased access to technologies in English classrooms in order to keep pace with technology.

The most recent iteration of this work was published as an NCTE position statement entitled, *Beliefs for Integrating Technology into the English Language Arts Classroom* (ELATE Commision on Digital Literacy in Teacher Education, 2018). The authors of this document echo many of the values shared in the *Definition of Literacy in a Digital Age* (National Council of Teachers of English, 2019), explaining that literacies are closely tied, but are not synonymous with, technology. While they argue that technology has created opportunities for new means of consuming and producing texts, they also recognize that such technologies are not neutral and have been leveraged to promote discriminatory messages.

Throughout the document, the authors state four beliefs with regard to integrating technology into the classroom:

1. Literacy means literacies.
2. Consider literacies before technology.
3. Technologies provide new ways to consume and produce texts.
4. Technologies and their associate literacies are not neutral.

They then proceed to unpack each belief by providing suggestions and implications for K-12 teachers, English teacher educators, and English and literacy researchers. The organization of the position statement helps clarify that English teachers are not solely responsible for ensuring that students possess the literacies necessary to function in an increasingly digital world. English educators and researchers must be willing to work with and alongside teachers in order to inquire what literacy practices are valued and requisite to be fully engaged in our current social landscape and help support pre- and in-service teachers for the challenge of preparing students to meet these needs.

These position statements argue that technology in English education is not only a way to enhance the English curriculum; it is essential to ensure that curriculum is meaningful and relevant for 21st century students. In spite of this call for English teachers to be better-prepared to infuse their classrooms with technology, English education programs across the nation rarely provide standalone courses dedicated to pre-service teachers' digital pedagogies (Caughlan et al., 2017). This raises significant questions as to where upcoming generations of English teachers are expected to gain the digital pedagogical competencies necessary to engage students with an increasing and constantly changing landscape of digital tools and literacies.

Defining the Tech-Savvy Classroom Space

In addition to studying tech-savvy teachers, researchers also recognize that classroom space is impacted by the presence of technology. This small catalogue of literature looks at the way technology impacts the gaze of students during technology-facilitated instruction (Parr & Ward, 2011), instructional considerations for the placement of technology in the classroom (Tondeur, De Bruyne, Van Den Driessche, McKenney, & Zandvliet, 2015), as well as the shift in "classroom-ness" when students read in digital spaces (Burnett, 2013). These studies are important in recognizing that, not only are pedagogies and learning outcomes changed when digital tools are used, but the classroom atmosphere feels different for both teachers and students. While I believe this line of scholarship provides important considerations that are often overlooked, there is a need for additional research that looks at the purposeful ways teachers create classroom spaces based on their understanding of digital pedagogies, context-specific classroom procedures, and the specific needs of students.

Literacy Events and Practices

This study will be addressing both literacy events and practices as they occur in classroom spaces. The concept of the literacy event has shifted over time. Cook-Gumperz (1977) originally described such events as a process involving the application of literacy skills (both reading and writing) in order to determine whether or not application of such skills was appropriate. This is a more formalized concept, which translates literacy events as measurable moments of correct or incorrect language usage. For Anderson, Teale, and Estrada (1980), literacy events are "any action sequence, involving one or more persons, in which the production and/or comprehension of print plays a role" (p. 59). Heath (1983) would build on this concept by embracing the social component of literacy events, arguing that interactions with others allow for new interpretations of text, rejecting more formalized rules for those embedded within cultures. Interpreted this way, literacy events are based on the use of literacy skills that students are developing, both in school and in their social lives.

This study challenges this idea of literacy events by bringing in work from human geographers like Doreen Massey (2005), who conceptualize "place as event." This concept is particularly useful when considering the affordances of technology. Events, according to Massey, are a "constellation of processes" (p. 41). Locality no longer plays a central role in such a process, as it builds and changes due to the shifting landscape. When students engage in literacy events with their peers in digital spaces, they are no longer practicing literacy in a classroom bound by the four walls of their school building. Instead, such activity is in a constant state of becoming.

Building Heath's work, Brian Street (1984) developed the idea of literacy practices, considering the ways in which literacy is sociocultural. According to Gee (2015), new literacies research places a focus on "studying new types of literacy beyond print literacy, especially 'digital literacies' and literacy practices embedded in popular culture" (p. 9). Barton and Hamilton (2000) provide a more refined understanding of literacy practices, defining them as "the general cultural ways of utilizing written language which people draw upon in their lives. In the simplest sense literacy practices are what people do with literacy" (p. 8). This study focuses on literacy events but attempts to uncover the literacy practices that are situated in schools and the social lives of teachers and students.

Learning Ecology

In attempting to better understand the ways technology impacts learning spaces, I often struggled with trying to find the ways to locate where and when learning happens, particularly when it is not solely dependent on the physical classroom and the limits of the other humans that occupy it. As such, I will be referring often to "learning ecologies" as it seems to best represent the field of study throughout this project. Ecology is a playful way of describing learning spaces, as it draws on fields outside of education in order to discuss the diversity of things present in any given school. According to Allsop (2000),

> I understand `ecology' as a set of interdependencies between conceptual, social and environmental factors; and I understand `performance' (as a time-based art) as an unstable element or catalyst operating within an inclusive ecology which enables people to re-think or revision or remediate their relationships to each

> other and to the interdependent worlds that are constituted by those relations. (p. 4)

As a scholar of theatre, it may seem strange that I would choose Allsop's definition to start with. However, performativity is highly present in classrooms and, similar to a theatre, schools can be "inclusive ecologies" which bring people together in particular ways.

Literacy scholars have played with this idea of ecology for some time as well. According to Alvermann and Robinson (2018) "the word ecology is particularly well suited for considering the ways in which young people, both in their homes and in their home countries, use digital writing as a means to interact with global issues and global others" (p. 163). In considering the role of 1:1 technology, Spires et al., (2012) talked about how technology creates a learning ecology in which "information and ideas are abundant, in flux, and constantly evolving" (p. 234). Both concepts of learning ecologies are valuable in thinking about how technology not only expands the classroom to digital realms, but the ways in which technology is deeply embedded within the cultural experiences of youth, serving as a bridge between school and the manifold notions of "home." If nothing else, the idea of ecology is broad enough that it highlights the difficulty involved in attempting to pin down singular notions of locations where learning occurs.

Theoretical Framework

According to Kamberlis and Dimitriadis (2005), "Theories are 'detours' that help us ground our engagement with new problems and allow that engagement to function as a substrate for generating more theory" (p. 15). Taking this into consideration, theory

played a critical role in helping me to look at how digital tools inform teaching and change classroom spaces. In addition, thinking with other theorists helped me develop my own concepts and theories.

This study is grounded broadly within a posthumanist/new materialist paradigm, using Actor Network Theory (ANT) (Latour, 2005) as a theoretical framework. ANT is a framework that is part of a larger field of new materialism. New materialism contains an ethical commitment to a flattened ontology. It eschews notions that humans are positioned at the top of a natural hierarchy in which all other matter assumes a lower position. It insists on cleaving the dichotomy between the thinking, speaking, sentient being and "things" by highlighting the vibrancy possessed by taken-for-granted matter (Bennett, 2010). In approaching this study, which involves both humans (i.e., teachers and students) and things (e.g. computers, desks, Wi-Fi, whiteboards), it was important to bear in mind that "One of the risks for the new materialisms involves framing the goal of inquiry as producing an improved description of our objects of inquiry, while leaving unchanged the construction of the inquirer as a spectator subject" (Rosiek, Snyder, & Pratt, 2019, p. 5). While I include humanist elements throughout my study (e.g. teacher interviews, student observations), a new materialist approach forced me to consider the ability of non-human things to engage with and impact humans in critical ways. In attempting to engage in a new materialist project, I had to consider what power every "thing" within a classroom possesses and how humans and technology have a two-sided, recursive relationship in which they impact one another.

New Materialism

This study puts new materialist theories to work by attempting to look at how technologies and other materials come together with humans in classroom spaces and how such entanglements might inform classroom discourses around both teaching and learning. Whereas more humanist approaches to research place a focus on the actions of people in trying to understand their motivations and thoughts around a particular phenomenon, new materialism attempts to de-center the human in order to consider what impact "things" in our world have on our movements, rhythms, and discourses. In thinking specifically about schools, Snaza et al. (2014) considers all that surrounds teachers and students on a daily basis and how the primacy of humans in qualitative inquiry may result in the glossing over of the impact of matter in education:

> schools are also sites that contain: networks of wire and pipe linking the buildings' architecture to the subterranean infrastructures of cities and beyond that to the swirls of the oceans and global deposits of prehistoric dead organisms waiting to be mined and refined; dead nonhuman animals on plates in cafeterias, as well as on feet, human bodies, athletic equipment, and biology dissection trays; innumerable microorganisms, weeds, and insects colonizing every nook and cranny; pheromones and other less "natural" chemicals passing among hormone-addled adolescent humans and slightly less-hormonal adults; and stockpiles of books, computer equipment, office supplies, light bulbs, cleaning chemicals, historical records, sporting equipment, and cooking utensils. This partial list should be enough to demonstrate that anthropocentrism puts us at the center of the universe and the

> center of the conversation when, in fact, we are not the center of the universe. Indeed, we should not be the center of conversation. (p. 40)

By attending to material that is often taken for granted, researchers have an opportunity to shine a light on how matter like books and reading curricula produce students in school spaces who adopt subjectivities like “good reader” or “bad reader" (Bridges-Rhoads & Van Cleave, 2017). In her defense of new materialism, Jane Bennett (2010) states, "If we think we already know what is out there, we will almost surely miss much of it" (p. xv). It is through attending to that which often gets overlooked that new perspectives on education arise.

For literacy researchers, new materialism is an orientation toward inquiry through a “way of knowing/becoming/doing the world and (producing) literacies” (Kuby, Spector, & Thiel, 2019, p. 6). Burnett and Bailey (2014) insist that, "rather than seeing the material and immaterial in terms of binary distinctions between on/offscreen or on/offline" (p. 51), researchers might be able to study them as more enmeshed and inseparable. It is for this reason that the discursive is so tightly wound up in the material. Things are not simply combined and mixed with discourses—they are entangled. According to Barad (2007), “To be entangled is not simply to be intertwined with another, as in the joining of separate entities, but to lack an independent, selfcontained existence. Existence is not an individual affair” (p. ix). Given this, it is unthinkable for human subjects to exist before or separate from that which surrounds them.

Modern learning ecologies make it difficult to think about reading and writing without also considering the impact of technology on literacy and composition practices. This is where a new materialist approach to discourse becomes useful. According to

Barad (2007), “Discourse is not what is said; it is that which constrains and enables what can be said" (p. 146). This definition is drawn directly from the work of Foucault (1972) and helps better understand how certain ideas coalesce around power and societal structures. While materiality of reading and writing online has changed how society views literacy, school structures and systems also attempt to define reading, literacy, and writing in order to colonize and standardize them. In spite of this, is impossible to ignore the role that digital material plays in informing discourses and vice versa, both in school and out of school. This recursive process is why the relationship is best illustrated as such: material←→discursive practices. According to Orlikowski and Scott (2015), “As material-discursive practices are constitutive, they configure reality, or put another way, they are performative.” In thinking about English language arts curriculum, pedagogy is in a constant state of becoming because technology shifts our understanding of what it means to be literate or, perhaps more accurately, *do literacy*, on a regular basis. According to Kuby, Spector, and Thiel (2019), “These material←→discursive entanglements produce children, teachers, materials, and how society views writing, reading, and literacy(ies)” (p. 10). The definition of literacy is constantly under revision because of the material←→discursive practices associated with it, and as a result of these entanglements, we find that students are constantly being produced by things that are both visible and invisible in schools.

New materialism has been taken up most fervently in recent years by early childhood literacy scholars. In addition to attending to the ways in which materials like books and reading curriculum produce young readers (Bridges-Rhoads & Van Cleave, 2017; García-González, Véliz, & Matus, 2019; Kuby & Rowsell, 2017), studies in early

childhood education have also focused on children's negotiation of their learning environments (Änggård, 2016; Procter & Hackett, 2017). The lack of concern for material in secondary schools, although disquieting, makes sense. Preschool and elementary classrooms are spaces of movement and exploration. Middle and high schools are too often sites where bodies are disciplined and become docile (Bánovcanová & Masaryková, 2014); it is difficult to locate vibrant matter (Bennett, 2010) in spaces that lack vibrancy. Whereas new materialist theories have tended toward the study of early childhood experiences, other scholars have used it to consider how research might be able to better attend to school spaces (Charteris, Smardon, & Nelson, 2017; Mulcahy & Morrison, 2017), sonics (Wargo, 2017, 2018), technology (Bodén, 2017; Ehret, Hollett, & Jocius, 2016; Wohlwend, Peppler, Keune, & Thompson, 2017), and rhythms of school (Leander & Hollett, 2015; MacRae, Hackett, Holmes, & Jones, 2018). These studies serve as valuable mentor texts for applying a new materialist theoretical stance to secondary English language arts classrooms as a way of honoring the vibrancy that exists in these spaces.

Actor Network Theory

Actor Network Theory (ANT) is a framework that falls under the category of new materialism. While it could be useful to borrow concepts from other new materialist scholars like Karen Barad, Jane Bennett, and Gilles Deleuze, Bruno Latour's ANT provides a system of concepts that dovetails nicely with work around technology and maps onto classroom practices.

The network is a central concept to ANT. Bruno Latour (2005) uses the term "assemblage" interchangeably with "network," noting that "the word network is so

ambiguous that we should have abandoned it long ago" (p. 129). Associations with other networks in the world such as technical (e.g., internet) and sociological (e.g., markets) networks provide heuristics that describe the global social world, which ANT attempts to avoid. Latour is careful to point out that "Network is a concept, not a thing out there. It is a tool to help describe something, not what is being described" (p. 131). This description helps point to the similarities between networks and assemblages, as they are apparatuses used to conceptualize the way things arrange. Latour is more explicit in his understanding that a network as concept is a tool rather than something that is "real." Instead, networks help us in recognizing what actors are present within a network at any given time and provides researchers with a language for beginning to theorize what role they play in social settings.

The social, for Latour (2013), is something that "does not define a material different from the rest, but rather a weaving of threads whose origins are necessarily varied" (p. 296). Similar to Barad's notion of entanglement mentioned above, the social is something that Latour (2005) argues can only be reassembled only if it is first "opened up, de-fragmented, and inspected" (p. 250). Because of this, traditional practices of the social sciences lack the ability to interrogate the social, when so many of the critical "circulating entities" (Latour, 2005, p. 233) other than humans get ignored.

For any new materialist researcher, bodies, both human and non-human, are critical in mapping what is happening in any learning ecology. This can be more challenging than anticipated, as social science research traditions have been critiqued for disciplining scholars to enter a field of study with specific research questions that guide what inevitably will be seen and, in turn, what is likely to be ignored by a researcher

(St.Pierre, 2016). New materialists studying classrooms are forced to consider the ways in which all things have an impact on the happenings in a learning ecology. What are the students doing as a result of the laptops placed in front of them? What sensations are present with bodies as they work with technology? How is the teacher's role changed by the use of technology? How are the desks organized? Where are the windows located? How is the lesson impacted by the placement of the clock? Every actor must be interrogated.

Unseen bodies also must be considered when conceptualizing matter in the classroom. Discourses such as school rules, curriculum, and time are all bodies at work in the classroom. While none are visible to the naked eye, all have the ability to affect other bodies in potentially important ways. When observing a classroom using technology, a new materialist must consider actants such as electricity, Wi-Fi, and who has access to what websites and why? What explicit rules are put into place that outline expectations for technology use? What do all of these things do and what force do they have over the class space? What are the affective ways these bodies act upon other bodies and what possibilities does it open up for the classroom space?

Leander and Lovvorn (2006) use Strathern's (1996) heuristic of "cutting the network" as one way that researchers are forced to make determinations of how to delineate the critical bodies that make up an assemblage. Mapping networks help in theorizing classroom assemblages in the techie classroom. More traditional qualitative methods often encourage a researcher to pay close attention to the actions of the student and the teacher to determine what is happening. In other cases, a researcher might be tempted to attend to the discourses present and privileged at any given moment. New

materialists will certainly take into consideration what humans are doing and how these discursive practices impact students' ability to act. But in considering the embodied practices of humans, special attention must be given to the ways in which human and non-human bodies are arranged in a classroom. Moreover, it looks at the possibilities and constant states of becoming. It is this potentiality that creates the classroom assemblage. Just as the human and non-human bodies intra-act (Barad, 2007), erasing the line between where each begins and ends, everything that arranges in assemblages is in a constant state of productive flux. However, by de-centering human action, and instead folding it in with all other bodies in motion, we are provided with a different perspective on how digital tools, students, teachers, curriculums, rules, and other discursive practices arrange and determine what is possible in learning spaces.

One way Latour (2000) conceptualized networks is through the metaphor of human (H) and non-human (NH) actant chains: H-NH-H-NH. This can be a helpful heuristic that shows how actants of various composition might come together to inhabit a specific space and time. In the techie classroom, a network then could look something like the following: student-Chromebook-teacher-curriculum-distracted classmate-grading policy. The image of the chain takes these constituent parts of the classroom space and illustrates not only the way they come together, but how each has an impact on the entire network. While I believe this to be helpful, I would caution against the natural tendency to bring strict organization to a network. Chains are linear and have a sense of order, whereas networks are always in flux, with actants constantly entering into networks and dispersing. The chain metaphor suggests a sense of stability that is not always possible, nor necessarily desirable. However, understanding how these networks are created,

disperse, and are re-created with new actants opens up new possibilities of seeing not merely how the classroom is organized, but puts a greater emphasis on the non-human actants in the classroom, how they facilitate learning for human actants, as well as bring to bear implications of classroom discourses that might otherwise be overlooked by teachers, students, and administrators.

Similar to the broader field of new materialism, ANT studies has been taken up by early childhood and elementary school scholars, mostly interested in the cross-section of literacy and technology (Heydon, 2013; Heydon, Moffatt, & Iannacci, 2015; Lafton, 2015; Parker, 2017). One scholar, Chris Bigum, has used ANT to think about the role of technologies in in school spaces to consider how devices, namely computers have an impact on learning online (Rowan & Bigum, 2003), attention (Bigum, Knobel, Lankshear, & Rowan, 2005), and equitable access to learning (Bigum, 1998). Many of Bigum's publications using ANT to investigate technology use is over 20 years old, but they provide a useful outline for structuring a study that looks at classroom technology using this theoretical framework.

In arguing for the inclusion of computers in classrooms in the late-1990s, Bigum (1997) used ANT to discuss the ways in which the relations between teachers and computers could be re-conceptualized. He described the "sociotechnical ensembles" (p. 255) that were possible when teachers and computers work together, almost like colleagues, to develop a curriculum that is a combination of various actants, such as the teacher, computer administrator, computers, hardware, software, telephone lines, central computers, administrative procedures, and staff. By highlighting the various actants involved within these networks, Bigum made the argument that the role of the teacher

must change in order to create space for computers to enact a sense of agency that is typically not assigned to non-humans. Bigum concluded that "An ANT account of classroom use of computers captures the messiness, the potential instability, the moves made by each of the actors, including the articulation work required to hold all things together" (p. 257). During the late-90s, computers tended to be unreliable, which also highlighted the important role that both humans and non-humans have in creating sociotechnical networks that are "durable" (p. 257) and able to persist over time. Studies like this illustrate how human and non-human bodies must be able to operate together in technology-driven classrooms.

Bigum's use of ANT served as a useful model for this study. In thinking about the chains that are created between teachers-technology-discourses and the similar and often competing chains of students-technology-discourses, ANT was used to identify and study the actants within classroom networks to help determine how non-human bodies, such as laptops/Chromebooks, desks, Wi-Fi, school/classroom rules and procedures, and 1:1 policies play in the classroom setting.

Latour also wrote extensively about the changing digital landscape and how technology *behaves* and impacts human behavior. In his article, *Morality and Technology,* Latour (2002) claims that the invisibility of technology in our day-to-day lives is an "optical illusion" (p. 252). He goes on to caution,

> If we fail to recognize how much the use of a technique, however simple, has displaced, translated, modified, or inflected the initial intention, it is simply because we have changed the end in changing the means, and because, through a slipping of the will, we have begun to wish something quite else from what we at first

> desired. If you want to keep your intentions straight, your plans inflexible, your programmes [sic] of action rigid, then do not pass through any form of technological life. The detour translate, will betray, your most imperious desires. (Latour & Venn, 2002, p. 252)

When put into human hands, technology changes and shifts its original aims, resulting in unintended consequences. In making such a bold statement, Latour gives credence to the idea that technology has a stronghold on humans and that the only preventative measure they can take is to avoid technology all together.

As technology continued to advance through the 21st Century, Latour further developed the idea of the detour. According to Latour (2013), "If nothing in technology goes in a straight line, it is because the logical course—that of the episteme—is always interrupted, deflected, modified, and because in following it one goes from displacement to deviation" (p. 223). Similarly, he explains that a detour is the same thing as "when we assert that there is a 'technological problem,' an obstacle, a snag, a bug" (p. 223).

Latour's concepts of mediators and intermediaries are closely related to detours. An intermediary is "what transports meaning or force without transformation: defining its inputs is enough to define its outputs" (Latour, 2005, p. 39) whereas mediators "transform, translate, distort, and modify the meaning or the elements they are supposed to carry" (Latour, 2005, p. 39). Put differently, intermediaries are highly predictable, whereas mediators are unpredictable and can lead to unforeseen outcomes. Latour draws a direct connection between these concepts and technology, explaining how "A properly functioning computer could be taken as a good case of a complicated intermediary… But if it breaks down, a computer may turn into a horrendously complex mediator" (Latour,

2005, p. 39). This is an important consideration when researching technology anywhere, but in particular in school spaces. Digital tools have become faster and more reliable over time, but they still possess the potential to transgress and "[malfunction] through a sort of malevolent depression" (Latour, 2013, p. 225). It is when technology takes a detour that humans are snapped out of routine because they are incapable of doing what they had intended to do with digital tools.

Humans, however, do not get a free pass when considering the implications of the infusion of technology in everyday life. Latour (2012) states, "It is not the case that we have failed to care for Creation, but that we have failed to care for our technological creations. We have failed to love and care for them" (p. 2). As the creators of these devices, humans play an important role for taking care of technologies. For Latour, there is a clear need for an understanding how we are complicit in these technological detours. Similarly, Pink, Horst, Postill, Hjorth, Lewis, and Tacchi (2016) argue that digital material "are made and made meaningful through human activity" (p. 16). So, a study like this not only focuses on the impact of technology on school spaces, but how humans infuse a sense of value and meaning into these tools through learning and social practices.

Anthropologists have also looked at the materiality of objects like the Sony Walkman (du Gay, Hall, Janes, Mackay, & Negus, 1997) as a way of storying technology that is deeply embedded into cultural milieus of the time. Technologies, particularly those attached to the listening of music, have strong ties to culture and carry with them traces of symbolic significance as well. Silverstone and Hirsch (1992) talk about "domestic technologies" as those that are "embedded in the structures and dynamics of contemporary consumer culture" (p. 20). This study looks closely at the tools that

students use that are sanctioned by their schools, specifically Chromebooks. But it will also address personal technology use, considering how cell phones and headphones are signifiers for youth culture. Building on the ideas presented by Silverstone and Hirsch, as well as Latour's (2013) concept of detours, this study considers how technologies become "domesticated" into daily lives and what happens when these devices do not *behave*.

New Literacies

In addition to ANT, my epistemological stance as it relates specifically to literacy is grounded in new literacies studies. This approach recognizes that literacy is sociocultural and situated in experiences, interests, and social and professional contexts (S. B. Heath, 1983; Lankshear & Knobel, 2011; Scribner & Cole, 1981; Street, 1984). Lankshear and Knobel (2007) note that, "because there are multiple ways of being in the world, then we can say that there are multiple L/literacies" (p. 219). This is important when considering the personal and professional lives of teachers. The new literacies epistemology is often used to study student technology use, both in and out of schools. However, the contextual notion of literacies is valuable in understanding the ways in which Discourses (Gee, 1990) shape teachers' perspectives toward technology. One trait that makes new literacies "new" is that they are deictic (Coiro, Knobel, Lankshear, & Leu, 2008), by being context-dependent on the space and time in which technology is being used. As such, the carry over between technologies used at home versus in classroom spaces for teachers is worth investigating in order to determine how the tech-savvy teacher's pedagogies are shaped by their out-of-school literacy practices.

Mills (2010) argued that new literacies made a "digital turn" during in the 21st century, focusing on how social experience was changed when connectedness to community moved to digital spaces. Given that new literacies made such a shift, scholars must be able to differentiate between the "technical stuff" and the "ethos stuff." According to Lankshear and Knobel (2011), the "ethos stuff" are "often more 'participatory', more 'collaborative', and more 'distributed'; less 'published', less 'individuated', and less 'author-centric' than conventional literacies" (p. 29). So, while this study focuses on actors within the classroom, specifically the digital tools being used by students, it looks beyond the "technical stuff" to determine how digital tools allow for students and teachers to connect, deepen, conceptualize, and develop epistemic content knowledge differently when teachers engage students with technology.

In considering the varied learning contexts in modern times, new literacies provides an important framework for considering the liminal space between home and school and how each informs the other. Alvermann (2011) considers in-school and out-of-school contexts to be less like containers and more like "sieves through which social, cultural, economic, and political discourses animate one another" (p. 158). By and large, new literacies work has centered around these contexts by focusing on the practices of young people's use of technologies such as iPads (Hutchison, Beschorner, & Schmidt-Crawford, 2012), iPods (Ehret & Hollett, 2013), mobile phones (Warner, 2016), as well as their curation of podcasts (Bianchi-Pennington, 2018), and social media practices (J. Davies, 2012; Gillen & Merchant, 2013; Greenhow & Gleason, 2012; Thibaut, 2015; Wuebben, 2016). Studies like these take into consideration the movement of teen culture

into school spaces, recognizing that the relationship between home and school literacies bleed together so that they are constitutive of each other.

Discourse (Gee, 1990) is an important concept for this study, as it informs how new literacies practices help produce teachers and students. Gee argues that Discourse is more than language and that it serves as an "identity kit" (p. 142) that demonstrates "membership in a particular social group or social network" (pp. 142-143). This concept of Discourse builds on the work of Scribner and Cole (1981), Heath (1983), and Street (1984, 1988) in arguing, not only that language and literacy is socially situated, but it is wrapped up in identity. Returning to the idea of teachers who tech, school identities of teachers are important to understand. Investigating self-perceptions of these teachers who were identified as tech-savvy by administration, fellow teachers, and students, provided important insights related to *why* certain teachers believe technology belongs in the English classroom as well as a possible understanding of why English teachers are uniquely positioned to bring technology into their classrooms.

This study takes a slight deviation to the work of new literacies studies because, whereas a significant corpus of the work up to now has centered around the in-school and out-of-school literacies of adolescents and young adults, this project recognizes that teachers' identities are also shaped both by school discourses and literacies practices that traverse both in-school and out-of-school spaces. By considering how teachers' use of digital tools and social media outside of school shapes their teaching identities, I attempt to gain a stronger understanding of the "sieve" between different contexts for educators and how technology use in both home and school contexts might inform each other in meaningful ways.

Organization of Study

This study is organized into six chapters. Chapter One is an introduction to the study that provides necessary foregrounding of the project by discussing the problem to be addressed, questions to be answered, definition of terms, and the theoretical framework which informs this work. Chapter Two is a review of literature relevant to the study of teachers and students and their use of technologies in the classroom. Chapter Three is an explication of the methodologies and approaches used throughout this study. Chapter Four is devoted to the findings related to the idea of teachers who tech and the impact on pedagogy. Chapter Five is devoted to a developing theory of the "paradox of tetheredness," focusing on the ways in which the mobile digital tools serve as important connective tendons to classroom learning. This study concludes with Chapter Six: a summary of findings, and implications for teaching practice, teacher preparation, and future research.

CHAPTER 2

REVIEW OF RELEVANT LITERATURE

What follows is a review of literature that helps situate this study by touching on a body of research that addresses the impact and role of technology on teaching and learning at the point of publication. One of the significant challenges about research in any field that deals with technology is that it runs the risk of becoming obsolete by the point of publication due to the speed of technology innovation. The thoughts of Shirley Brice Heath, Brian Street, and Molly Mills (2008) resonate with my approach to this chapter:

> Often one hears about the literature review as though there were only one body of literature to review or that one could produce a single such review. We speak instead of literature reviews to emphasize both the iterative nature of such readings and the need to read across topics and even disciplines as central research questions get refined during the course of fieldwork. (p. 50)

The interdisciplinary approach to this study, which uses anthropological methods to look at technology, teaching, learning, and school space made it so that the review of literature needed to be expansive to address such considerations. I took seriously the notion that writing a literature review is an iterative process. The following is a synthesis of research that informed the design of the study that was supplemented with additional literature after both the observation and data analysis stages which assisted me in developing a greater understanding of the school contexts being studied.

Technology in the English Language Arts Classroom

Understanding technology use as a literacy is critical to this study because it takes into consideration the skills as well as the social D/discourses inherent to the use of technology, both in in-school and out-of-school spaces. Since its inception in the 1980s, the field of New Literacy Studies (NLS) has developed compelling arguments about literacy practices and how they are social, rather than individualistic. Over the past 35 years, concepts of literacy and what counts as text have gone through significant revisions, particularly with NLS scholars who understand literacy as a reflection of socio-cultural practices. In an increasingly technological world, people engage with multiple forms of literacies at work, at home, and in public spheres, all of which are believed to develop their identities, values, and beliefs. This confluence of culture and technology gave rise to new litera*cies* studies, a subset of NLS that seeks to understand various digital and analog literacy practices and how they impact the social world.

Situating technology use as a literacy practice highlights the ways in which digital tools and their discourses have a place in English language arts classrooms. As technology became more accessible in the early 2000s, researchers in the field of new literacies became interested in not only studying the social nature of traditional typographic literature and spoken language, but novel ways in which technology was connecting people through the internet. Classrooms seemed to be progressing alongside cultural movements in communication as researchers began studying the ways blogs (Lacina & Griffith, 2012; Lewis, 2014; Ranker, 2015), iPads (Burnett & Merchant, 2017; Hutchison et al., 2012; A. Simpson, Walsh, & Rowsell, 2013), mobile phones (Bromley, 2012; Warner, 2016), podcasting (Bianchi-Pennington, 2018), social media (Gillen &

Merchant, 2013; Greenhow & Gleason, 2012), coding websites (Chandler-Olcott & Mahar, 2003), and digital reading (Coiro, 2009; Hutchison, Woodward, & Colwell, 2016; D. J. Leu et al., 2015) became integrated into English classrooms. In general, new literacies studies are less about technology as an innovation to pedagogy and more about the messy ways students' identities, social lives, and competencies are incorporated in and out of classrooms and the implications for students' learning, both at home and at school.

Outside of new literacies research, the findings about the efficacy of technology are mixed and address the varied interests and concerns about how technology is changing learning landscapes. While some have made the argument that technology integration is important because of its impact on student engagement (Sawang et al., 2017; Tay, 2016), such a claim is often justified by the use of technology as a tool for learning content knowledge as opposed to helping students develop a unique set of literacy practices for complex modern times. Indeed, some of the loudest and most compelling advocates for technology in schools come from scholars who argue that it dovetails with the expectations of digitally-connected world (Hannaford & Beavis, 2018). The use of technology in English classrooms seems appropriate, not just in considering that such skills are so closely aligned with literacy, but because young people will need to be able to use digital tools and interpret burgeoning forms of media (Jenkins et al., 2009; Turner et al., 2017). For that reason, technology should not only be viewed as a tool to enhance disciplinary content (Manderino & Castek, 2016), but as a means of providing critical literacy skills for students who will inherit a digitally mediated world (Kimbell-Lopez et al., 2016).

In addition, a closer look at youth culture shows that many students are already using technology during their personal time outside of school (boyd, 2014; Ito et al., 2010). Discussions of technology in secondary classrooms also provide opportunities for talking about critical digital media literacies (Pangrazio, 2016) and youth civic engagement in online spaces (Garcia, Mirra, Morrell, Martinez, & Scorza, 2015; Ito et al., 2013, 2015). These topics go beyond the discussion of skills and competencies and open up the classroom to concerns related to the practices that go into making meaning of texts in digital spaces and how online communities engage with shared political purpose. Teachers who are able to bridge adolescent and young adult social practices with technology and content knowledge are likely better positioned to draw valuable connections between in-school and out-of-school literacies (Coiro et al., 2016), making learning meaningful for students.

Because of the embeddedness of technology in the lives of young people, use of technology can be one way of developing a culturally relevant pedagogy (Ares, 2006, 2008) which honors the backgrounds that students bring to school. As a result, English teachers are beginning to recognize that they need to help students develop the skills needed to be digitally literate (Cho & Afflerbach, 2015; Singer & Alexander, 2017). For example, in her study of nine middle school teachers, Margaret Hagood (2012) found that a new literacies approach to English language arts can increase motivation, engagement, and collaboration, when students are able to bring their digital practices into the classroom. More schools today are integrating technology at lower grade levels in order to teach elementary school students how reading on screens is different from reading more static, typographic texts (Brown, 2016). Equally important for teachers is the

recognition that digital literacy skills do not supplant more "traditional" reading skills because students do not live in a completely digital world. Because of this, teachers are tasked with creating curriculum that allow students to develop literacy skills that are mediated by digital and traditional, typographic texts (Molin & Lantz-Andersson, 2016). It is for this reason that researchers like Maryanne Wolf (2018) have proposed a "biliterate" approach to reading that engages students in both mediums of text. Although the implementation of technology can provide one way of ensuring content is culturally relevant, research also suggests that teachers should be seeking balance in their approach to teaching literacy.

In spite of the promise that technology offers to secondary English classrooms, research around the use digital tools in classrooms is not without its detractors. One of the most ardent arguments against the use of computers and mobile devices in school is that they create a distracting environment for students (Dobler, 2015; J. A. Williams et al., 2011), a topic which will be discussed in great detail below. Given that technology has such a high ceiling for making learning relevant by addressing important issues that impact youth today, teachers must be willing to determine whether or not the potential benefits of digital tools outweigh the possibility of classroom distraction. School initiatives, such as 1:1 initiatives, can be one way in which school districts develop an infrastructure for incorporating technology while establishing school norms and expectations when it comes to appropriate use.

1:1 Initiatives

1:1 technology initiatives started becoming more and more prevalent during the turn of the 2010s as district and school-level policies attempted to address standards-

based expectations for a digitally literate citizenship. Typically, with these initiatives, schools provide every student with laptops, netbooks, or tablets. Other models use a "bring your own technology" (BYOT), asking students to use their personal devices in the classroom for class activities. Not only do these initiatives attempt to integrate technology more easily into the classroom, but programs in which students are provided school-sanctioned digital tools also address the socioeconomic issues typically associated with technology by ensuring that all students have access to technology.

In spite of its increased popularity in the past decade, studies have produced mixed review regarding the efficacy of 1:1 programs in schools (Harper & Milman, 2016; Islam & Gronlund, 2016). As mentioned above, one of the biggest concerns that teachers and administrators have when it comes to the use of technology is the uptick in student distractedness. Studies investigating 1:1 programs are quick to point out that off-task student behavior is a significant deterrent for adopting programs that insist on putting technology into the hands of every student (Andersson, Hatakka, Grönlund, & Wiklund, 2014; Ferguson, 2017; Tallvid et al., 2015). Incorporating technology on a broad scale comes with the expectation that teachers are trained on how to use digital tools for educational purposes and prepared to help students properly negotiate how to include the technology into their school and personal lives (Luo & Murray, 2018). So, while technology brings with it the increased temptation of distraction, the tools themselves are perhaps less to blame than the teachers and administration who are charged with mentoring students through the process of thinking about how to properly engage with technology.

Because the narrative for distractedness has been so swift in criticizing 1:1 initiatives, it has created new areas for inquiry into the study of technology in the classroom. Recent research has shown that the presence of technology is not necessarily to blame for the uptick in "cyberslacking" as one might assume (Rana, Slade, Kitching, & Dwivedi, 2019). Two ways in which teachers can combat digital distraction is by creating and fairly enforcing established school or class "restrictions" (Kay, Benzimra, & Li, 2017) and ensuring that the technology being deployed is being clearly tied to learning objectives so that students understand how technology relates to their learning (M. Green, 2019). Teachers who are able to clearly communicate goals and expectations of technology use in 1:1 settings stand a greater chance of avoiding the distraction trap that critics believe students too often fall into.

Criticism of 1:1 programs also stem from parental concerns related to whether or not adolescents and young adults need more time with screens. Parents are often the "silent stakeholders" (Keane & Keane, 2017, p. 1447) who want to know whether or not the learning ends justify the technological means. Another parental issue that has garnered significant attention lately is the concern over screen time and whether not it is in their child's best interest to look at a computer screen all day and night in order to complete tasks for school. Parents may also may feel uncomfortable with their children bringing home a school sanctioned device and spending time with technology that used to be reserved for social time with parents and siblings (Jin & Schmidt-Crawford, 2017). Because of these concerns, it is the responsibility of the schools to bring parents into the fold by educating them and providing a plan for how the technology is expected to lead to an increase in student motivation, engagement, and learning, without adding to greater

potential for distraction (Keane & Keane, 2017b). Additionally, schools may choose to provide workshops about how to help parents hold conversations about screen time at home with their child (Jin & Schmidt-Crawford, 2017).

Another sticking point for 1:1 initiatives is that it requires buy-in from teachers. It makes sense that when teachers feel uncomfortable using school-sanctioned digital tools—whether it is due to lack of digital competencies, concerns over time and task management, or fear of losing control of the class—they will be more reluctant to use technology in their teaching (Tallvid, 2016). The literature around what makes a successful 1:1 program tends to suggest that there are several determining factors that impact teachers' willingness to integrate technology into their pedagogy. On a practical level, school leadership must be willing to ensure that the appropriate infrastructure is put into place before rolling out the use of school-sanctioned devices (Holen, Hung, & Gourneau, 2017; Keane & Keane, 2017a). Teachers and students must be able to have access to appropriate hardware and software and a wireless network that supports the capacity of technology (Corn et al., 2010). These responsibilities require leadership on the school and district level to ensure that the technological needs are being met in order to avoid as many disruptions to learning and subsequent frustration from teachers and students (Gherardi, 2017). Teacher reticence with technology can serve as a significant deterrent from using technology in the classroom. Because of this, schools must be willing to provide the appropriate infrastructure, both in the form of necessary hardware, software, and Wi-Fi service as well as training and support for teachers on how to best implement the tools into their curriculum.

Even when teachers have the best digital tools at their disposal, it can be difficult to manage an entire class of students who have access to all the information available on the internet. As a result, teachers fear that their inability to monitor students can lead to an increase in academic dishonesty (Karlsudd, 2018; Rodriguez-Gomez, Castro, & Meneses, 2018). Concerns over cheating by copying work from sources online highlights the challenge that teachers face in facilitating classwork using digital tools. But they also make the argument for using technology less for rote assignments and more for creative, student-centered activities (Boulden, 2017; C. A. Smith & Santori, 2015). 1:1 schools must be able to understand the affordances of the digital tools they are implementing and determine how they will address potential troublesome side effects of providing all students with their own personal devices.

Part of the infrastructure of a 1:1 program includes establishing schoolwide policies for appropriate use. Teachers often recognize this as a level of support that delineates how technology can and should be used in the classroom and what happens when students choose to not follow those expectations (Corn et al., 2010; Holen et al., 2017). Although administrative support in the form of infrastructure and discipline when it comes to technology seems to be important, professional support is critical in increasing a teachers' willingness to use technology in the classroom (Erbes et al., 2016). Some studies suggest that full-time "technology facilitators" (Stanhope & Corn, 2014) can serve as valuable advocates by providing professional development and situated classroom support, as well as overseeing general administrative tasks related to technological infrastructure. Other design models for professional development have emphasized the importance of teachers being given opportunities to reflect on their

motivations with regard to digital literacy so that they are better able to determine how technology fits into their English curriculum (Hobbs & Coiro, 2019). Challenging and encouraging change in teacher dispositions is important because, if schools are able to help teachers develop positive attitudes toward technology, they will be more likely to integrate it into their classrooms (Gibson et al., 2014). In addition to making space for reflective practice, professional development should include hands-on opportunities for teachers to play with technology in order to help them better understand the affordances of various tools and begin considering ways in which they could implement them into their classrooms (Hobbs & Coiro, 2016). Incorporating a systematic professional development series devoted specifically to technology can be difficult to implement. But it holds some of the greatest potential for explicit instruction and support for teachers who enter the classroom with little background or experience with technology.

Other programs have developed technology leadership teams based on the most tech-savvy teachers to serve as liaisons for the rest of the staff. Delegated leadership, combined with collaborative learning communities, have shown to be powerful ways of helping less techie-savvy teachers develop competencies because of their willingness to listen to and be supported by their colleagues (Keane & Keane, 2017a). It becomes clear that districts and school leadership can provide significant support to help teachers feel more comfortable about the sudden influx of technology into their classrooms during a 1:1 program rollout.

In spite of the challenges and concerns listed above, studies have indicated that 1:1 initiatives can have a powerful impact on students and their experience in classrooms. In considering the difficult correlation between technology use and student success,

research suggests that 1:1 programs tend to lead to greater student academic achievement (Bebell, Clarkson, & Burraston, 2014; Harper & Milman, 2016; Harris, Al-bataineh, & Al-bataineh, 2016; Zheng, Warschauer, Lin, & Chang, 2016). Even studies that refute significant gains in student achievement do not suggest that the increased use of technology negatively impacts student achievement (N. L. Williams & Larwin, 2016). So, although concerns regarding increases in student distraction and screen time persist, the body of literature related to 1:1 technology and student achievement tends to lean heavily toward the positive impact of these initiatives.

Other studies that have focused on the experience of students in 1:1 schools and the perceived benefits of greater access to technology. One obvious advantage to these initiatives is that they provide technology for every student. As a result, the opportunities for personalized learning are significantly increased, which gives students a greater sense of control during individualized learning opportunities (Crook, Sharma, & Wilson, 2015; Varier et al., 2017). In addition, 1:1 technology, specifically iPads, offer the potential for students to engage in more constructivist, project-based learning (Boulden, 2017; Maher & Twining, 2017; C. A. Smith & Santori, 2015). Because the devices are provided by the schools, districts are better able to address concerns with regard to access to technology (Harper & Milman, 2016). Students who come from households that do not own technology are provided with a digital tools that they otherwise would not have access to. So, in addition to helping students develop new digital literacy skills, programs may also have the added benefit of providing opportunities for children to introduce their parents to newer technologies (Noguerón-Liu, 2017).

From an instructional standpoint, technology can be a powerful tool for differentiation. In addition to helping support teachers in providing individualized reading skills (Frey, 2006), tools like iPads can help teachers develop new pedagogical strategies when working with English Language Learners to help tailor language development to their specific needs (Prince, 2018). It should come as little surprise, then, that one of the biggest advantages of 1:1 programs is that putting a device in the hands of all students affords teachers the opportunity to personalize learning in meaningful ways.

Studies have shown that 1:1 initiatives have not only had positive impacts on academic achievement. As mentioned above, the world is becoming increasingly connected through the use of digital devices. Because of this, some have argued that 1:1 programs are important because, regardless of whether or not the use of technology leads to greater academic gains, learning that is mediated by technology is more reflective of the global flows of knowledge in digital age (Livingstone, 2012). Not only does a 1:1 approach reflect current trends in modern society, but it democratizes learning by creating learning ecologies that model digital citizenry (Spires et al., 2012). In addition, 1:1 devices have been shown to help improve social interactions and build classroom community as digital tools serve as important shared “reference points” that foster collaborative activities (Bebell et al., 2014).

Buchholz (2015) studied the impact of 1:1 technology in a multiage classroom, focusing primarily on the embodied practices and potential for producing authentic video content using iPads. Students were tasked with creating short commercials that discussed either the benefits or potential dangers of technology in schools. Such a project asked students to consider some of the discourses that surround technology use with youth, both

in school and in their personal lives. As Buchholz observed one of the focal groups who chose to discuss the negative impacts of technology, she recognized that improvisation, rather than careful scripting of commercials played an important role—a seemingly important affordance of the ease of recording on an iPad. Because students had access to iPads, they were able to quickly brainstorm ideas and then improvise their performances on the fly. Students created three vignettes which mocked the ways adults often talk about mobile devices as tools that are a distraction, mind-numbing, and lead to addictive and even combative behavior. The students then compiled their vignettes into an infomercial using MovieMaker software on PC computer.

The study demonstrated how 1:1 technologies allowed for greater potential for creativity through the production of digital texts. Through their mildly subversive informercial, students used their voice to share their thoughts about the way technology was being used in their school and to challenge discourses on how adults often position technology as an impediment to learning. The assignment also gave students the opportunity to reflect and share their frustration with the way iPads were replete with apps that were geared so much toward learning that they were not engaging or interesting to use. They suggested that, rather than administrators and superintendents, students and the teachers who know their students the best should be in charge of choosing apps for the 1:1 iPads.

Buchholz (2015) also pointed out that the iPad camera is a stock app that is often overlooked, but which possesses great potential to "capture literate bodies in action rather than forcing the meaning-making process onto paper" (pp. 20-21). The video project was powerful because it required students to do more than read a text and respond in essay

form. Rather, they had to *show* what they understood about the creation of a persuasive visual text. Buchholz discussed the need for "exploring new relationships between digital technologies, bodies, and literate identities" (p. 22), which is a call that new literacies research seems capable of doing in attempting to better understand how 1:1 initiatives can be a powerful force in the creation of students' identities inside and outside of English classrooms.

Alternatively, 1:1 initiatives built on the BYOT model encourage students to bring their personal devices from home to school. Although this opens up significant questions about equity, particularly for students who cannot afford to purchase technology, such programs have been found to help bridge the gap between home and school by helping students understand how their personal devices can be powerful tools for learning (Maher & Twining, 2017). So, although 1:1 initiatives are not a silver bullet for solving educational woes in the United States, it is evident that it has a lot to offer teachers and students in making learning more individualized and relevant.

Rising Technophobia in Schools

Despite its potential, there have been movements in recent years to scale back the technology in schools because of fear of possible deleterious effects of technology overuse and on young people today. This focus on the negative impact of technology pervades both academic research and mainstream media, which has changed the conversation around technology in both in-school and out-of-school settings. Discourses surrounding technology in youth personal lives are troubling because reports from news media sites like the New York Times have shared concerns that "the devil lives in our phones" (Bowles, 2018). Even renowned technologists like Ian Bogost (2012) have

compared technology's addictive nature to cigarettes. Fears over the well-being of young people based on their (ab)use of technology makes it so that the decision to adopt 1:1 initiatives is incredibly fraught as schools do not want to be accused of perpetuating youth addiction to technology by providing them with digital tools that could potentially have harmful effects.

One significant level of concern deals specifically with the mental health of adolescents who spend significant time with digital devices. As social lives for teens move increasingly toward online spaces, young people are finding themselves in the unenviable of position having to negotiate technologies that serve as both tools for learning and those that mediate their social lives. The uptick in cyberbullying leads to stress that does not go away when students shut down their devices (Calpbinici & Tas Arslan, 2019). Concerns of "technostress" attempt to explain debilitating effects of overuse of technology which force people to completely disconnect from their online networks (Tarafdar, Maier, Laumer, & Weitzel, 2020). As a result of these fears, schools have begun implementing zero-tolerance cell phone policies to quell some of the presumed anxieties that young people may be feeling. However, forcing students to keep their phones out of sight may lead to "nomophobia—the fear of being without access to one's cellphone" (Mendoza, Pody, Lee, Kim, & McDonough, 2018). As mentioned above, part of 1:1 program infrastructure is creating norms for technology use that is appropriate for learning communities. However, while administrative support with regard to school policy is important, schools must also be careful to be responsive to the culture of the young people they are attempting to support by ensuring that the inclusion of some technologies over others do not lead to greater distraction or stress.

The implementation of school rules related to technology, specifically in 1:1 school settings, have led teachers and school administrators to lead to increasingly restrictive cell phone policies. According to a study conducted by Robert Epstein (2007), "teens in the U.S. are subjected to more than ten times as many restrictions as are mainstream adults, twice as many restrictions as active-duty U.S. Marines, and even twice as many restrictions as incarcerated felons" (p. 59). Some schools have attempted to avoid zero-tolerance technology policies by trying to reimagine ways to encourage young people to hold themselves accountable for responsible use of their devices through games that reward students for keeping their phones in their pockets or bookbags (Hernan, Morrison, Collins, & Kroeger, 2018). Others have argued that, rather than simply creating rules or games, teachers have a responsibility to help students develop self-regulation when it comes to the technology in order to help them recognize times when it is most appropriate to use devices during the school day (Tulane, Vaterlaus, & Beckert, 2017). The following section discusses one potential orientation toward technology that might help teachers think about how to teach responsible technology use in schools.

Digital Wisdom

Marc Prensky (2012), coined the term "digital wisdom" as a way of theorizing how technology can be used as a tool for learning as well as how humans can use it practically to have the greatest possible impact on their lives. Through his deep exploration of technology throughout history, Prensky considered how some of our world's first technologies are similar to those of modern times. For example, the discovery of fire has had one of the greatest impacts on human life. It provides heat for

comfort as well as serving as a means for cooking food. But it also possesses the deleterious potential of burning down homes, scarring our bodies, and being harnessed for war. Over time, humans have learned to weigh the pros and cons of such technologies and have been forced to take the good with the bad. Modern technology, like computers, cell phones, and tablets, come with extraordinary potential. More and more, arguments about the side effects of living in a digital society, particularly newer discussions of depression, declension of social skills, and addiction (Twenge, 2017) are becoming a greater concern as young people are finding digital tools closely woven into the fiber of youth culture.

Understanding technologies as always being a double-edged sword, Prensky (2012) argues that "we recognize the dangers of the technology and do our best to protect against them, but we accept that this powerful tool benefits us and strive to make better and better use of it" (pg. 48). Such a recognition of both the dangers and potential of technology is an important starting point for parents and teachers. Due to this complex dichotomy, Prensky makes his call for digital wisdom: a "dual concept, referring both to wisdom arising from the use of digital technology, and to wisdom in the prudent use of such technology" (pg. 51). In short, technologies are only useful when deployed by a person who knows *how* and *when* to use them.

In considering the role of all teachers of adolescents (not just teachers who tech) one must be willing to help students reflect on their relationship to technology and how it can best be integrated into their lives. There are a few things adults can take into consideration, most notably the role of classroom rules and how they are justified. Citing Schwartz and Sharpe (2010) Prensky (2012) states that rules are "pale substitutes for

wisdom…rules without wisdom are blind—and at best guarantee mediocrity, forcing wise practitioners to become outlaws, rule-breakers pursuing a kind of guerilla war to achieve excellence" (pg. 52). In other words, wisdom is essential to the creation of rules because they underpin the rationale that provides those being governed by such rules with a practical explanation of why they should abide by them. With regard to technologies in the classroom, Prensky attempts to go beyond mandating rules and instead highlights the skills and behaviors that teachers can be encouraging from their students. According to Prensky, "A big part of digital wisdom is knowing when our decisions to use those technologies are right" (pg. 51). There are current trends in America's classrooms in which teachers create "cell phone jail," locking up personal devices as a means of classroom management (T. Smith, 2018). However, policing phones is a short-sighted solution for a perceived larger societal concern over the addiction and distractibility of technology. This issue could be addressed more effectively by allowing students to keep their phones in their possession and teaching them digital wisdom—when and how to put technology to work in the most effective way.

Technology's Impact on Teacher Practices

This literature review has already explored several factors which impact teachers' willingness to incorporate technology into their pedagogy. Support from administration and technology leadership has been discussed as one way teachers may be able to develop the skills requisite to understanding the tools that can support their teaching. However, classroom tech-savviness is not just about knowing how to teach with digital tools—it is also a reflection of the level of confidence that teachers have with dovetailing their content knowledge with technology (Tondeur, van Braak, Ertmer, & Ottenbreit-

Leftwich, 2017). This section explores how technology has impacted teaching practices, specifically in secondary English classrooms. In addition, it will provide a foundation for beginning to think about teaching practices that might begin to define a teacher who techs.

For over a decade, scholars in the field of English education have recognized that technology is a literacy that should inform curriculum and pedagogy (Swenson, Young, McGrail, Rozema, & Whitin, 2006). Secondary English teachers should be able to recognize the role of technology in adolescent and young adult lives and develop lessons that help students recognize the impact of technology on both literacy and social practices (Mehan, 2018). This, however, is no simple task, as teachers must be able to develop epistemologies that help them develop digital pedagogies for literacy instruction (Sofkova Hashemi & Cederlund, 2017). One of the most significant barriers that prevent teachers from using digital tools in their classrooms is the negative attitudes they hold about technology, specifically as it relates to their lack of competencies and skills (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012). Subsequently, teachers—particularly those less willing to use technology—need support in aligning their current pedagogical beliefs with the technology practices that could make learning more meaningful for their students (Tondeur et al., 2017). In addition to providing professional development, as mentioned above, teachers should be encouraged to assume the role of researcher when they use technology in order to determine the impact of technology and to refine their technological pedagogies (Kortecamp & Steeves, 2002). Secondary English teachers might consider how youth practices in digital landscapes

can/should inform their pedagogical approach to reading, writing, listening, speaking, and viewing.

In thinking specifically about pedagogy, it is important to differentiate between various applications of technology in the classroom. Some studies highlight the ways in which technology enhances teaching practices by helping teachers assess learning (Shirley & Irving, 2015) and provide feedback and learning support more efficiently using online platforms (McKnight et al., 2016). Technology use that is teacher-centered, specifically related to workflow, highlights how technology can be a boon for teacher productivity. There is a stark contrast between research that investigate technology's impact on teachers versus those that study how learning is impacted by the purposeful integration of digital tools into the learning process. Studies that demonstrate how technology can be deployed to create student-centered learning opportunities (Drexler, 2010; Mills, Knezek, & Wakefield, 2013) or support genuine curiosity through authentic inquiry projects (Kingsley & Tancock, 2013; Norris, Soloway, Ming Tan, & Looi, 2013) paint a picture of tools with unique affordances that change, not only how students learn and are assessed, but what students are capable of producing to demonstrate their developing mastery of content.

In teaching contexts, as with almost any other skill, there are degrees of mastery that might explain why teachers are more successful in certain domains of the profession than others. The same can be true for teaching with technology. Christensen and Knezek (2016) developed a continuum to determine teachers' "mobile learning readiness." At the lowest stage, a teacher may simply be aware that technology exists, but lack the skills to apply it to teaching. Teachers who know how to creatively apply technology to new

contexts are thought to have reached the highest stage of mobile readiness. So, for English teachers to be deemed "mobile learning ready," they would need to be able to know what tools are available, consider the implications of the tool on literacy practices, and determine a way that students could use the tool for their own authentic purposes.

In addition to considerations such as age, experience, and access to technology, proficiency with technology plays a significant role in whether or not teachers are willing and able to integrate technology into their teaching (Inan & Lowther, 2010). Similarly, other studies have found that there is a direct correlation between teachers' personal experience with technology and their increased willingness to use technology in the classroom (Liu, Ritzhaupt, Dawson, & Barron, 2016; Ritzhaupt, Dawson, & Cavanaugh, 2012). Teachers' familiarity with social media, blogging, gaming, reading online, and consumption of different media has an impact on their "digital mindset" in the classroom (Tour, 2015). In addition, teachers may be engaging in important learning communities online that help them refine their teaching practices (Damico, 2017). These findings suggest that more tech-forward, "mobile learning ready" educators may receive their most valuable professional development at home as they engage in their personal online spaces.

Attempting to define what is meant by "tech-savvy" is tricky based on the current literature related to teachers and their relationship to technology. In general, "tech-savvy" teachers are understood as those who are more comfortable facilitators of learning with technology (Corn et al., 2011) and are often expected to serve as role models and leaders help their less tech-savvy colleagues learn how to use technology in their classrooms

(Kelly, 2015). In considering all that goes into creating a tech-savvy English classroom, Kajder (2003) claims,

> You don't have to abandon your beloved, tattered copy of Webster's dictionary for the newest online edition available through a handheld PC. Becoming tech-savvy simply means that you will lead students to become digitally literate within the context of your curriculum. (p. 11)

In addition, Kajder posited that teachers do not need a lot of technical knowledge and may even lack the "savvy to anticipate problems that might arise and [the] chaos [that] can often ensue" (p. 16) when technology malfunctions. Instead, being savvy requires a certain level of curiosity in order to be a "continual learner" (p. 22). In this regard, it is less about the digital competencies of teachers and more about an exploratory orientation that embraces the risks of incorporating technology that honors the savviness of students. In short, creating the tech-savvy English classroom begs teachers to recognize their possible blind spots when it comes to technology and forge ahead with technology because teachers are responsible for preparing students for their digital futures.

Hobbs and Coiro (2019) define the "techie" teacher a little differently:

> You have a passionate curiosity about new digital tools and platforms and you like to be the first one to discover and use them. You experiment with how digital technologies can promote learning and you see much potential to engage students with learning through the use of apps, tools and digital platforms. (p. 4)

This is a clear deviation from Kajder's definition, as the "techie" teacher is more about digital skills and explicit curiosity with being an early adopter of technology in order to develop novel pedagogies for engaging students with a variety of digital tools in the

classroom. Although there is a wide berth between both concepts of what makes a teacher who uses technology—as well as sixteen years between publication—one characteristic both share is a sense of curiosity. Whether or not a teacher has strong digital competencies, it would appear as though the tech-savvy teacher inquires about their classroom practices and seeks out ways to experiment with technology because they believe it makes learning purposeful and engaging.

To some extent, this study considers how "savviness" with digital tools separates more tech-savvy teachers from their less techie colleagues and draws on the literature discussed in this section in order to begin to better understand how competencies and positive dispositions regarding technology are produced. In addition to looking specifically at digital pedagogies, special attention will be given to addressing how content knowledge is made more relevant, accessible, or authentic when a capable teacher implements technology. In so doing, this work builds on adjacent fields of literacy and writing pedagogies scholarship that have demonstrated that teachers who read are better teachers of reading (Cremin, Mottram, Collins, Powell, & Safford, 2009; Daniels, 2003; Mckool & Gespass, 2009) and teachers who write are better teachers of writing (Augsburger, 1998; Cremin & Baker, 2014; Grace, 1999; Greene, 2017; Wells, Lyons, & Auld, 2016). This study follows a similar line of inquiry by asking whether teachers who tech are better English teachers with technology. In other words, do teachers who use technology outside of school have a penchant toward using technology in the classroom and does that personal engagement with technology inform their English teaching pedagogies in unique and meaningful ways?

Teacher Preparation Programs and Technology

In spite of a significant amount of research and policies devoted to highlighting the value of technology in education, the adoption of technology is not nearly as prevalent as one might assume. One reason for this is the issue of teachers and their identity and personal relationship to technology. There are several factors that tend to predict a teacher's willingness to use technology once they have their own classroom. Significant scholarship has been devoted to the connection between teacher self-efficacy related to digital tools and the implementation of technology in the classroom (Ertmer & Ottenbreit-Leftwich, 2010; Killi, Kauppinen, Coiro, & Utriainen, 2016). The issue of self-efficacy has been used to justify the need for college level courses that instill the importance of digital literacies early and often in teacher preparation, believing that even "digital natives" (Prensky, 2001) need to learn about the significance of technology to teens and young adults. This is surprisingly pervasive with current cohorts of pre-service teachers (PSTs) in their twenties who do not enter their teaching programs with a strong belief that digital literacies have value in school spaces, despite their steady personal use of technology (Kist & Pytash, 2015). Too often, PSTs use dividing practices to separate technologies for school (e.g. Microsoft Word/PowerPoint, document cameras, SMART Boards, etc.) and technologies for home (e.g. text messaging, social networking, etc.) and believe that each have unique and separate domains in both teachers' and students' lives.

Adding to PSTs reticence is their lack of experience learning with technology in meaningful ways when they themselves were young adults. One cannot discount the fact that these teachers bring with them years of their own experiences which inspired them to enter the teaching profession (Ertmer & Ottenbreit-Leftwich, 2010) and that shedding

these strongly held dispositions around education can be a difficult task. There is a level of vulnerability that is required to teach using pedagogies that are completely unfamiliar. Future educators not only need to know how to use digital tools in meaningful ways, but they must be encouraged to learn beside their students and let go of the need to be the expert at all times (Hundley & Holbrook, 2013). Teacher education programs have a responsibility to help PSTs develop these dispositions as learners and to support them in developing the confidence they need to work with technology during their student teaching and years of induction into the teaching profession.

Teacher resistance often stems from a lack of knowledge and fear of looking foolish in front of students (O'Hanlon, 2009). Although some research argues that resistance can be mitigated through effective support and professional development of technology skills and pedagogies for in-service teachers (Spires et al., 2012), others have suggested that such professional development makes little difference for veteran teachers (Christensen & Knezek, 2017; Hutchison & Reinking, 2011; Tallvid, 2016). So, schools, specifically those that have invested in technology, are often left with questions as to how to convince teachers to use digital tools with students.

Boling (2008) attempted to highlight some of the potential pitfalls of teaching a college course dedicated to incorporating technology practices in the English language arts classroom. In her graduate level course entitled *Literacy and Technology*, pre-service and in-service teachers as well as administrators from various teaching backgrounds and levels of experience with technology were introduced to different digital tools, such as blogs, instant messaging, and 3D chatrooms—tools that were popular during the time of the study. Throughout the semester, Boling would introduce the tools in class and then

ask the graduate students to write reflective journal entries about the ways the hardware or software could be used in their current or future classrooms. In addition to student reflections, Boling kept a journal which documented her feelings about the course throughout the semester.

Ultimately, Boling (2008) often found herself feeling frustrated as many students believed that technology could be a tool for teacher productivity and efficiency, but clung tightly to fears regarding the potential dangers of the social aspects of certain websites and programs. Students expressed concerns over the fact that tools like instant messenger were negatively impacting students' ability to communicate clearly because of their penchant for using less formal language when chatting with friends. They also talked about their reticence for using blogs and 3D chatting due to the inability to control who could access student work and the fear that adults with bad intentions would attempt to engage students in inappropriate conversations. Although it was clear that student safety was an important consideration for these graduate students, it seemed to be at the cost of recognizing that these current and future teachers were limited in their willingness to use authentic digital tools with their students.

Boling (2008) found that it was important to craft a flexible curriculum when attempting to help pre- and in-service teachers and administrators better understand the significant potential of technology in bringing together social and literacy practices. First, she believed it was critical to understand the various entry points and experiences that graduate students had with technology in order to provide them with the important foundational information needed before introducing them to seemingly more social, student-centered digital tools. In addition, there was a need for university professors to be

malleable and adapt to the needs and address concerns that pre- and in-service teachers might express throughout the semester. To combat this reticence, Boling found that it was helpful to seek out teachers who were currently using the potentially divisive tools in their classrooms to serve as a proof of concept to demonstrate how the technology could be leveraged in a safe way that added value to the English classroom.

One of the most significant findings that Boling (2008) described was the need for embedding reflection throughout the semester, both from the student and professor. Pre- and in-service teachers need to be provided with opportunities to share their honest feelings regarding technology so that the professor can be responsive and tailor the curriculum to their interests and needs. More importantly, students in the course seemed to benefit from being able to track their thoughts and opinions as they shifted throughout the semester. In addition, Boling found that her own reflections were helpful because they forced her to ask important questions about why certain digital tools were difficult for pre- and in-service teachers to imagine using in their classrooms. Many of her most significant findings came as a result of the reflexivity afforded by her journal, which ultimately allowed her to be more responsive to the needs of her students. As a result of her willingness to listen to her students and adapt over the course of the semester, the syllabus turned out to be a co-constructed document that was collaboratively designed by her and her graduate students.

Teacher preparation programs must begin thinking about their role in helping future secondary English teachers consider the role that technology can and should play in their approach to teaching. It would be a mistake to assume that most pre-service teachers who were born into a world replete with technology will enter into teacher

preparation programs armed and ready to apply their assumed digital competencies to English content (Kist & Pytash, 2015). Studies that look directly at teaching methods related to literacy have found that, in addition to providing teachers with a foundation for teaching literacy skills, methods courses devoted specifically to teaching literacy skills provide teachers with valuable experiences that positively improve their perceptions of why literacy is important and they will be able to apply their expertise in their future classroom contexts (Scott, McTigue, Miller, & Washburn, 2018). A compelling argument, thus, can be made that instruction explicitly dealing with new literacies and the connection between technology and English content belongs in English preparation courses of study, (McPherson, Wang, Hsu, & Tsuei, 2007). Many programs are still unclear as to how to integrate technology into their coursework (Caughlan et al., 2017).

The shift from methods coursework to practicums and student teaching can serve as a powerful way to show pre-service teachers how technology fits hand in glove with English content once they are teaching in K-12 classrooms. However, research shows that "Technology is inconsistently used to learn ELA instructional practices in the methods course; however, teacher candidates use it even less frequently in their field and student teaching placements" (Pasternak et al., 2016, p. 383). For nearly four decades researchers like Dan Lortie (1975) have talked about the role mentor teachers have in the reinforcing outdated teaching methods that remain prevalent in current classrooms. This concern over the "salience of the traditional" (Wilhelm, 2016) suggests that mentor teachers often have a significant impact on the pedagogies of their mentees, to the point where much of the practices pre-service teachers are taught by their university methods courses can be "washed out" (Zeichner & Tabachnick, 1981) by the observations, feedback, and advice

given by mentor teachers. Mentor teachers are critical parts of a PST's learning network and, because pre-service teachers typically spend their last semester of their teacher preparation in their placement schools with their mentors, they often have the final say on teaching methods, classroom management, and the role of technology in the class. Furthermore, research shows that years of teaching experience may also impact a teacher's disposition toward technology and the extent to which technology should or should not be used in the English classroom (Flanagan, S., & Shoffner, 2013). It is possible that veteran teachers may have had limited exposure to courses related to educational technology and their teaching philosophies may rest on foundations that do not recognize technology as central to student learning. So, while teacher preparation programs will likely seek out mentors that have enough experience to support a PST during their practicum and student teaching, that criteria may also work to the detriment of pre-service teachers who need support in trying out new technologies.

Even in teacher preparation programs that have strong coursework devoted to the integration of technology into English content, mentor teachers who lack efficacy with technology might possess the power to "undo" much of what pre-service teachers learned in their methods courses. One way to address this concern is to help empower PSTs to advocate for technology, as they can become leaders within their placement and future schools in demonstrating what they are learning in methods courses and sharing innovative practices with veteran teachers who may not have had similar course offerings as they were earning their certification (Grundmeyer & Peters, 2016). While college coursework might help PSTs develop the competencies and efficacy needed inform their pedagogies, it will likely need reinforcement as new technologies become available. This

is why contextualized, content-specific professional development is so vital to helping teachers stay abreast with the current trends related to educational technologies and methods (Ruggiero & Mong, 2015). Teachers who have the benefit of a strong technological foundation in college that is consistently buttressed by professional development may be better prepared to address the needs of new generations of students who will enter schools with variegated, evolving technological skills and experiences.

It likely comes as little surprise that personal experiences with technology as well as years of professional experience impact teachers' pedagogical decisions. However, in considering Gee's (1990) concept of Discourses as identity kits, it might be helpful to recognize how the Discourses around teaching help educators assume positions in classrooms that also shape the way they experience, interpret, embody, and practice the techne of teaching. Teachers are constantly in a state of becoming as their teaching identities are shifting with every new encounter they have in the classroom. This identity work is quite significant as teachers are constantly negotiating personal and professional worlds that create "borderland narratives" (Alsup, 2006) that inform their teaching practices. Although it is important for in-service teachers to attend to their evolving identities, there is also a need to "engage preservice teachers in reflective practice about identity construction that pushes them to think about the institutional and student expectations that they will encounter during their jobs" (Vetter, Hartman, & Reynolds, 2016, p. 323). Teacher preparation must be willing to help pre-service teachers in conducting this identity work so that they can begin to construct their "teacher-selves" (Sallı & Osam, 2018). Teacher preparation programs have been shown to play an important role in helping teachers develop the efficacy necessary to teach with

technology. The literature also suggests that personal technology use tends to impact a teachers' willingness to use digital tools in the classroom. However, scholarship around how to build "techie" identities is largely missing. This study lays the groundwork for beginning to understand what identity work goes into producing teachers who tech by studying classroom practices while also inquiring into unique experiences that inform those classroom practices.

CHAPTER 3

RESEARCH APPROACHES

Due to the focus and unique attention to human and non-human actors in this study, a variety of approaches were employed that helped visualize the classroom in a way that recognizes the complex experience of the technological classroom. In many regards, this study was experimental in both design and execution. As such, it may be more appropriate to think of the unfurling of the research process of less like following a methodology and more like applying research approaches. According to Kamberlis and Dimitriadis (2005),

> We use the term "approaches" rather than the more commonly used term, "methods"… in the popular imagination "methods" often falsely connote rigid templates of sets of techniques for the proper conduct of research. By using the term "approaches" we want to foreground the "practice" dimension of engaging in research. (pp. 17-18)

Personally, I struggle more with the notion of methodology, which connotes a specific linear protocol and correct way of conducting qualitative inquiry. If methods are specific practices that help a researcher collect and analyze data, then this project relied heavily on methods used by other scholars in order to investigate the use of technology in schools. However, I agree with Kamberlis and Dimitriadis for the need for flexibility when it comes to research design. As such, I refer to the process that I engaged in for this study as an approach rather than a methodology or method.

Experimentation with video played a critical role in both the data collection and analysis process. Furthermore, this work was interdisciplinary by design—borrowing from other fields like sociology, visual anthropology, and human geography by conducting teacher interviews, classroom observations, as well as follow up interviews with teachers to discuss what happened during those observations. This was a careful process because, according to Barad (2007) an interdisciplinary approach requires "respectful engagements with different disciplinary practices, not coarse grained portrayals that make caricatures of another discipline from some position outside it" (p. 93). Spending time reading and viewing ethnographic film from different fields meant that there was not a singular method nor a primary mentor text by which this study was crafted. Instead, time and attention were given to thinking about how to map different research approaches onto a study which promises to engage in new materialist inquiry in classrooms where humans and technology occupy a shared space. The approaches used in this study were intended to honor both the human and non-human actants as a way of beginning to think with visual tools during each step of the process.

In order to respond to the research questions, I embedded myself in two local classrooms for one of their English language arts periods during 5-7 days per participant in order to conduct classroom observations. This study relies heavily on video ethnographic practices, using video as a means of showing findings and using it as a cue during follow up interviews (Tobin, 2019). Video ethnography approaches were appropriate for this type of work because it allowed me to record and reflect on classroom literacy events, both as they occur in vivo and during the editing process. It also afforded the unique opportunity to focus on embodied practices as they relate to

technology as a means of exploring how technology changes the teaching and learning process in English classrooms. As such, the written word seemed insufficient by itself to report findings on classroom space and embodied practices, which is why this study is considered a multimodal dissertation where the traditional written dissertation is supported by a short form, 30-minute ethnographic documentary film.

Rationale for Design

The design of this study is a response to recent calls for conducting studies that produce knowledge by engaging in qualitative inquiry differently (Denzin, 2017; Handforth & Taylor, 2016; Honan & Bright, 2016). However, it is worth noting that the approach to this study is not done haphazardly in the interest of simply doing something unusual for the sake of difference. Instead, this exploratory approach was done in accordance with what Denzin and Lincoln (2018) referred to as *researcher-as-bricoleur*. Kincheloe et al. (2018) make the argument that bricoleurs "steer clear of preexisting guidelines and checklists developed outside the specific demands of the inquiry at hand…In lieu of such rationalization of the process, bricoleurs enter into the research act as methodological negotiators" (pp. 432-433). Through the process of creating a bricolage, the bricoleur is careful to use tools they are familiar with in order to be responsive to the field of study. So, while a research project may not have an explicit plan from the outset, the bricoleur understands how to craft it as the process unfolds. As I began developing the idea for this study, I had an idea of the tools that would be important for investigating teachers, students, technology and the impact on classroom practices: iPads for recording classroom activities, microphones, digital notebooks for keeping memos, software for editing video footage, etc. But working with video in novel

ways provided me with leeway in ensuring that the study design was more open and malleable. In short, I had to consider what methods, data collection and analysis tools, and research practices I was familiar with as a way of "quilting" together (Denzin & Lincoln, 2018, p. 45) a plan that provided a starting point that afforded enough freedom to change directions if needed.

What follows is a description of the approaches used based on the approaches that seemed most salient as determined by the aims of the study. While I am cautious about using the term method, I concede that my work was influenced by ethnography, specifically video ethnography. Another way of taking a bricoleur's approach to ethnography might be what Androutsopoulos (2008) referred to as "guerilla ethnography," which she describes as "seizing the opportunity to use whatever methods are possible under the circumstances of each particular context" (p. 9). This requires the researcher to be disciplined in various methods, enough to where they can apply them in an appropriate and timely manner.

There were several purposeful decisions that were made from the beginning which informed this study. The first consideration was time. I had to consider how many days and class periods would be necessary and appropriate to observe teachers and their technology use. I also wanted to ensure that the turnaround time for follow up interviews was reasonable enough so that teachers felt as though they were able to be reflective of their classroom practices without allowing too many days to pass between observation and interview. As a result, I chose a compressed time mode which allowed me to "inhabit a site for brief but intensive periods trying to see everything that is relevant to the participants" (Jeffrey & Troman, 2004, p. 538). Thus, I spent 5-7 days in each of the two

teacher-participants' classrooms, recording digital events that involved reading and writing as a way of zeroing in on specific activities that would help answer the research questions.

Data collection was another consideration that sets this study apart from most other qualitative research dissertations. Any study of teacher embodiment and the engagement of humans with technology requires tools that would be appropriate given the research questions. New literacies scholars have argued that work dealing with digital tools highlight a direct need for emergent research methods (Bhatt, de Roock, & Adams, 2015). Researchers in this field must recognize that "technologies never stand still and, therefore, nor do the literacies associated with their use" (Livingstone, Van Couvering, & Thumim, 2008, p. 104). This creates complex digital environments that are not demarcated by the four walls of the classroom (Lawless & Schrader, 2008). Video in particular can be a powerful tool for studying different literacy enactments and how "multimodal text creation in diverse sociocultural contexts draws on and develops embodied experience" (Miller, 2013, p. 389). Experimental approaches to video can also allow researchers to capture the "sensory-motor body in its spontaneous activity" and "its unconscious ephemeral actions" (de Freitas, 2015, pp. 321–322). This study considers how both student and teacher bodies are drawn together in digital classroom spaces in order to call attention to how mobile, new literacies practices might impact conscious and unconscious embodied practices.

The mobile and embodied elements of this study led to the decision to use of video for collecting data *and* sharing findings through a mode of publication in educational research that is rarely used. This study borrows approaches from video-cued

ethnographic methodology (Tobin, 2019). However, in an attempt to elucidate the sociomaterial relationships the in the classroom being studied through the new materialist lens, some exploration and variation was necessary in order to be adaptive and responsive to the classroom spaces being studied. This visual approach to ethnography seemed appropriate given that

> ethnography's commitment to writing from the ground is an impulse to stay open to what's in your vicinity. But the "ground" is not just a backdrop or a context; it's the sensed social-material-aesthetic atmospherics resonant in a scene, the threshold onto worlds of expressivity in a problematics. (Berlant & Stewart, 2019, p. 34)

Video allows for special consideration of the sensorial, allowing for researchers to consider not only the visual, but the sonics of a classroom and how all of this put together can lead to a richer ethnographic narrative that is capable of engaging the senses. Such a focus on intangibles like the sensorial can allow scholars to attend to that which is often bracketed off in research accounts (Coleman, 2017). Playing with this idea of the senses, it is worth mentioning Bennett's (2010) suggestion of "following the scent of nonhuman, thingly power, the material agency of natural bodies and technological artifacts" (p. xiii). Roel (2012) recognized how materiality, specifically Actor Network Theory concepts, could be helpful in studying the ways in which classroom materials assist in the creation of knowledge using "material ethnography." Studies like this are useful in providing models for how other scholars are capable of mapping new materialist concepts onto ethnographic practices and how the theory and methodological approaches are commensurate.

According to Geertz (1995), “For an ethnographer everything is a matter of one thing leading to another, that to a third, and that to one hardly knows what” (p. 20). What is portrayed here as a researcher’s attention deficit might differently be understood as an interest to attend to any and every thing that seems important at any given time in a research site. Because this study is invested in looking at the way networks come together and disperse (Latour, 2005), the video collection must be capable of mobility in order to follow the flows and activities of the classroom. I, as the videographer and researcher, had to be able to “follow the scent” by working with a mobile approach consistent with the dynamism of the humans and non-humans being studied.

Leander and Boldt (2017) conceptualized “moving with” posthuman subjects as a way of engaging differently with the study of emergent literacies. Speaking directly about studying the interface between humans and technology, Pink et al., (2016) claim,

> mobility becomes part of the research process as the participants and the researcher might be involved in moving through various material environments while engaging with social media. The visuality of the screen should, therefore, be contextualised [sic] alongside the visuality of the offline world. (p. 161)

During the data collection process, I used an iPhone to record literacy events as a way to remain as mobile as possible. Although my camera could not enter into students’ computers, the screens of students Chromebook devices were at once both part and separate from the analog classroom space as things like Wi-Fi allowed students to be situated in the classroom and anywhere the school internet would allow them to go. Simultaneously, my eyes attempted to look around the classroom while also attending to

what was being recorded on my iPhone while my headphones captured the audio of the wireless lavalier microphone attached to the teachers.

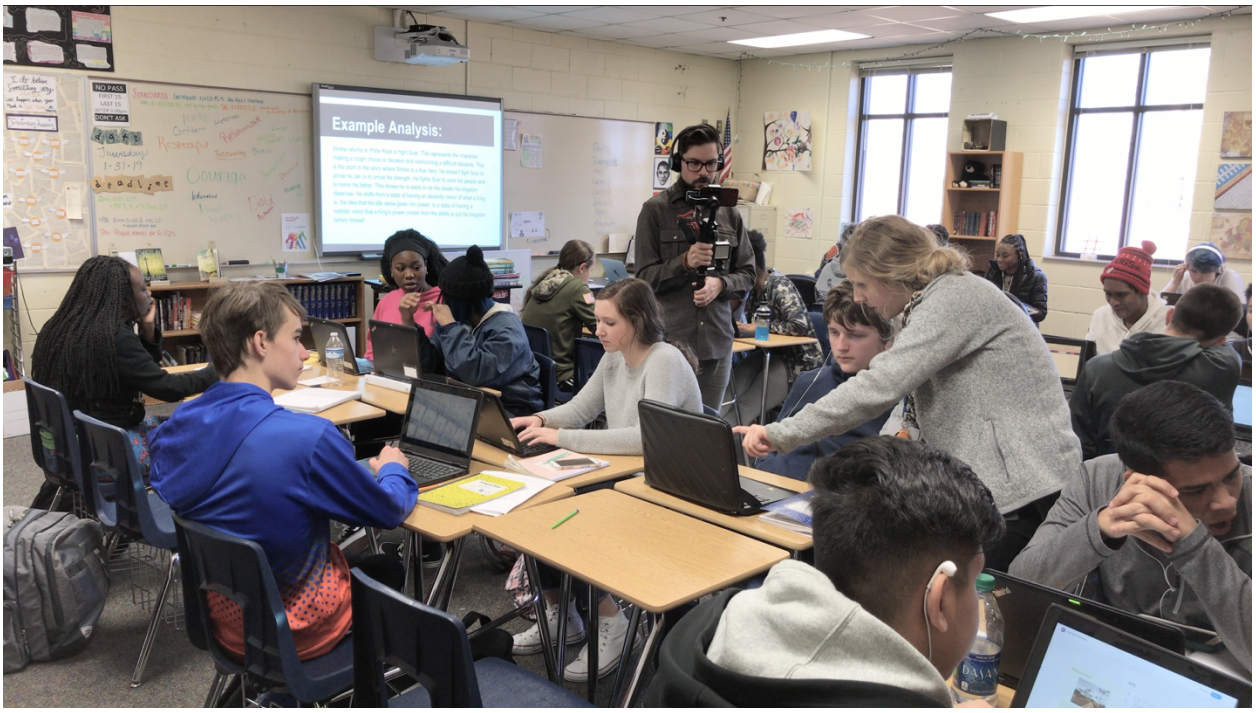

Figure 1. Recording in Mrs. Ogden's classroom

Video and audio tools provided great opportunities for experiencing these learning ecologies differently. But these tools also make up an assemblage of devices that impact the way researchers interact with others. Lenz Taguchi (2013) states, "As a researching-collective-body, being used by thought, you are in a state of inter-connectedness, and companionship with other beings, matter and discourse" (p. 1109). In addition to being embedded and inter-connected with the teachers, students, technology, and other matter present in the classroom, the "anonymous eye of the camera" (Deleuze, 1985/1989) became an important part of the research assemblage. In moments when my eyes were suddenly drawn elsewhere, the camera continued to document what was happening in front of me. In addition to my handheld iPhone camera, two iPads were used to visualize different angles that might otherwise be missed. The mobile and stable

imagery seemed important to weave together a more complete narrative by not privileging my movements. Instead, the (re)viewing during the analysis process allowed me to often experience classroom events for the first time, in spite of the fact that my body had been present, yet unaware, during the recording.

New materialist work does not attempt to ignore or revoke the human, rather it investigates how it comes together and disperses with other non-human matter and what meaning can be made of such intra-actions. So, there are some humanist elements to this study. First, the video-cued interviews were meant to give voice to participants and to serve as a form of reciprocity by providing teachers the ability to see their teaching from a perspective they otherwise would not have access to. Instead of speaking on behalf of my participants, it was important that teachers be able to justify and back up their pedagogical moves through an interview process that engaged them in reflective practice. This ethic is consistent with the belief that "what ethnography should bring to education is not answers, but a listening, learning posture that—based in respect for informants—leads to the explication of the important, unaddressed questions" (Kamberelis & Dimitriadis, 2005, p. 5). This importance of listening was valuable, not only during interviews, but during observations as well.

One final rationale for the use of video in this study was that, in an age where visual media tends to compete with the written word, video holds potential of engaging larger populations with scholarship (Woo, 2008). Eriksen (2006) claims that ethnographers are tasked with creating work that is accessible by making "the world simpler and more complex at the same time" (p. 130). That is a challenge that all researchers, not just ethnographers, should take seriously. Video, I argue, may possess a

certain cachet that could make this work more approachable to teachers, administrators, parents, and other stakeholders giving greater value to those in classrooms to enact research-informed change.

Hammersley (2017) argues that one of the difficulties ethnographers face today is that there is no clear cut definition of what entails an ethnography and that such a broad range of definitions only serves to obscure what is meant when researchers claim to produce ethnographic scholarship. As explained above, this study draws on video ethnographic methods, but the design itself borrows from other fields and experiments qualitative research approaches. This decision to develop a more emergent design was informed by the field of study: dynamic classroom spaces that take advantage of the mobility of digital technology. In order to keep pace with these learning ecologies, I needed tools and approaches that would allow me to follow the flows of the classroom rhythms as they occurred and be adaptive to the classroom literacy events. As such, a bricoleur's approach that started with video ethnographic practices and evolved as the study progressed was adopted as a means of weaving together different methods and tools capable of honoring the subjects and spaces being studied.

Research Process

The design process for this study started in fall of 2018 and commenced in March 2020. The timeline for each step of the study can be found in the figure below.

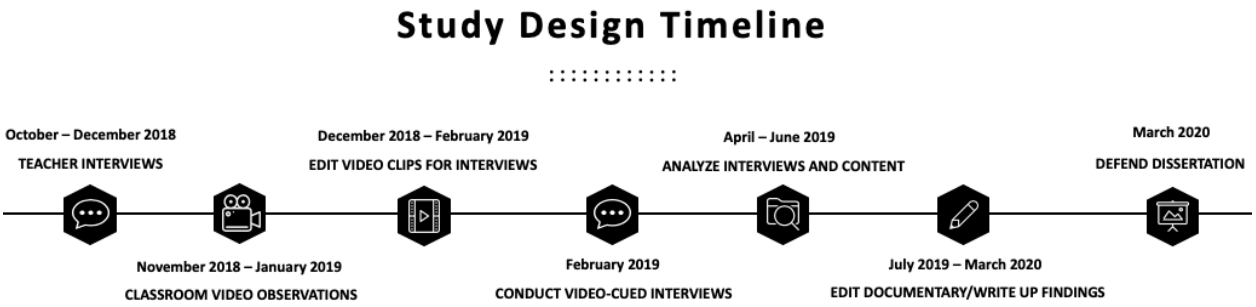

Figure 2. Chart outlining the study design timeline

Video Ethnography

In recent years, education scholars have begun recognizing the power of video, primarily for data collection and analysis (de Freitas, Lerman, & Noelle Parks, 2017). However, unlike some of the other fields of social science, educational research rarely uses video as a means of reporting findings, choosing instead to translate what is "captured" by video into transcripts and then rendering them into written reports. One platitude that highlights the great potential of qualitative research is that it begs the researcher to *show* rather than *tell* what happens in the field (Patton, 2015). If this is to be the case, then educational research would benefit from borrowing methods, techniques, concepts, and reporting mediums from other social sciences to develop a practice of publishing video in order to visually illustrate findings from the classroom in a way that helps both academic and non-academic audiences understand the possible impact of educational scholarship.

Erickson (1984) defines an ethnographic study as one that "not only treats a social unit of any size as a whole but that…portrays events, at least in part, from the point of view of the actors involved in the events" (p. 2). He makes the argument that doing an ethnographic study using film in school is difficult because researchers must study classrooms as if they are microcosms of the school community. Moreover, they must be

able to identify “the oddness and arbitrary nature of the ordinary everyday behavior that we, as members, take for granted" (p. 9). This can be particularly difficult for teacher-researchers studying schools, because certain practices may seem *too* familiar and may not register as extraordinary to an ethnographer. However, an important feature of ethnographic filmmaking is that it highlights relevant actions, relations, and differences within certain communities.

Joseph Tobin studied school culture in three different countries in his books and video ethnographies *Preschool in Three Cultures* (Tobin, Wu, & Davidson, 1989) and *Preschool in Three Cultures Revisited* (Tobin, Hsueh, & Karasawa, 2009). In these instances, the video served both as a means of representing the researchers’ experiences in each culture as well as cueing feedback during follow up interviews with teachers. Using video in this manner was revolutionary for ethnographic work in the early nineties and provided a new method for conducting qualitative interviews. In addition, it innovated research methodology by introducing new “multivocal texts” (Tobin et al., 1989, p. viii) in which video was capable of eliciting comments from researchers and participants, both from firsthand accounts and in response to preschool experiences from other cultures. In both cases, the book served as a companion to the video to help provide a deeper explication for what viewers would see on screen.

Video-cued, multivocal ethnographies like the ones described above use video differently from more traditional ethnographic studies, specifically in how footage is used as data. Traditional visual anthropologists consider that, in order to make their work “scientific” and reliable, they must go to extremes to ensure that their data is devoid of subjectivity. One way in which visual anthropologists attempt to do this is by removing

the human touch of the researcher as much as possible. Mead (1995) argues that one way this can be accomplished is by setting the camera on a tripod, leaving it, and allowing the camera to record long shots of events. Videos are only capable of recording what is viewed through the lens of the camera, which is typically impacted by the movement of a camera person deciding what is filmed and, by extension, what is not recorded. As a result, the person behind the camera has one of the most important roles in determining what action is valuable and worthy of study. Although researchers are certain to miss potentially promising footage, Mead believed that scientific objectivity could be ensured by removing the hidden agendas and tendencies of the camera person and replacing them with a tripod. Long takes of video footage not only provide a richer narrative (Asch, 1992; MacDougall, 1998), but they also remove the human "touch" during the editing process by allowing events to play out with little influence from the researcher in determining what is important and what ends up on the cutting room floor (Ruby, 2000).

This study used the video-cued ethnographic approach during the data collection process—conducting video recorded pre-observation interviews with teachers followed by classroom observations with subsequent video-cued interviews. However, because of the new materialist theoretical stance, the humanistic interview was not the singular focal point of data. Things that cannot speak for themselves, such as desks, computers, mobile phones, sticky notes, headphones, lights, and sounds had to be taken into consideration as well. Because of this, I was careful not to give all of my attention to the loudest students or the movements of the teacher. Instead, my body and camera had to be more attentive to the non-human actants in the classroom space as well.

Unlike anthropologists like Margaret Mead (1995) who argue that longshots with stable cameras and minimal editing might be able to create a level of objectivity, the aim of this project is to be more mobile and follow the flows of human and nonhuman bodies in the classroom. The difficulty of recording video in a classroom is that there is no main subject. Is it the teacher? Is it a student or perhaps the class as a whole? Is it the classroom? Is it the Chromebook? Theory was helpful in answering this question: it is the networks made up of classroom matter as well as activity, rhythm, and flow of all of these actants that are at the center of this project.

Admittedly, the final video product may be compared to other video ethnographic products. I may not be able to convince viewers that the knowledge produced by this investigation does anything better or worse than other tried and true methodologies. However, the process of using video ethnographic approaches and trying to adapt it for this particular project was an ethical and political decision. It was done with every intention of trying to forge new modes of thinking with video. The result was an approach that, although not completely foreign to familiar methods, was a pastiche of video ethnography, documentary film, art, technology, philosophy, and scholarly written communication.

New Perspectives

Video ethnography possesses certain affordances that allow for different perspectives in classrooms. For example, there has been a movement in video ethnography, specifically within the field of human geography, to embrace the use of first person video cameras like Go Pros and Google Glass in order to learn about the phenomenological and mobile everyday experiences of people (Paterson & Glass, 2015;

Pink, 2015; Wilhoit & Kisselburgh, 2016). Such approaches have been applied to school settings in attempting to better understand the sensorial experiences of children and their enactments of learning (C. Green, 2016). This type of perspective-taking can be useful in thinking how video might be positioned to help researchers walk in participants' shoes. However, video research approaches can also help participants better understand their own experiences through guided reflective practice as well.

Video diaries have been used to great effect as a way of attempting to give students an opportunity to reflect on their experiences (Buchwald, Schantz-Laursen, & Delmar, 2009; Larkin & Jorgensen, 2014; Noyes, 2004). This method focuses less on attempting to capture classroom activity and instead gives students the opportunity to share their thoughts about school using video as a tool for reflection as opposed to a more formal interview or written prompts. This method is often employed as a way of attempting to give students greater control by allowing them to ask questions and engage with the study by eliciting their thoughts in a less top-down manner in which a researcher dictates specific topics during an interview (Larkin & Jorgensen, 2014). Its ability to give voice to participants makes this approach and others like it quite valuable.

Video can also allow participants to gain a new perspective of their own lived experiences they might not otherwise have access to. Researchers in fields like vocational education (S. Chan, 2013) and medical education (Bezemer, 2017) have used video as a tool for studying teaching and learning as a way of making research-based improvements to their respective professions. Reflective practice is also an important consideration of good teaching practice. Studies have demonstrated that, by showing teachers video-recorded footage from their own teaching, they can engage in powerful video-stimulated

recall that has an impact on their pedagogy (Durand, Hopf, & Nunnenmacher, 2016; Kourieos, 2016). Multiple cameras can be set up in classrooms as a way of providing teachers with unique perspectives that look at the classroom from different angles. Secondary literacy researchers have been able to use this multi-cam set up to identify what literacy looks like across a classroom context (Blikstad-Balas & Sørvik, 2015) and to look closely at how individualized digital literacy practices are enacted during class lectures (Blikstad-Balas, 2012). This study attempts to take advantage of multiple cameras as a way of noticing as much classroom activity in order to have multiple perspectives to draw so that both I, the researcher, and the teacher-participants have new and different ways of re-experiencing literacy events.

Video data that is grounded in professional practice gives participants the opportunity to reflect on their subjective understanding by looking back and interrogating their actions after the fact (Welsh & Dickson, 2005). Video, then, can be a powerful tool, not only for research, but to help teachers in their process of professional development. More important, engaging teachers in reflective video recall is a form of participatory research that democratizes the inquiry process (Batallan, Dente, & Ritta, 2017) because it gives them a voice in the process and allows them to explain what they notice and justify their actions using their own words. While it does not negate the need for theory, there is a danger that researchers can over-theorize what happens in educational research by imposing their beliefs and the philosophies they subscribe to. The insights of the teacher-participants in this study give credence to potential justifications with a level of authority that theory simply cannot.

Educational video-cued interviews (Tobin, 2019) allow teachers to be a part of the video creation process, which helps establish shared values between the researcher and the researched (Blazek & Hraňová, 2012). As a result, participatory video research might be better understood as research *with* rather than research *on* subjects (Sutherland & Young, 2014). So, while interviews may serve as a tool for triangulation in an attempt to produce accounts of verisimilitude, the true value of video-cued interviews lies in the possibility of forging new, shared interest in the research project as teachers benefit from gaining new perspectives to their teaching practices.

Body

Brian Street (1993) suggested that culture is less like a noun and more accurately understood as a verb: "a social process that is not fixed but always changing" (p. 83). School culture, then, could be understood as part of an embodied practice that enables social enactments which are constantly on the go. Video, particularly in education, has opened up new possibilities for studying the body. de Freitas (2016) argued video is important because it "has allowed researchers to zoom in on hands and faces, and to focus on any given moment, in order to study the micro gestures of teaching and learning" (p. 553). In education research, this interest in the corporeal has led to a different focus on how human bodies interact and respond to one another (Alibali & Nathan, 2012). Drawing from Deleuze (1985/1989) , de Freitas suggested that video can teach viewers about "what a non-thinking body is capable of, its capacity, its postures" (p. 189 as cited de Freitas, 2016, p. 566). The non-thinking body can be interpreted as the one that is affective, that moves before it is aware of what it is doing, that is inherently pre-conscious. The advent of new video collection tools and methods make possible the

ability to study the body, both in classrooms and other social settings, in ways that have previously been unthinkable.

Bodies in school settings are important because they are sites of power that can help researchers understand the relationality between adult teachers and adolescent and young adult students. Video analysis of bodily enactments such as gaze, posture, facial expression, and movement can provide a window into the otherwise hidden political school structures present when bodies come into contact with other bodies (Parks & Schmeichel, 2009). Other approaches have used video data to cut together human bodies, student work, and other-than-human bodies as a way of demonstrating how classrooms can serve as a "disciplinary entanglement" in which "knowledge, rules, skills and processes incorporated and interwoven into students very beings and entangled in 'becomings'" (Chappell et al., 2019, p. 309). In his study of youth mobile composition, Wargo (2015), illustrates how tools like Snapchat enable young people create "techno-embodied," nomadic, stories that traverse space and time. Close attention to embodiment in English language arts classrooms have also focused on seemingly more mundane practices like handwriting as a way of attempting to understand how "the body (as phenomenologically experienced and embodied) serves as both a metaphoric and functional interface between the mind and the material world" (Haas & McGrath, 2018, p. 127). So, while researchers may engage in scholarship that attends to the body, it is important to note how both traditional literacy practices like handwriting as well as more modern conceptions of literacies, such as social media, can better help researchers understand the modern learning ecologies young people navigate.

Teacher bodies have been studied in a similar fashion, finding that "teachers' past experiences of teaching and life in general are always present as embodied corporeality and are expressed through the observable actions of the teachers" (Daugbjerg, de Freitas, & Valero, 2015, p. 784). This suggests that close attention to embodied teaching is both a reflection of past and present lived experience. Because of this, schools are places where bodies are disciplined through rich histories that deeply engrain dispositions around education that likely enable and constrain bodily practice. The difficult task of the video researcher is to attempt to capture the elusive body using research approaches that can "re-enchant some of the details that make up the richness of embodied life" (Bates, 2013, p. 36). This study has the added challenge of considering how embodied practices of both teachers and students are changed by the presence of non-human material bodies.

Classroom Space

Winston Churchill once stated, "We shape our buildings; thereafter they shape us." Similarly, in talking about social gravity, Gee (1991) believed, "As physical space configures the motion and shape of objects I want to suggest that social space configures the motion and shape of human language and interaction" (p. 1). While neither may have been considered new materialists, their perspectives on buildings might help us consider how space is crafted and plays a role in disciplining bodies as well as arranging social worlds. Schools are certainly no exception. Practical considerations must be made during a construction process to consider how to accommodate a reasonable number of students in a class, where static technology like projectors and SmartBoards will be located, and what type of lighting will be conducive to learning. Once a teacher takes over a classroom, it is their responsibility to begin arranging desks, situate a space designated

for their professional responsibilities, decorate the walls to create a welcoming environment, etc. All of these space-related tasks must be undertaken with the consideration of how to create a classroom that allows the teacher to teach and students to learn.

Studies have looked at classrooms at different grade levels. For example, studies in early childhood have attempted to understand how student play is negotiated by spaces designated specifically for students (Otsuka & Jay, 2017). Technology brings with it unique considerations when it comes to classroom space as well. The classroom layout must be set up in such a way that it allows students to follow along with information the teacher is sharing using instructional technology as well as allowing for students to be able to transition over to using their personal devices (Tondeur et al., 2015). Modern technology-rich classrooms in particular require teachers to consider how analog features like desks and chairs will be able to accommodate collaborative learning when students may also need access to power (Nelson, 2013). So, if teachers have access to mobile technologies, they must be willing to create spaces that allow students to move about easily with their devices. Studies like these serve to explain why location of technology matters and how space can have a significant impact on learning.

Bodies and buildings are extrinsically linked. Social scientists interested in studying embodiment must also attend to the spaces the body inhabits. Simpson (2015) states, “in the wake of the corporeal turn in the social sciences, atmosphere- and ambiance-based research are both concerned with the relationships between bodies and the environments they inhabit” (p. 28). Studies that refer to atmosphere and ambiance are concerned more with senses than the general materiality of the social setting. While this

might seem like a trivial distinction, Brennan (2004) talks about atmosphere/ambiance in terms of the experience anyone feels when they enter a room and the feelings that immediately register within the body. In studying cities, Thrift (2004) makes the claim that space can be manufactured to arouse affective responses within the body that force us to act in certain ways. In this regard, bodies can be manipulated to feel and move by virtue of the space it inhabits.

Space is an important consideration, not only because it serves as the setting for video, but it also determines possibilities of what bodies are capable of doing. Not only does the setting provide borders and frames for the body, but atmosphere/ambiance may cause certain affective intensities to be felt within the body, which can impact the potentiality of the way the it moves and interacts with other bodies in that space. While this study does not attempt to "capture" the atmosphere of a classroom on video, video can portray a "feel" for the classroom. Burnett (2013) contends that digital literacy practices give rise to the possibility of a more fluid and hybrid school space she terms as "classroom-ness." Throughout this study, I attend to whether or not 1:1 technology classrooms have a different sensibility to students and teachers, changing traditional notions of what it means to "do school" and how "classroom-ness" is or is not created by the presence of digital tools.

New Materialist Video

As discussed above, this project is undertaken less with a firm methodological stance and is part of a more experimental approach to conducting research and challenges what it means to produce a dissertation. A video that renders material in a more vibrant and lively fashion is a challenge. Pink et al., (2016) state, "Combining mobile

technologies such as video cameras and mobile phones with ethnographic research on the sensory and haptic dimensions of everyday practices enables a complex engagement with the sights, sounds, taste, smell, feel, rhythms and temporalities of a range of actors, spaces and practices" (p. 56). This study is a response to calls for new modes of qualitative inquiry while also taking into consideration approaches that are most appropriate given the focus of the research questions. This study marries new materialist theories with video methods in an attempt to consider how digital material interfaces with human bodies.

The use of a new materialist theoretical framework at first may seem like a unique challenge to crafting a video of a classroom, as the dynamism of humans can easily overshadow the vibrancy of other matter. However, this study recognizes that any posthumanist work is not undertaken as a way of attempting to shove aside the human, but to put other material in conversation with them. This requires a fair amount of creativity on the behalf of the researcher to attend to materials and avoid the temptation to only follow human activity. Scholars like Wolfe (2016) have used experimental filmic methodologies that included participant videos and interviews in order to look at entanglements across time and space as a means of creating an iterative dialogue that privileged participants' stories over researcher descriptions. Wolfe used video to "consider ways materiality, technology, and the digital nature of video mobilizes material relationality" (p. 3) in order to study female experiences in secondary schools. Engaging participants in "filmic interviews" that had them talk about their time in school allowed Wolfe to conduct a diffractive reading (Barad, 2007) of their shared experiences.

The idea that video can be used with new materialist theories is not completely novel. Richardson-Ngwenya (2014) used video to study the vibrancy of sugar cane fields, producing a written text with links to video clips in order to bring life to her literal field of study. Somerville (2016) studied student-created films to show how video can be a powerful tool, not simply for collecting data, but for beginning to interrogate posthuman entanglements using new empiricist (Clough, 2009) and post-qualitative approaches (St.Pierre, 2011). Although this study is not grounded in new empiricist or post-qualitative work, it does follow a similar impulse to resist a prescriptive methodology, choosing instead to embrace different qualitative research practices that are appropriate based on the theoretical framework as well as the scope of the study.

Aesthetics

As researchers call for new uses and interpretations of video in the social sciences, the methods for collecting and "analyzing" footage must be commensurate with the theoretical frameworks being used by researchers to understand the body, atmosphere, and affect. MacLure, Holmes, MacRae, and Jones (2010) are critical of more traditional interpretations of education research in which "video method is meant to be free of art, artless" and takes offense to work that "presents classrooms as enclosures, inhabited by stock figures (the teacher, the child) who, despite being played by real people, become drained of singularity" (p. 546). Video has the potential to keep up with an increasingly fast-paced classroom by providing new perspectives related to the felt experiences of the body. New materialist video research still has an interest in humans and the spaces they inhabit, but in different ways than more traditional humanist research. As such, the methods of studying the body must be different.

Tobin and Hsueh (2007a), have argued that "the aesthetic quality of an ethnographic video should be thought of not as a luxury but as inherent to the purposes of the project" (p. 82). In an attempt to create rigorous, objective research, some ethnographers and visual anthropologists become overly concerned with objectivity, creating films with little artistic visual appeal. Tobin and Hsueh explain that documenting cultures with video is an art that should be enjoyable for the filmmakers and participants because it is a creative endeavor. Moreover, research videos should be pleasurable for audiences as well. Rough cuts and amateurish editing ends up being more of a distraction, breaking down the fourth wall by forcing viewers to recognize that they are watching a video rather than experience the events alongside the participants on screen. As a researcher, videographer, and editor for this study, I take seriously the responsibility to "make it easy for the virtual audience to receive the aesthetic production that is the film. The aesthetic is political" (Wolfe, 2016, p. 6). Considerations of framing become of critical importance. Video researchers must first and foremost determine the most appropriate framing of any scene, as it will have important implications for the analysis process (Luff & Heath, 2012). A recognition of such a political act forces the video-researcher to make purposeful decisions throughout the data collection and analysis process, considering both what footage is going to create an aesthetically pleasing narrative while at the same time not sacrificing the integrity of the scholarship.

As previously mentioned, this work is being presented in both written and video formats. It is important to me that the video be something that a broader audience of researchers and teachers might find, not only interesting, but enjoyable to watch. Taking the time to produce a video that is both academic and professional is a challenge.

However, the aesthetic quality of a film is an important quality for making this study appealing to a general audience outside of academia.

Filmic Ethnography

Although the video portion of this project is a bit more exploratory, it is important to provide background that describes the inspiration for the filmic approach in this study. Because there are not a lot of documentary-style videos coming out of education, mentor texts for this project were difficult to find. Works such as Tobin's *Preschool in Three Cultures* (Tobin et al., 1989) and *Preschool in Three Cultures Revisited* (Tobin et al., 2009) provided a useful starting point. Understanding that Joseph Tobin is an anthropologist by training suggested that looking in fields outside of education might provide me with helpful approaches to video research.

A reading of anthropological work elucidated the contentious nature of choosing video and reinforced that purposeful decisions must be made in choosing video as a tool for inquiry. Because this study attempts to marry some ethnographic approaches with documentarian aesthetics, it became important to see how this project could be recognized as a contribution to current knowledge projects that engage in new materialism and new literacies work. The term documentary is challenged by many anthropologists, as its definition "tends to float; it is a hybrid, landing anywhere on the continuum according to an imprecise combination of the fieldworker's personal ethical obligations and an overarching duty to compelling storytelling" (Koehler, 2012, p. 58). Because it privileges storying, documentaries could be viewed as the written equivalent to a new journalist approach to research popularized by authors like Jonathan Kozol, Joan Didion, and Tom Wolfe (Kamberelis & Dimitriadis, 2005). In other words, there is a

tendency for documentarians to take a more subjective, first-person stance toward their footage, whereas ethnographers often spend more time in their research fields in order to develop “thick, rich, descriptions”(Geertz, 1973). The challenge is to walk the line of enough description and narrative arc without losing scholarly value.

Others argued that filming is “analogous to writing, that is, embedded with a first person subjectivity and narrated with perspective” (Escobar, 2017, p. 12). Comments like this seem to concede that objectivity is not possible, nor is it desirable when producing anthropological video. In fact, video-researchers may often enter a field with a unique orientation toward filmmaking that leads to “filmic observations” that have them consider what potential narratives will develop previous to any recording (Tiragallo, 2007). Anticipating events in this manner may seem inconsistent with the aims of qualitative research, but the trained ethnographer will have likely spent significant time in the research site before recording begins, affording them a level of familiarity that would inform possible events to be recorded.

The term “filmic ethnography” was coined by anthropologist Jay Ruby (1975) to describe the ways in which visual ethnographic work adopted the grammars of documentary film. He claimed that both genres share a set of common features:

1. Study of non-Western (exotic) research subjects.
2. Visual/auditory style (e.g. soundtracks that accompany moving image).
3. Reliance on narration and/or other written content for further explication of events on film.

These elements are used as a way of showing the cinematic qualities that both genres typically rely on. Ruby’s point in describing filmic ethnography was to express concern

over the primacy of aesthetics in film, believing that ethnographers would turn to professional videographers and editors which would compromise the scholarly agenda of visual research. Moreover, he had a political axe to grind with documentarians who referred to themselves as ethnographers. Ruby (2000) went so far as to encourage anthropologists to refer to their work as "anthropological cinema" unless they were trained as an ethnographer. After several decades, Ruby (2008) conceded that the technology for producing film became easy enough that the researcher could also be the videographer and editor, allaying concerns of turning these responsibilities over to non-researchers in the film industry.

Having studied ethnography, I felt confident in conducting what might be understood as a filmic ethnography for this project. The aim of this study is to use video to investigate the use of technology in a way that is both artful and scholarly. While my work does not directly align with Ruby's definition, specifically with regard to studying non-Western subjects, the remaining two criteria remain consistent with aims of the video portion. Although I do not consider myself a master of videography and editing, I have access to recording devices and editing software that afforded me the opportunity of conducting this study without additional support from professional cinematographers.

I have been careful to resist a methodology for this study, as different approaches and disciplines have informed the data collection and analysis process. Perhaps a helpful interpretation of how this work relates to filmic ethnography is to point out that what Ruby (1975) describes as filmic ethnography is not a methodology so much as a genre for a style of a visual research. Although the word "ethnography" is in the title, it is less about the methods employed and more about the grammars of film. So, while the

approaches borrow largely from ethnography, it is experimental in both the data collection and analysis phases. However, the final video product does attempt to create research that crosses over with documentary-style film in similar ways as described by Ruby.

Another area of tension with categorizing this work as a filmic ethnography comes from the suggestion that short form, 30- or 60-minute films may be incapable of thick, rich, description (Basu, 2008). Anthropologists have argued that video may be unable to stand on their own, requiring a textual companion (Biella, Chagnon, & Seaman, 1997). As a result, this written portion of the study serves as an important supplement to the video that provides description and elaboration when necessary.

Reflexivity

Subjectivity statements are typically provided in scholarly works so that a researcher might offer a personal history in relation to topic of study as a way of situating themselves within the project as well as acknowledging possible bias (Preissle, 2008). Reflexivity, on the other hand, is "a process by which ethnographers reveal their self-perceptions, methodological setbacks, and mental states" (S. B. Heath et al., 2008, p. 123). A confessional reflexivity statement (Foley, 2002) is like a brief autobiography that gives the researcher the opportunity to talk about how the research process was impacted by their beliefs and personal experiences. While a researcher may not be able to guarantee unbiased accounts of their findings, they can use reflexive practices to help create a more transparent project that leads to greater trustworthiness (Gerber, Abrams, Curwood, & Magnifico, 2017).

According to Pink et al. (2016),

> to be reflexive can be defined as the ways in which we, as ethnographers, produce knowledge through our encounters with other people and things. It is an approach that goes beyond the simple idea of 'bias' and that engages with the subjectivity of the research encounter and the explicatory nature of ethnographic writing as a positive and creative route through which to produce knowledge or ways of knowing about other people, their lives, experiences and environments. (p. 12)

This definition is helpful in thinking, not only about researcher bias, which tends to be a focal aim of subjectivity statements. Instead, reflexivity is both a practice and a concomitant awareness that I, the researcher, am engaging in a creative endeavor through encounters with people and places that produces knowledge rather than attempts to represent a generalizable reality. Reflexivity is consistent with my understanding of the goals undertaken by this project.

Taking this into consideration, engaging in reflexive practice became an invaluable part of this research process. It began with me recognizing that my interest in teachers who tech started with my own personal history as a former middle school teacher who was often regarded as particularly tech-savvy. In many ways, this project helped clarify some of my personal classroom experiences. This process might be thought of as a vicarious self-exploration through the insights of other teachers who share similar teaching philosophies. This study forced me to think about how I was similar and different from my research subjects and the role of technology on my teaching identity. On the other hand, it had been nearly four years since I taught middle grades English language arts in a physical classroom when this study started, so there was a significant

gap in the technology that I had access to, which helped me better understand the evolution of technology and its impact on pedagogies that differed from my own.

Since entering my doctoral program, I have found myself more and more concerned about cultural discourses around technology with America's youth as I have had more time to read deeply about current issues and trends in educational technology. As mentioned in chapter 2, popular media has a tendency to focus on the dangers of technology on young peoples' mental and physical health as well as their social engagement with their peers. I take umbrage with such narratives because of the positive impact technology had on the students in my classroom. As the parent of two young boys, I feel that I have a responsibility to closely monitor the screen time of my children. But I also believe that they will be raised in a world surrounded by screens. Parents along with teachers need to be equipped with the knowledge of how to help young people prepare for their digital futures. So, both my experience as a researcher and a parent have left me with a critical eye toward recent reports that vilify technology as the root of so many dangers in youth culture. Indeed, I recognize that I may have an axe to grind and believe that research with broad appeal can have an impact in quieting some of the calls for the expulsion of technology in schools.

Foley (2002) believes that *theoretical reflexivity* is important in helping the reader recognize the ways in which a researcher's theoretical stance might impact their findings. Qualitative research requires that we situate our work in theoretical stances (Patton, 2015), so disclosure like this might seem redundant. However, I recognize that unique theoretical stances that undergird this study may exist on the fray of more conventional qualitative inquiry and could require further explanation of how theory relates to the

research process. As mentioned throughout this project, my new materialist and new literacies stance has an important bearing on the direction of this project as well as how data was collected and analyzed. I am convinced that the technology situated at both teachers' and students' social lives plays a vital role in the way identities are produced. Furthermore, I believe that technology possesses certain qualities that impact our daily embodied practices. This study is crafted to test these beliefs and to determine if such an orientation toward teaching with technology has a bearing on classroom practice.

Finally, it is worth addressing my positionality to my research subjects. Being a white, middle class, able-bodied, cisgender, male working with two teachers who identify as white females raises possible concerns related to culturally situated notions of gendered power. All interviews were conducted with open doors during school hours or in the presence of students. Video served as documentation to ensure that proper protocols were followed and to show that teachers were given opportunities to dictate the direction of interviews and observations. The video-cued interviews allowed teachers to drive the direction of the project as well as give them the opportunity to provide their thoughts and to challenge any assumptions that I brought to their classrooms. This served as democratizing mechanism that attempted to guarantee a fair portrayal of my research subjects as a way of flattening any perceived hierarchies that our personal, cultural, or embodied histories brought to this project.

Role of Researcher

Throughout the research process, I took on several roles of varying skill and value. First, I believe my prime responsibility was to serve as a researcher. This required me to put my inquiry at the fore of my decision-making during design process as well as

the data collection and analysis stages. This study forced me to think like an ethnographer in order to consider what questions might be of interest to both me and others within the field of new literacies and secondary English education. I also had to be considerate of how I would present my work in the most effective manner.

My roles as ethnographer and videographer were not (and could not) be bifurcated. I would argue that the video ethnographer thinks about their field differently when they are also considering the documentarian aesthetics and potential narrative of what they are observing. As Colebrook (2002) stated, “Even machines, such as the technical possibilities of the camera, can transform thinking” (p. 38). I found this to be true, as the camera and the process of producing film forced me to combine my role as researcher/filmmaker. For me, I was cognizant of how I was able to gather as much data that would provide a narrative that was a fair representation of each classroom. In the back of my mind, I had to be careful of my camera positioning, how close or far away I was, if I was in the frame of my static cameras that were capturing other angles, and, ultimately, how the footage would be used in a more holistic manner to help tell the stories of these two classrooms. Balancing these roles and responsibilities was difficult at times. But I cannot deny that thinking like a videographer/ethnographer forced me to approach my field of study in ways that I believe had a valuable impact on the direction of this study.

Once the decision to conduct a study that would report findings using written and visual communication, I had to embrace my role as a videographer. While spending time in the field, I was mindful of things like framing, narrative, and sound. The intent to share my video with broader audiences forced me to think about quality of audio and video for

future showings/publication. Once observation data was collected, I had to then assume the role of video editor. Most documentary film producers would likely hire people with unique expertise in these skills. However, this being a dissertation, collaborations of this type may have caused some consternation given that there are certain expectations about completing a capstone project such as this individually. In spite of what seemed like a limitation, having the opportunity to work individually and closely with the data through the recording and editing process served as important processes for thinking with my data.

Research Site Selection

Participants for this study were chosen using nonprobabilistic (Merriam & Tisdell, 2016), purposeful (Patton, 2015) sampling. Merriam and Tisdell (2016) state that purposeful sampling is most commonly used when "the investigator wants to discover, understand, and gain insight and therefore must select a sample from which the most can be learned" (p. 96). I chose to study teachers who are part of neighboring districts near a major university located in Southeastern United States: Griswold County School District (GCSD) and Creek County School District (CCSD) (all names of locations are pseudonyms). While both districts are located in a convenient location, they fit the profile I believed to be important to this study: they were 1:1 with all students being provided with school-sanctioned Chromebooks. This is a critical characteristic because it allowed me to study schools where the most basic factor of access to digital tools could be accounted for. In other words, schools where all students have guaranteed access to technology meant that I did not have to account for disproportionate access to digital tools as a mitigating circumstance across research sites. However, issues related to

difference in policy, professional support, and infrastructure, proved to be unique and showed how not all 1:1 programs are built on the same foundation.

Griswold County schools adopted the 1:1 policy in 2014 and received national recognition for the inclusion of Chromebooks in a district comprised largely of students from minority, deeply impoverished communities. Teachers from Griswold County were quick to recount some of the challenges associated with the distribution of the laptops to students. In some cases, these were the first and only computers families owned, which meant that they were not only used for students' academic work, but sometimes for parents' work and personal use as well. In addition, the school district worked with local businesses to create a directory for free Wi-Fi hotspots so that students (and families) could use their computers outside of school even if they do not have the internet at home. Griswold County also installed a powerful technical infrastructure, both in and out of school, to help support students and their use of technology. During the first years, teachers also felt highly supported by administration as they had several professional development opportunities to learn more about how to effectively incorporate technology into the classroom. However, after the first two years, teachers were provided less support and time to plan using technology and, as a result, the computers were generally used less and less and were viewed more as a distraction than an academic support. Some schools within the district have since decided to collect the computers and gave them to teachers to keep as classroom computers, no longer allowing students to take their computers home with them. Actions such as these seem to serve as a harbinger for the future of Griswold County's 1:1 computer initiative.

This situation is juxtaposed by a neighboring district, Creek County schools, which is made up of a less diverse, more affluent student body. Creek County started its first year as a 1:1 district during the time this study was conducted, providing students in grades 5-8 with Chromebooks with the intent of extending this program to the high school in the following year. Instead of increasing internet accessibility throughout Creek County, they were working on the Google platform which allowed students to access their work both online and offline. This site was chosen because it served as interesting comparison to Griswold County, which has had more years of experience with their 1:1 devices, but also lost significant levels of support over time. Creek County, then, was an interesting case to juxtapose with Griswold County in looking at how time might impact 1:1 initiatives.

Research Participants

Teachers partaking in this study were identified as tech-savvy by multiple sources. I first spoke with my major professor, who has a background in working with local teachers, specifically in the realm of digital technologies. In addition, I emailed the former technology specialist for GCSD, who was able to identify teachers with whom she worked closely and believed integrated technology in effective ways. I also asked a former colleague who assisted with the professional development team at GCSD and worked closely with teachers during in-service trainings related specifically to technology. I then cross-referenced the lists of teachers provided by my major professor and the technology specialists to determine two participants from different districts who I thought would best fit the aims of this study.

Participant 1

Mrs. Brouillard was a teacher at Belville Middle School in Creek County. She taught English language arts for 13 years, the last three of which had been at Belville Middle School. However, she was a career-changer, having spent time in retail before earning an alternative certification in teaching (without a degree in education)—something she believed had a significant impact on the way she approaches teaching 8th grade English language arts. During my early email conversations with her, she seemed reticent about being identified as tech-savvy in spite being recognized by multiple sources as developing meaningful and impactful lessons with technology. She was a Google Certified Innovator, a designation given to educators, "selected based on their professional experience, their passion for teaching and learning, their innovative use of technology in school settings, their potential to impact other educators, and their desire to tackle some of the biggest challenges in education" (Google, 2018). Mrs. Brouillard set herself apart from other teachers in her school who use technology in more analytical ways, such as collecting data using online assessments or levelled reading programs, as she believed that technology should be used for creative, student-centered purposes. In addition, she was proud of her educational digital footprint. She was an active participant in multiple Twitter chats, finding it to be the most important form of professional development. Moreover, she believed that all teachers should have a desire "to be part of a larger conversation" about what is happening in their classrooms through online platforms.

During our first interview, she vividly recounted how in 2011 her approach to teaching completely changed when she was introduced to project-based learning (PBL)

during a conference at her former school district. She was instantly hooked by teaching and assessing learning through projects, and yet she felt like a pariah because she could not convince any other teachers at her school to get on board with her. This led her to seek out other opportunities at schools that valued both PBL and technology. She spent one school year helping to establish a new high school devoted strictly to innovation and design, before deciding to take a job at Belville Middle School. Moving back into a more "conventional" school seemed to have had an impact on Mrs. Brouillard and her teaching, as she once again became viewed as *the* tech-savvy teacher who stood out amongst a crowd of teachers who typically do not use technology in their own classrooms. She identified herself as a "rebel" and wanted to be a "change agent" at Belville as they began rolling out their 1:1 initiative.

Mrs. Brouillard played an important role in the 1:1 roll out, as she was part of the technology leadership team. She recognized that she had a gift for learning how new tools work and could problem-solve when hardware did not work. She was charged with helping to lead professional development opportunities to support her colleagues learn what the Chromebooks could do for learning and to pilot new programs. Creek County had a rather strict protocol for introducing new tools to students for fear that some apps might be inappropriate for students under the age of 13. Mrs. Brouillard was very mindful of this and did everything she could to innovate within the expectations established by her district.

Participant 2

Mrs. Ogden worked within Griswold County at Pine Grove High School. She was teaching 9th and 10th grade English during the time of this study and had recently

finished her M.Ed. at a local university before taking over her first classroom. While she received some support during her graduate work, she identified her beginning years in the classroom as formative based on the amount of professional development, she was involved in from the district during the roll out of the 1:1 initiative. She talked about the professional development she received through Griswold Country that showed her what types of digital tools were available to her. However, more than anything, she fondly recalled the days where she was given a substitute teacher to cover her classes so that she could take a day dedicated purely to planning with technology. Those days were no longer offered to her, which she believed had an important impact on her willingness to try new tools with her students. So, while she continued to use technology, she seemed to feel as though she was no longer an innovator in the ways she used to be when she was given time to plan.

Instead of tech-savvy, Mrs. Ogden referred to herself as "tech-willing." She knew that technology was important for students because she believed that digital tools would be an important part of their futures. In addition, she found that it allowed students to engage in more creative activities, which aligned with her approach to the teaching of English; she believed that students should be given opportunities to express themselves in whichever modes they feel most comfortable. Mrs. Ogden did not see herself as a technology teacher. Instead, she was there to help students engage in the creative process and show them how technology could facilitate creative production. She also did not feel the pressure to be the expert in the room. Instead, when students did not know how a digital tool worked, she first encouraged them to figure it out on their own. In many

ways, she attempted to create a student-centered classroom that took advantage of the creative, design potentialities of the Chromebook.

Mrs. Ogden was in her fifth year of teaching and provided some deeper insight into the ways in which early-career teachers can include some of the new literacies often closely associated with her generation. While she may be considered a beginning teacher, she had enough time and experience at Pine Grove to help me understand how she persisted in her pursuit of finding meaningful ways to integrate technology into secondary classrooms. She noted the fact that there were not a lot of other teachers in her school who use technology at her school. However, she did not believe that she had a responsibility to show other teachers how they could leverage technology in their English classrooms to make learning more meaningful or engaging. Instead, she had a small group of like-minded (younger) teachers who she would talk to about technology within her school.

Mrs. Ogden was an avid user of Instagram but was still trying to figure out how to use it for educational purposes. She followed other local teachers as a way of seeing what colleagues in her community were doing and as well as share student work that she was proud of. So, when it came to sharing some of the exciting things she was doing with students and technology, she shared her practices primarily on her social media rather than her colleagues at Pine Grove.

Data Sources and Collection

There were several data sources which were collected to help in responding to the research questions for this project. I started my data collection process with pre-observation interviews with teachers to learn more about them, their use of technology,

and determining whether or not they would be appropriate participants given the scope of the study. I then spent 5-7 days in each classroom conducting video observations during one of each of the teacher's class periods. Finally, after editing observation footage, I conducted video-cued interviews with both participants. The video observations provided an opportunity to focus on both teaching practice while paying close attention to the material in the classroom. Attending to both the human and the non-human matter was important in attempting to respond to the various questions posed in this study. I had data that I would consider more humanistic (e.g. interviews, observations focusing on teachers and students) and other sources that, although may have been framed with humans, centered material (e.g. images of computers, desks, power). Video was collected using three iPads and one iPhone in order to view the classroom from different angles and perspectives using the iOS Filmic Pro App. High quality footage was collected in order to ensure that, in addition to having high quality raw data, the images could be used for an aesthetically pleasing video publication as well. What follows is a description of the data sources and the means of collecting data throughout the different phases of my research design. The table in Appendix F provides a broader overview of this process as well.

Phase I: Teacher Interviews

The first phase in the research process was to conduct video-recorded semi-structured interviews (Brinkmann, 2014) with the teacher-participants. The purpose of conducting qualitative interviews is to "find out what is in and on someone else's mind to gather their stories" (Patton, 2015, p. 628). So, these interviews were meant to engage my teacher-participants in sharing more about themselves, while also helping me begin situating this study based on their personal and professional experiences.

I developed an interview protocol (see Appendix G) to gain a better understanding of my teacher-participants dispositions and experiences related to technology, both in their personal and professional lives. These interviews took between 30-60 minutes and covered topics such as how they use technology at home and why they believe it is important for students for students to use technology in their English classrooms. These conversations set the stage for talking about expectations and potential learning outcomes when I conducted classroom observations. Most importantly, they provided necessary background that helped me better understand the experiences these teachers brought into their classrooms and how it informed their English pedagogy.

According to Heath, Street, and Mills (2008), the best ethnographers possess "visual acuity, keen listening skills, tolerance for detail, and capacity to integrate innumerable parts into shifting wholes" (p. 57). These traits become all the more important when interviews are being recorded and those recordings will eventually be rendered into a more holistic narrative of the ethnography. Because of this, I was careful to listen carefully and insert myself as little as possible during this stage of data collection.

Phase II: Classroom Observations

The next stage of the research process for this study was to conduct video-recorded classroom observations. After speaking with the participants during Phase I, they told me about upcoming lessons that involved digital tools in ways that represented their philosophy with regard to technology's possible role in the teaching of English. They then told me which class they felt comfortable having me come to observe and which lesson segment and dates worked best for them. It was important that I gave my

teacher-participants the option to choose which days I observed because a) I wanted them to be comfortable during the recording/observing process and b) their choices provided interesting insight as to what they considered to be particularly "techie" lesson sequence/project.

I conducted these observations independently, which meant that I had to be creative in the ways I recorded video in the classrooms. I used two iPads set up on tripods along with an iPhone which I used as a handheld recording device in order to move about the classroom and capture some of the more "mobile" literacy events. I put the iPhone on a gimbal, which allowed me to record smooth, continuous footage. The gimbal also had a mount on which I was able to affix a Røde shotgun mic. This was essential for attempting to record specific conversations and other sonics in the classroom without capturing all of the additional ambient noise in the background. In addition, the iPad set up in the back of the classroom was connected to a lavalier microphone that was attached to the teacher. This was another important mobile consideration, as it afforded me the opportunity develop a wireless method for collecting audio from the teacher at all times without having to follow them around; it gave me the freedom to follow other classroom flows that may not involve the teacher. I did, however, monitor the lavalier microphone through the use of Bluetooth headphones connected to the iPad to ensure the quality of the audio and to make any adjustments as needed. While it was important for me to attend to the movements of the teachers, I also paid close attention to the embodied practices of the students as they engaged with technology. In addition, even though this study did not include opportunities for student interviews, I was cognizant of the thoughts they shared with their teacher and classmates during classroom conversations and independent work

time. Student audio was mostly collected through the iPhone as I moved about the classrooms.

All devices used the Filmic Pro app. This was preferable to the camera app that comes standard with the iPhone and iPad because it gave greater control over lighting, focus, zoom, frame rates, and image quality. During my first observation with Mrs. Brouillard I started using a Swivl mount, which allowed me to place a third iPad in the room to follow her using a tracker that doubled as a microphone. While this was helpful, particularly because I was the lone cameraperson, I quickly realized the quality of the video was poor, particularly because Mrs. Brouillard preferred to keep her lights low, making it a difficult environment for recording. Because I wanted to get an authentic recording, I did not want to ask her if it would be possible to turn her lights on during classroom observations. Instead, I was forced to rely on the other two static iPads as the Filmic Pro app was better equipped for recording in Mrs. Brouillard's learning environment. Furthermore, during our video-cued interviews, she explained that the Swivl camera's movement was distracting during the first day of recording. As a result, I set up two iPads on one side of the room as a way of attending to important grammars of film (e.g. the 180-degree rule).

Field notes played an important role through this phase of data collection. Taylor, Bogdan, and DeVault (2016) suggest that researchers leave the research setting after an observation and record field notes as soon as possible. They also believe it is helpful to view the field journal as a living document that a researcher can return to throughout the research process as new insights develop. Keeping this in mind, I recorded my thoughts and general impressions after each observation while sitting in the school parking lots of

each site. I used the Evernote app on my phone to keep a record of my thinking, which allowed me to keep my field notes with me wherever I had my phone.

Field notes can be considered raw data to be coded as well (Maxwell, 2013; Merriam & Tisdell, 2016). I, however, did not code my notes. Rather than viewing my notes as data, I used Evernote more like a field journal for recording "thoughts, impressions, initial ideas, working hypotheses, issues to pursue, and so on" (Schwandt, 2007, p. 115). Documenting notes as the study occurs can be helpful because it can help "make sure the inquiry is unfolding in the hoped- for direction and can stimulate early insights that may be relevant to pursue in subsequent interviews while still in the field" (Patton, 2015, p. 692). My notes served as an archive for daily events which allowed me to take an inventory of initial findings while also indexing observations with dates which would eventually make it easier to pull footage as I was creating the documentary.

After each observation, I downloaded footage onto an external hard drive and then cleared it from each device in order to free up memory to record subsequent observations. I used Final Cut Pro X (FCPX) to sync the angles of from the two iPads and the iPhone footage into one singular timeline; this allowed me to look at the day's events from all three perspectives.

Figure 3. FCPX editing interface

I then chose footage from each observation and condensed them into shortened clips, otherwise known as "rushes," (Macdougall, 1998; Tobin & Hsueh, 2007). This allowed me to engage with the video immediately as an initial layer of data analysis, similar to the first stage of coding a transcript and reviewing observation notes and memos. Video analysis is unique in this regard because it creates an "ongoingness of…activities as well as archiving them" (Pink et al., 2016, p. 165). In other words, the daily viewing of video and editing process allowed me to re-view and re-experience events that were recently enacted in a classroom. By condensing 60-90 minutes' worth of footage into 10-20 minutes, I was able to provide a brief highlight reel of each observation, which not only would be important for putting together video for future interviews, but it was a valuable reflective tool.

Phase III: Video-Cued Interviews

The third and final phase of data collection involved video-cued interviews (Tobin, 2019). The first step of this phase was taking the video montages from the rushes and adding them to a singular timeline in a separate FCPX project. In both cases, I realized that I did a poor job of condensing footage on a daily basis and did not edit out enough content; each montage was roughly 90 minutes long. It was important that the video montages for each teacher was roughly 30 minutes because it was meant to serve as cue for engaging participants in conversation during their follow up interviews. The expectation for the video-cued interviews was that teachers would sit with me and watch the montage of their teaching segments and have control over pausing the video when they wanted to comment on something they noticed. Because of this, the video clips needed to be shortened to roughly 30 minutes, if for no other reason than conducting a reasonable timeframe for the interviews, assuming that a teacher who is actively involved in the video-cue process may pause often in order to share insights. While it was difficult, eventually the videos were edited down to 30 minutes for each participant.

Both teachers met with me in February 2019 to watch their montages and comment on what they observed. I approached these video-cued interviews with the intention of staying quiet and waiting for teachers to comment on what they found interesting. I believed this was important because I had already imposed my views while actively choosing the clips I found most interesting. Admittedly I was not able to remain quiet particularly in cases where video clips that were chosen with the intention of eliciting a response from the teacher participant went unnoticed or did not seem significant enough for the teachers to comment on. So, there were instances where I

asked pointed questions about specific clips. However, after both interviews I felt differently about the video-cue process. It was misguided of me to assume that teachers would find instances as interesting as I did as an outside observer. The video was more similar to a carefully crafted, semi-structured interview protocol, facilitating conversation by allowing us to re-experience a shared classroom experience. Michelle Fine (1994) would describe this exploration of the researcher-participant relationship as "working the hyphen" of the teacher-participant relationship as we were co-constructing findings of classroom technology literacy events by providing our own insights through our discussion of the video montage.

Like the previous two phases, these interviews were recorded. This was important because, while the framing of these interviews was taken into consideration, the thoughts shared by the teachers would be used throughout the findings section of this paper. In addition, the teachers' insights created narrative voiceovers to help describe events in the documentary.

This part of the research process was meant to provide an opportunity to these teachers to see their teaching in ways typically not afforded to them. Viewing video of professional practice "can help both researchers and participants become reflexively aware of hidden habitual and embodied digital practices and meanings" (Pink et al., 2016, p. 49). At the end of both video-cued interviews, teachers expressed gratitude over being able to participate in the study, since the videos gave them a reason to pause and reflect on daily teaching approaches that they otherwise would not have taken time to engage in.

Data Management

According to Paulus, Lester, and Dempster (2014) “Not only do digital tools present opportunities to support and even transform our research, but at times they may threaten our ability to engage in ethical practices” (p. 7). Furthermore, citing Grant and Luxford (2009), recording with video requires researchers to develop “higher levels of trust with research participants than is required when recording audio alone” (Paulus, Lester, & Dempster, 2014, p. 143). As such, I understood the need to be explicit with my participants, explaining my intent with the data collected and how it would be carefully stored for safekeeping. This required me to ensure that all data stored on my mobile devices and hard drives were, whenever possible, password protected and encrypted. In addition, I was clear about my intentions on producing the video for a broader audience, so that the teachers and students understood the implications of sharing their thoughts and classroom activities on video. Once the project is complete, I will keep the data on an external hard drive that will be locked in a secure location for five years.

Data Analysis

Analyzing the data through the process of producing a video set this study apart from more traditional dissertations where the written product is the only/primary form of representation for the findings. As mentioned, I am producing both a traditional written dissertation along with a video that helps support the writing. Subsequently, I approached the video editing process as my approach to analyzing the data. Richardson and St.Pierre (2005) argue that writing is thinking and can be considered a part of any analytical process when putting together scholarly work. Richardson (2018) argued that creative approaches to qualitative inquiry, such as writing poetry, can help researchers experience

their data differently. In that same vein, I would argue that video editing is a form of creative thinking. Furthermore, methodologists like Melissa Freeman (2017) have advocated that different "modes of thinking" can bring about new insights during data analysis. The analysis process I engaged in is perhaps the biggest deviation from traditional ethnographic work as I make the argument that video production and the consideration for narrative is an engagement with data that creates new possibilities for developing findings in qualitative inquiry.

Advances in video collection methods bring about important considerations with regard to the video editing process. More traditional video ethnographers often argue in favor of extended video clips with minimal editing (MacDougall, 1998; Mead, 1995). MacLure et al. (2010) make the argument that the "'hands-off method' of video has limited potential to animate the viewer – to spark new thoughts, sensations or reflections. It simply repeats what we already know" (p. 546). If the aim of modern video ethnography is to add something new to the conversation in the social sciences, then perhaps researchers have more leeway when it comes to editing video. Vannini (2015) reminds us that "Editing…is a political and ethical practice within all video-based research no matter what the intended audience" (p. 236). The process of "audiencing" forces researchers to think not only about what they as investigators find interesting, but also about how the content will be viewed and interpreted by prospective audiences (Garrett & Hawkins, 2015). As I was creating my video-cues, I had to think about my teacher-participants as my primary audience. As I began preparing the video for publication, I had to consider the interests of the field and broader audiences who ostensibly would view the film.

Analyzing Video Data

During this stage in the research process, I started by combining both montages used for the video-cue interviews into a singular project in FCPX. Next, I re-viewed each montage and started identifying similarities between both participants, arranging similar clips side-by-side in the FCPX timeline and placing a title box in front of the group of clips to keep them organized. In many regards, this was similar to an inductive coding strategy of "constructing categories or themes that become the findings of the study" (Merriam & Tisdell, 2016, p. xiv) through identifying similar clips, organizing them together, and labeling them.

At the same time I was organizing the clips, I continued taking notes in Evernote as a means of getting a condensed, textual overview of the findings—a process similar to storyboarding a film or novel. In it, I would title it based on the label in the title box and describe what clips fell within this segment of the film. After all of the clips from the montages were grouped together, the extraneous clips were placed at the end of the timeline to be used for B-Roll or extra footage if needed.

Next, I re-viewed the video-cued footage from both teachers. I analyzed the clips by looking for similar themes as identified in the timeline and Evernote storyboard. FCPX has a side panel which allowed me to take notes about each clip, so as I was splicing each interview into their correlated segments, I was taking notes which allowed me to quickly search and identify the themes of the clips and move them into the section of the timeline which correlated with their themes.

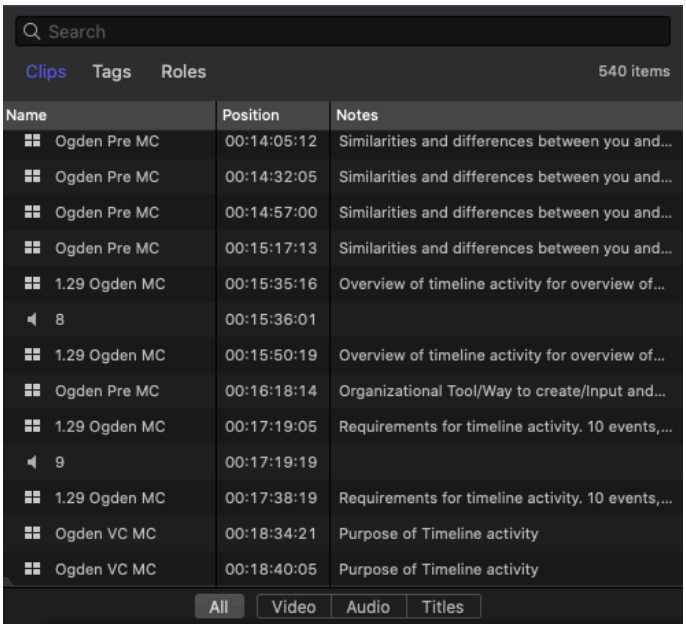

Figure 4. Notes section of FCPX

I then returned to the pre-observation interviews as a way of cross-referencing my findings to see to what extent the beliefs and philosophies shared during our original discussions matched with what happened in the classroom. Like the process described above, I attempted to identify themes from both teachers' pre-observation interviews that matched themes already identified in the timeline. This review was more important because it helped contextualize the study by providing a background for each teacher. A majority of the footage from these interviews were moved to the front of the timeline and served primarily as a way of introducing each teacher in the beginning of the film.

After I had re-viewed and placed the clips on the timeline, 29 themes had been identified and the runtime for the film was 123 minutes. I decided to export the video and watch it on a television as a way of getting a more accurate, cinematic feel and to determine how the study was unfolding. As I watched the film, I took notes in Evernote, writing ideas related to findings, repetitious clips, issues with the overall narrative, and identifying areas that needed more support as well as themes that seemed to be

extraneous or less important given the scope of the study. I then used those notes to guide the next stage of editing and analyzing.

One of the distinct advantages of working with video data is that it provides the opportunity to analyze and re-analyze clips over time as a way of refocusing and attending to different events with each new viewing (Hayashi & Tobin, 2012). In addition, it allows for different opportunities for what Geertz (1988) refers to as "being there." As I reviewed my notes in Evernote, it became clear that my analysis through editing and viewing the video was an evolving process that provided me with clarity over time. Insights were becoming more and more refined as major findings were coalescing and providing a narrative for what it might mean to be a teacher who techs.

The storyboard in my Evernotes file also served as an outline that was constantly under revision as I analyzed clips and edited the video. In addition, the notes were a helpful guide that I used to write out short captions for each theme. I recorded each caption using GarageBand software I then imported each audio caption into the FCPX timeline to serve as narration for the 29 themes in the film.

Once I was able to get the video down to 90 minutes, I decided that I could use it to begin constructing the written findings portion of this project. I converted the video into an audio file and used an artificial intelligence company, Trint, to transcribe the audio. Because each segment was carefully chosen and organized by theme in the film, it made it rather convenient to start writing directly from the transcript. As a result, the organization of the findings is a mirror of the 90-minute version of the video.

The final stage of this process was to take the 90-minute video and edit it down into a short form film with a greater focus. This project has four questions which are

related in scope but had different epistemological and ontological aims. My first two questions deal more with teachers and their practice, whereas questions 3 and 4 are more concerned with new materialist concerns with technology. In determining how to proceed with my video, I returned to the consideration of "audiencing" (Garrett & Hawkins, 2015) to think about the type of video I could produce and who the audience for this project would be. After looking at different publication avenues that possess the digital infrastructure and interest in publishing video work, I decided that a journal like *Contemporary Issues in Technology and Teacher Education* (CITE Journal) might find this study of interest to their readership. In addition, it seemed as though my first two questions related to teachers' dispositions and new literacies practices would be a fit for their journal.

I returned to editing and analyzing the video one final time with the new goal in mind of focusing primarily on answering research questions 1 and 2. So, while the final video product being shared does not directly address issues with regard to new materialism, the process of creating the 90-minute video was a mode of thinking that played a significant role in helping me craft the findings section of this study. In the end, I was able to edit the video down to 30 minutes with the intent of previewing the final cut on March 31st, 2020.

Ethics and Politics

One of the major deterrents for using video in research are the serious ethical implications that come with conducting this type of research. Institutional Review Boards (IRB), tend to proceed with caution when confronted with visual research proposals, particularly when working with potentially vulnerable populations. Ethical considerations

become more complex when technologies like video are introduced because there is not a long history of protocols in how to handle the recording and distribution of video findings. This requires that video researchers remain adaptive to the evolving norms of the field and develop strong ethical practices that honor research subjects (Derry et al., 2010). Researchers who believe video may serve as the best medium for data collection and reporting may find themselves in a dilemma of having to negotiate with IRB committees. I have been fortunate that IRB has approved my study contingent upon the approval of the school districts. Despite overcoming this initial hurdle, I was mindful of several ethical considerations throughout the data collection and analysis process.

Students and Video

Children are considered some of the most vulnerable populations in social science research. Working with any minor is particularly messy because they are not of the age of consent and require parental permission in order to participate in any study. This raises important questions such as who owns the video footage (researcher, child, parent) and who is responsible for advocating for the child if they no longer want to participate in the study. An ethical researcher will approach their studies as a collaborative partnership, understanding that any data belongs to all parties involved. Additionally, that they should pay close attention to the signals a child may be inadvertently sending in case they feel uncomfortable with the study (Robson, 2011). Sadly, this is not always the case and children may feel powerless to speak up for themselves, especially if parents are not present to advocate for them. As a result, it is advised that studies involving children, particularly those using video, are conducted carefully and include both the child and parent in all decisions of what to do with footage. Member checking by showing clips

throughout the study and final films before publishing can help mitigate any potential ethical issues related to the child or their family feeling as if they have been taken advantage of. In accordance with our IRB and the local school districts, I had guardians sign consent forms for their children and students signed assent forms. Teachers also signed consent forms. The forms clearly outlined the nature of the study as well as the fact that video would be used for publication and professional presentations.

Anonymity

Issues of anonymity are also difficult to navigate. The nature of the study often dictates how much a participant is willing to be visible within a film. IRB often has the final say as to whether or not participants faces can be revealed in the reporting process. A simple solution would be to edit faces by blurring them out. However, as mentioned above, if modern films are to be edited for aesthetic and poetic appeal, then blurring faces is an editing move that reminds the viewer that they are watching a film, snapping them out of the experience pleasurable experience of being wrapped up in the viewing process. Because of the near impossibility of guaranteeing anonymity and creating aesthetically appealing video content, researchers are charged with providing a strong rationale as to why video is necessary when studying children (Mortari & Harcourt, 2012). This requires educational video researchers to be mindful of their researcher questions at every step of the process and consider whether video is the best/only way to collect data and share findings.

In referencing her study on chronic illness, Bates (2015) argued that it is important that participants be given the option and right to not remain anonymous, as that only serves to reinforce a discourse of silencing the voices of people who want their personal

stories to be told. In this case, Bates used what Sweetman (2009) referred to as "an ethics of recognition" (p. 8). She used a portion of Association of American Geographers Statement of Professional Ethics, which states: "informants should be asked whether they prefer anonymity or recognition, and the project should be implemented and its results should be presented in keeping with these individuals' preference" (n.p.).

Unfortunately, educational researchers do not seem to have a similar position statement, but I believe the sentiment from the AAGS should be recognized in this case. I believe that teachers and students have the right to share their experiences with a broader audience in the hopes that by seeing what happens in a classroom, other educators might benefit. I also recognize that the nature of my study is quite different from that of Bates', but it is my mission to be able to use video to address issues that I think have important implications for teacher education.

Reactivity

Research participants may feel added pressure to perform for researchers, particularly when cameras are involved. Researchers typically understand this as the Hawthorne effect (Cook, 1962), believing that people will behave differently when being closely observed. However, cameras can amplify this effect. According to Møhl (2011), people being filmed "may go on living their lives, but they do so in a slightly different manner. One gets the impression that they are performing their own lives" (pp. 232-233). Bilkstad-Balas (2017) refers to this change in behavior as "reactivity."

One possible solution is to ensure that participants get used to cameras being present well before the actual filming begins (Tobin & Hsueh, 2007b). Heath, Hindmarsh, and Luff (2010) have found that people often eventually forget that cameras

are present and their behavior may be more consistent and less performative. Ethically, this benefits the study as a whole as the footage gathered might be more representative of a typical experience. As a result, I visited the classroom sites days before I actually began recording so that teachers and students could become accustomed to the cameras in the room, lessening the possibility of reactivity.

Risks and Benefits

I did not anticipate any risks associated with this study. I hope that teachers benefitted from watching the recorded observations and providing some thoughtful and reflective insight related to their teaching. I think that this allowed them to look at their pedagogies and classroom practices from a unique perspective not often afforded to them. As a result, I believe that students benefitted as well, as teachers may choose to make purposeful changes relative to their pedagogical approach to teaching English, both with and without technology, after participating in this study.

CHAPTER 4

FINDINGS I:

TEACHERS WHO TECH

Over the course of any career, teachers often develop a reputation for possessing unique qualities that become part of their teaching repertoire. Students and colleagues may come to know certain teachers as caring, humorous, easy graders, strict disciplinarians, along with other traits that tend to paint complex teachers with a singular, broad brush. English teachers in particular may develop personae's as experts in certain facets of the English language arts curriculum, such as an expert on teaching drama, poetry, modernist American literature, creative writing, grammar—the list goes on. Whether these monolithic perspectives on teachers are fair or not, they likely have an impact on the identities teachers curate for themselves inside the classroom.

What follows is a description of the two participants of this study: Mrs. Brouillard and Mrs. Ogden. As mentioned above, both teachers were identified by peers, colleagues, administrators, and professors as teachers who use technology effectively in their English classrooms. This chapter begins by describing each teacher's use of technology during my observations as a way of beginning to better understand why others might view them as particularly tech-savvy. The rest of the chapter is devoted to trying to learn more about how these teachers developed their identities and how their personal literacy practices inform their digital teaching practice. Although Mrs. Ogden and Mrs. Brouillard are unique in their methods and approaches to teaching English language arts, they also share

some similar experiences. The comparisons between their classroom activities and personal literacy practices lay a groundwork for beginning to theorize what a teacher who techs might understand about the application of digital tools in the English classroom and how this facet of their identity sets them apart from their less techie colleagues.

Teaching with Tech

While conducting observations in both classrooms, I often marveled at the different ways Mrs. Brouillard and Mrs. Ogden used technology. In addition to being inclusive of students' out-of-school literacies, they made sure to use digital tools that covered English content in order to make activities student-centered and provide them with choice. Even when they were addressing standards that seemed traditional in nature—whether it was annotation, tracking impactful coming of age moments in bildungsroman texts, identifying shifts in mood in fiction, or conducting quickwrite activities—Mrs. Ogden and Mrs. Brouillard attempted to use technology to breathe new life into the content and make it relevant to students' interests.

During her observation segment for this study, Mrs. Brouillard's class worked on a writing unit based on the National Novel Writing Month project, more commonly known as NaNoWriMo. During the 30 days of November, people of all ages are encouraged to use an online platform through NaNoWriMo with the aim of completing a novel. According to their website, "National Novel Writing Month believes in the transformational power of creativity. We provide the structure, community, and encouragement to help people find their voices, achieve creative goals, and build new worlds—on and off the page" (National Novel Writing Month). The decision to develop a writing unit around NaNoWriMo was a pedagogical move that Mrs. Brouillard made

independent of the prescribed curriculum provided by the instructional leadership for Creek County schools—a demonstration of her willingness to push boundaries and engage students in authentic writing experiences. In coordination with the structures provided by the NaNoWriMo platform, Mrs. Brouillard crafted lessons that she believed would allow students to unleash their creativity by exploring some of their best ideas and putting them into a novel. This was a tall task for 8th graders, but Mrs. Brouillard believed that her students had the potential to write their novels and provided them with the time and structure necessary to help them achieve such lofty goals.

However, Mrs. Brouillard frontloaded this unit with the understanding that too often the hardest part about the writing process is starting. During my first day in her classroom, she introduced students to The Most Dangerous Writing App—an online platform (separate from the NaNoWriMo program) that is meant to help facilitate quickwrites. Students were expected to write continuously for five minutes without stopping. If at any point they paused for more than a few seconds, the website would delete all of their words and students would be forced to start over with a blank screen.

As Mrs. Brouillard introduced this activity, she was greeted with groans of potential frustration from her students as they realized that the stakes for their quickwrites were amplified by virtue of the possibility of writing thoughts and ideas that they could add to their novels only to see their words vanish into the ether. Clearly, Mrs. Brouillard did not want her students to expend energy writing toward their NaNoWriMo novels and then be left with nothing to show for it. At face value, such an activity may like a Sisyphean task. But Mrs. Brouillard used the Most Dangerous Writing App as a tool to help students overcome some of the cognitive blockage that often accompanies the

brainstorming and drafting process. As students engaged in the timed writing, there was a sense of urgency not normally present during free writing activities. Students fingers moved furiously across the keys while eyes were fixated on the screen with severe intensity. The clicking of the keys was only interrupted by the intermittent groan of a student who had lost their writing because they had paused too long or attempted to backspace and revise their work contemporaneously.

After five minutes, Mrs. Brouillard attempted to debrief the experience of quickwriting with speed and intensity rather than cautious attention to each thought that appears on the screen. It was apparent that many students believed that what they had written was nonsense and that the quickwrites had not assisted them in producing any content that would help them write their novels. So, Mrs. Brouillard changed the subject asking students to think about the process and craft of writing rather than the end product of their quickwrite. She started by eliciting questions about cognition, pointing to her head and asking students to tell her what happened "up here." Students expressed feelings of frustration over the mistakes in their writing, focusing on what one student referred to as "gibberish" and errors that were made rather than what the quickwrite had ostensibly helped them overcome: self-doubt associated with the craft of writing. Mrs. Brouillard returned time and again to theories about cognition shared by many productivity and writing gurus, like Peter Elbow (1973) and Steven Pressfield (2002), who believe that sitting down and writing is the only way to overcome issues related to a writer's inner critic.

During points in the conversation where they expressed feelings of inadequacy about their quickwrites, Mrs. Brouillard would tell them that "the gibberish [you wrote]

was your brain working" and that they "Had to keep [their] fingers working. Our brain works through the movements." It was evident through this discussion that Mrs. Brouillard understood the act of writing as embodied and pre-conscious. Where her students might understand writing as an academic pursuit that depends on intelligences like creativity and mastery of usage and mechanics, she wanted them to use their fingers to tamp down their inner critics. Furthermore, this activity began illustrating how Mrs. Brouillard believed technology could serve as a tool for facilitating these embodied writing practices that helped students develop ideas that might not otherwise be "available" to them on a more conscious level. The Most Dangerous Writing app was not merely a platform for writing and sharing work—it allowed students to produce different writing by engaging in a process that forced students to explore their first ideas, even if they might not be their best or most coherent ones.

Another student started mocking her own writing by stating that she wrote *bea9tiful* rather than *beautiful.* Mrs. Brouillard used this opportunity to tell her students, "No more backspacing…Do not criticize your work yet." In that moment, the idea of backspacing more of a metaphor for the writing process, as she was encouraging students to forge ahead while leaving self-doubt in the wake of their forward momentum with their novels. During a follow up interview, she would admit that the point of the activity was to help them by instilling a fear of losing something good to help them push through "not-knowing and mistakes." Too many times she had seen "the rational brain [take] over the creative brain" when students sit down to write. Elbow (1973) believed that the power of the quickwrite exists in the potential of a writer's fingers moving quicker than the brain. When writers allow ideas to flow onto paper or screens with little conscious

attention to organization, spelling, or content, they may be able to tap into writing that overrides their inner critic.

Mrs. Brouillard seemed to be cognizant of her students' self-consciousness and did her level best to serve, not only as a teacher, but as a cheerleader. Borrowing a quote she learned while working out at her local gym, her mantra during that first day was "you cannot be unstoppable if you do not start." Mrs. Brouillard explained that she understood that writing is a struggle and that things like writer's block can prevent even the best of writers from getting their ideas on the page. However, she also understood writer's block not necessarily as a paralysis of thought rather a "fear of writing—fear of what might come out on the page." Rather than trying to avoid this type of struggle, she wanted students to face it head on. By the end of the month, Mrs. Brouillard was excited to hear students talk about how proud they were for producing a book, believing that the volume of their writing was an impressive achievement. For many, they wrote more in a month than they had in their entire time in school.

This activity in Mrs. Brouillard's class was the first indication that a teacher who techs understands that technology must be leveraged in a way that allows students to engage in activities that they otherwise would not be able to do with analog material. Quickwrites are a mainstay in many English classrooms. But the challenge of writing fast in a paper notebook is absent of the disincentive of losing one's work. The Most Dangerous Writing app was used as a tool to get students to move beyond their first ideas and tap into a deeper idea that may be lodged deep in their minds. Furthermore, the movement of fingers and intensity of student gaze on computer screens showed how the embodiment of typing was a critical element in this particular activity. I paid similar

attention to embodied practices in Mrs. Ogden's classroom as students worked on their Chromebooks to create timelines for books they were reading independently with their peers.

Mrs. Ogden was able to use technology as a means of disrupting conventional notions of analyses while students engaged in book clubs. During this activity, students were placed in literature circles based on different books in the bildungsroman genre and were asked to create a timeline of main events that led to their protagonist's coming of age. According to Mrs. Ogden, the objectives for this activity were twofold: for students to analyze the structure of the bildungsroman in their novels and for students to pin point moments on a timeline that helped them realize that events in our lives add up to make us into the adults we eventually become.

Mrs. Ogden demonstrated that for her choice was incredibly important when it came to using technology with students. Before students started on their activities, she had them view examples of potential final products created by her and her student teacher, Ms. Lamp'l: Sutori and TimeGraphics. Providing students with the time to tinker with different tools and to visualize what their final product might look like was valuable to students. Returning to the concept of the bricolage, Turkle and Papert (1991) discuss how a bricoleur "resembles the painter who stands back between brushstrokes, looks at the canvas, and only after this contemplation, decides what to do next" (p. 169). The 10th grade course of study in her state was vast, asking teachers to provide students with a survey of world literature. Such an expansive curriculum might seem overwhelming, forcing some teachers to plan with a sense of urgency that leaves little room for flexibility and exploration. However, Mrs. Ogden built in time for tinkering, allowing

students to look through the examples created by the teachers so that they could decide which tool would be most appropriate for them. She wanted students to feel a sense of ownership by providing them with choice. She was surprised to find that many students chose the timeline tool that was more complicated to use. She realized that by showing students different mentor texts, they were focused on the end product without considering the functionality of the timeline tools.

Once students chose their timeline tool, Mrs. Ogden had them work within their book clubs to brainstorm their plot points together. Although their final products had to be completed individually, collaboration was another central tenet of her activity. Book clubs are social by design. So, it would make sense that students should have an opportunity to crowdsource potential events before they started plotting events on their timelines. Interestingly, students started their brainstorming in paper journals, even though all students had their Chromebooks. As I continued talking with Mrs. Ogden, it was evident that the use of paper journals and reading paperback books while working on digital assignments helped students develop a workflow between modes meant to assist students in staying organized. The combination of paper and digital matter created a network of actants that helped facilitate further conversations with broader networks of students within literature circles.

Ultimately, Mrs. Ogden believed that the timeline activity was not successful. For some students, the technology stood in the way of their success because they spent so much time figuring out how to manipulate plot points and add images that it detracted from the process of the analysis of the literature. She also expressed concern over the amount of time that it took students to complete their timelines. She had planned for them

to complete their timelines and have an opportunity to share their final products with classmates from other reading groups as a way of providing a synopsis and mini book talks to entice their classmates to read their book club books in the future. But students ran out of time.

During our interviews after the activity, it was evident that Mrs. Ogden was frustrated by the amount of time it took her students to get comfortable with the timeline tools. To make matters worse, students' inability to think of events to add to their timelines seemed to clearly suggest that many of her students had not been reading their books. As with any activity in the English classroom, students find it difficult to discuss and complete activities when they have not engaged with the text. Mrs. Ogden's willingness to allow for choice with technology seemed like an important consideration for teachers who tech. In addition, her willingness to work with digital tools that would help students synthesize their books as a way of better understanding coming of age demonstrates how teachers who tech seek out innovative ways to push the boundaries when tackling traditional English content, such as the bildungsroman.

Digital Annotation

Another foundational skill that both Mrs. Ogden and Mrs. Brouillard "digitized" was the craft of annotation. Writing in the margins is a critical skill for middle and high school readers to master, as it is part of a process, not only of summarizing and comprehending a text, but engaging with a text (Porter-O'Donnell, 2004). For these teachers who tech, however, digital tools can make it so that the work that often exists in the marginalia of a paperback book can facilitate meaningful conversations in digital spaces (J. W. W. Chan & Pow, 2020; Reid, 2014; Tseng, Yeh, & Yang, 2015).

Mrs. Ogden used a tool called Actively Learn—an online platform that allows teachers to assign readings to students from a clearinghouse of grade- and discipline-specific videos and texts. Articles, short stories, excerpts from novels, and videos are organized by topics and have brief descriptions of page numbers, grade level ranges, and Lexile numbers so that teachers have the ability to quickly scroll through and find texts that seem most appropriate for their students. On this particular day, Mrs. Ogden chose an excerpt from the 1961 short story "The Man Who was Almost a Man" by Richard Wright in which a young man struggles with fitting in with other people in his neighborhood and is conflicted about his own masculinity and whether or not owning a gun would provide him with safety or put him in greater danger. On the surface, the objective of this day's activity was simple: read the text on Actively Learn and annotate in the margins. Whereas she could have simply assigned the text to the students and asked them to annotate as they read the online text, Mrs. Ogden first took 10 minutes to introduce students to the Actively Learn platform and to show them how she planned on facilitating discussion by posting probing questions in the margins.

The aims of this activity seemed simple: provide an online space where she could collect formative data on student annotation skills as well as comprehension of a text. However, during our follow up interview, Mrs. Ogden was careful to explain that the annotation of the text online provided her students with unique learning opportunities. First, her questions in the margins made it so that she could check her students' understanding of a text that fit within the bildungsroman genre—a text that related directly to the focus of their current unit. Second, it gave her the ability to give students an opportunity to teach one another about good annotation practices. During Mrs.

Ogden's overview with the class she made clear to the class that everyone could see their posts and half-jokingly stated, "I'll be watching." At first, I wondered if her comments of peer and adult surveillance were meant to serve as a warning to take the activity seriously. But she soon followed up this directive with a gentler comment that pointed more directly at what is at the heart of digital annotation:

> You are reading individually BUT…you are interacting via this site, okay? So you are like connecting each others' thoughts. So look at the annotations that are being made, reply to my annotations, okay, and kind of interact with each other in that way. We're not talking. We're not using our beautiful voices. We are interacting via this text.

Students' words in the margins provided them with a voice as they responded to the text as well as to Mrs. Ogden's questions and their peers' annotations. They were reading socially in an online space that was similar to more traditional classroom discussions. While students were accomplishing an academic task, they were having a conversation in the margins of the text which allowed parallel peer-to-peer interactions. Mrs. Ogden kicked off conversations by strategically embedding questions she may have asked had they been reading the text aloud. But more than simply choosing to respond to her questions, students demonstrated a willingness to ask their own questions and point out events that seemed to be of particular interest to them. More importantly, students were given an opportunity to respond to one another and their insights, leveraging the tool as not merely a measure of student comprehension, but interpretation. While students rarely seemed to use the "reply" function, they did choose to annotate the same text, giving their own opinions about what the main character, Dave, may have been experiencing. But

unlike the academic conversations high school teachers expect students to have, the marginalia was not just a form of personal textual discourse, but space for learning.

The act of social annotation can be seen as an example of a literacy event that, although occurred synchronously with a class of students, was both contained and dispersed (Massey, 2005). Students were having meaningful conversations in the margins, helping one another develop ideas and work through the process of annotation. This event allowed students who were already gifted annotators to assist their less skilled peers develop a literacy practice by working through a text in a socially, digitally-mediated way.

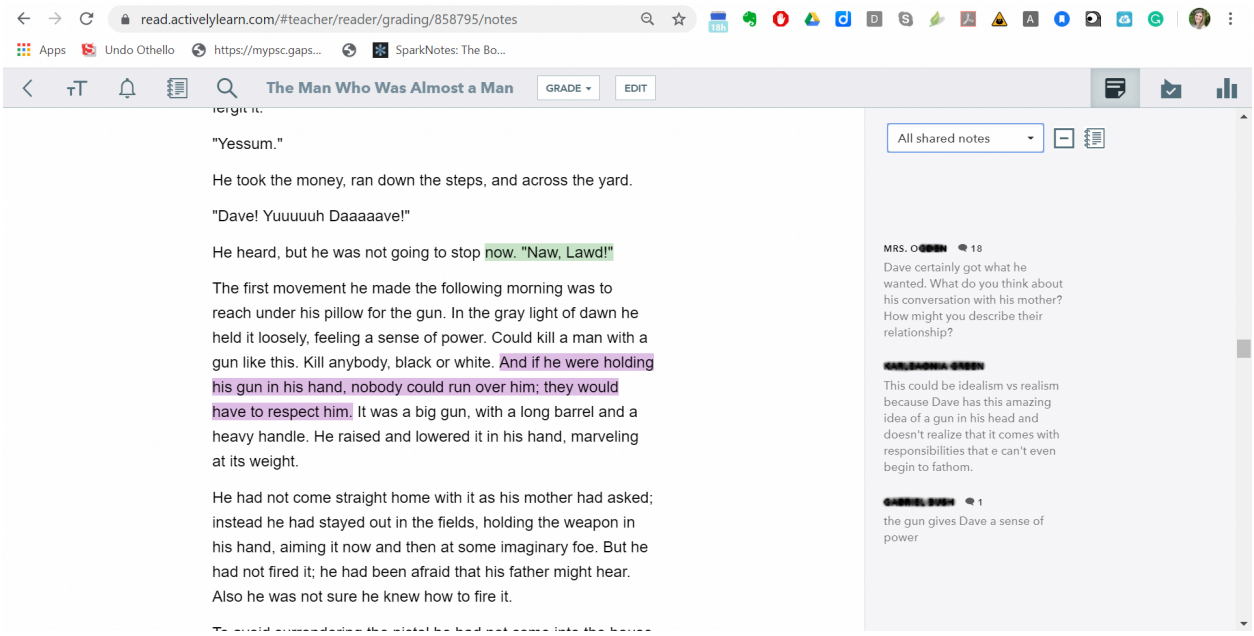

Figure 5. Student annotations in Actively Learn

After this lesson, Mrs. Ogden explained that she liked using Actively Learn to "continuously build on annotation." It helped students extend the skill of annotation by making it social. When she warned her class that she and their peers would be able to see their comments, it added a sense of pressure, not only to take seriously the activity for the day, but the desire to respond in an academic manner—to sound smart to their

classmates. Mrs. Ogden told me, “I wanted people to see each other’s annotation because I have some strong annotators… I have some not-so-strong annotators. So, I wanted them to see what other people were annotating. And then also it’s almost like creating a silent discussion.” Digital annotation, for Mrs. Ogden, was a way to engage students in discussions that provided a medium for peer-to-peer tutelage by modeling annotation skills. She recognized that the use of such an annotation tool gave her an opportunity for a formative assessment that allowed her to “check in” on student progress with textual interpretation. But the shared online space meant that students who may have felt uncomfortable in their annotation skills could use their peers’ comments as a model for their own thinking, not so different from a teacher think-aloud strategy where a teacher makes explicit their thought process when coming to a conclusion. Technology like Actively Learn was able to facilitate such a teaching practice by decentering Mrs. Ogden and banking on the distributed knowledge of the class to help address annotation skills. I observed collaborative annotation in Mrs. Brouillard’s class as well. But she would take a more blended approach to crowdsourcing knowledge in her activity.

Mrs. Brouillard’s annotation lesson, focusing less on the skill of annotation and instead on having students understand the craft of writing. For this activity, she had students read *Warriors Don’t Cry* by Melba Patillo Beals as a way of having students better understand how an author uses setting to create mood. Mrs. Brouillard was using Beals’s book more as a mentor text for writing craft so that they could apply what they observed from her work and apply what they learned to their own novels during the NaNoWriMo unit. Similar to Mrs. Ogden, Mrs. Brouillard wanted to use a digital platform to help students organize their annotations. This was complicated because

students were partner reading with paperback books. So, Mrs. Brouillard had to consider how students might be able to annotate in pairs when the text itself was not digital. She decided on creating a chart in a Google Doc that helped students annotate every time there was a shift in setting in the first chapter of *Warriors Don't Cry* and then analyze the impact on the mood during each scene change.

Location	Citation (page #)	Descriptive Details	Mood
hospital	Page 2	"The white hospital," "the operating room," "rocking me back and forth," "the operating room"	Cold, uncaring
home	Page 4-5	"Big, old, white wood-frame house," "seven red cement stairs," "giant rubber plant," "tall mahogany bookcases that held the cherished volumes of Shakespeare, Chaucer, and Emily Dickinson, and of James Welden Johnson and Langston Hughes that Grandma and Mother loved so much," "tattered, over-stuffed green velvet radio with brass knobs sat on a round mahogany table," "wine-colored leather chairs," "clock and a copper horse that had belonged to Great-grandpa rested on the mantel over the fireplace"	Warm, welcoming
Melba's bedroom	Page 6	"Place for stuffed animals to live," "home for my huge brown Raggedy Ann doll" "magical place," "daydreamed for hours," "music or radio shows," "whoever I wanted," "could be free"	Warm, clean, peaceful. girly
Conrad's bedroom	Page 6	"Strange trucks," "glass jars of crawly bugs," "wooden train Daddy made for him," "counting marbles," "putting puzzles together," "playing Monopoly," "cluttered with pieces and parts of things"	Messy, productive, playful
Dining Room	Page 7	"Big oval table," "gathered each night for dinner," "brown leather chair," "mother as she studied for her night-school exams"	Warm, loving, serenity
Grocery store	Page 8	"Neighborhood party," "sawdust on the floor," "aroma of the spices, fruit onions, nuts, and potatoes," "festive colors"	Warm, festive
Dunbar Junior HIgh School	Page 12-13	"Copying from the blackboard," "her face didn't look at all happy," "you are all dismissed early today"	Anxious, excited
Home	Page 13	"Going home to be with my Grandma India was something I looked forward to everyday," " warm gingerbread and milk" "would talk and laugh"	Warm, loving
Path home	Page 13-14	"Familiar route," "walked since age six," "vacant block," "grassy field filled with persimmon trees," "it wasn't always safe" "otherwise I felt I was pretty safe,"	Peaceful, lonely

Figure 6. Example of student annotations for Warriors Don't Cry

Like Mrs. Ogden, Mrs. Brouillard walked students through the process on how to use the technology for this activity. She showed them where they could access the chart in Google Classroom and explained to them that she expected "proper, full analysis of evidence of what the different settings are as they roll out in the book" without being too prolix. For middle schoolers, striking such a balance can be tricky. But Mrs. Brouillard

modeled what she expected from students in the chart before allowing them to get started on their annotations.

As students worked, it seemed as though Mrs. Brouillard's activity was a bit "clunky" in comparison to Mrs. Ogden's online annotation assignment. Students were spread out across the classroom—some choosing to sit on the floor while others worked at their desks. They had to negotiate a space in the classroom that would allow them to read from their books as well as stop and annotate on their computers. Many students easily settled this issue by finding a place in the classroom where they could spread out and easily move between book and computer. Other students decided to divvy up responsibilities: one person would read while the other listened and annotated.

Figure 7. Students reading and annotating on the floor

As Mrs. Ogden's activity demonstrated, annotation is often powerful because it provides an opportunity for students to engage socially within the margins of a text. There is something powerful about adding one's thoughts alongside those of authors like

Richard Wright or Melba Patillo Beals. But such an opportunity seemed lost in Mrs. Brouillard's activity. During a follow up interview with Mrs. Brouillard, I pushed back on whether or not an activity like this actually helped students with their ability to annotate a text. Her response was valuable:

> The Chromebook is just a vehicle for being able to input and then the workflow element of being able to have it always. I think there's no better way of having a dialogue with a novel or a book then by writing in its margins and marking up the text and that's something that we are gradually getting them prepared for because they do a lot of that in high school. With [*Warriors Don't Cry*], we did more of the online let's do specific annotations, so like the setting and mood element, the dialogue, um, the pacing—the zooming in or slowing down in your pacing. And so those specific skills for the progression of the novel, it made more sense to have those online because…the book was really more of a model for the writing of a book as opposed to the content of the book.

Mrs. Brouillard reinforced what many experienced English language arts teachers know to be critically important when it comes to teaching reading and writing skills: context matters (D. J. Leu, Kinzer, Coiro, Castek, & Henry, 2013; Smagorinsky, 2018). She believed that annotations are most meaningful when students are able to put themselves in conversation with the authors they are reading. The teachers who tech in this study seemed to also understand pragmatic affordances of being able to leverage technology for the simple purpose of workflow and submission of classwork and homework. But the format of the assignment must be appropriate given the objectives of the anticipated learning outcomes. Had she wanted students to engage in a dialogue with Beals, she

would have likely made the decision to have students write in the margins of their books, an activity more similar to what I saw in Mrs. Ogden's classroom. Because they were focused more on writing craft, she was able to design an activity and digital handout that provided students with the structure necessary to help students draw attention to Beals's writing moves so that they could attend to them in their own writing. So, when compared to Mrs. Ogden's activity with Actively Learn, this activity did not directly address the act and skill of annotation because students were not writing in the margins. Instead, it was more about tracking shifts in text as a way of noting the authorial moves so that students could apply it to their own writing.

Although both teachers implemented digital tools for annotation, they were using it for very different purposes. Mrs. Ogden leveraged annotation software in order to facilitate discussions between students within a text. For Mrs. Brouillard, annotation was more about collaborating face-to-face with a partner to identify conventions of setting and mood in a mentor text. So, while both teachers used technology to help students annotate text, they had to possess necessary content and "mobile learning readiness" (Christensen & Knezek, 2016) in order to understand which digital tools would best fit the objectives for their activities—something a teacher who techs might understand better than some of their less techie colleagues.

In both cases, the online and offline literacies of students were porous as the annotations online were meant to facilitate the skills they needed to think and write in the margins. Whereas Mrs. Ogden's activity engaged an entire class in responding to a digital text, Mrs. Brouillard's annotation activity created another complex network of both digital and analog material. The movement between modes meant that students perhaps

missed out on the authenticity of what is at the heart of annotation: writing in the margins. By the end of their reading, Mrs. Ogden's students had highlighted text, commented in the margins, and responded to the thoughts and ideas of their peers. They created a new text—a palimpsest of Wright's writing—that put their words in conversation with those of Richard Wright. Mrs. Brouillard's class noticed authorial moves, but they were distant observers, leaving the margins of their books untouched. On the other hand, the networks created in Mrs. Brouillard's class involved voice, as students had face-to-face conversations during their annotation process. Comparisons of both demonstrate how literacy practices like annotation can make space for divergent social interaction that lead to valuable meaning making of text.

Techie Identity

The literacy events described above attempt to provide examples of what learning and engagement might look like in the classroom of an English teacher who "techs." Technology was deployed as a means of decentering the learning process by allowing digital tools to facilitate collaboration in both digital and analog classroom spaces. This section relies less on classroom observation, turning instead to interview data in order to better understand all that goes into the identity work and production of an English teacher who techs. I focus specifically on the identity work that went into shaping these teachers during their first years of induction into the teaching profession as well as how technology has helped them craft their teaching personae, both in classroom and online spaces.

Mentors as Identity Builders

Mrs. Ogden felt as if her tech-savviness was in part a result of being paired with a mentor teacher during her student teaching experience who did all he could—even bending the rules—to ensure that students had regular access to technology. She noted that, at that point, the school where she student taught had not yet adopted the 1:1 technology policy. However, Mrs. Ogden fondly recalled that she did not think her mentor teacher

> was supposed to have a laptop cart all to himself. I'm pretty sure he was supposed to be returning it to the library, but we had a laptop cart every single day and we pulled out laptops like almost every single day.

Regular access to technology and the modeling of how to implement digital tools laid the groundwork for Mrs. Ogden's pedagogy, as she eventually took what she learned during her student teaching experience and applied it to her own approach to the high school English curriculum. Because she eventually returned to the same school at which she student taught (after pursuing her master's degree), her experiences with her mentor teacher were immediately transferrable, as her context for teaching had not changed. In fact, the only significant shift came as a result of her school district adopting a 1:1 policy the year before her first year of teaching. This seemed to have an impact on her teaching practice since previously she would have had to sign up for access to the limited number of laptops available to students and teachers at the time, forcing her to jockey against her mentor for permission to use the same laptop carts she used on a regular basis during her student teaching.

Mrs. Ogden's experience with her mentor teacher also points to another issue often prevalent in schools today. If her mentor was able to keep the laptop cart without raising any eyebrows, it would be fair to assume that there was very little demand from other teachers to use technology. This suggests that these teachers who tech are unique in their fervor for implementing digital tools in their classrooms. Alternatively, it was the other teachers' disinterest in technology that allowed Mrs. Ogden and her mentor to have daily access to technology. Their semi-rebellious nature allowed them to fly under the radar by keeping the communal laptop cart in their classroom for the better part of an entire school year.

Mrs. Brouillard's first years of teaching were also shaped by a mentor teacher who she viewed to be a rebel in his approach to teaching. Unlike Mrs. Ogden, Mrs. Brouillard did not go through a traditional teacher preparation program at a college, as she was a career changer, leaving a retail job with a major cell phone service provider for the classroom. As a result, she never received any formal education courses or certification coursework. However, during her years of induction she recalled having

> a phenomenal mentor teacher that taught right next door to me, um who was probably one of the first sort of sparks when it came to me being sort of a rebel teacher—this divergent thinker because he was always giving me these—I mean the way he thought was just brilliant.

This mentor's "divergent" approach to teaching was not necessarily connected to using technology. But what Mrs. Brouillard admired most about him was simply the fact that he was different and that he refused to accept the status quo from students. She would often

find herself seeking advice with some of her issues in the classroom and was left thinking, "*Wow, that's different. I want to do that. I want to think differently*."

Mrs. Brouillard's pursuit of difference as a teacher is something she is quite proud of. There were a few times she mentioned the word "traditional" to describe the current state of affairs in American education, and would further refine her definition using terms like "clunky" and "unnatural" to convey frustration over the way many schools attempt to make teachers toe the line with particular mandates and policies. Looking back on her first years in the classroom, Mrs. Brouillard said, "I wanted to be different. I knew I wasn't like a normal, what I thought a 'normal teacher' should be." It was a rejection of normalcy and the attempt to think differently, like her mentor, that helped Mrs. Brouillard cultivate her identity.

Technology, however, has not always defined what it means to be "different" in education. In fact, for many educators today, it is a tool that helps teachers achieve a range of learning goals on a regular basis. One might argue that, in a time when technology is being understood as a critical tool for both learning and social lives of students, the divergent teacher is the one who avoids technology altogether. But Mrs. Brouillard makes an important point about her disposition toward technology when she began teaching in 2005:

> I wanted to push my kids and I wanted to bring in their choice and their voice and their likes and their interests and eventually that became technology because I think smart phones were kind of taking off and laptops and that sort of thing and so I really wanted to find those things that fired up my kids.

Mrs. Brouillard was motivated to be different. But she did not have her mentor's years of experience that allowed him to address the problems like the ones she was facing during her first years in the classroom. However, having just come from a retail job that involved the sales of cell phones, she did have unique familiarity with technology and understood the potential that technology could have in allowing students to connect with classroom content—one that put their interests and needs first. Mrs. Brouillard found her niche by understanding the technological milieu of the time by embracing her unique background in mobile technology sales.

Mentors have a powerful role in helping pre-service teachers and early career teachers navigate the teaching profession and develop their "teaching selves" (Danielewicz, 2001). Mrs. Ogden and Mrs. Brouillard's experiences were no exception. Surprisingly, neither teacher mentioned teacher preparation programs as pivotal in helping them develop digital competencies. As mentioned above, Mrs. Brouillard did not take any coursework in education and, as a result, relied heavily on the guidance of her mentor. The first years of induction are critical for helping teachers develop the efficacy needed to be successful educators (Fenwick, 2011). But not all teachers have access to mentors like those that Mrs. Ogden and Mrs. Brouillard were fortunate to have. Their thoughts indicate that the pairing of mentors during student teaching is of critical importance—a process that cannot be overlooked in teacher preparation programs. In addition, the fact that Mrs. Ogden did not talk about receiving much support in digital pedagogies during her teacher preparation suggests a greater need for technology coursework that informs the identity work programs are already doing. Moreover, it raises the question of whether or not teacher preparation programs have a responsibility

to work with mentor teachers to help them cultivate "techie" identities of their own so that they will be better prepared to support pre-service teachers.

Social Media Teaching Identities

While mentors laid the foundation for technology use, social media seemed to serve as the scaffolding for continued professional learning as well teaching identities. Mrs. Brouillard explained that she was "professionally on Twitter" during her first years of teaching. She went on to say that Twitter was a valuable resource for her and her teaching because, based on her experience, she knew that she could take any question and bring it to her Twitter community members and they would help her find an answer. According to Mrs. Brouillard,

> you, as an educator, can go out on to social media—especially Twitter—and find whole groups of people who are of common mind—like a hive mind, like a bee hive…where you can throw an idea out and you can immediately get great proven ways of doing things in your room. And you can also connect with those teachers too and potentially bring them into your classroom or bring their kids into your classroom you know Skyping or Google Hangouts.

For Mrs. Brouillard, she considered the power of her network whenever she wanted to innovate in her classroom. She referred to Twitter as her "educational community" where she went to see what was "trending" as a means of staying abreast of approaches, pedagogies, and models for instruction and classroom management. She argued that Twitter had "augmented" her teaching in important ways, positioning it as both a community and space for professional development. As discussed in further detail later, Mrs. Brouillard started Twitter chats related to the use of technology in instruction and

often went to her online network first when she was stuck and needed some inspiration and support for finding new tools to use in her classroom.

Figure 8. Mrs. Brouillard's Twitter profile

Mrs. Ogden did not use Twitter, finding it overwhelming because she felt as if there is so much content being shared on a moment-by-moment basis that it gave her anxiety over missing something important. This anxiety of trying to stay up to date with everything led her to believe that she needed to choose one social media platform. She chose Instagram. In talking about what drew her to Instagram, Mrs. Ogden stated, “I love following other teachers on Instagram. And then I have a ‘teachergram.’ So like, my students can follow me on my teachergram.” Like Twitter, Instagram was not created

with educational purposes in mind. However, just as the hashtag in Twitter helps to tag and categorize content, Instagram users have been able to create sub-communities that support a particular niche. Teachergrams are unique ways of providing educators with their own slice of the platform by allowing them the space to share their teaching ideas and student work with other educators. Her teachergram account followed teachers as well as bookstagrams—Instagram accounts devoted to the sharing of book recommendations—because she liked getting "book updates about what people are reading." It was clear that social media was valuable to Mrs. Ogden because it not only connected her to teachers, but readers, both inside and outside of education, so that she could develop her pedagogy as well as stay current on texts she may want to include in her classroom.

While she talked a lot about following other teachers on their teachergram accounts, Mrs. Ogden's own identity on Instagram seemed a bit tenuous. She explained that at first her teachergram account was "for the students. It was a place for me to share student work and stuff." However, as she looked at the type of content her peers posted, she realized that there were different ways teachers could use their platforms. She mentioned one particular 10th grade teacher at her school who used her account for "student promotion" and she admitted, "I don't think I'm quite at that level. I'm still kind of like just feeling the waters of it. But I love it." Although she expressed some self-doubt in comparing her posts to another teacher in her school, she recognized that she was often inspired by such teachers when considering what content to share herself. Mrs. Ogden stated,

> because I follow just so many other teachers, I feel like I start posting things about

> teaching—like me reflecting on my own teaching practices. So it's kind of like a mix of I'm sharing stuff that students are doing but I'm also like reflecting on my own teaching practices. So, I can't really figure out what audience I really want there.

Mrs. Ogden's understanding of audiencing when it came to her teachergram account was fascinating. Whereas she could simply use her account to "creep," or follow but not comment (Damico, 2017), on other teachergram posts, she seemed to find herself inspired to share what was happening in her class, both as a way of being a part of an online teaching community and as a space for reflection on her teaching practices.

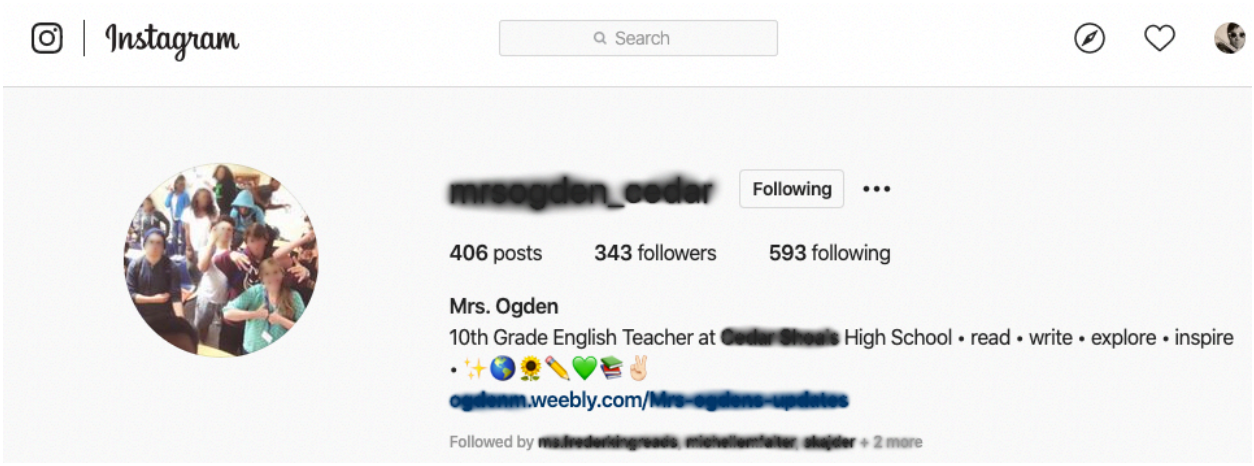

Figure 9. Mrs. Ogden's teachergram profile

Her concerns with audience were further complicated when she though about the great things that Instagram could do for her students. Because Mrs. Brouillard only used Twitter to converse with colleagues, her audience and purpose for using Twitter was clear. Mrs. Ogden vacillated between seeing Instagram as a tool for communicating with students and engaging with a larger educational community. In reflection on her initial purpose for her teachergram account, Mrs. Ogden recalled originally wanting

> to post what students are doing, I'm going to post due dates, updates around [my school], that kind of thing. And then it was just kind of like *I don't know if really students are checking it,* you know like, for that purpose.

Current concerns with teachers and students connecting online (Common Sense Media, 2016) make it so that following a teacher on Instagram, regardless of whether it is a personal or professional account, creates a potentially fraught situation when curating a teachergram account. In considering the evolution of what her account transformed into, Mrs. Ogden stated, "I love my students, but I don't really want to communicate via Instagram with them…I have a lot of students that follow me, but it's less for them and it's more for like me to reflect on what I'm doing." She went on to say,

> if I'm not constantly posting about my students, they don't follow you. Which is really weird to like—it's so weird to think about. But like I've had students who were like, 'If you don't follow me back, I'm not going to follow you" and I'm like "Well, I'm not going to follow you back so, sorry.'

It can be uncomfortable to connect with students online as teachers may feel the need to give every appearance of keeping their distance as the boundary of schools are blurred by online networks. Perhaps what her students failed to recognize was that, because it was a professional teacher account, Mrs. Ogden was not using Instagram for its originally intended purpose: to connect with friends and family through a visual medium. However, she realized that, if students were not going to follow her unless she followed them back, she could not leverage Instagram as a tool for providing students with updates about due dates and class assignments.

Mrs. Ogden's struggle is one that good English teachers often help students work through: how to compose texts with a specific audience in mind. Without a clear-cut audience, it is hard to determine what type of content would be most appropriate. She recognizes that the only way students would follow her was if she a) posted content about them and b) followed them back. The transaction of following someone on social media in exchange for following them back is an online social practice that expresses a certain level of reciprocity. Without her willingness to engage in the follow back transaction students had little incentive to follow her account, unless she was publishing content that students found so interesting they would follow even without her following them back. That was the double bind that Mrs. Ogden faced. It appeared as though she wanted her students to follow her account because she wanted to share their work with their peers and her broader network. But Mrs. Ogden chose to limit her use of some of the basic functionality that Instagram offers, since she was disinterested in following students and communicating with them through a social media platform. This demonstrated a deliberate literacy practice that she wrestled with when considering audience, which in turn may have impact the way she approached the teaching of creating texts for authentic audience.

Her students' refusal to follow her students narrowed her audience to other teachers, which also helped her determine the purpose of her account and the content that she would share with her colleagues in the classroom. She went on to explain,

> there's a ton of teachers here that have teachergrams, so we all kind of follow each other and comment on each other. And some middle school teachers, which is actually pretty fun because some middle school teachers follow me and are like,

Oh man, like, that's my student. I taught both of them in the 8th grade. You know, like that kind of thing. *It's good to see they're still doing good*.

Instagram allowed Mrs. Ogden to connect with colleagues in her district and, when she did use her account for student promotion, she believed she was providing a service to her students' previous teachers by creating a check-in mechanism that allowed teachers to see the academic achievements of their former students. So, although Instagram is an online program with the potential of outreach of global proportions, Mrs. Ogden's most significant contribution seemed to be on a local level.

Social media was a critical tool for identity work for Mrs. Ogden and Mrs. Brouillard. Seeing as both teachers had accounts devoted to teaching, it was evident that their new literacies practices may act as a sieve (Alvermann & Moore, 2011) between their out-of-school and in-school identities. Twitter and Instagram were used as tools that reinforced important Discourses (Gee, 1990) that crystallize what it means to be a teacher who techs, both on a global and local level.

Interestingly, both Mrs. Brouillard and Mrs. Ogden admitted to having personal accounts that were separate from those they used for their classroom identities. Mrs. Brouillard said that she was "not an Instagram person" and, instead used Facebook because "it's a lot more about sharing memories or microblogging type of thing." Consistent with her concerns with getting overwhelmed by different social media platforms, Mrs. Ogden only used Instagram, but created a separate account for her personal use. When asked why she had two different Instagram accounts, Mrs. Ogden said, "It's not like I'm posting anything bad on there. It's just mostly my kids and so I try to keep that just a little bit separate from my teachergram." Whereas Mrs. Ogden seemed

to value her privacy by separating her teaching life from her personal life using different accounts, Mrs. Brouillard appreciated how the functions of Twitter and Facebook differ in such a way that each had particular affordances that helped her curate and sustain personal and professional relationships in different ways. Furthermore, the fact that neither one of them used the same social media platforms demonstrates how these teachers who tech recognized the value of creating a teaching identity in digital spaces, while not necessarily agreeing on a singular medium for finding inspiration and sharing content.

Seeking Like-Minded Collaborators

What became evident when hearing both teachers talk about their experiences with technology was that collaboration is different for them. Historically, teachers have relied on their colleagues at their schools to help them think through their pedagogical conundrums. These teachers who tech have extended online teaching networks and sometimes turn to their colleagues on social media before asking their fellow teachers down the hall. Moreover, when they do collaborate with their face to face colleagues, they often seek out their fellow tech-savvy teachers before their less techie ones.

As discussed above, Mrs. Brouillard was an active participant on Twitter, believing it to be a critical component of her professional identity and development. However she also explained,

> when I'm trying to figure out how to, to do something or I want to do something new, usually it starts here. It starts with my team at school because I can't work on my own, like I'm a team—I'm a member of a four-person team. So, we have to kind of have an idea. We have to work with in the curriculum that we have we

> have to work within…sort of is our way of doing things. understands the expectations of her school and her colleagues.

Rather than looking at her team of teachers or the curriculum as a limitation or imposition, she viewed them as enabling constraints. Having sat with Mrs. Brouillard and her colleagues during lunch, I heard casual conversations about technology use. It was evident that there was only one other teacher on her team who would consider herself as particularly tech-savvy. Although the other English teachers may not have been as tech-centric with their teaching, Mrs. Brouillard recognized that their orientation toward collaboration and trying something new had been a boon for her professionally. She stated, "I have a really solid collaborative team here and so usually whatever I'm finding is benefiting the whole…group. We're a very open-minded sort of tech group this year, so we've all benefit from it." Her teaching teammate's open-mindedness made them ideal collaborators during planning meetings, in spite of their lack of technological experience and knowledge.

Although she viewed her teammates as equal collaborators, it did not prevent Mrs. Brouillard from taking to her online networks when it came to different approaches to her classroom. She mentioned that she sometimes felt compelled to take "those ideas that we come up with this as a team and then go out and to see how other people are using it." Alternatively, she also talked about her impulse to "try things out more here [in my classroom] to start with and then go, *ooh, that was good I need to share that*, because I don't want to share something that's not going to be effective." Mrs. Brouillard had a sensibility toward developing what she believed to be best practices with technology through a more experimental approach that involves trying out an idea she learned about

in her network and then refining it for her teaching context. Her teaching was a reflection of the influence from both her face-to-face colleagues and her online network. However, she was cautious when implementing lessons from her network because her Twitter colleagues not understand her students in the same ways her fellow teachers at Belville did. This highlights the ways in which both face-to-face and digital connections supported teaching in valuable ways and illustrates how having multiple avenues for collaboration allowed for manifold voices that informed teaching practice.

In addition to doing her best to gather information from her face-to-face team and her network, it became evident that Mrs. Brouillard recognized that the power of Twitter relies on the active engagement as both an inquisitor and sage. She explained,

> I think Twitter helps to like sift out some of those things or kind of like tease out some of the good things. And then also it's a great place to share. I mean when my kids have done the great things and the project—maybe the project was created locally. But if the kids have done something great I can share that out and then help others in that fashion. So, Twitter is not just for, you know, consuming. It's a great place to learn and share and create as well.

Mrs. Brouillard seemed to understand the norms of digital citizenry associated with teacher affinity spaces on Twitter. Just as she asked for help, she knew that she had certain competencies that could contribute to the betterment of other teachers. Moreover, she felt a sense of responsibility to both her face-to-face and digital colleagues to share what she learned from the other. This sharing often came during discussions in planning meetings and provided teachers with materials she found or created that they could immediately use in their Google Classroom ecosystem. Mrs. Brouillard believed that her

tech-savviness was a defining characteristic of her teaching persona. So, to withhold information certainly could help her in maintaining that designation within her team. But her willingness to share what she learned with her colleagues demonstrated a particular ethos associated with a current milieu of a "wikinomics" (Tapscott & Williams, 2006)—people can be more informed about nearly anything if everyone shares what they know. Mrs. Ogden, on the other hand, had a different approach to collaboration when it came to sharing digital tools and pedagogies, both online and at her school.

For Mrs. Ogden, Instagram did not seem to play much of a role in sharing materials and ideas with her face-to-face colleagues. From my first meeting with Mrs. Ogden, it became apparent that she relied more on serendipitous connections with colleagues as opposed to the more active strategies that Mrs. Brouillard used with her Twitter network. Mrs. Ogden discussed that she had a tendency to share what she learned about digital tools with colleagues who are similar in age and experience, stating that "I'll definitely say that like the younger teachers probably—just the newer teachers that I like went through our program—I have a few teachers that went through the same program as me and I think like we kind of like *oh here's a great tool I used it today, here it is*." She went on to explain, "It's not like we're ever like *let's get together and figure out a way to use this*. It's more like we stumbled across this and it worked well in the classroom, so you give it a go if you want to." Her laid back approach to finding new tools does not diminish her fervor for technology. In fact, it was apparent from speaking with her that she had expansive knowledge of different tools that apply to specific literacy and writing skills. But she also regrettably found herself relying on the same tools year after year.

Similar to Mrs. Brouillard, Mrs. Ogden spoke highly of her fellow English teachers at her school, echoing how "at department meetings we're all sharing with each other. And everyone in my department is pretty open about things to try." Again, that willingness to try new things seemed to be closely associated with technology. But when I pressed a little more about what responsibility she felt she had when sharing her practices with digital tools, she expressed some concern over being overly zealous when it came to evangelizing technology to those who did not seem to share the same interests as her. Mrs. Ogden explained,

> I guess if we're sharing tools I'm just kind of sharing it with people that I know use it. Yeah, I don't know what my role is in trying to kind of force someone who doesn't want to use technology in their classroom.

In addition to her concern over being too forceful with technology, she believed that perhaps her lack of years of teaching experience did not provide her with the clout necessary to make certain assertions or suggestions with other more experienced teachers. According to Mrs. Ogden,

> I feel like I don't ever like try to step too much in like guide any teachers. Especially being, I don't know, a new teacher I would never I guess go to a veteran teacher and tell them how to run their classroom.

She would, however, go on to discuss how her

> mentor teacher is also, like, he's always like searching out new things. He actually does do that. He likes finding new tools and stuff and so he kind of shares things

out whenever he finds something new that he thinks will be useful.

Unlike her mentor, Mrs. Ogden expressed some reservations when it came to sharing her technology tools and approaches. However, her inhibition had less to do with her competency and more to do with a perceived status within her department as a new teacher with only four years of experience. She did not want to step over any boundaries that might make her seem as though she was inserting her teaching philosophy onto someone disinterested in using digital tools in their classroom. So, although Mrs. Ogden's teaching with technology demonstrated a level of expertise with technology, her status as a novice teacher within her school seemed to prevent her from feeling comfortable in sharing the engaging work she was doing with her English students.

Mrs. Ogden demonstrates a level complexity that is apparent in many hierarchical structures in schools today. Too often the "salience of the traditional" (Wilhelm, 2016) persists as more conventional teaching methods remain the prevailing approach over more relevant pedagogies. Neither Mrs. Brouillard nor Mrs. Ogden painted their teams in a negative light. In fact, they described their colleagues as strong brainstormers and sounding boards, particularly when it came to sharing ideas and taking risks. But perhaps the biggest difference between Mrs. Brouillard and Mrs. Ogden is their years of experience. Although Mrs. Ogden only had four years of experience, she demonstrated certain teaching practices that belie her status as a novice teacher. But in comparison to other teachers with more experience, Mrs. Ogden positioned herself as someone with a unique skillset when it comes to technology. However, she was hesitant to share her knowledge and classroom practices with more experienced colleagues who do not share the same penchant for technology, choosing instead to collaborate with teachers with

similar years of experience in the classroom and who were already known to use digital tools.

Policies and Initiatives

In addition to mentors, district and school wide initiatives seem to have an important impact on these teachers' abilities to use technology with their students. Both schools were part of a 1:1 technology initiative in which students were given Chromebooks that they were expected to bring back and forth between school and home. Technology initiatives seemed to send a clear message to both teachers about the importance of technology in their school settings.

1:1 Initiatives

Both teachers found themselves in schools that were at different points in their 1:1 technology initiative. Whereas Ms. Brouillard's school was in the first year of rolling out their Chromebooks, Mrs. Ogden's school district was in year five. It was evident that the policies had important impacts on their willingness and ability to use technology. I was mostly curious to find out what impact the school district and the immediate school community had on these teachers who tech. In other words, to what extent do school initiatives and the associated expectations have on both creating and supporting teachers who tech?

For Mrs. Ogden, timing seemed to be of utmost importance in helping her cultivate her identity as a teacher who techs. As previously mentioned, she was a student teacher at the school in which she currently teaches and she felt lucky that she had a mentor who was tech-savvy and rebellious enough to secretly keep a communal laptop cart in their classroom. However, one year prior to her first year of induction, Mrs.

Ogden's school district adopted a 1:1 Chromebook initiative, which ensured that all students would have a device that they could take home and were expected to bring to class every day. When I asked her what those first years of teaching were like, she reflected on how technology use was not only encouraged, it was "an expectation." There were systems that were put into place that would ensure that teachers were using technology effectively. Mrs. Ogden recalled,

> we would have walkthroughs just to make sure that we were using our Chromebooks. And so and so I feel like my first year, maybe even two years teaching, I was trying to figure out ways to include technology for everything. Like I wanted everything to be digital.

Her comments suggested that administrative walkthroughs were a level of accountability that forced her to plan English lessons that were tech-centric. For some teachers, walkthroughs and observations can feel like a practice of criticism and control. For a new teacher like Mrs. Ogden, this level of pressure to create lessons using technology could have had a negative impact on her pedagogy. But Mrs. Ogden spoke with a sense of reminiscence of a time that seems rather distant from the current state of affairs at her school.

In addition to walkthroughs, Mrs. Ogden talked about technology trainings in which her district

> paid for us to like take half days to get trained on technology, which I thought was really great because it was like time set aside where I was focusing on technology, what new tools are there, what can I use them for. It was like creating process for

> me for me.

What Mrs. Ogden described was a district that seemed to value technology enough to invest, not only in hardware and software, but the teachers themselves. What too often gets lost in the implementation of technology is the value of time. Teachers need opportunities to learn about what the technology can do, what tools are available to them, and how to plan with the tools in mind (Hobbs & Coiro, 2016; Ruggiero & Mong, 2015). Often, money is positioned as a constraint or a justification for not using technology. But if a school district decides that they are going to pour money into providing every student with hardware, they often must be willing to look into what other investments are necessary to make the technology effective in the classroom. Mrs. Ogden recognized that it cost the district money to hire substitutes to cover her class in order to spend time with the district technology team (of which the salaries were obviously another expense). But she was appreciative of the opportunity and, it would appear, as if the investment in her played an important role in turning her into the teacher she is today.

In recounting her experiences during those professional development days with technology, Mrs. Ogden remembered constantly thinking, "*how can I incorporate this new tool into a lesson for myself*." For her, it was a type of challenge that she willingly accepted and "really enjoyed." Admittedly, it appeared as though a lot of her willingness to use technology during her first years of teaching stemmed from the expectations of the district and a need to please administration. Mrs. Ogden recalled the implicit message from the district was,

> We put all this money into them so students should definitely be using them…it was a big like *you should be using technology.* And so, you know, I'm trying to

> please everybody and I'm like, *Yes, I'm going to use technology*.

Evidently, the missive from her district leadership that technology was expected to be used in the classroom was clearly received by Mrs. Ogden. It's worth noting that the top down messaging from the superintendent, which filtered down to the principals and technology team was encouraging for Mrs. Ogden, perhaps because she was primed for using technology because of her experiences during her student teaching. The edict that technology use was an expectation was likely welcomed because it meant that Mrs. Ogden could continue doing the work that she did with her mentor without having to worry about the issue of access to technology. I recognize that other less tech-savvy teachers may not have had the same reactions as Mrs. Ogden. As previously mentioned, there were "veteran" teachers in her school, who she would never approach about technology out of fear that they would think she would be telling them how to "run their classroom." So, based on the experiences shared by Mrs. Ogden, the making of a teacher who techs could be a product of timing and a particular zeitgeist based on district-wide initiatives. By tracking her early career trajectory, we see how the interest in technology was cultivated early in her career during her student teaching and then immediately reinforced by district- and school-wide support systems.

As successful as her first years of teaching were with technology, shifts in district-level administration resulted in a change in the philosophical approach to teaching. Digital tools became an unfortunate casualty during the transition. Mrs. Ogden remembered how, almost instantaneously,

> the technology team like disbanded. Like, I don't want to like make any assumptions, but I think money, you know, like, *Okay, we've trained everyone*

> *now. We don't need to continue to put money into, you know, training teachers on technology because we already did that all*. So, then there was like no more technology walkthroughs.

Mrs. Ogden intuited what may have been happening during the change in administration. When school systems take a short-sided perspective with regard to technology, they often plan for the present moment rather than thinking about a more sustainable approach to supporting teachers and students with 1:1 devices beyond year 1 of the initiative (Swallow, 2015). What makes teaching with technology so tricky is the fact that it is constantly evolving; apps, websites, and devices that are relevant today can quickly become obsolete tomorrow. Training teachers to use technology cannot be viewed as a one-time process. Once a teacher is trained to use digital tools pedagogically, they will require continued professional development that reinforces the potential impact of technology as well as updates on burgeoning trends and tools that could help support their teaching. Furthermore, they will need the administrative support for the in-situ application of technologies in the form of observations that both hold teachers accountable for the use of technology and, more importantly, provide them with meaningful feedback.

The 1:1 initiatives seemed to have an important impact on Mrs. Ogden's classroom practices and the ways she began curating a teaching identity. At the surface, the program simply gave teachers and students access to digital tools. But the levels of support and accountability served as an incentive for her to craft lessons that were not simply novel, techno-centric, or cutting edge based on the digital tools available to her; they were pedagogically creative. 1:1 support is only half of the equation because it

requires a level of desire and ingenuity on behalf of the teacher to be able to make the connections between the tools, English content, and, perhaps most importantly, an understanding of the literacies that students are bringing with them to school. Mrs. Ogden's ability to meld district-wide expectations with pedagogical moves that sponsor student interest and values allowed her to take advantage of the affordances of the tools she had access to in her classroom.

One of the more unfortunate side effects of the sudden loss of district support was the impact that it had on Mrs. Ogden's ability and willingness to innovate with technology. Just as she had spoken so passionately about the time provided for her outside of the class to learn from the technology team and plan with other teachers, Mrs. Ogden admitted that her application of digital tools became stagnant during the past few years:

> I haven't used anything new in a really long time. Like I haven't taken the time to sit down and just search and see what is out there that is maybe new to me. I just use the same tools that I've been using for the like past two or three years over and over again. So, I kind of do wish I had some sort of—besides my own free will—to like take time and do that.

There was a recognition from Mrs. Ogden that she could do a better job of seeking out new tools to use. However, her lack of technological innovation in the past years seemed to be a reflection of the lack of planning time afforded her to be creative and to seek out new tools. Teachers are constantly forced to negotiate choices between planning or grading; calling a parent or preparing for a staff meeting presentation; tutoring a student after school or attending a staff training. They are often pulled in different directions and

forced to choose what is most pressing at any given moment. So, to assume that teachers who have been trained to use technology will continue to actively seek out new tools—even the most tech-savvy teacher—might be too simplistic. Teaching involves great complexity beyond lesson planning, instructing, and grading. Mrs. Ogden's experience is proof that school and district level support significantly informs teaching practice. When those supports are stripped from teachers, so are the incentives and professional opportunities to think about how technology can shape pedagogy. Mrs. Ogden seemed disappointed when talking about her tendency to simply recycle lessons using the same digital tools from her first two years of teaching. But her concern further highlights the need for continued school support, not only in creating teachers who tech, but allowing them to retain such an identity. Mrs. Ogden's comments on the need for support during the early years of the 1:1 initiative in Griswold County were echoed by Mrs. Brouillard when discussing how Creek County was approaching their 1:1 rollout.

Mrs. Brouillard's school was at a different point in their 1:1 initiative, as this was the first year her 8th grade students had Chromebooks. During the timeframe of this study, all students from grades 4-12 had just received Chromebooks. She echoed many of the same supports that were mentioned by Mrs. Ogden when she was reflecting on her first years of the 1:1 rollout. Mrs. Brouillard had an interesting perspective because she was part of a technology team within her school that was helping to provide support for teachers who wanted to learn more about how to use technology. She was positioned as one of the most tech-savvy teachers in her school, so her colleagues often went to her when they ran into issues or were trying to figure out how to do something innovative with the Chromebooks. She noted the wide array of teacher needs and concerns, stating,

> I spent some time with, with teachers around the building, helping them, sort of, you know, maneuver through our learning management system which we've adopted district wide now…it's a learning curve for a lot of us—it's just learning how to use it. And then not just how to use it but then what are those neat things it can do? So, you know, some of them, it's just some teachers is just *well how do I use it* and then some teachers like *I get how to use it, but now how can I push this to like do some things that are neat and different*.

Mrs. Brouillard's role allowed her to see various dispositions toward technology in a new light. She understood that some teachers might not be as enthusiastic about technology and were only interested in figuring out how to create assignments and enter grades into the learning management system (LMS), while others were trying to figure out how the Chromebooks were going to change their pedagogy. So, while Mrs. Brouillard used Chromebooks in a more project-based, student-centered way, she recognized that some of her less techie colleagues simply needed help learning the basics of what the Chromebooks were capable of doing. So, while moving paper assignments into a digital classroom space is a simple substitution of one format for another that does not enhance learning in significant ways (Puentedura, 2009), Mrs. Brouillard recognized that her peers had different entry points when it came to technology. It was her hope that, by showing her less tech-savvy peers how to use their Chromebooks, they would eventually come to her to find out the "neat things" they can do.

There were other considerations that were important to Mrs. Brouillard and her district that did not seem to be as significant to Mrs. Ogden. One topic of concern was

potential negative impacts of technology on the adolescent brain. When discussing her colleague's and their adoption of technology, Mrs. Brouillard mentioned,

> There's always the concern about screen time. There's always the concern about how much—what is the content students are getting? So we are very careful about—we are a middle school so we're really careful about 13 and under applications and checking for student privacy and figuring out what is it – what are those apps that we can use and then what are those apps we need your permission form for? And so our, you know, eighth grade tends to be able to use more than our six grade and because we have sixth graders and eighth graders in the building, you know, we can all use the same apps where we can buy something for eighth grade, we may not be able to use it in sixth grade.

One limitation in a 1:1 initiative, particularly in a middle school, is the disparity of age-appropriate tools. A sixth grade teacher may find themselves pigeonholed by a limited number of digital tools that are school-specific and age-appropriate. One could imagine, then, how such limitations could serve as a disincentive to using technology beyond the basic expectations of facilitating content through the LMS. Subsequently, the development of teachers who tech could be stunted by policies that prevent students younger than 13 from being able to use tools that could have a significant impact on their learning.

The concern over screen time is part of a larger societal debate that schools have a responsibility to address with teachers and parents. As discussed above, in order for 1:1 initiatives to be effective, teachers must be supported to use the technology provided to them by their district (Erbes et al., 2016; Stanhope & Corn, 2014). That requires teachers

to be knowledgeable about what digital tools are available to them and in what context they can and should be deployed. By developing teacher competency with technology, administration must also instill a sense of advocacy (Corn et al., 2010), as the calls for less and less technology with adolescents grows louder. This is not meant to diminish such calls, as teachers should be able to adopt a critical—even a skeptical—stance toward technology and the impact it has on youth culture. But the wholesale arguments that technology is bad can be abated by teachers who are knowledgeable about the educational potential that technology provides in the classroom as well as the broader social implications regarding students' lives outside of school. This brings about a larger conversation about the need for balance between technology and more "traditional" modes of teaching, which will be discussed in depth later.

One theme that was critically important within both school contexts was the need for professional development. As part of her school's technology leadership team, Mrs. Brouillard was responsible for providing professional development opportunities for teachers. Unlike Mrs. Ogden's school district, however, Mrs. Brouillard's school planned to provide asynchronous support through video tutorials that showed teachers different tools and,

> how you can use it, this is what it looks like from the teacher side, what it looks like from the students' side and then so teachers can just kind of one-stop-shop this is how you use it and then create for themselves.

From Mrs. Brouillard's perspective, these videos, which would be created by her and other teachers in the building, could be powerful for a few reasons: 1) the videos would be located in one place and serve as a clearinghouse of video resources, so teachers do

not need to search the web for answers to their questions 2) it would be personalized and tailored to their school context since the videos would be created by teachers at the school and 3) it would be a different mode of sharing ideas across grade levels and content areas, which could open up new possibilities for collaboration.

During a follow up email with Mrs. Brouillard during the beginning of the subsequent school year, she mentioned that the video support was no longer necessary because district-level technology leadership created their own tutorials for teachers. In her email, Mrs. Brouillard said, "Our [information technology staff] has so many how-to videos for our district approved applications that it didn't make sense for me to make any." So, rather than having teachers create videos sharing novel ideas of ways to use the digital tools pedagogically, they relied on the IT staff to share the basic functions of school approved apps. It is important to make a clear distinction about the type of support that such videos provide as there is a difference between showing teachers how to *use* a tool and how to *apply* a tool to their teaching. Mrs. Brouillard's choice of wording when talking about "district approved" applications was striking as well. Rather than choosing a more superlative adjective such as "the most engaging" or "cutting edge," she talked about the apps that they were *allowed* to use because the district deemed them appropriate. It suggested a top-down approach to decision making that was more about accountability and responsible use rather than ways to make technology meaningful and relevant to teachers and students.

Mrs. Brouillard also recognized the potential for informal, face-to-face, drop-in professional development opportunities to support her colleagues with using technology:

There are some rock star teachers across this district who could do some "y'all

> come sessions" and just say, *hey, you know, you're wanting to do—you know, where you used to do a poster, let's see if there are two or three apps that you could do a digital version of this and get your kids learning how to use this program as opposed to just putting it on paper anymore*. Or, you know, *you want to do a presentation? Well, here's three different ways you can do an interactive presentation with these apps*. Just little "y'all come sessions" where teachers are continuing that learning. But deciding what it is that they want to learn when it comes to technology.

The power in these "y'all come sessions" seemed to be situated in the potential of personalization. Teachers who wanted to learn a newer, digital approach to a traditional lesson could ask for help. Even the name "y'all come session" suggested a level of informality that seemed important to the warm and welcoming nature of such a learning opportunity. A teacher who may be hesitant to use technology could feel encouraged to attend a session based purely on the casual nature, understanding that anyone, regardless of his/her technological competency, would be welcomed to attend. This was much different from the mandated type of half-day professional development that Mrs. Ogden discussed, which seemed to require the teacher to attend the technology in-service learning days. It appeared as though the clear messaging from administration through the money spent on computers along with the trainings played an important role in making Mrs. Ogden a teacher who techs. While it is too early in the 1:1 initiative to determine the fidelity of her approach to professional development, Mrs. Brouillard was hopeful that the systems she and the rest of the technology team were putting into place would do for others what professional development did for her, early in her career:

> Those kind of sessions could be the—that could be the spark. Like, they could see the one thing—like when I sat in that session and saw project-based learning, I was like *oh my gosh. You know, this is it! This is the game changer*. If they sit—they come just out of curiosity and they walk away with one little tool that they could put into play the next day, it could be the total change in how they approach or they're being open-minded to to the technology.

Mrs. Brouillard was perhaps making some assumptions that other teachers were as curious as she was when she started teaching. Regardless, her district embraced an online professional development system that was much different from the face-to-face approach that seemed to have a strong impact on Mrs. Ogden. While many different methods for professional development for technology have been explored (Hobbs & Coiro, 2016, 2019; Voogt, Almekinders, Van Den Akker, & Moonen, 2005), only time will tell whether Mrs. Brouillard and her cohort of teachers who tech will be able to shepherd their colleagues at Belville Middle into a more digital facing future.

Digital Wisdom

During classroom observations, it seemed as though both Mrs. Ogden and Mrs. Brouillard adopted an ethic of digital wisdom (Prensky, 2012). While neither used the term, they described the importance of teaching students how and when to use technology rather than taking them out of their hands. Both alluded to the importance of teaching students how and when to use technology. In some cases, their approaches stood in stark contrast to their school's mandates and the rules and expectations of their colleagues. But whether it was based in principle or practical concerns, it was evident that both teachers avoided the myopic tendency to solve problems today by confiscating phones or

developing zero tolerance classroom policies, taking instead the long view of what was best for their students.

Policies, Rules, and Approaches

School policies around personal devices in schools have a tendency to complicate rather than clarify a school's stance on technology use. During my interviews with both teachers, it became clear that Mrs. Brouillard and Mrs. Ogden taught at schools with very different mandates from administration. During both teacher's pre-observation interviews, it seemed as though questions about policies were less about particular stances toward technology and more about rules and consequences for when personal devices become a distraction from—rather than a tool for—learning. Put differently, it is important to make a distinction between policies, rules, and approaches. A policy might be defined as a mission about a particular school issue that is backed up with a rationale. While both teachers seemed to address policies, they often spoke about rules—statements about what students can and cannot do with their personal devices. However, it was more common that Mrs. Ogden and Mrs. Brouillard discussed approaches, or principles that helped them make purposeful choices with regard to common sense usage of technology in their classrooms. Moreover, their rules and approaches did not always align with the expectations (both explicit and implicit) of the school and their colleagues. So, whereas initiatives might usher in norms and expectations related to the use of 1:1 devices (Corn et al., 2010; Holen et al., 2017), such mandates did not necessarily resolve concerns over of personal cell phone use.

Mrs. Brouillard's interpretation of her school's policy was that the Chromebooks provided by the district should have alleviated students' reliance on personal devices. She explained,

> each kid has their own Chromebooks. So, our necessity for those handheld devices has sort of decreased this year. So, we tend to tell them not to get them out. They don't use their cell phones in class. They're not really supposed to have them out class and we don't like them to have them in the hallways or—because they like to wear their earbuds and they can't hear us when we give them directions and whatnot.

Mrs. Brouillard's use of "we" and "us" suggested that she was addressing a larger school policy that had, at some level, buy-in from the teachers. She also provided a rationale for not allowing students to use their cell phones and headphones in school: they had Chromebooks, thus eradicating the need for personal devices. Furthermore, allowing them to be used in the hallway would be a safety issue.

Mrs. Brouillard was able to clearly outline a policy and rationale regarding to technology use, but was quick to explain that her classroom rules were less hard and fast. She said,

> So, in class I'm not real—I'm not super strict on devices. If they need to get it out and check their time or set a reminder or something like that, I'm usually pretty flexible with that. It's just when they get sort of sidetracked and caught up in their social media or caught up on you know whatever they're— I have kids who read fan fiction all the time on their cell phones. But you know, when it becomes an

issue or it becomes a distraction, then I crackdown.

This was a significant amendment to her previous statement about school policy, because she walked back one of the major tenets of her administration's mandate about the Chromebooks supplanting cell phones in class. Mrs. Brouillard seemed to understand that each digital tool is unique in that they all do something different and serve different purposes. Her example of fan fiction served as a perfect example of how a teacher who techs might be different from other teachers in the school, as it required a level of understanding of user experience with devices and how reading certain content might look and feel different on a cell phone as compared to a Chromebook.

Mrs. Brouillard's classroom rules were flexible, allowing students with divergent interests to use the tools that best suited their needs. But flexibility can also make rules oblique and difficult to enforce. She explained that the only time she told students to put their devices away was when they got distracted by something like social media. But then it became her responsibility to monitor and police their cell phone use. From an outsider's perspective, I would sum up her personal technology classroom policy as "you can use technology until I say otherwise." This can be a tricky standard, as it often invites a student to challenge a teacher and their authority. But based on my observations, students did not seem to take advantage of her flexibility. It is possible that her willingness to address issues on a case-by-case basis was a gesture of goodwill that students were careful not to take advantage of.

What became evident through listening to Mrs. Brouillard is that her classroom rules did not only come from a place of understanding of technology, but concern over issues of control:

> As far as the school goes, I don't tend to be as— that's not something that I feel like I need to control as much. I think there are teachers that do feel like that's something they need to control. But for me there are other behaviors and other things that need my time and so unless it's just a problem and its chronic and it's an issue for a kid, you know, I think that you know there's not really a problem for me.

Not only did she fear that policing personal devices was problematic, but she was afraid that the focus on cell phones often shrouded bigger issues within school communities. Statements like this further helped clarify the picture of "the rebel" that Mrs. Brouillard painted herself to be. She was willing to dissent from her fellow teachers when she disagreed with a particular policy. This opinion was foregrounded in a larger issue for her, as she would go on to talk about what was at the root of her policies with regard to cell phones:

> you know we all have them. We got to learn how to deal with them. So, we have to learn how to multitask and know when to be on them and when not. So, I try to incorporate that into my teaching because, you know, we are a society that uses them so learn how to use them at this age and they'll be better off as you go forward.

This discussion with Mrs. Brouillard suggested that personal technology use did not come down to policy and rules; it was about learning when it is appropriate to use technology and when it is best to put it away—digital wisdom. While she may not lesson plan about multitasking and choice-making with regard to digital tools, she seemed to

embed these teachable moments seamlessly into her classroom. While more ardent rule-followers in her school could have taken offense to Mrs. Brouillard's technology policy, they would have been missing the learning opportunities she provided for students when forcing them to take responsibility for their personal technology use. The impulse in many schools today is to control technology as much as humanly possible to prevent distractions that hinder learning. Mrs. Brouillard suggested a different approach: trust students to make the right decision with technology and interject only when necessary.

Mrs. Ogden shared similar sentiments as Mrs. Brouillard, but she highlighted some of the difficulties that result when school policies are not as clear. When I brought up the school policy on personal devices, Mrs. Ogden laughed, saying, "That's a funny topic. So, I don't know. Like, of course the cell phone policy is that students are supposed to keep them in their bookbags during class time. That does not happen." However, Mrs. Ogden was careful to not to lay blame on administration, arguing that

> I feel like they catch a lot of flack when they're dealing with a lot. But I don't think they know what they want to do to deal with it either. You know what I mean? Like they're dealing with so many other things—so many bigger issues—that cell phones are just not on their radar—that they want it to be a classroom policy. But if you write a kid up for having a cell phone out and nothing happens, it's like *what do you do?*

When the messaging regarding technology from school leadership is unclear, it takes away one potentially useful recourse that teachers can use when technology becomes a major distraction in the classroom. Mrs. Ogden seemed to be rather generous when considering that administration had bigger issues to address than considering developing

a policy and norms to help guide teachers with regard to cell phone use. But when teachers are told that they are responsible for creating their own unique rules, that also puts the onus on the teacher to enforce that rule. In cases when students decide not to obey the rule, administration is often left with their hands tied because they may not have a clear protocol of commensurate consequences based on each teacher's classroom policies.

Mrs. Ogden created her own approach to cell phones based on lessons learned during her time in the classroom. One thing that she reinforced often was that she did not confiscate cell phones. She justified this decision, stating, "I don't want that kind of responsibility on me—too many horror stories. Also, I don't have enough room for all phones I would have to take up." Her decision to allow students to keep their phones, even in times when they could be a distraction, was grounded in pragmatics. Rather than fight with students over phones by taking them out of their possession, she chose a less contentious approach that put the responsibility of managing technology and completing their work back on the students.

Figure 10. Student using Snapchat on his cell phone during independent work time in Mrs. Ogden's class

Figure 11. Student playing a football video game on Chromebook in Mrs. Ogden's class

In talking about not having enough space to take up all the cell phones, Mrs. Ogden seemed to suggest that if she were to create a more hardline approach to

technology, she might take up so many devices that she would run out of room to keep all of the confiscated devices. This suggests that she believed that if she took a different approach with personal devices, she would likely spend significant time confiscating cell phones—time which could be used more productively for instruction.

Mrs. Ogden mentioned that the 9th grade teachers at her school adopted a policy in which students would hand over their cell phones, placing them in a shoe sleeve door organizer as they enter the classroom. While some believed that the policy cut down on distractions, she spoke to other teachers who said that they run into issues because "when students say 'no' it becomes a big deal and it's not something that can be ignored and then that's one more distraction from teaching that day because you're having to deal with a student that told you, 'no.' Again, Mrs. Ogden made a keen observation about policies: they are only effective when the rules themselves do not become a bigger distraction than the behaviors they are trying to extinguish.

Due to her concerns over the liability involved with confiscating cell phones, Mrs. Ogden made the purposeful decision to talk directly to students and tell them to put their phones away. In determining when to intervene with students and their personal technology use, Mrs. Ogden said,

> If it's a distraction, that's when I'm telling them to put away… it's like what my mentor did as well and I just kind of gravitated to that. There's never been really a concrete phone policy except put it away. You know, it's not "supposed to be out." It's when students who are not getting their work done, that's when—when I worry and I'm telling them to put it away.

Guided by what she learned from her mentor teacher during student teaching, Mrs. Ogden's policy was rather simple: if it's a distraction that is preventing you from getting your work done, put it away. More than a policy or rules, she had expectations that established principles for when to intervene with students when technology became an issue. Based on my time observing her class, "put it away" seemed like a mantra that Mrs. Ogden used often during independent work time. As she circulated about the classroom, she would tell students to "put it away—it's not helping you." Mrs. Ogden would state this in such a way that it would be hard for a student to get upset with her—annoyed perhaps, but not angry. When she told her students to put their phones away, she positioned it as both a demand and a helpful tip for getting classwork completed in a timely manner. It came from a place of caring rather than one of authority and control. Providing students with attention literacy skills like this recognizes the ethic of digital wisdom. Perhaps one of the most important lessons students can learn in the techie classroom is the ability to recognize the misnomer of multitasking and that focus is a commodity that cannot be spread across multiple tasks. Whereas she could have simply taken students' phones and solved the problem then and there, such an approach would be a transitory fix. The student who struggled to focus with technology in Mrs. Ogden's class likely struggled in other classes throughout the day. By explaining that technology is distracting students from their schoolwork, Mrs. Ogden was taking the time to help her distracted students understand how their attention was being pulled in a direction that was preventing them from completing their work. Bringing awareness to these possibly mindless digital practices could help students think twice before pulling out their

technology the next time they were faced with a task they needed to complete in a timely manner.

Mrs. Ogden mentioned that such an approach was not simple, explaining, “I have to say, ‘Put up your phone’ a lot. It sounds like I’m on repeat sometimes.” I can confirm that this was indeed the case, as I heard her use the phrase “put it away” quite often. When I asked her to talk a little more about how she determined when to speak to a student, Mrs. Ogden said that she was always cautious to make decisions on a case-by-case basis. She knew that some students could have their phones out and work, while others who had their phones out would find themselves so deeply distracted by social media and music that they would neglect their classwork. She told me that when she noticed a student had gotten off task because of technology,

> that’s when, you know, I have to have a talk with that student and I have to tell them, *look your phone’s a distraction. I don’t want to see it out at all.* And of course they bring it back out. But then you redirect again and there’s like a learning process.

True to her word, Mrs. Ogden often returned to particular students multiple times during class, telling them to put their phones away, addressing how it was distracting them, and then redirecting them to the task at hand, usually only to return minutes later to see that same student back on his or her phone.

During our interview, Mrs. Ogden talked about a different approach to the issue of digital distraction:

> I mean if they’re on their cell phone and it’s distracting them from their work, I let

> it distract them from their work. And then when I go and I show them, *Hey, you didn't get your work done today. Can you tell me why you didn't get your work done today?* and they'll be like, *Oh, it's because I'm on my phone* and I'm like, *Yes! Okay. So, we need to figure out how to manage that*.

While I never saw her take up this approach during my time in her classroom, her proactive and laissez faire strategy served as an opportunity for her to have a conversation with students about the effects of technology and how it prevented them from getting their work done. While this approach may seem punitive or even passive aggressive, it required a fair amount of restraint on Mrs. Ogden's behalf to allow a student to remain off task long enough for her to be able to have a follow up conversation with a student about the ways technology prevented them from completing their work. She demonstrated day after day that she cared about students and wanted to teach them learning skills applicable in different settings, both in and out of school.

At multiple times in our interviews, Mrs. Ogden talked about knowing when to use technology as a skill. She explained that

> Time management is something that I want them to learn and so I want them to always see the reason that they're not getting their work done is because they're letting their phone distract them. I think it is a skill to like know when to be on your phone and when not to not be on your phone.

What often gets lost in school policies and classroom rules is *why* they are important to students and how they discipline youth to behave and react in school contexts. Mrs. Ogden seemed to foreground her expectations in providing students with the ability to

make important determinations on when and how technology could be used in school and in their personal lives. This goes beyond the skill of focus and attention; it is about responsibility and accountability. Mrs. Ogden redirected often in the hopes that it would transfer beyond her classroom, understanding that it may take an entire school year for a student to be able to successfully govern their bodies as it reacts to the temptations of social media that is constantly at their fingertips. But for her, this was an investment that she believed would be crucial for them well after they left her classroom.

At first, Mrs. Ogden situated her classroom expectations with technology as the result of unclear school policies, as if she was doing the best she could with a difficult situation. But it seemed as though a lot of thought and consideration went into how she decided to approach the issue of personal devices as a distraction. First and foremost, it seemed to have come from stance of understanding her own struggle of focusing in a digital age. She talked about how she addressed her position on cell phones to students in the beginning of the year in her own professional context:

> My principal does not take up my phone when I walk into the building. Like he expects me—he has high expectations for me to keep my phone put away. And so that's what I always tell my students. Like I always have high expectations for you to keep that phone put away… A lot of times I also tell them that it's like a managing—a management thing that they have to learn.

By providing a rationale for her approach, Mrs. Ogden positioned herself as someone who has students' best interest at heart. More importantly, she was holding students to the same standard that she and her administration held for her regarding technology. This might help explain why students did not get angry when Mrs. Ogden told them to "put it

away" multiple times during class. Having to be told the same thing over and over is notoriously annoying for any teenager. But by underpinning her approach for students, they also knew that she was always going to give them the benefit of the doubt to prove that they could use their devices until it became an issue. In other words, Mrs. Ogden treated her students like the young adults they were, providing them with some agency in making their own decisions. But when she felt she needed to step in, they knew they must have crossed a line.

Training one's self to focus on work rather than getting distracted is not purely a concern for adolescents and young adults. Mrs. Ogden seemed to understand this better than most teachers. In reflecting on her own struggles with focus in a digital age, she talked about some familiar parallels between teenagers and adults, and how both face the same level of temptation:

> It's a skill that I have to practice. If I keep my phone in my desk, I don't look at it all because I'm busy enough to not look at it—of course because I'm a teacher; I'm always busy. But if I have my phone like near me, but let's say I wanted to post something on my teachergram like real quick because the kids did something great and I wanted to like share it right then so that I wouldn't forget and I have my phone on me, then that's what I'm doing I'm not, you know, 100% focused during my planning period. Like I could be grading or doing something, you know, like lesson planning, tweaking my lessons. Instead, I'm like posting something real quick and then checking to see, like, if I got any comments on it.

These teachers who tech seemed to understand the temptations that young people face when it comes to balancing online and offline identities, because they have shared

experiences with their students. Critical to Mrs. Ogden's comments above is a sense of acknowledgement that adults often find themselves going down the social media rabbit hole, posting content, waiting for comments from followers, and scrolling through their news feed and stories when they could be doing something more productive and meaningful. Because her struggles were all-too familiar, she seemed to recognize that she was often as guilty of getting distracted by the lure of social media. But more importantly, she could help them develop time management skills and the discipline to focus through a process of trusting them to use their phones and redirecting as needed.

There are certain unique circumstances that added layers of complexity to Mrs. Ogden's approach to personal cell phone use in class. First, she recognized that the 1:1 Chromebooks did not always address the learning needs of her students. Mrs. Ogden explained,

> It's hard for me to get really hard core or clear cut with my rules because there are so many times that I need kids to have their phones with them. You know, like so many times, *oh, you don't have your computer? Do it on your phone*. You know, and so then it's like, where we draw that line?

Cell phones still served an important purpose because they can be a backup device for students when they forget their devices at home, or their Chromebooks are not working.

In addition, some students preferred to use their personal devices over their Chromebooks, as their cell phones were critical parts of their academic workflow. Mrs. Ogden sometimes found herself telling students to put their cell phones away, believing them to be distracted, when they were actually adding content to their calendars, setting reminders, or reading. She explained that "there are a lot of times they're using it for

good, but it can be a distraction. It's like such—it's a balancing game." This idea of balance is very important and will be discussed in more detail later. Suffice to say, when it comes to technology, some teachers often assume the worst and try to preempt any distractions. However, by allowing students to use technology that they are most comfortable with, Mrs. Ogden honored their learning needs and provided them with the option to use digital tools in order to stay organized.

One final consideration that made Mrs. Ogden's approach particularly difficult was her understanding of students' access to technology outside of school. In speaking with her students, she realized that Wi-Fi is a commodity that many take for granted and that, for some students, their families may not be able to afford internet service at home. As a result, the school Wi-Fi provided a unique experience with students who owned a cell phone but did not have Wi-Fi at home or a data plan. According to Mrs. Ogden,

> I don't think many of them would have their own personal device if, you know, we didn't give them a personal device. A lot of students like this is their Wi-Fi. You know, like maybe they don't have Wi-Fi at home and so when they get here, like this is their Wi-Fi, and like some of them they've told me they don't have data plans; they use their phone when they are at school. So, that's another reason why cell phones are such an issue—because this is their time to be on their phone.

As Mrs. Ogden spoke about these important considerations of access, I began to understand what was at the heart of her approach with personal devices. For many teachers, it can be difficult to step in the shoes of their students, as many have forgotten what it was like to be a teenager. In other cases, the experiences of their students may be so different that they cannot comprehend what it would be like to grow up in their home

contexts. For Mrs. Ogden, she seemed to value such perspective taking and understood the disparity of income present within her school population. She recognized that such socioeconomic inequities have a direct impact on her approach to technology. For many of her students, their lack of technology and internet at home reversed traditional notions of "social time," as some only got to check their social media news feeds and connect with peers online during school hours before "going dark" at home. Although she stopped short of saying that she encouraged students to use their personal devices for social media during class time, it seemed as though she empathized with her students and may allow them some time to check their social media or play games on their phones so long as they did not remain off task.

Taking all that was discussed in this chapter into consideration, the making of a teacher who techs is complicated. Mrs. Ogden and Mrs. Brouillard experienced different paths to becoming the teachers they are today. But they shared similar practices with regard to technology use, specifically with regard to social media, which seemed to impact their pedagogy and their conceptualization of how technology could/should be leveraged to make their English content meaningful for students. More than anything, their reflections on their new literacies practices helped them better understand the way technology impacted their personal and professional lives which translated to a deeper understanding of their students' orientation toward and relationship with technology. This allowed them to develop protocols, norms, and practices around technology that sponsored students' literacies in their classrooms which, in turn, created a more inclusive, student-centered learning ecology.

CHAPTER 5

FINDINGS II:

TETHEREDNESS

Heath, Street, and Mills (2008) state that ethnography is "a theory-building and theory-dependent enterprise" (p. 38). Given that this study is situated at the cross-section between a video ethnographic approach and a new materialist theoretical framework, it seems appropriate to work toward theory-building, but in a more philosophical manner. Rather than theory, this findings chapter is dedicated to concept-building. Concepts, according to Deleuze (1990/1995), are "new ways of thinking" (p. 165). They can be powerful because they are "open understanding to what is all around us but not in our field of vision" (Povinelli, 2016, p. 4). Deleuze (1991/1994) adds, "If one concept is 'better' than an earlier one, it is because it makes us aware of new variations and unknown resonances" (p. 28). So, while concepts may be created to help us see and experience things around us differently, they can be slippery. Gane (2009) explains that "Concepts are not fixed but are what they call *becomings*…Concepts deal with possibilities" (p. 87, emphasis in original). What follows is the result of the attention given specifically to classroom matter, specifically digital tools, in the classroom. Using Latour's Actor Network Theory to think with, the concept of tetheredness came about as a way of looking at the connectedness and of humans and technology as well as the role of other actants, such as desks, power, Wi-Fi, Bluetooth, notebooks, lights, and headphones during classroom activity.

The Paradox of Tetheredness

At its best, technology can be a tool that tethers or connects people through its ability to share, whether that is through the sharing of music, memes, or thoughts and ideas. But technology also has a material, analog realm that requires both wired and wireless tethers. In this section, I will use a concept I am calling the *paradox of tetheredness* to look at the ways in which mobile devices allow teachers and students to move about the classroom while also connecting them to technology and their peers in important ways.

Bluetooth technologies and Wi-Fi allow learning to become *wire*less, but they are not *tether*less. For example, I will discuss the ways power sources play an important consideration in tethering students back to specific classroom spaces when battery levels are low. In cases when students need to plug in, they are physically tethered to locations that may not be conducive to learning. Cases like these demonstrate the limiting constraints of tethers.

Conversely, when students are able to unplug their devices, they are given a freedom to roam. Chromebooks in particular allow students to connect in meaningful ways to any digital space that their network will allow. More importantly, students can be tethered in deep and meaningful ways that allow them to capitalize on the collective intelligence of their class and the resources afforded by the internet when they occupy a shared learning space (Jenkins et al., 2016). Knowledge in a tethered classroom becomes decentralized when it relies on the wisdom of a cohort of students. In thinking about Mrs. Ogden's annotation lesson, students were tethered together through a network that seemed to be facilitated by Wi-Fi, Chromebooks, and the textual excerpt of Richard

Wright's "The Man Who was Almost a Man" in the Actively Learn program. But the network was made up of much more. As students annotated in the margins, they got to see their peers' thinking, and that thinking led others to think about the text in similar or divergent ways. In the last chapter, Mrs. Ogden talked about how students were "connecting each other's thoughts" using social reading practices in Actively Learn. This type of connection is a perfect way of illustrating how digital tools not only mediate connections between other devices, but ideas as well.

Metcalfe's Law, also known as network effects or network externalities, claims that a network becomes exponentially more valuable as it accrues more users (Metcalfe, 2013). For example, fax machines, phones, and Twitter held little value when few people had fax machines, phones, and Twitter accounts. In other words, networks become more robust as others join. So, in Mrs. Ogden's annotation activity, the value could not simply be in the capability of the technology, but in the ideas that students brought to the text. Networks themselves are not smart, but they rely on the intelligence of the people connected to it.

The great irony is that Bob Metcalfe was also known as the father of ethernet. Anyone who set up desktop computer before 2015 probably recalls the bundle of cables and wires at the back of the computer tower required to get it up and running. The entanglement of cables running between the tower and the mouse, keyboard, monitor, speakers, ethernet input, and power source guaranteed that anyone who wanted to use the computer would have to remain seated at a desk—there was no opportunity for mobility with a desktop. With the advent of Wi-Fi as well as advances in Bluetooth technology, one could be connected to a computer with fewer wires and cables. We may be tethered

to our computers, but the wireless mouse made the connection all the more robust because it added the additional functionality of mobility while also jettisoning the frustration of getting tangled up in cords and cables. By untethering from computers, devices made more greater convenient through the added benefit of Bluetooth technology. The erasure of tethers meant that keyboards, mice, and speakers were tethered wirelessly.

The Internet of Things (Raji, 1994; Weiser, 1991) is similar to Metcalfe's Law. It posits that material around us is increasingly getting smarter through its ability to connect to the internet, and as a result, communication with other devices connected to the internet. Things such as watches, lightbulbs, and thermostats which have been digital for quite some time, are understood to become smart through their internet capability and connection to the cloud. When watches, lightbulbs, and thermostats become smarter, they are capable of collecting and interpreting data to become more efficient in their respective functions.

The networks described in the classrooms in this chapter embraced the ethos of the Internet of Things. These teachers who tech recognized how the internet and mobile devices could provide them with an opportunity to create networks, both online and face-to-face. Neither analog nor digital networks are smarter than the other, rather they feed each other as a way of making the other optimized for learning. In seeking balance, these teachers understand that by simply moving analog activities in the digital spaces, they are not necessarily improving learning for the environment in which students learn. Instead, they recognize that networks can come together in the physical classroom and in digital learning spaces in porous ways. Place matters, but only to the extent that it must be ideal

and optimized for learning purposes. The concept of the Internet of Things is not based on the idea that all of these appliances connect to one centralized computer or network. Instead, each connected thing becomes stronger through its connection to other things. In many ways, tetheredness is a concept for knowledge production in school spaces, separate even from just the idea of what technology can do, focusing instead on what human capital can do as a community of learners comes together using mobile technology.

The paradox of tetheredness comes from the idea that, as more Chromebooks and devices connect to a school's Wi-Fi network, it actually clogs the network, potentially slowing all devices connected to it as it gets overloaded. So, unlike what is posited by the theory of the Internet of Things, the Chromebooks do not enhance other Chromebook devices simply by sharing a network—that in itself could have an adverse effect on the functionality of the technology. The more important point is that computers cannot make other computers smarter without the addition of human capital. It is the human-Chromebook assemblage which creates opportunities for a smarter network. Untethering using wireless technologies allows for greater mobility, freeing students and teachers to roam about the classroom and school with their peers, creating a more nomadic and collaborative learning ecology. However, as this chapter will discuss, there are instances where wires, as in the case of headphones and power cords, tether students to technology and one another. This paradox of tetheredness adds complexity to the classroom and asks questions about the possibility of how spaces can be designed to take advantage of the affordances of technology in classrooms.

Classroom Space

One of the first considerations with tetheredness is how it allows for greater mobility. As such the design of learning ecologies plays an important role in thinking about how technology can best be used given the classroom space. Learning from and connecting with others is capable anywhere a mobile device can exist based on its functionality and connectivity. For example, a Chromebook often lacks significant hard drive memory because, as a netbook, it relies heavily on the internet in order to maximize its utility. As long as students have access to Wi-Fi, Chromebooks can provide the type of on-the-go, wireless learning experience expected from them. Because Wi-Fi permeates throughout schools, homes, and other public and personal spaces students are not forced to stay in one place if they need to access something online. These teachers who tech seemed to understand how such digital tools provided them with flexibility in their classroom spaces. But as this section will explore, there are other important considerations concerning classroom space that came up as a result of the presence of technology, both for the teachers and the students.

Teacher Considerations

In any classroom, teachers are often confronted with questions of what classroom set up will be ideal. Where should the teacher desk go? How will students' seats be arranged? Where will the pencil sharpener be located? Do I have a space for a classroom library? In the beginning of the school year, teachers must make such decisions before ever meeting the students who they will be teaching. Often, the classroom is first set up based on the teaching style and a limited understanding of students who will soon inhabit the desks. Mrs. Brouillard and Mrs. Ogden explained their thought process when it came

to setting up their classroom based on their teaching styles and how they made certain decisions, both with students and technology in mind.

For Mrs. Ogden, mobility was key to her classroom arrangement. During the time of my observation, she had just moved into a new classroom, so a lot of the questions I posed were fresh on her mind as a few months earlier her space had been a tabula rasa. She walked me through the intricacies and considerations that go into creating a space that accommodated her teaching style as well as students' needs.

First and foremost, mobility seemed important for Mrs. Ogden. She explained,

> I try to make sure just mobility is really easy for me as a teacher, but also for students so they can like access things in the classroom. I try to make my students as self-sufficient as possible. So like, they knew where all my stuff is, like they knew where the extra paper is and the pencils are, and the sharpener, and the tissues and hand sanitizer.

Interestingly, Mrs. Ogden associated mobility with student self-sufficiency. By designing a classroom that designated spaces for certain essentials like paper, pencils, sharpener, tissues, and hand sanitizer, students were held responsible for getting whatever materials were necessary for them to be successful. On a more practical note, students did not need to interrupt class discussions by asking Mrs. Ogden if she could give them paper or hand sanitizer. Instead, she entrusted students to assess what it is they needed at any given time and to get out of their seats and get it. But in order for this to be purposeful, Mrs. Ogden had to create a space that was conducive to student mobility. If students needed to sharpen a pencil and could see where the sharpener was located, but could not easily get to it, they might choose to simply opt-out of doing the work because the path to the

sharpener might seem like more trouble than it was worth. What might be interpreted as pure laziness on the students' behalf was an honest concern for teachers when establishing classroom spaces that work for students, as it provided a "no excuses" mentality for getting students to be responsible for their own learning and personal needs. In considering the importance of student mobility, Mrs. Ogden mentioned, "I've never wanted like people stumbling over each other, though when you have like 32 students crammed into this tiny room, it happens." Mobility seemed even more important when the size of the classroom space was less conducive to the number of students it is forced to accommodate. However, in talking about the possibility of students "stumbling over each other," her classroom arrangement was not only a matter of convenience, but one of safety.

Mrs. Ogden went on to say, "I'm also moving around as well," when talking about creating space for mobility. Although she had a personal desk, Mrs. Ogden said that, for her, "I feel like is just here. It's like a storage piece for me. I don't ever use my desk." Because of this, there was not a specific centralized location for her during class instruction and independent work time. During her annotation activity, she brought her Chromebook to one of the groups of students and interacted with them rather than sitting at her desk. Although her Chromebook provided her with opportunities to engage with students in digital landscapes, other wireless devices, specifically her Bluetooth mouse, allowed her to move about freely throughout the classroom during times when she needs to use technology. During the video-cued interview I pointed out to Mrs. Ogden that she used her mouse a lot during her tutorial for the timeline tools. I asked her to tell me more about the role her wireless mouse plays in her teaching practices:

> I do like that, um, like we have the wireless stuff, um, because I'm all around the room, but I don't know if there's a purpose behind it. I'm just all around the room because that's just me, I think, I don't know. Um, I think it's good as a teacher to be in different places at once, you know, like kind of like bouncing around so that way, like you're not giving all your love to one side of the room. You're kind of like spreading the love everywhere.

To Mrs. Ogden, her use of her wireless mouse seemed like an obvious choice for a teacher who uses technology but wants to be able to move about the room. Her inability to identify a particular "purpose behind" mobility suggested something that felt natural to her—it's just what good teachers do. Her concern over "spreading the love" through proximity to all students suggested that her teaching style is dynamic rather than static. This nomadic approach is made possible by her mobile devices, both her Chromebook and her wireless mouse.

Mrs. Ogden made an important observation about her mouse when she talked about its ability to "be in different places at once." This is a powerful affordance of Bluetooth technology, as her mouse could, for example, allow her to conference with students at the back of the classroom while also controlling her computer located at the front of the room. This type of bi-location points to the fact that her mouse at any given time could tether her to her students and other technology at the same time, creating multitudes of herself that lead to a more expansive potential for supporting learning.

Mrs. Ogden would go on to explain,

> I bounce around and so it's nice that my mouse can travel with me. Sure. I lose it a lot. My kids like they'll back me up when they, they know that I'm always like,

> *where's my mouse?* I'm like, *whose, who has my mouse, who sees it?*

Similar to students' use of technology, there are certain practices with wireless teaching tools, like a Bluetooth mouse, that seemed personal and embodied—as if her digital tools were appendages of her teacher-self. Mrs. Ogden's notion that her mouse "travels" with her, suggested that such tools can be companions. Her observation that "where's my mouse?" was a popular refrain with her and her students implied that the loss of the mouse is a regular occurrence and a formalized inside joke with students that pointed to embedded teaching practices.

Mrs. Brouillard, on the other hand, found that her teaching practices were mediated differently by the technologies the school provided for teachers. She described,

> because we are sort of beholden to um, technology that is still tethered, I tend to sit at my desk a lot because my computers are not able to be moved around very much and we do have the projector in the room. So, that does need to be the center of um, the focal point most of the time. Um, but sometimes I just turn it off and we're more focused on me working around the room.

Unlike Mrs. Ogden, Mrs. Brouillard was not provided with a mobile device, like a Chromebook. Instead, she had a desktop which sat on her teacher desk. As a result, Mrs. Brouillard's desk became a "focal point" for her, particularly in times when she was providing instruction to students. In hearing her talk about her personal technology, Mrs. Brouillard seemed to downplay the primacy of mobility in her classroom as a result of "technology that is still tethered." But during a mini lesson on gerunds, she went to her desk and quietly mumbled to herself "Let me get my [wireless keyboard] so that I can get

untethered." It was at this point that I began thinking about the concept of "tethered tech." The word "tether" suggests something umbilical in nature. Tethers connect—but they also tangle. When Mrs. Brouillard talked about being "beholden" to tech that tethers, she was commenting on the inconvenience of tools that are seemingly static and immovable. Tech that tethers conjures certain ideas of tools from a recent past—a desktop computer that must be plugged in at all times because it lacks a rechargeable battery; a monitor that possesses a separate tower with a hard drive and motherboard; a USB connection for a mouse and a separate one for a keyboard; color-coded audio cables that plug into other inputs; knots of cables entangled behind and below a desk. But a Bluetooth mouse or keyboard is, by definition, wireless. In comparison to tethered tech, wireless devices connect without cables, allowing for the mobility necessary. Bluetooth connectivity still "tethers" devices to one another. Both teachers had Bluetooth devices which were important to their embodied teaching practice. Mrs. Ogden's mouse and Mrs. Brouillard's keyboard gave them wireless access to their computers while also allowing them to move about the room and support students on a more personal, proximal manner. Because of this, these teaching devices freed them from being tethered to their desks and allowed them greater opportunity to be tethered to their students. By creating distance between them and their computers, these teachers who tech were able to work closer with their students. In both cases, Mrs. Brouillard and Mrs. Ogden showed how Bluetooth technology was a powerful tether that gave them the ability to move about their classroom spaces more efficiently and effectively to support English instruction.

Student Considerations

Mobility is not the only, nor is it the most important, consideration when it comes to setting up a classroom space that can accommodate technology. Mrs. Brouillard and Mrs. Ogden created spaces that they believed would serve students and their learning needs.

Seating. One important consideration with regard to classroom space is how to best arrange student desks to accommodate the specific needs of all students. Seating arrangements are important because they orient students to one another, to teachers, and to the tools for instruction (e.g. whiteboards, projectors, books, etc.). Mrs. Brouillard's teaching style was conversational in nature and she required desks to be arranged in order to facilitate the discussions she expected from students. She explained:

> I like the kids to be, at least with an elbow partner, someone next to them. Um, because we do a lot of kind of turn and talks and, and uh, partnered, you know, um, shared document kind of things where they need to be side-by-side. So I tend to pair desks, um, a lot. And it, it gives me the ability to kind of get with those two students if I need to have a quick conversation.

Mrs. Brouillard's desks were arranged in pairs so that all students had a partner, which demonstrated that, although she was a teacher who techs, she did not only think about engagement in online spaces. She still felt the need to arrange her classroom space to accommodate the face-to-face connections that she wanted students to have with one another as well as to be able to facilitate conversations between her and the students. However, she also arranged desks so that they all faced the front of the classroom—the same direction as the projector screen. Even in a classroom space designed to

accommodate mobile technologies, Mrs. Brouillard had to account for the immobile devices that facilitate learning, such as her teacher desktop computer which she used to project her slide decks in the front of the room during whole class lectures and discussions.

Although her classroom set up seemed to accommodate her needs with regard to instruction and group work, Mrs. Brouillard mentioned that she liked to mix things up every so often. She said, “I like flexible seating. Um, I'll change my, my seating arrangement up to three, four times a year because I get bored with it and I feel like the kids need a little bit of a shaking up.” So, although the pairing of desks seemed to map onto the participatory nature of her classroom expectations, Mrs. Brouillard also believed that seating rigidity begets complacency. By being flexible with her desks, she created new learning experiences with her classroom by jilting students out of the prosaic routines of the class simply by re-creating their space.

During the time in which I observed Mrs. Ogden, her desks were organized into pods of four or five desks. This seating arrangement seemed to accommodate the needs of her book clubs, as students who read the same books were able to sit together and discuss their readings during their timeline activities. However, Mrs. Ogden explained that, like Mrs. Brouillard, she changed the “classroom desk set up like all the time,” telling me,

> my desks are never the same and my students hate it. Um, because I'm always changing the desks on them. Um, I typically like to keep them in groups for the most part because I do a lot of group work. Um, but I do have to change it up quite a bit because they get really comfortable in groups. And so, um, if there's

> too much talking, like we were just talking about, um, changing them back into rows for a little bit. Um, but groups is a big thing for me.

Both teachers provided an instructional rationale behind the changing of seating arrangements. In fact, they both believed that seating was powerful because it could facilitate meaningful discussions in groups of two or more students. Other parallels were evident in comparing Mrs. Brouillard's notion of "shaking up" and when Mrs. Ogden referred to students getting "really comfortable in groups" and needing to move seats back into rows. The biggest difference between the two teachers was that Mrs. Brouillard seemed to make changes to the classroom space to create a cognitive jolt, whereas Mrs. Ogden spoke of it in terms of a tool for classroom management.

Comfort. Another major consideration for both teachers was student comfort in their classrooms. In fact, comfort was mentioned throughout interviews with both teachers. However, it was a double-edged sword for Mrs. Brouillard and Mrs. Ogden. Of course, teachers want students to feel comfortable in the classroom, but too much comfort was often viewed as symptomatic of apathy. So, being able to create spaces that create just enough comfort was challenging.

Mrs. Brouillard was explicit with what was meant when she talked about comfort and safety in her classroom and how she believed the classroom and lesson design could create opportunities for students to feel comfortable. In talking about her classroom and her students, she said,

> I want to be comfortable. I mean, if, if I, if I need them to be attentive to me and what I'm saying, the desks work fine. Um, you know, we don't have a lot of like the, the seating isn't very flexible. Um, but that's one way to be flexible is to allow

> them to sit on the floor sit in stools…I've got some kids who like to lay on the floor, which is fine. Um, you know, some of them like to sit, um, they'll pair their desks up in, in weird, interesting ways. Um, but for me it's just a way of getting them comfortable and letting them get in their element.

For Mrs. Brouillard, she associated comfort with student choice as it related to learning spaces. She seemed to be keenly aware of students' unique learning needs, entrusting them to make appropriate decisions when it came to choosing where to sit during independent work time. However, she also required students to sit at their desks during class segments when they needed to focus on her (i.e., during direct instruction). But when students were expected to work with their peers, they had free reign on how they wanted to position their bodies in the classroom. During my observations, I saw students remain seated at their desks, while other students were strewn all over the floor. In many cases, the spaces they chose had to accommodate the digital tools as well. So, when students knew that they were going to be typing, they seemed more inclined to stay at their desks. However, during times when they were reading, they often chose to sit or lie on the floor. This entailed a fair amount of trust from Mrs. Brouillard, as moving about could add distractions and increased transition time between activities. But students seemed to understand that they were entrusted with making good decisions and I never witnessed students taking advantage this responsibility.

The flexibility of the seating is quite important when thinking about tetheredness. If students have wireless devices, then they should be able to move about the room. This was evident in both classes, as students had freedom to move about. But Mrs. Brouillard's class seemed to take full advantage of their ability to move around. When

students were not restricted by cables connecting their devices to power sources, they chose instead to connect with their peers by finding work spaces that was able to accommodate their learning needs.

Lighting. Another similarity was that both of these teachers who tech had LED strand lights adorning their classroom ceilings. Lighting for Mrs. Brouillard was of primary concern, stating,

> I like low lighting. Um, I use, um, some LED, um, stranded lights. Um, on my ceiling instead of my fluorescent lights because I feel like fluorescent lights are very sort of glaring and um, they have a slight buzz to them and they bother me. Um, and I think that as a student they might be a little bit bothersome as well. So, I tend to turn off the fluorescents and turn on the, the strand lights.

I never entered Mrs. Brouillard's classroom when the lights were turned on. This became a topic for discussion during one point when she was having a conversation about mood in *Warriors Don't Cry* and how the setting can impact the way a character and, in turn, how the reader feels during certain parts. She asked students, "What if I turned off my LED lights and turned on my classroom lights? What kind of mood would that create?" Students began calling out, explaining how weird that would be and how much they liked that she kept low lighting in her classroom. When she said that the fluorescent lights "bother me," Mrs. Brouillard demonstrated an ability to think like an adolescent by putting herself in her students' shoes and thinking about what conditions would allow them to be able to focus on learning.

Although Mrs. Ogden had strand lights in her room as well, she typically kept her fluorescent lights on during class time. In explaining her approach with lighting, she said,

“I do think that lighting matters a lot of time. Anytime there's a video going on, I turn the lights out and put my Christmas lights out.” So, for her lighting is contextual and based on what she and/or the students are doing. The only days I saw her turn off her classroom lights and use the strand lights were on days when students were journaling or reading independent novels. It would make sense for students to use low lights during those times as many might consider the solitary acts of reading or writing to require a certain level of comfort. However, once that time was over, she turned the classroom lights back on, almost as a way of signaling a change in activities.

Access to Power. One final consideration that Mrs. Ogden thought was important in considering her classroom set up was access to power outlets. According to her,

> I try to make sure my outlets are always open. That's one thing because kids need chargers because it’s—we're one-to-one so the kids have the technology, we give them the technology, they have it, they bring it into the classroom. And so I try to make sure because they need to charge their—they're expected to go home and charge it and come back and have them charge, but that is not always the case.

Because of this, Mrs. Ogden did not put student desks on the perimeter of her classroom and instead arranged longer tables along the edges in case students needed to sit there in order to charge their Chromebooks during class. She talked about the issues of charging with frustration, as not having a charged device often created difficulty for students in completing tasks, particularly since they used their devices so often—an issue discussed in more detail later. She also explained that her school gave her “extension cords last year that sat—that could sit in the middle of the classroom, but like budget cuts or something, I don't have my extension. They didn't give us extension cords this year.” At first, this

seemed insignificant, but it appeared as though this really bothered Mrs. Ogden. Extension cords would provide her with greater flexibility in her classroom. Wall space was a hot commodity for her and her students, because access to power was limited to certain areas of the classroom. As a result, students who needed to work on their Chromebooks as they charged would need to move from their seats—where they were often working in small groups—and then work near a separate space near an outlet. If she had extension cords, not only would it provide additional outlets, but students would be able to have more accessible power based on her seating arrangement. She was looking for a way to make the possibility of tethers more convenient for those students who ran out of power.

Making outlets open and available was not just a matter of arranging desks so that they were accessible. Mrs. Ogden mentioned that ensuring that power was being reserved for charging Chromebooks could be "kind of a hindrance when my kids are trying to charge their phones in the outlets. So, it's like computers only chargers." As a teacher who techs, she likely had a unique perspective on how important personal devices were to students. When their cell phones run out of power, young adults often feel as if they are getting cut off from important lifelines via social media. But the limited sources of power made it so that Mrs. Ogden could not afford to let students charge their cell phones when she anticipated needing the outlets for students who did not charge their Chromebooks the night before.

While this issue may seem mundane, power becomes exponentially more important when teachers expect students to use their personal devices on a daily basis. In this day and age, coming to class without a charged device is proportionate to not

completing one's homework. Beyond demonstrating a lack of responsibility, showing up to class without a charged device is an inconvenience for a teacher who techs, as often they plan lessons under the assumption that all students will have their school-sanctioned devices. Mrs. Ogden seemed to plan lessons anticipating that at least a few students would come to class without a charged device. She prepared for it, like any good teacher would do. But it did not make it any less frustrating, as we will explore later in this chapter.

Embodied Practices

As mentioned in chapter 2, the discussion of classroom space would be incomplete without the consideration of the bodies that inhabit them. In thinking back to concerns over cell phone policies, perhaps some of the tension with school rules and procedures with technology comes from the notion that teachers who tech try to think like their students. They understand that technology is not just another "thing" in their lives—it is often a tether to their social lives, both in the digital and physical realm. This connection between adolescents and technology was evident as I observed students' hands on screens and the way they internalized embodied practices with their digital tools. It seemed as though there was something quite personal about students and their personal devices.

There is a taken-for-grantedness that is often associated with the relationship between technology and bodies. Arguments over personal technologies as "appendages" (Rainie & Zickuhr, 2015, p. 11) are made as a way to talk about the addictive nature of modern technology. Metaphors like these insinuate a problematic relationship between bodies and technologies, as personal devices have become so closely intertwined into our

lives as to become a natural extension of ourselves. Although comparisons like these are used a way to problematize the addictive nature of technology, the appendage metaphor may have something to offer when taking a close look at how students' bodies react and relate to their digital tools.

During Mrs. Ogden's timeline activity, students demonstrated embodied practices that were seemingly pre-conscious (Massumi, 2002). Their Chromebooks were like any other netbook, with the added benefit of a touchscreen that allowed them to use their fingers to point, drag, and scroll through open windows on their screens. As I observed students creating their timelines, I noticed that they used more traditional functionalities—typing, using the mousepad to scroll, point, and click—and the touchscreen interchangeably.

In one instance, a girl reading the graphic novel *Persepolis* in her book club wanted to add an image of a girl wearing a hijab to her timeline. She started with a Google search, using her keyboard to type her terms. Once her results were populated, her hands moved to the right side of the screen, nearly gripping the side of the monitor with her right hand in order to use her thumb to scroll through the page until she could find the image she wanted to use.

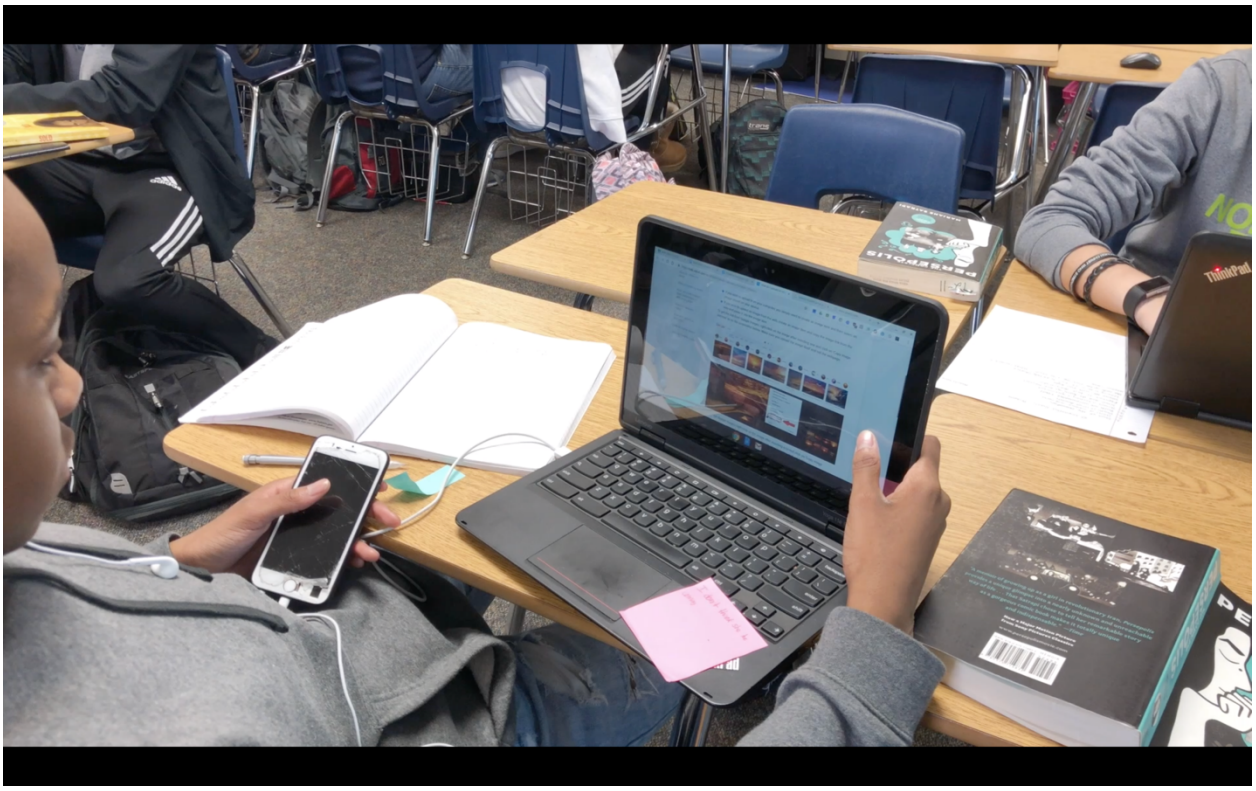

Figure 12. Student scrolling for an image for her timeline

Once she found her image, her right hand moved back to the mousepad so that she could navigate between various open tabs in her Google Chrome browser. After toggling back and forth between her timeline and her image from her Google search, she seemed to determine the best strategy for importing her image into her timeline.

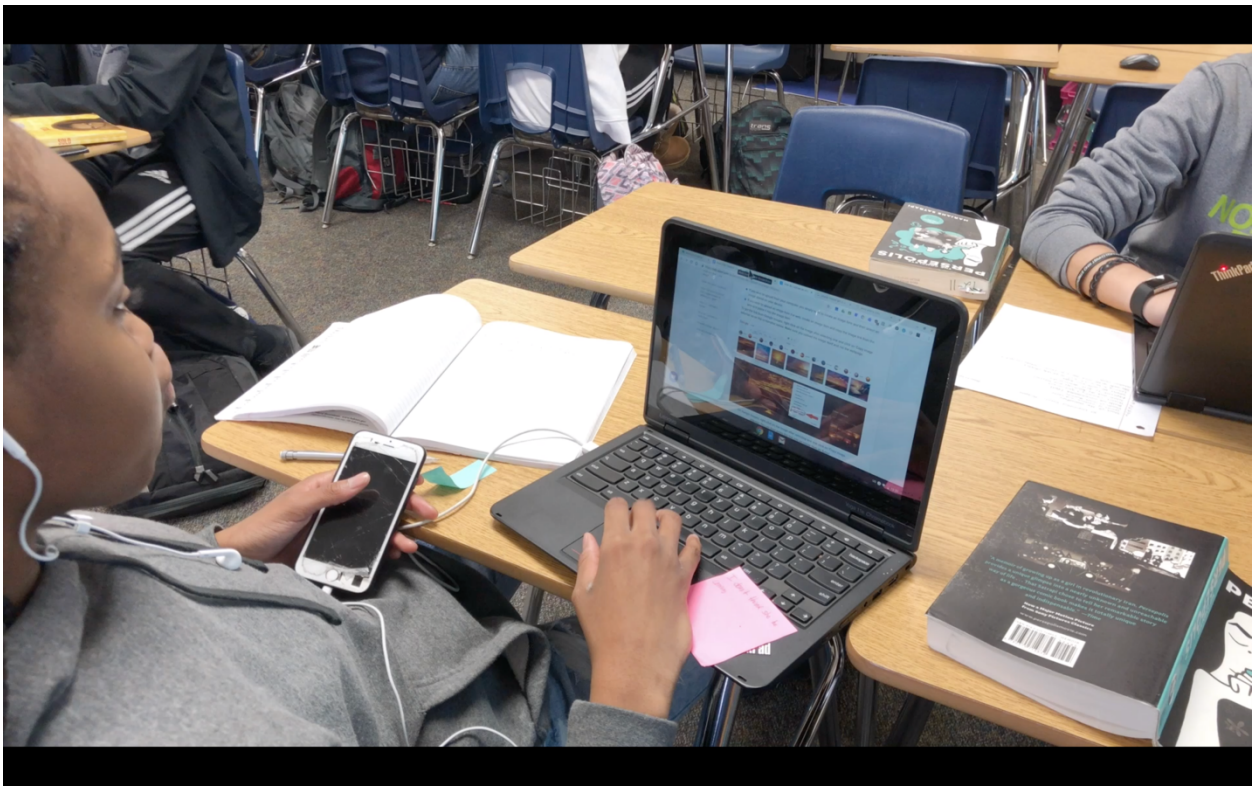

Figure 13. Student using mousepad to left click on image

After toggling back to her Google image tab using the mousepad and the left click function, she used her right middle finger to apply sustained pressure to an image on her screen that she wanted to insert into her timeline.

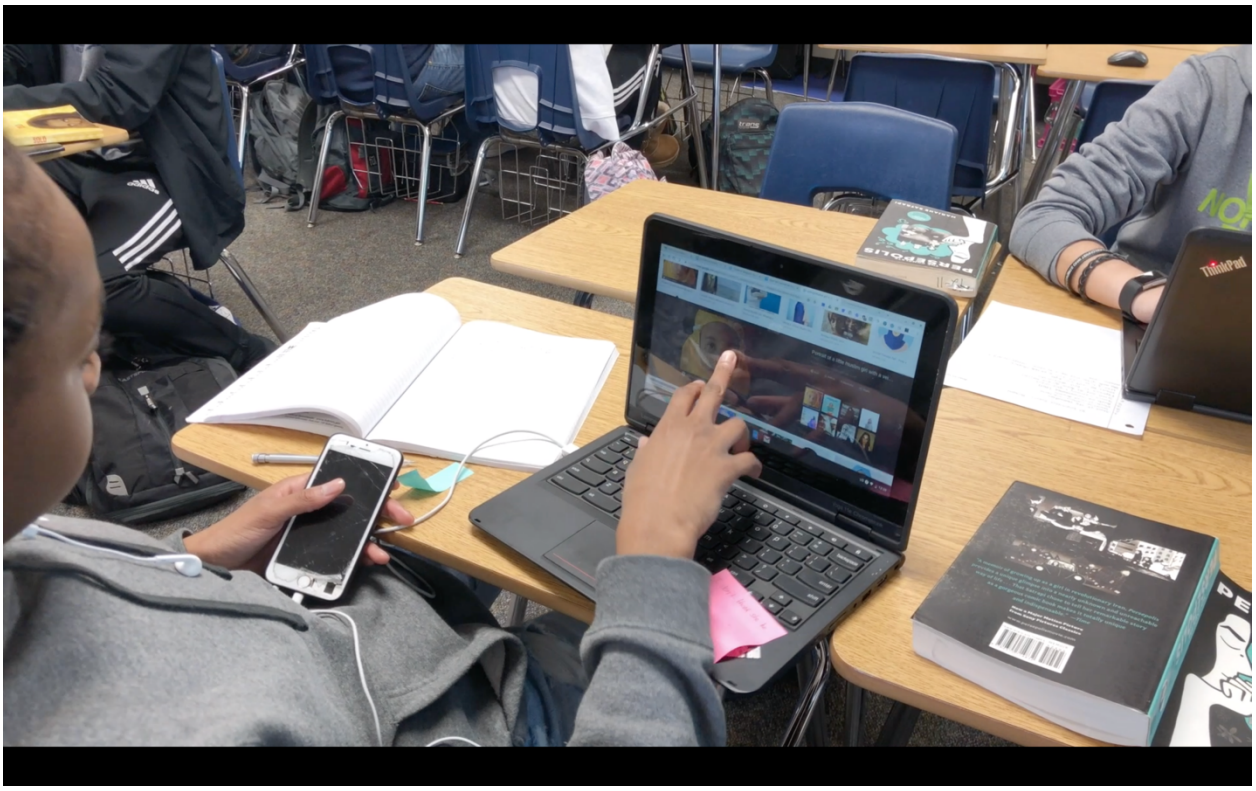

Figure 14. Student using touchscreen to save a Google image

A menu popped up next to the image that her finger was touching, giving her various options for what she could do with her image. She used that same finger to gently press the “Save Image As…” option.

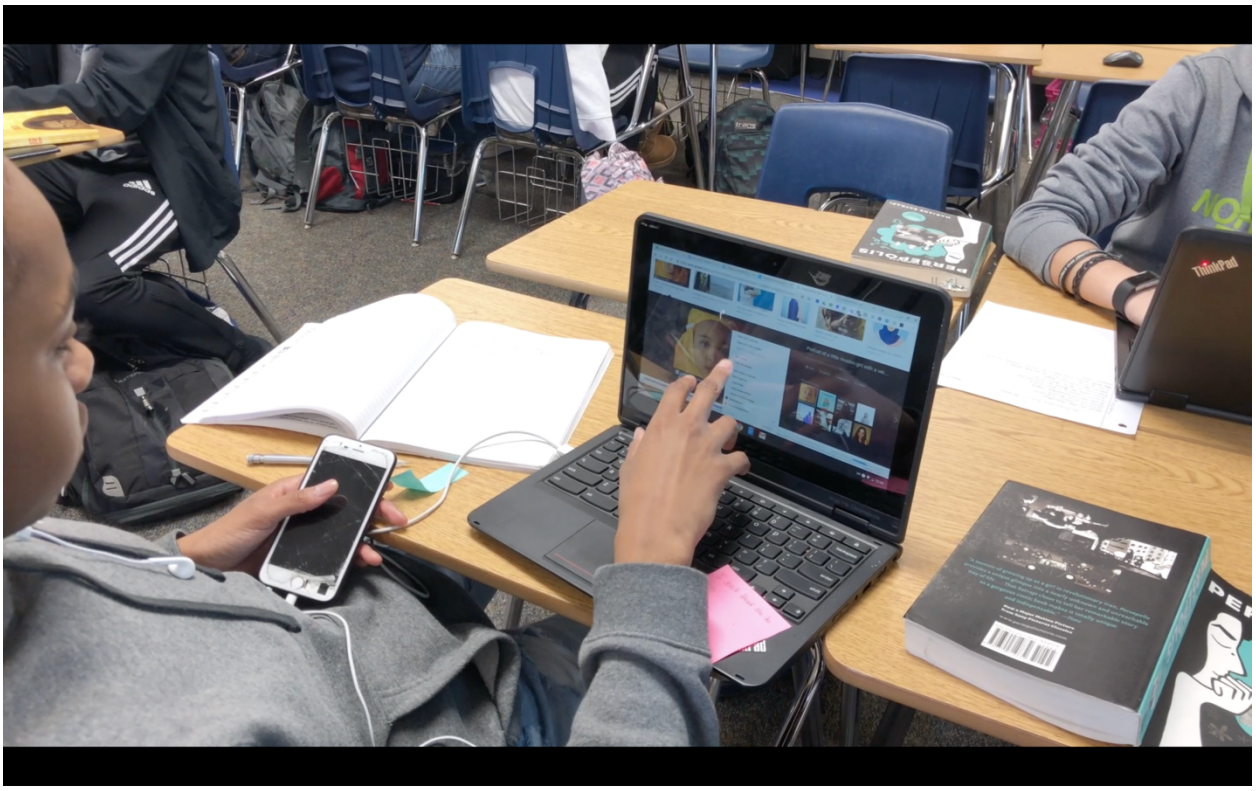

Figure 15. Student using touchscreen to save image to Google Drive

The menu disappeared and a new window opened up, providing her with various options for locations to save her chosen image on her Google Drive. She returned to her mousepad to navigate her Google Drive, finally selecting her preferred folder by left clicking on the mousepad.

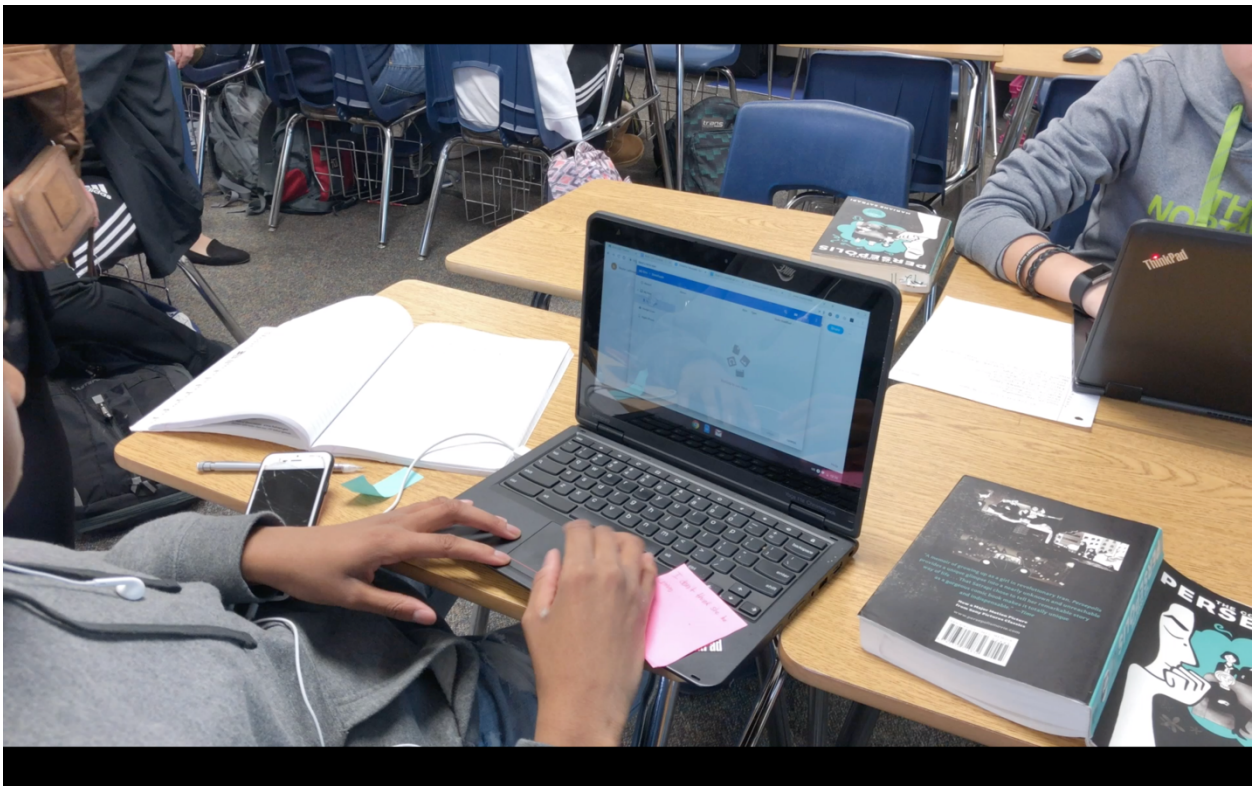

Figure 16. Student returning to mousepad to navigate Google Drive

The process described above is perhaps banal. But a closer look at the student's body's exchange with technology reveals a unique embodied workflow that seemed to change based on the expected outcome from technology. As the student moved from keyboard for searching, to the screen for scrolling, to the mousepad for toggling between tabs, it appeared that certain tasks seem more natural on different parts of the Chromebook. Whereas the toggling between tabs and her Google Drive could have just as easily been achieved through the touch screen functionality of her Chromebook, she returned to the mousepad for navigating and left clicking primarily. Scrolling and saving images could have been achieved through the mousepad as well. But for this particular student, those actions, or perhaps more appropriately *routinized behaviors*, seemed to exist more appropriately in the domain of the touchscreen.

Additionally, these movements and transitions from keyboard to mousepad to screen were achieved through the use of one hand. Throughout most of this sequence, the student held her phone in her left hand. Her ear buds were connected, but her phone's screen never illuminated. She may or may not have been listening to music. But there did not seem to be a purpose for holding on to the phone while working. It was seemingly a mindless behavior that should have otherwise hindered the student. But her bodily familiarity with the Chromebook allowed her right hand to do everything she needed to achieve given the task at hand.

Mrs. Ogden mentioned that she had begun noticing the gestural power of technology, particularly during the transition between students and teachers getting the new touchscreen Chromebooks. In thinking about the relationship between her own interaction with technology, she explained,

> when my computer was not touchscreen and theirs were, I would sometimes go to do something on my own screen that I would do while I was showing them. Like, I'd be around the room and I'd start touching their screen and like showing them things. And then I'd be sitting at my desk and I'd start to do the same thing. I'm like, *Oh man, my computer is not touch screen. I can't do that*.

Mrs. Ogden provided insight into the bodily habits that teachers become accustomed to when working with different types of technologies. Her comments are useful because she only recognized her own embodied impulses when confronted with digital tools that possessed different capabilities. Mrs. Ogden's example makes a critical point: bodies' relations with technology go unchecked unless we experience some "shock to thought" (Jackson, 2017; Massumi, 2005). Put differently, the pre-conscious, mindless actions

with technology are only noticed when confronted with technologies that do not react to our touch in the way we intend. As she helped students work on their touchscreen devices, her mind and body were slowly disciplined to work in certain ways. It was only when she tried to touch her non-touchscreen Chromebook that she became aware of how the technology disciplined her movements and interactions with technology.

In addition, Mrs. Ogden provided some possible explanation for the divvying up of embodied practices associated with the keyboard and touchscreen with the student above. “I use my touchscreen for certain things, especially if I'm trying to show them something like a document. I'm trying to like scroll through the document and like point at certain things. Like I'll do that a lot.” This idea that the touchscreen is useful for “certain things” makes sense. But it implies that certain tasks are better with the touchscreen than others. Typing, for example, currently primarily exists within the domain of the material keyboards of Chromebooks. But the mousepad provides similar functionality to that of the touch screen. One might argue that moving a cursor and clicking on an object with the mousepad is one too many steps when simply using a finger to point at a screen can achieve the same goals. But the body’s orientation toward technology is built on a particular history based on familiar interfaces which facilitate and crystallize muscle memory over time. So, in cases where teachers and students could be streamlining certain processes with technology, they are acting in accordance with their body’s natural inclination until they allow the technology to move them in a different way.

Headphones: The Aural Sensorium

In addition to the sense of touch, listening was particularly important in Mrs. Ogden's room. Music is often understood as an important marker for adolescence, providing a soundtrack for coming of age, as well as important pop cultural referents for inclusion within their peer communities. During independent reading and writing times, students would wear different varieties of headphones including Apple AirPods, and Beats by Dre Bluetooth headphones, as well as the cheaper wired earbuds. Whereas the wired earbuds and even the AirPods seemed to serve as a functional means of listening to music on their personal devices, the Beats by Dre headphones seemed as much a fashion statement as a technology for listening to music. They were conspicuous, wrapping around the ear, surrounded by cushion, adorning the top of the head with the Beats by Dre insignia. Costing nearly $200, they were also a symbol of materiality for young adults. They were functional, fashionable, and encoded with a particular social status.

There was no attempt by students to hide their headphones and, unlike her cell phone policy, Mrs. Ogden never instructed students to put them away or take them out of their ears. This registered as strange for me, as I tried to put myself in Mrs. Ogden's shoes. As a teacher, I always felt I was struggling to ensure that students were attentive to me and the work I expected from them. Furthermore, there seemed to be a disconnect between her approach with cell phones and headphones. Headphones seemed to provide an equally pressing threat to student focus and attention as did social media on their personal devices.

Figure 17. Student wearing Beats by Dre Bluetooth headphones during silent reading

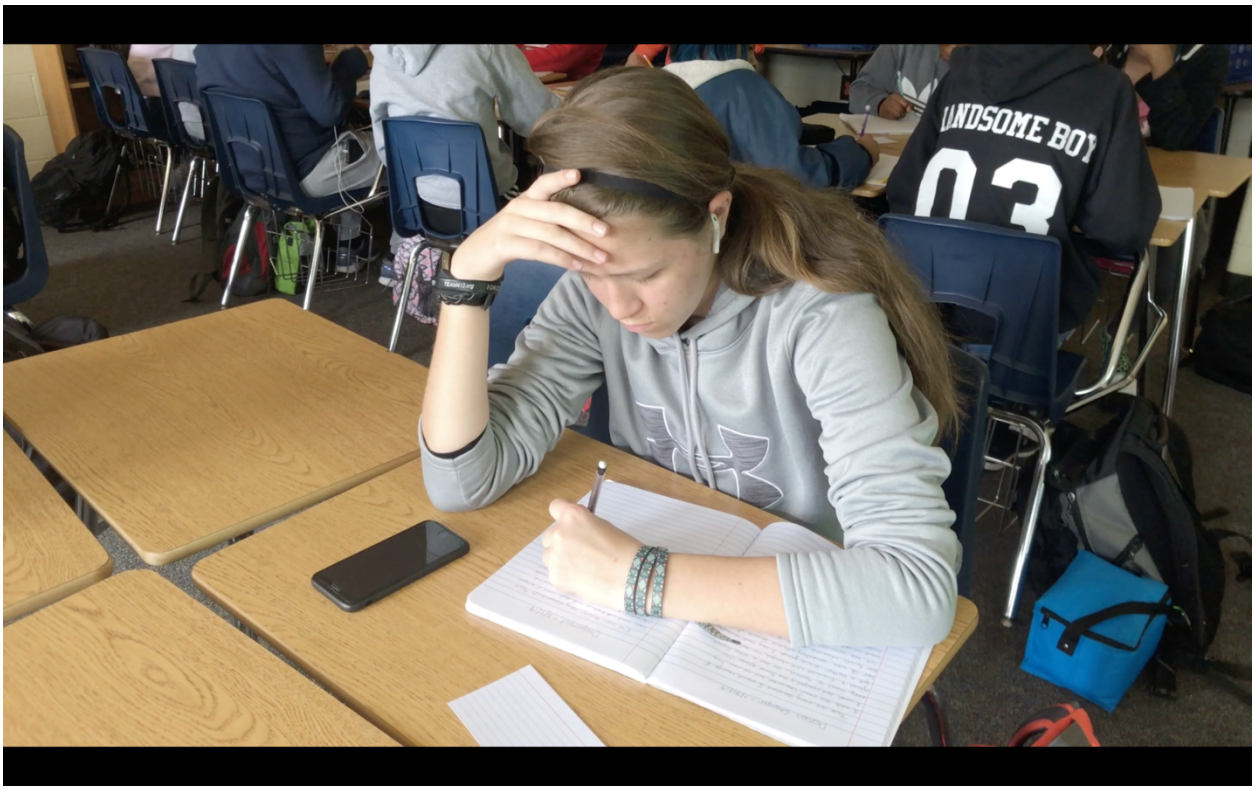

Figure 18. Student wearing AirPods during journal time

Upon closer investigation, I noticed that many students often wore their headphones throughout the entire class with one ear exposed. I began to wonder if the way students wore their headphones might serve as an important signifier to Mrs. Ogden. Perhaps this was a sign of good faith on behalf of students to let her know that they were being attentive to her expectations. During a follow-up interview, I asked Mrs. Ogden if she had a policy or approach with headphones in her classroom. She explained, “I used to have, um, a teacher-friend who would say like one ear bud out and like I remember him saying that like one ear bud out and um, I just always thought that was interesting.” Mrs. Ogden did not necessarily explain that “one earbud out” was her policy. But she seemed to recognize that her teaching peer saw this as a possible concession for students who want to wear their headphones in class. Mrs. Ogden would go on to say, “I can tell when they're not listening, you know, and I can—it's like even if they have two headphones in,

a lot of times, um, they're listening. Even if they have two headphones in and I can tell." In this regard, she relied heavily on her intuition to recognize when a student may be giving all of his/her attention, even when wearing headphones. As discussed above, a more hard and fast approach with regard to technology might be easier for a teacher to enforce certain expectations. She could require students to put headphones away as a way of ensuring that it did not detract from her lesson. But in following her instincts and allowing students to wear headphones, she created a classroom environment in which she trusted that students would be responsible to make the right decision for their learning.

Figure 19. Student reading with Beats by Dre with "one ear out"

However, as I pressed a little harder, I learned that the decision to allow students to wear headphones may have been grounded, not only in trust, but in the interest of mitigating unnecessary conflicts with her students. Mrs. Ogden explained why she

believed students felt the need to keep their headphones on—even when not listening to music—stating,

> It's a comfort thing I think sometimes to have those headphones in. Like, they don't—they do not want to take their headphones out. Like, it's a really big deal. Like you tell them to take their headphones out and then they might shout at you like, I'm—I can hear you. It's not like the music's on. I can hear you. I guess some of them take one out maybe to kind of like show that I am listening and I'm not, like, completely engaged in what I'm doing.

Mrs. Ogden's assessment of students and their use of headphones seemed to be based on previous experience, more than likely from incidences with students who were visibily upset when she tried to create hard and fast rules for when students could and could not wear their headphones. In choosing which battles to fight with students, she was avoiding conflict. But her recognition of headphones being a "comfort thing" is important. From an instructional level, a teacher should do everything possible to make students feel comfortable, as it creates the requisite conditions for learning. But the association of headphones with comfort points to a perceived need to always be connected in some way to personal devices. To keep one's ears plugged, in fact would seem to provide a hindrance for learning. But Mrs. Ogden described a culture of students who exist in a world in which headphones provide a continual soundtrack whenever possible. So, the "one earbud out" approach is the consolation students offer Mrs. Ogden to signal that, although they do not want to put their headphones away, they are being attentive.

An extension of the "one earbud out" rule manifested in the sharing of headphones between students during independent work time. This struck me as

particularly strange, as Bluetooth technology with personal devices seemed to slowly be taking over the landscape of on-demand, mobile music experiences. Commercials for Beats by Dre and AirPods demonstrate how Bluetooth untangles the listener from their personal devices and allows them to listen move about freely. So, the use of wired headphones stood in stark contrast to students who opted for the bulky, over the ear, Beats by Dre headphones or the more unassuming, yet equally, expensive Apple AirPods. Unlike the Beats by Dre, wired headphones might represent a very different status symbol—one that lacks a certain cultural capital, even if they are the "free" white earbuds that came with the $500 phone. But the connected headphones seemed to mediate community for students. Whereas listening through Beats by Dre headphones provided a personal listening experience, the wired headphones were easily shared between students. Listening together was a way for students to connect, both physically and socially, through shared interests in music. Students were tethered by cables and mini amplifiers, which might seem insignificant at first. But they served as critical nodes for students seeking connections with peers. As I watched students work independently while sharing wired earbuds, I could not help but wonder what impact their shared aural experiences had on their respective work. The music could not be overlooked as part of the network created by students in the classroom space. The sounds along with the wired cables connecting students ear-to-ear made me continue to wonder about how technology tethers people together in powerful ways.

Figure 20. Students sharing headphones during journal time

Figure 21. Students sharing headphones during independent work time

Tech Fails

Failure is something that all teachers deal with. Over time, master teachers develop agility and resilience when it comes to implementing lessons, as lesson plans do not always match up with reality. These teachers who tech understood that technology could be unpredictable and lead to greater possibility that a lesson will not turn out as planned. In both classrooms there were times when technology did not work as anticipated. As a teacher, it is always frustrating when the vision and reality of a lesson conflict. But it seems as though Mrs. Ogden and Mrs. Brouillard accepted these as a mere side effect associated with technology use in the classroom.

In fact, failure seemed to be more of an expectation than an unanticipated side effect of teaching with technology. Although neither planned to fail, they did plan for failure and discussed the myriad ways a lesson could go wrong because of technical issues. According to Mrs. Brouillard, she planned lessons

> knowing that there's going to be hiccups. There are always going to be hiccups. Somebody's going to do something and we're going to have to restore it from the trash or we're going to have to, you know, so, um, and then I think that's just a matter of experience.

In other words, issues and mistakes are part and parcel of using technology. The very notion of a "hiccup" seems appropriate given Mrs. Brouillard's description of what a tech failure might look like. In talking about examples like a student accidentally deleting something and having to restore a document from the trash, she not only explained how human actions can lead to failure, but some technologies have safeguards that help teachers and students overcome certain problems as they arise. Hiccups like these are

fleeting so long as someone in the room, either a teacher or a student, has the knowledge required to solve the issue. For a teacher who techs, their interest in digital tools along with their familiarity often make them suited for scenarios like those described above. This is critically important. As mentioned in chapter 2, teachers who do *not* tech might lack the skill, knowledge, and subsequent experience and efficacy with digital tools. As a result, the anticipation of a tech failure could be enough to prevent non-techie teachers from attempting to digitize a lesson. Teachers who tech are all too aware of the possibility of a failure. But their experience helps them develop the self-efficacy necessary to believe that, no matter what happens, other options are available to help students complete the task.

Mrs. Brouillard would go on to say,

> It's never going to be just easy. It's never just going to come in, you're never going to come in and open your laptops and things are just going to work. It's just not, you know, every day there's something, something happens, some something happens, I've got to, we've got to work around this or oh well it's not working here, so we've got to do this. Or um, you know, the Chromebook decides it's going to take the day off. Or, or the app that I wanted to use is—worked at home but didn't work at school or the filter.

By providing more specific examples of Chromebooks taking the day off or apps not working, Mrs. Brouillard gave a glimpse into the varied ways in which a lesson with technology can go wrong. She seemed to have adopted a rather defeatist attitude around technology, discussing how using technology is "*never* going to be easy." Such quotes might make us wonder why a teacher would ever willingly choose to use technology

knowing all that could go wrong. But it seems as though the challenge of finding workarounds is not just an assumed consequence of using technology—for Mrs. Brouillard this is what teaching is all about. She explained,

> You know, it's just, there's always some challenge, which I think is great because it teaches the kids, you know, things aren't going to always work, you know, and so you have to be creative and you have to find those ways to work around. And you know what paper and pencil is a tried and true way of doing things.

When Mrs. Brouillard spoke of tech fails, she was actually addressing the gift of real life challenges. Whereas tech fails can be frustrating, they also afford her with opportunities to teach students about creativity, resilience, and the need for back up plans. Mrs. Ogden would echo similar sentiments, sharing that, when faced with a tech fail, she "always [tries] to use it as like a learning experience. *Okay, well let's figure out a different way. This one's not working, let's, let's try to figure out something else*. There's usually always another option." Problem solving and adaptability are two themes that reappeared throughout our conversations about tech fails. But the idea of experience was also important, because all teachers must start somewhere, often with no experience. Classroom identities, like teachers who tech, are not donned overnight. They take time. It requires some risk-taking for a teacher who has never used technology to give it a try, understanding that things can go wrong. But comfort with technology is something that comes with experience.

In this section, I highlight instances in which technology caused "hiccups" in Mrs. Brouillard and Mrs. Ogden's lessons as a way of exploring what goes through the mind of a teacher who techs when confronted with tech fails.

Hardware and Software

I observed tech failures in both classrooms. For Ms. Brouillard, it came when a Chromebook refused to load an online text for one of her students. Instead of giving up, it was clear that, along with a sense of determination to use technology, she developed a protocol when things do not go as planned. On this particular day, the student called Mrs. Brouillard over to see if she could help get the reading to load in a program called Newsela. I observed Mrs. Brouillard try several actions, including restarting a computer, logging off and back onto the Wi-Fi network, and using a set of keys to enter into a different mode. This process took about ten minutes—time that she could have been using to circulate and respond to other questions as students read. After exhausting all of her knowledge, the computer still did not load the reading. But in talking with Mrs. Brouillard, she explained that when confronted with a tech fail, patience and experience are her most valuable attributes:

> When things go wrong, you take a five minute break. I mean, you see if you can't, if you can't get it to come back up online, I mean a lot of it is just turn it off and turn it back on and hope that it fixes itself. Um, so that's my usually first go to is to log out, log off, let it cycle for a second, and then turn it back on and hopefully that corrects whatever it is.

Taking a beat and not allowing the problem to overwhelm her and the student was sage advice, but it’s not always easy to do. In the instance described above, Mrs. Brouillard could have understood her responsibility as a teacher during independent time to be the reading instructor—not the technology specialist. But she gave the struggling student her

undivided attention and started with the first part of her tech fail protocol: turn off the computer and turn it back on.

When the computer did not start back up properly, she tried the next step in her protocol: jump start the Chromebook using a unique set of keys. During a follow up interview, Mrs. Brouillard said, “there's a thing for restarting it if it doesn't start up. So there's like a, like a set of keys you click and it'll kind of jumpstart the power again.” What was most interesting about this step is that Mrs. Brouillard could not tell me exactly what keys allowed her to jumpstart the computer. Instead, she pantomimed the keys she pressed using her fingers on an “air” keyboard. This step seemed to be part of an embodied practice as Mrs. Brouillard was not conscious of the exact keys she pressed in order to get the Chromebook to start back up. In the image below, one could almost imagine her envisioning a keyboard as she clicked the phantom keys. So, not only is this part of the protocol embodied, but it is “downloaded” into her problem-solving “software.”

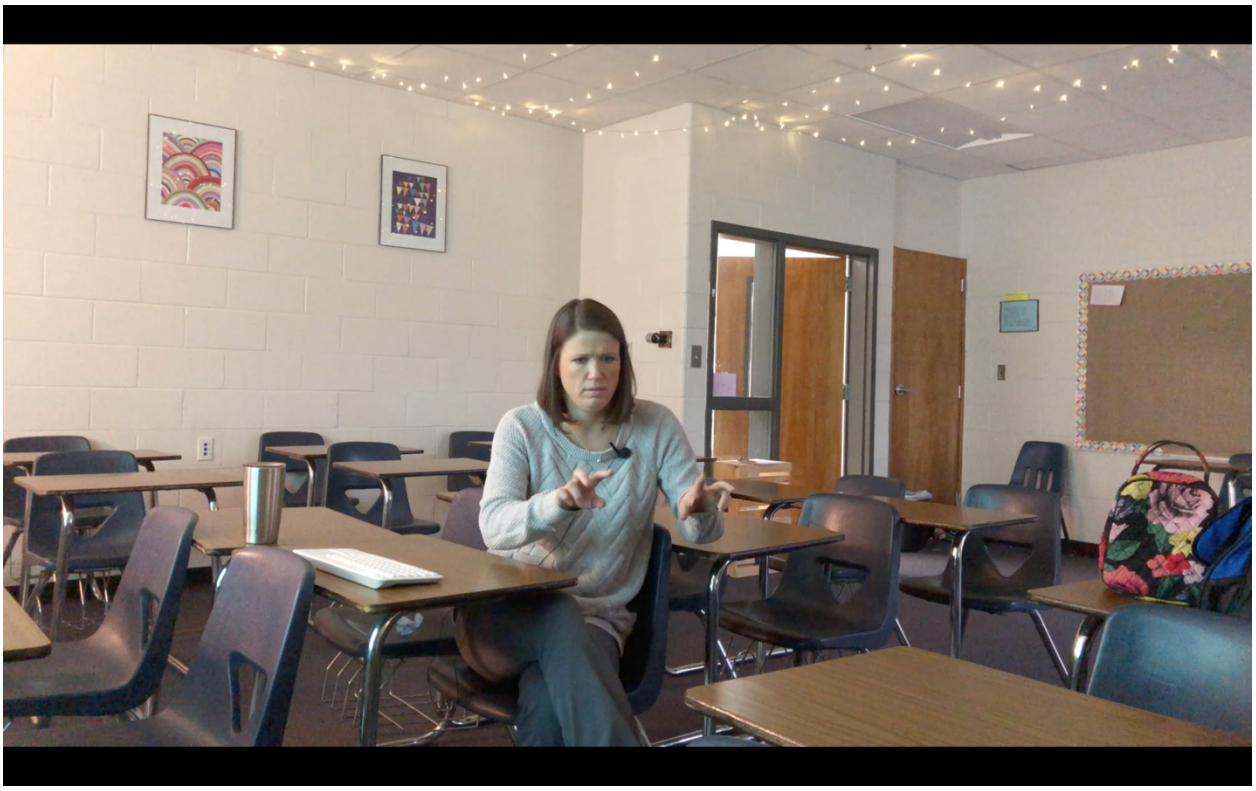

Figure 222. Mrs. Brouillard demonstrating her embodied protocol for fixing computer issues

The next step in her protocol is best characterized as improvisation. When the first two steps fail to solve the problem, Mrs. Brouillard said, “I just click around. That's kind of been my thing.” At first, I thought this was a rather cavalier approach to solving a students’ issue. Certainly, a technological novice might admit to just “clicking around” because they do not know any better. But it is important to remember that even a teacher who techs is not a computer scientist. An interest and a perceived value in technology is quite different from having an intimate understanding of how hardware and software work. But a bricolage ethic of tinkering is important for many technology enthusiasts, as that is one way to develop a sense of comfort with digital tools. So, when a teacher who techs “clicks around” they are not doing it aimlessly; that would be a fool’s errand. Instead, she uses her experience and understanding of the technology to explore and see if she can find a solution. Mrs. Brouillard did this knowing that “there's not a lot you can

do wrong, you know, you can't get yourself so far down a hole that you can't really dig yourself out with a Chromebook." In other words, she knew enough about the inner workings of a Chromebook to know that she was not going to break it simply by tinkering with it.

When all else fails, Mrs. Brouillard either sends the student to someone with more technical skill with Chromebooks or she lets the student look on with a partner. Too often this final step is overlooked when teachers who do *not* tech opt for less techie activities. For Mrs. Brouillard, resigning that she does not have all of the answers, but someone else might, is an acceptable concession. Even though she is understood as a teacher who techs, she knows that people like her media specialist might know more about possible problems and solutions than her. With regard to the student who was unable to get the Newsela content to load, Mrs. Brouillard later learned that there was an update for the Chromebooks that she was unaware of. The media specialist diagnosed the problem, but was unable to get the update completed on that day. So, the student came back and read with a partner on her computer. The technology did create some issues that took time, but she was able to complete the work in a timely manner with the rest of her class.

I saw similar struggles with technology in Ms. Ogden's class, but it was often less about hardware issues and more related to the process of using the timeline software. I watched as she helped many of her students as they struggled with their projects for technical reasons. At one point, I observed her sitting with one student for five minutes as she showed the student how to save an image in her Google Drive and upload it to her timeline. Most of Mrs. Ogden's students had Chromebooks for the past five years as part of the Griswold County 1:1 initiative, so saving images to their Drive should have been a

skill they possessed. Based on her experience, Mrs. Ogden had a theory that this had less to do with students' technical skills with the Chromebooks and more to do with the activity itself.

Upon reflecting on the extended technical support she provided this student, Mrs. Ogden said,

> I don't mind going around and helping students individually. Um, a lot of times it's not so much they don't know how to do it, but they just don't know how to like get started and so that's like the way of saying I can't do this because I can't figure it out, but really just don't know how to start or don't want to start. And so that's kind of like my easy, like, go to, *Well, here's how you had a picture. Let's start there*. You know what I mean? Like, *Here's how you add a plot point. Let's start there*. And I kind of helped them with their first one and then move on.

Mrs. Ogden suggested that in some instances, student procrastination is masked by a tech fail. Confusion around adding an image might more accurately be understood as an excuse to put off work *or* a subtle cry for help. It is worth acknowledging that during the times I observed Mrs. Ogden helping students, she never voiced this hypothesis with a student. In moments of frustration, it would be understandable for her voice her frustration saying, "do you really need my help or are you just procrastinating?" Instead, she assumed good intent from her students and, at the very least, played along with the appropriate script of the helpless student and the knowledgeable instructor.

While she never expressed frustration with students, Mrs. Ogden did talk about some of the difficulties that come along with perceived tech fails. As we watched footage

of her helping the student enter images into her timeline, Mrs. Ogden provided me with a glimpse into her mindset at the time:

> It's always frustrating. Uh, one, like I'll tell you exactly what was going through my mind: like, 1) this is not as easy as I wanted it to be. Um, and then 2) like I'm spending a lot of time with this one student and I need to be monitoring my room and like helping other students as well. And so I'm all of a sudden I'm spending like five to ten minutes with one student, you know, and I have 30 of them in a room. And so, um, that's like my initial thought process when that's happening.

So, while Mrs. Ogden was outwardly stoic while helping students overcome their tech fails, she seemed to suggest that subconsciously she felt a certain level of frustration. But it is important to note that her frustration was never directed toward the students. Too often teachers get upset when students do not already possess certain content knowledge and skills—often the competencies that the teachers are supposed to be teaching. When a techie lesson did not go as planned, Mrs. Ogden got upset that the tool was not as user-friendly as she had hoped and that it prevented her from monitoring and checking in with the rest of the class. She did not make excuses, nor did she lose control. In instances when software confusion led to tech fails, Mrs. Ogden moved with the rhythms of the class and provided them with the best support she was capable of.

Power

Mrs. Ogden expressed frustration with other types of tech fails as well. As discussed above, access to power was very important in Mrs. Ogden's classroom, as students who came to class without a charged device were often left unable to complete

their work for the day. In reflecting on past incidences related to “dead” Chromebooks, Mrs. Ogden said,

> It's just frustrating when like the computers aren't charged or they're dead. Um, and you're then having to like rearrange your instruction to like fit the needs of these, like, just these inconveniences. That's just what it is. Like pure inconveniences. I had one time, I think I had like four students that didn't have their computers or they were dead on like vocab quiz day and then I’m like trying to plug them in everywhere so I don't have to print, you know, paper copies and yeah, it can just be a mess sometimes. Like, you're constantly navigating, how do I do this activity when like five students have dead computers.

Mrs. Ogden seemed to understand that there was something almost trivial about her frustration when it comes to un-charged Chromebooks. To her, it is nothing more than “pure inconvenience.” But such inconveniences made it so that she had to scramble to find solutions to students’ problems so that they could do something as simple as take a vocabulary quiz. The tech fail associated with dead computers is one that falls squarely on the shoulders of the students who do not prepare accordingly to charge their devices the night before. But once students came to her classroom unprepared, it suddenly became her responsibility to find ways to get students the power they needed to complete their tasks.

Lack of power created issues for students on a few occasions during my time in Mrs. Ogden’s classroom. At one point, I observed as Mrs. Ogden worked with a student, Quincy, who had to sit at a separate table away from his book club during the timeline activity because his computer did not have enough battery life. The table by the wall

outlets allowed Quincy to continue working on his timeline while his computer charged. But his lack of power led to isolation during a time when he needed the help of his peers.

Power also created a tech fail for a student who tried to complete a video journal. Similar to her annotation activity, Mrs. Ogden used technology as a space for students to check in with regard to their independent reading books using a first-person video recording program called *Flipgrid*. This program allowed students to record themselves and share big ideas from their books, similar to little book talks. This seemed like a great way to update traditional independent reading practices, but it turned out to be far more complex for students.

During an independent work day, one student, Laura, asked Mrs. Ogden if she could go into the hallway in order to find a quiet place to record her video response on the book she was reading. In the middle of her response, I watched as the student paused and her face dropped as she declared, “My laptop died.” Again, the charge of the Chromebook played a role in Laura’s ability to complete her class assignment, as death by power shortage essentially prevented her from being able to complete her Flipgrid response.

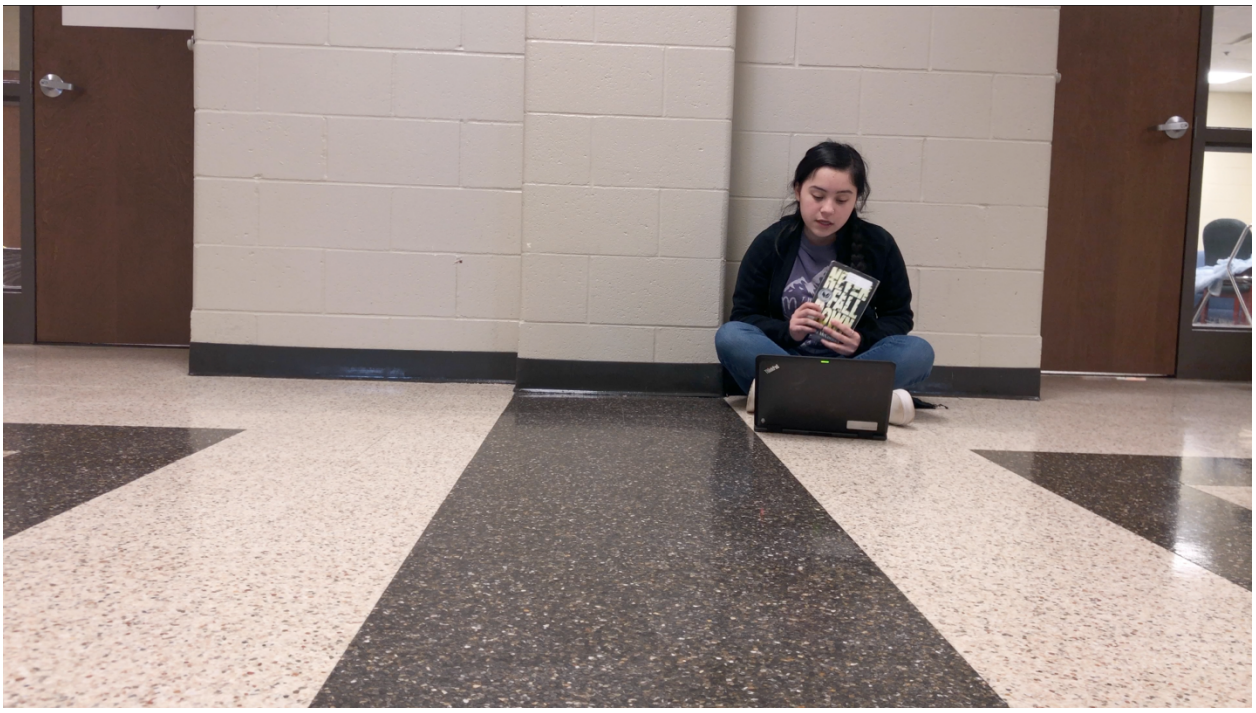

Figure 233. Laura recording her Flipgrid video before her laptop lost power

Both classrooms experienced moments when Chromebooks took what Latour (2013) refers to as detours. When a Chromebook fails to update properly or it runs out of battery in the middle of recording a video, it demonstrates the moment when devices turn from intermediators to mediators (Latour, 2005). This may be a failure in our ability to domesticate and tame our technology. It also helps illustrate the unique actants necessary to create a durable network. The technical matter that matters is not simply the device. Wi-Fi, Bluetooth, and power are not visible, but they play an important role in classroom networks. Tech failure is a powerful discourse that proves that these teachers who tech must be resilient in the face of potential issues. However, consideration of all actants that make up these powerful, yet potentially fragile networks are important in the digitally connected classroom.

Seeking Balance

In spite of how important technology seemed to be to these teachers, both as part of their identity and their pedagogies related to English, they recognized that not everything in their classroom must revolve around technology. Pedagogical decisions needed to be made as to when to use technologies like Chromebooks and cell phones, and when it is more appropriate to use more traditional classroom tools, like paper and pencil. In fact, they understood that there is such a thing as too much technology and that balance between digital and analog tools is critical.

Mrs. Ogden first expressed this idea of "balance" during our first interview, stating, "I felt like I was doing a lot of digital projects, but then I wasn't really reflecting on what they were learning from that…So I, I went from like, everything's digital to like, okay, we need to balance things out a little bit more." The idea of balancing the digital with the analog is important, particularly when discussing these teachers who tech. There is tendency to think that an educator who is identified as techie is going to always find a way to insert technology into a lesson. But both Mrs. Ogden and Mrs. Brouillard talked about a concern of tipping the scales between the digital and analog too far in one direction.

In a similar fashion, Mrs. Brouillard mentioned that she and the other language arts teachers were noticing that they needed to

> give [students] paper probably a little bit more than we are. We're, we're not get--I think we've, because we're just now 1:1. I think we've just kind of swung over and we're doing a lot with the Chromebooks, but we're kind of realizing we need to come back just a little bit, um, and maybe do a third on paper and two thirds

online or something to that effect.

Mrs. Brouillard seemed to ascribe the overuse of technology to the novelty of the Chromebooks during this first year of their 1:1 initiative. But as I will discuss in this section, technology by itself cannot be viewed as a panacea for an ailing educational system in the United States (Sancho-Gil, Rivera-Vargas, & Miño-Puigcercós, 2020). Perhaps the most important aspect of technology is the teacher's ability to make decisions about when and how to use technology for specific purposes in the English language arts classroom. More importantly with regard to a teacher who techs, their decision on when *not* to use technology is just as critical. Seeking balance is one part of both teachers' planning process that helps them ensure that their affinity toward technology does not obscure their judgement when it comes to crafting the most effective English lessons for their students.

Switching Gears

One idea that both Mrs. Brouillard and Mrs. Ogden discussed was the idea of "switching gears." Part of the issue with technology is that it has the potential to turn stale when overused. In schools this is particularly dangerous as more and more 1:1 devices are becoming tools for collecting data on student performance. As a result, young people are likely to develop negative associations with devices that are transitioning into tools for harvesting data and creating profiles for learning identities that do not tell the whole story of who they are as students. Neither teacher addressed the issue of testing during my interviews with them, instead choosing to focus on other concerns as it relates to the use of technology, both in their classrooms and those of their colleagues'. One

reason that both teachers were seeking balance was because they believed that students needed some diversity with regard to instruction and assessment.

During my observations of Mrs. Ogden's classrooms, I saw diverse approaches to the teaching of English language arts. While most of my time with her involved lessons that were tech-centric, she included moments when students were expected to keep their Chromebooks in their backpacks so that they could complete assignments with paper and pencil. One such moment came on the heels of their annotation activity when Mrs. Ogden asked students to write down how they connected bildungsroman themes to the Richard Wright excerpt they annotated together online. She could have asked students to respond in an online format, but instead she wanted them to write an exit ticket, giving students a sticky note and asking them to handwrite their response and post the sticky note as they left the classroom at the end of the period.

When I asked Mrs. Ogden about why she chose to use paper and pencil, she provided a cogent rationale that seemed to suggest that her decision making was based on very clear objectives for this formative assessment:

> I just like the idea of them doing something and then stick like it being an action. Like then like solidifying their ideas and putting it up publicly. Um, so, and they could make it public in a Google Doc too, but I don't know. I just, I like the contrast of them doing something digital, but then also like, okay, now we're switching gears. Like, this was all about the short story and now we're switching gears to--back to your book club. Let's do it in a different medium to make it--I don't know, to synthesize it, to solidify this idea, this transfer of knowledge.

Mrs. Ogden's idea of switching gears was not only based on how paper and pencil helped students synthesize knowledge differently, but it was also deeply encoded with embodied practices. Once students finished writing their exit tickets, I watched as some of the boys leaped as high as they could to see who could post their sticky notes at the highest point on the wall. Previous to this, students had been working silently on their annotation activity and, with the simple changing of mediums, the classroom erupted with ebullience through movement which provided an enthusiastic coda to an otherwise seemingly docile lesson.

I followed up with Mrs. Ogden and asked her why she did not just continue with technology by allowing students to post their thoughts online. She explained, "I used to do…exit tickets on a Google Form, but then I started to never look at them. And so this is like, boom on the wall. I look at it like as soon as they leave." So, although a viable digital option was available, Mrs. Ogden knew from previous experience that having students create their exit tickets in a Google Form made it difficult for her to review. Instead, she created a physical space that not only created opportunities for student transitions, but also gave her a quick and easy way to check student responses that was more amenable to her style of assessment.

The notion of "balance" was extended in the following class day as Mrs. Ogden took pictures of students' sticky notes and posted them on a Google Slide to show the rest of the class. When I asked her about this, Mrs. Ogden told me, "when I see good things, I take pictures of it and I highlight them later on." So, by taking the analog sticky notes and digitizing them with her cell phone and posting them using Google Slides, she was not so much balancing as *blending* modalities.

Similarly, Mrs. Brouillard expressed the importance of switching gears with students in her classroom. Although I never observed lessons where students worked on paper, she talked about what impact switching from Chromebooks to paper and pencil has had on students. She told me that class feels different when students

> get an actual sheet of paper that they're working with, which has been few and far between this year. But when we actually use it now, there's a, it's like, *Oh, we're on pa--like we're on paper.* This is something we need to, you know, it's, and they, they do really great work because it's not something they do every single day. You switch up enough. They, they realize, okay, I, you know, I have it, it's a new format, a new medium, and now I've got to adjust my thinking so that I can work in that medium or on that medium.

The ideas shared by Mrs. Brouillard were reminiscent of her rationale for flexible seating arrangements. She mentioned that, since moving to a 1:1 model, teachers at her school rarely used paper for instruction. So, by "switching up" the modalities, it forced students to think differently. Not only did this seem to be important as a way to catch students' attention, but I could not help but think about how it helped students think in both online and offline modalities. In both instances, the diversity of thought and approach to teaching demonstrated that, although teachers who tech could likely find a way to make everything digital, their willingness to switch gears helped prevent technological monotony.

It was evident that both of these teachers who tech understood that, just because students had access to digital tools, they did not need to use them for every activity. Literacy events in particular can be tactile experiences, as reading a paperback book or

writing using a pencil and paper changes the experience of both. Mrs. Ogden and Mrs. Brouillard were careful to choose the technology that made the most sense in helping their students meet the standards of their English courses. However, there were moments when we talked about the importance of using different technologies, both for themselves as teachers and for their students. In the next two sections I discuss how teachers who tech think like both a teacher and the students in their classroom in order to make purposeful decisions as to when and how to implement technology effectively.

Thinking Like a Teacher

I first noticed teachers switching gears for their own personal purposes during times when they would turn off the projector, pull up the screen, and write on the whiteboard. This seemed like a stunning action after observing how smoothly technology seemed to integrate into every facet of their classroom procedures. At one point, Mrs. Brouillard was circulating during a grammar and activity and suddenly directed students to give their attention to her as she provided some additional instruction on gerunds on the whiteboard. There was nothing particularly noteworthy about the instruction that was provided at that moment. However, it was almost jarring to see a teacher who techs using markers and a whiteboard to teach on the fly. While seemingly unremarkable, I thought that it might point to a weakness of technology and its inability to be adaptable for on-the-spot instruction. In talking to Mrs. Brouillard, she explained that she used her whiteboard for specific purposes, as it was a designated spot in her classroom that allowed her to work through ideas in a quick, extemporaneous manner:

> so my whiteboard is more of a process, you know, side of it, side of the board. So sometimes it's easier for me to pull the screen up and just write because I need to

> be able to get something down on, on the board quickly and it's something that they need immediately or it's like, *Oh my gosh, you guys are making this mistake, let's work through that*. And I need to handwrite it because handwriting, you know, is something that I think at the end of the day is something that we, we learn better through anyway.

There are two very significant points that Mrs. Brouillard made about the role of her whiteboard. First, it was a place for her to provide information immediately to help clarify student mistakes. Second, the whiteboard helped her, as the teacher, because the practice of handwriting allowed her work more methodically. So, the whiteboard was not only a tool that allowed for instantaneous instruction, but it was a tool for her own thought process. By slowing down, it seemed to provide Mrs. Brouillard with the time to think about how she could walk students through the thought process one step at a time.

Perhaps even more surprising, Mrs. Brouillard had a chalkboard in her classroom and still found it to be useful. However, her chalkboard served a different purpose than her whiteboard. Mrs. Brouillard explained,

> a lot of times I put things on my chalkboard that need to be up there for a long time because I don't like writing in chalk. So, if it's something that they need, like for instance, we're doing this bystander or scapegoat thing, like they need those definitions. They're going to be up there for two weeks, um, because they just need to have that there all the time.

Although both boards in her classroom involve handwriting, the experience of writing in chalk and marker signaled unique and different purposes for Mrs. Brouillard. Because she

did not enjoy writing in chalk, she only used her chalkboard when she was posting information that students needed for extended periods of time. There was a notion of permanence associated with her chalk notes. In spite of its archaic nature, Mrs. Brouillard refused to ignore the utility of her chalkboard. It was evident that all tools in her classroom had possibility when it came to her instruction and the way she thought through her instructional process.

Mrs. Ogden was also reflective of how technology has impacted her approach to literacy pedagogy. She considered digitizing her book club unit using Google Docs, believing it could be a great way to further update her reading practices while providing her with a different way to keep her groups organized:

> I will say that like as I was looking for resources on--to do my book clubs…when I'm looking for new resources and things, like I saw on Teachers pay Teachers, this like Google Drive, like holy grail of a packet to like make it all digital. So like they were tracking, they were doing all their roles that I had them doing on paper digitally. Um, and I'm always intrigued by it because I always think like how nice that must be to not have to have folders and papers everywhere. But I'm always like just worried that it will take away from the discussion if they have to have their computers up. And so every year I'm always like, *Ooh, I should get that* or make my own. Like, I'm pretty like good at making documents and I am pretty sure I'd know like I could do it. It's just like always worried about how that will take away from my discussions.

Mrs. Ogden's decision to keep her book clubs in the analog realm is an interesting one. She addressed the fact that, by going digital, she would alleviate a lot of the stress of

assigning roles and organizing discussions in book clubs by facilitating her book clubs through Google Docs. She mentioned that it was not the financial burden of having to pay for the content on the Teachers Pay Teachers website that prevented her from updating her book clubs; she was confident that she could just as easily create the content herself. But it was the concern over what such a shift would do to student discussions. Mrs. Ogden recognized that her analog, more traditional way of doing book clubs might be the most effective way to help students learn how to have an academic discourse with one another. Certainly, this unit could have been done digitally, but with possible implications on the quality of the conversations that students would have if she were to make the change. So, rather than deciding to take the path that might make her job easier, she opted to keep using paper for her book clubs because she believed that it would facilitate student discussions in the most meaningful and effective manner.

Mrs. Brouillard and Mrs. Ogden demonstrated that technology, while central to their teaching practices, did not force them to plan lessons that privileged digital tools. Thinking like a teacher required that they remain open minded about how they could incorporate both digital and analog tools into their lessons depending on specific instructional goals and objectives. Supplementing direct instruction on grammar or highlighting good annotation practices on a projector can be beneficial in providing visuals that help students better understand English language arts content. But that is not always the case. The sign of a good teacher who techs is that they understand that analog, low tech tools still have a place in modern learning ecologies.

Thinking Like a Student

Both teachers discussed the purposeful ways they think through their decision-making process as it relates to when to deploy technology and when it should be put away. Similar to Mrs. Brouillard's notion of process as it related to her use of the whiteboard, Mrs. Ogden found that the paper in material journals afforded students certain opportunities that get lost in digital realms. She told me,

> I love journals being on paper. Like, I just think, I don't know, there's something about like being able to flip through your work and kind of like looking through it, you know, and like, I don't know, having something that you see and you scratch things out and you know, like there's mess ups there and you can't just backspace, backspace, backspace. Like, your ideas are there. They're permanent. You could erase, but you know, like it's kind of messy and kind of not all at the same time. I don't know. I like journals on paper.

I was struck by Mrs. Ogden's ability to talk about the materiality involved with the writing process. There is something almost affective about her description of the flipping of papers and the permanence of "mess ups" and ideas. What she describes is ethereal in nature, but quite practical when considering why she insists on paper journals. Being able to quickly thumb through old entries provides students with opportunities for seeing their work over time. Seeing your ideas in your handwriting is different from seeing it presented in a standardized Times New Roman, size twelve font. As such, the process for creating those ideas cannot be the same either.

Mrs. Ogden went on to explain,

> One year I did try to do digital journaling and I felt like I couldn't monitor it as well. Um, because they could jump between sites. So now they know that like journal time is like definitely like no phone's out, (even though of course some are still on phones). But you close, your computer. Computer is closed. Computer is not up during journal time. So, I don’t know, I like that too.

Again, what Mrs. Ogden described is something processual related to journaling. She explained that, in addition to believing that paper journals were better for writing, it also made it easier from a classroom management standpoint. During my observations, I could not help but feel as if there was something ritualistic about journal time. Students started every day writing in their journals, which provided a structure and set the tone for the rest of the class. This allowed students to calmly gather their thoughts in anticipation for discussing an important topic for the day. But by insisting that phones and computers be put away, it also sent a message to students that, if they are going to focus on their writing, then they cannot be tempted by their phones. Journal time is a moment in class where students were expected to spend intimate time with their thoughts and their journals.

Although she did mandate that certain activities, like journaling, should be completed without technology, there were other times where Mrs. Ogden created lessons that gave students the option to work in the medium that best fits their interests, talents, and learning styles. Mrs. Ogden said,

> I've gotten more now where I give them options. So, if we're doing something

> with like they have to create a character map. I let the, I have a digital option for them, but also like I have a drawing option because a lot of students would prefer to draw than work digitally. So, I feel like now I give a lot more options. With the commercial that we did their option was to either create a commercial or to write a speech. And so both of them were hitting on persuasion tactics, which is what I was teaching. And so there was kind of like a digital option for those that wanted to swing that way. And then there was a written option for students that wanted to write.

Providing students with choice is something that has been important in English classrooms for quite some time (Ivey & Broaddus, 2001; Moley, Bandré, & George, 2011; Morgan & Wagner, 2013). But too often teachers insist that students create products in such a way that often does not allow for creativity and personal inquiry. In the example above, Mrs. Ogden was careful to mention that she never loses sight of her big objectives and finding ways to allow flexibility in measuring whether students are able to demonstrate mastery over content knowledge (persuasion) or their ability to create a product (commercial or a speech).

Mrs. Brouillard shared a similar sentiment when talking about balancing reading paperback books and online texts:

> Some people love reading online, some people don't. Um, I try to vary it so I don’t—we don't all read online. Like, I would not want to do all e-book, you know, reading during the school year. I think the kids get enough screen time, but um, you know, tracking—your eyes, tracking on a piece of paper that's not backlit is different than your eyes tracking on a backlit screen.

Similar to Mrs. Ogden's approach to varied types of assessments, Mrs. Brouillard understood that the experience of reading is different for students when they read a physical book versus an e-book. This idea of choice was expressed through her knowledge that reading in different mediums is a matter of preference. But she also demonstrated a basic understanding of the cognitive science of literacy on screens as well as the broader social debates over acceptable limits on screen time. Balance was important for Mrs. Brouillard because, although she could assign all readings to be completed online, she knew that would be disregarding the varied mediums in which people read today.

Helping students create a workflow was also important to Mrs. Ogden. In seeking greater balance between the digital and analog she told me,

> These last few years that I've been teaching, I've cut back a little bit to balance things a little bit more. Um, so like if they are reading something on their computer, I want their work to be on paper, but if they're doing something on the computer, I try to have like something they're reading on paper so that it's not like they're--have like three bazillion tabs up. Like, you should see their tabs when they come into class. It's like, they've got every tab open from all their classes. And so I'm just trying to keep the switching from pages as minimal as possible.

It is important that, in talking about balance, the notion of using both digital and analog tools alongside one another does not get lost. Up to this point, most of the discussion has centered around a bifurcation of activities that either involve a computer or paper and pencil. But Mrs. Ogden used both types of tools side-by-side as a way to make it easier

for students to balance their work by not forcing them to constantly switch between multiple windows and tabs on their Chromebooks.

Mrs. Ogden went on to say,

> Just I feel like I can read the students really well and I kind of think like a student. And if I was doing something like digitally, I would want an easy like, *Oh, I'm reading and highlighting here [in a book] and typing right here*, like going back and forth. Um, it's just easier for my brain to manage that. Or if I'm reading right here, I would like to write down stuff in my little graphic organizer right here in my journal. Um, that way it's, I don't know, the processing is a little bit easier.

Again, she discussed the workflow process and how to she helped ease the cognitive load that students could face by providing them with a way to organize their work spaces using both paper and computers. Mrs. Ogden made a powerful statement when she said that she believed she could "think like a student." This is critically important because it not only shows how she made purposeful decisions with regard to when and how to deploy technology in her classroom, but by imagining the workflow that she would need to be successful in her own class, Mrs. Ogden was reflective and cognizant of how she could impart her own digital wisdom onto her students.

Overall, these teachers who tech were attentive to their students' needs when it came to technology. Throughout both their interviews, they not only talked about balancing technology with other modes of learning by thinking about the needs of their students, but they then planned and executed their lessons in such a way that honored the myriad ways of approaching English language arts content.

Old School

I want to conclude this chapter by discussing the importance of the non-digital. I spent significant time observing and speaking with Mrs. Brouillard and Mrs. Ogden in the hopes of learning precisely what role technology plays in their personal lives and in their classrooms. I believe the answer is that digital tools have had an extraordinary impact on who they are, both at home and at school. But the point that they continued to reiterate is that technology can only have meaning if used effectively and with temperance. For teachers who tech, that means that they not only demonstrate restraint when it comes to deploying the tools they cherish, but it also requires that they remain acutely aware of what other technologies are at their disposal.

Toward the end of my final interview with Mrs. Brouillard she delivered a soliloquy that helped me better understand how the diverse tools in her classroom impacted her instruction when I suggested that using non-digital tools in the classroom was an "old school" approach to teaching:

> So, you say go back old school. It's really not all school, it's just, it is, it's school. Go back to what you did, you know, go back to a different way of doing it and you're going to get a different, maybe, maybe a little bit of a different outcome. Um, but it's neat to have all the choices now. You know, before you had to give a sheet of paper and it was almost like sometimes you felt like it was just this redundant—you got bored with it. Because we got into that mindset of, you know, worksheets, worksheets are bad worksheets or bad, well yeah, well we only have paper and you're, that's the only thing that you can give them. You're going to overdo it. Well, Chromebooks too. If the Chromebooks, the only thing you're

> working with every single day, it's going to—you got to switch it up. You know, we're, we're creatures of habit, but at the same time we like, you know, flare and fun and different…but it all has its place. It's all technology. A piece of paper and a pencil is just as much technology as a Chromebook.

Both teachers spoke with eloquence and clarity when discussing their affinity toward technology, no matter how they defined it. But in her comments above, Mrs. Brouillard makes clear that a teacher who techs has a broad definition of what technology is. In using a whiteboard, chalkboard, paper and pencil, both teachers demonstrated that they were chameleons in the English language arts classroom—adaptable and amenable to using all technologies at their disposal.

Abraham Maslow (1966/2002) famously stated, "I suppose it is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail" (p. 15). Through my time in both classrooms, it is clear that Mrs. Brouillard and Mrs. Ogden's tool belts were teeming with apps and websites that many of their colleagues had never used. But to reduce them to a teacher who only uses digital technology would be a mistake. Their sensibility toward innovation makes them leaders of progressive pedagogies in their schools. But a true teacher who techs adopts a unique perspective that sees a variety of tools as technologies that possess potential for teaching and learning.

The idea of seeking balance is important, as it points to how teachers who tech take advantage of all matter they have at their disposal in order to take a more "bi-literate" approach (Wolf, 2018). The networks in these classrooms are made stronger by virtue of these teacher's ability to move between the analog and the digital. They also

send an important message that, while technology is a powerful learning tool, it is not the only one they have.

Final Thoughts on Tetheredness

Mrs. Brouillard used the word "untethered" to describe her ability to move about her classroom freely with her wireless keyboard without the concern of being tangled in cables connected to her desktop computer. Chromebooks are mobile devices that are, in essence, able to be "untethered" in the same way as Mrs. Brouillard's keyboard or Mrs. Ogden's mouse. But Bluetooth capabilities still tether devices to one another with certain limitations (e.g. radial distance, software, power, etc.). In Quincy's case, his need to tether to a wall outlet connected him to power while *disconnecting* him from his book club. For Laura, she was using Flipgrid, which should have allowed her to tether her ideas to those of her peers who were reading other books. But her inability to find a quiet space in the classroom forced her to go "untethered" into the hallway. As a result of her inability to properly power up, her device died in the middle of her book talk and she could not complete her assignment.

Both moments helped me realize that tetheredness is a two-way street. It creates opportunities for student-to-student and student-to-teacher connections via wireless tools. But the need to stay physically tethered is a limiting constraint that impacts the way students are able to fully take advantage of their mobile devices in classrooms and at home. This concept of the Paradox of Tetheredness is meant to theorize the ways in which technologies can be powerful nodal points that we have come to expect in a digital existence. In thinking about students wearing Bluetooth headphones, they likely think very little of the wireless capability of listening to music, audiobooks, or podcasts—

disentangled and seemingly separate from their devices. But anyone who has ever walked out of range with a pair of Bluetooth headphones knows, at some point, the music starts to slowly breakup before going silent. To borrow Mrs. Brouillard's words, we often feel "beholden" to certain technologies because they are woven so deeply into the fabric of our day-to-day experience. If Bluetooth seems to untether headphones from cell phones, then social media is perhaps the most obvious example of a tool that tethers. For many, it is the medium by which we stay in touch with family and friends. But it also makes it so that we feel absorbed in other's lives without actually making any personal contact. We might begin to ask ourselves just how connected we truly are with others if keeping in touch no longer requires communication.

The point of this discussion is not to challenge the utility of technology at home and at school. But the tools described in this chapter are often so closely related to the natural rhythms of our daily lives. Too often we fail to consider just how mobile many of our devices actually are. In 1:1 schools like those in this study, students are expected to be able to take their Chromebooks with them between home and school, creating an increased need for devices that can move about freely. At face value, personal devices like Chromebooks are becoming more and more "untethered" by relying on things like Wi-Fi and Bluetooth as modes of connecting. But they are also expected to be able to "tether" the school experience to the home life. In understanding the paradox associated with dis/connected devices, teachers might develop a different orientation toward technology, one that attends to the assumptions of the potentialities of digital tools in classrooms.

CHAPTER 6

IMPLICATIONS FOR PRACTICE AND FUTURE RESEARCH

The observations and interviews conducted in Mrs. Ogden and Mrs. Brouillard's classrooms provided a starting point for thinking about how to conceptualize what it means to be a teacher who "techs." While their teaching contexts and approaches to the English curriculum were different in many ways, they seemed to share several characteristics and experiences which helped them develop unique pedagogies and practices when it came to teaching with technology. Furthermore, such experiences seemed to help them curate identities that coalesced around their melding of literacies and technology. In this chapter, I provide a list of shared pedagogies, practices, and qualities that were consistent between Mrs. Ogden and Mrs. Brouillard as a way of attempting better understand how their identities as teachers who tech were produced, what they believed/valued, and how their teaching philosophies and literacies impacted teaching practice.

Summary of Teachers Who Tech

The concept of the teacher who "techs" can be a useful in thinking about the role that technology plays in producing teaching identities for English teachers who not only possess technology competencies, but are capable of leveraging digital tools in order to craft curriculums that honor the literacies that students bring to classrooms. Below is a list of the pedagogies and practices that Mrs. Brouillard and Mrs. Ogden shared:

1. Transcending analog tasks.

2. Student-centeredness.
3. Workflow.
4. Personal technology use led to discovery.
5. Created identities for intended audience and to lever a network.
6. Purposeful meaning-making choices around classroom space and mobility.
7. Responsive classroom technology policies and attention literacy.
8. Anticipation of failure.
9. Balance.
10. Collaborative production (not consumption) of knowledge.
11. Rebellion.

This list is not meant to be reductive of these teachers and their experiences in the classroom. It is, however, a starting point for thinking about some characteristics both teachers possessed while also considering what types of support and experiences they were afforded as they began curating their techie identities. Below is a summary and synthesis of the practices and pedagogies discussed throughout this study in an attempt to elaborate on the ways they informed Mrs. Brouillard and Mrs. Ogden's teaching.

Transcending Analog Tasks

During the days I conducted my observations in their respective classrooms, Mrs. Ogden and Mrs. Brouillard demonstrated how digital tools could be leveraged to engage students in tasks that did not simply move traditionally analog English tasks onto their devices. For example, while Mrs. Ogden could have printed copies of "The Man Who was Almost a Man" and asked students to annotate the text in the margins, she would have lost the social aspect that was at the heart of her lesson. While the objective of both

activities would have centered around the practice of annotation, the ability to learn from peers within the digital margins would have been absent, preventing them from being able to crowdsource their thinking around the text. Similarly, Mrs. Brouillard's *Most Dangerous Writing App* activity was meant to help students with their quickwriting in a novel way. The technology facilitated the quickwrite with the added possibility of students losing their work if they stopped typing, which served as an incentive to keep their ideas flowing and continue writing. As previously mentioned, quickwrites are not new; teachers have been using them to help students brainstorm writing ideas for decades. Traditionally, teachers who use quickwrites often ask students to complete them in a writer's notebook. Certainly, Mrs. Brouillard could have had students complete them in notebooks or even a Google Doc and they would have been equally effective. However, neither tool could add the incentive to keep writing based on the chance of losing their ideas in the same way *The Most Dangerous Writing App* was capable of doing.

Student-Centeredness

Student-centeredness was at the heart of both Mrs. Ogden and Mrs. Brouillard's teaching practice and pedagogy as they worked hard to seek out ways to allow for student voice by providing them with choice through creative project-based learning. Both teachers used technology in ways that highlighted the potential that technology possesses by providing opportunities for students to collaborate using their peer networks. As students worked, they were never confined by the tools they used. Even in cases where students were being asked to create a timeline in Mrs. Ogden's class, they had a choice of tools that they believed would be most useful in completing the assignment. Providing

such opportunities requires trust from students to make personal decisions that will work for them. It is less top-down and prescriptive and leaves room for possible errors in judgement, as students might make the wrong compositional decisions. But throughout my time in both classrooms, centering learning around students by tailoring it to their needs and interests allowed them to demonstrate their knowledge through engaging, creative projects.

This type of student-centeredness often came about during times when both teachers took advantage of the wisdom of the class as a whole, asking students to be as much a part of the teaching process as they were the learning process. In that regard, new literacies practices were at the heart of both classrooms. Again, invoking Lankshear and Knobel (2011), the "ethos stuff" of digital tool-use involves more participatory, collaborative, and distributed work. Mrs. Ogden's annotation activity provided an exemplary instance of pedagogy that asks students to leverage technology in order to read socially in the margins as a way of allowing students to crowdsource meaning-making of a text. Mrs. Ogden was a decentralized participant who, while posing questions, did not attempt to provide "correct" answers about how to interpret a text. Instead, students were put in charge of developing insights alongside their peers in a digital realm.

Lankshear and Knobel (2011) also explained that "ethos stuff" is less published, individuated, and author-centric than "conventional literacies" (p. 29). In this case, one could argue that Mrs. Brouillard's NaNoWriMo activity or Mrs. Ogden's timeline activity would not be considered a new literacies activity because of how individuated they were. However, both teachers allowed students to collaborate in analog spaces and then apply feedback and support from their peers to their work online. Mrs. Ogden used

the face-to-face classroom space to help students develop ideas for their timelines based on the novels they were reading together in their book clubs. Students then turned to their chosen timeline software, synthesizing what they had discussed with their peers into a visually appealing product that summarized the coming of age experience of the protagonists in their books.

For Mrs. Brouillard's students, they used class time to annotate *Warriors Don't Cry* in groups and then applied what they learned from Beal's writing craft to the novels they were producing in the NaNoWriMo platform. Mrs. Brouillard had students write their own novels, but she deployed technology in ways that assisted students in doing the literacies practices that professional authors might engage in. Studying mentor texts, like *Warriors Don't Cry*, or engaging in quickwrites that challenged their inner critics using technology helped students begin thinking about their author-selves. After all, authors are people who write. By the end of her unit, all students completed a novel, making them novelists.

Whereas the "ethos stuff" is meant to be less published, individuated, and author-centric, the activities that both teachers crafted allowed for collaborative peer engagement that informed their individual work. In the case of both teachers, their experiences in online spaces seemed to have an impact on the ways they approached reading and writing pedagogy. Neither teacher seemed to be using technology in class simply for the sake of using it. The technology in their lessons had a purpose and, even when the work produced was more individuated, it was used in a way that was meant to give students the chance to share their work with their peers. In that regard, these teachers who tech seem

to understand how they benefitted from online collaborations through social media and looked for ways to create similar opportunities for students in their classrooms.

Workflow

One consideration that seemed salient for both teachers was that, while technology was important, they did not believe that Chromebooks could supplant other more "conventional" materials in their English classrooms. Although there may be times when we feel as if we are being inundated with new technology on a daily basis, we remain surrounded by analog matter as well. We receive mail in our mailbox, handwritten signatures on paper still serve as a seal on legally binding documents, and reading on a paperback book is different from reading on a screen (Singer & Alexander, 2017). These teachers who tech seemed to recognize that moving all learning online would prevent students from learning how to integrate analog material into their lives. Providing opportunities to work with both analog and digital tools at the same time provided students with a chance to develop a workflow that helped them better understand how different materials and modes can work hand-in-glove to help students work productively and efficiently while remaining organized.

In Mrs. Brouillard's class, students worked with paperback copies of *Warriors Don't Cry* while annotating and identifying shifts in mood as they read. Similarly, Mrs. Ogden worked hard to help students develop a workflow that included both digital and analog materials. As students searched for important moments in their paperback book club books, they would take notes in their paper journals, and then transpose what they wrote into their timelines. She did this purposefully, believing that it would help students organize themselves across different modes, rather than having to toggle between

multiple windows on their Chromebooks. In both cases, analog material was not an afterthought in the techie classroom. It was part of a learning network that worked in tandem with, not against, technological pedagogy.

Personal Technology Use Led to Discovery

Both of the teachers who tech in this study had a social media presence which seemed to have an impact on their pedagogy. For Mrs. Ogden, Instagram was her social media platform of choice. She used her teachergram account in order to follow other teachers and find inspiration for her teaching. However, more than her pedagogy, she found herself often inspired by other teachers who had been able to determine a strong audience and share student work in an effective way. Mrs. Ogden originally hoped that Instagram would be a useful tool for communicating with students by sharing due dates and other important information about her English classroom, but when confronted with the possibility of students requesting to follow her with the expectation of her following them back, she began feeling uncomfortable with the thought of engaging with her students on social media. So, she made the conscious decision to shift the tone of her account to sharing student work.

Mrs. Ogden's most active followers and commenters were community members and teachers within her school district. In that regard, she had a rather localized concept of what social media could do for a teacher. This is not a negative interpretation of her use of social media—just because networks can give users a global reach does not mean that is the most effective way to engage with an audience. She seemed most encouraged by the attention her account received when teachers would comment on how much they enjoyed seeing their former students doing inspiring schoolwork in her English class.

Since the data collection process for this study concluded, I observed Mrs. Ogden producing more and more content on her teachergram account, showing students creating memes for their interpretation of Shakespeare's Othello, oral history podcast activities, as well as sharing reviews of young adult novels that her students might likely enjoy. As she used her account more to highlight the ways she is capitalizing on her students' cultural competencies and digital skills, Mrs. Ogden demonstrated the ways in which her participation in networks like Instagram help her stay connected to the new literacies practices of her students. Examples like this seem to point to a clear connection between Mrs. Ogden's new literacies practices and the way they inform her ability to make learning culturally relevant for her students.

Mrs. Brouillard's social media tool of choice was Twitter. Her willingness to facilitate Twitter chats related to educational technology helped demonstrate how her digital footprint was different from Mrs. Ogden's. Mrs. Brouillard was proud of her presence in her online network and believed that she has a strong "hive" that she could turn to when she needed help thinking of new ways to approach teaching skills in her English language arts classroom. In that way, her pedagogy was directly impacted by her activity on Twitter.

When it came to crafting lessons based on suggestions she received online, Mrs. Brouillard explained that she often goes through a process. First, she took the idea and tried it out in her classroom. Next, she identified any issues that she faced, and then brought the idea to her collaborative 8th grade ELA teaching team at Belville Middle. For Mrs. Brouillard, she recognized that she could be the conduit between Twitter and her face-to-face colleagues. Both had something to offer, as her Twitter network could not

have the contextual background necessary to understand Mrs. Brouillard's students and her teaching team, though open-minded, was less techie and rarely approached the teaching of English with technology in mind. Both her online and offline collaborators help inform her pedagogy in meaningful ways.

In comparing both teachers, it is important to note how Mrs. Brouillard and Mrs. Ogden created spaces online for their personal lives that are different from their professional accounts. Mrs. Brouillard made the decision that Facebook was where she would post personal content related to her family, whereas Mrs. Ogden made the conscious decision to choose one platform—Instagram—but create two separate accounts. From a new literacies approach, these teachers that tech seemed to realize that the literacies involved in being a mother, sister, daughter, or friend are different from that of a teacher. As Lankshear and Knobel (2007) state, "because there are multiple ways of being in the world, then we can say that there are multiple L/literacies" (p. 219). The manifold identities that the participants possess made it so that their online lives were best bifurcated so to not mix their teaching experiences with their personal experiences. Their different accounts were deictic (Coiro et al., 2008) and this recognition of context allowed them to engage differently in online spaces.

Created Identities for Intended Audience and to Lever a Network

These teachers who tech demonstrated the ways in which technology use at home and school is porous. Both Mrs. Brouillard and Mrs. Ogden talked about how their personal use of social media informed their teaching and, alternatively, how their teaching informed the content they posted online. Their class activities also illustrated how important technology was to their English pedagogy. The lessons observed were

techno-centric without disregarding the purposeful ways in which the digital tools helped deepen learning opportunities meant to assist students in working toward mastery of disciplinary English skills.

These new literacies practices played an important role in helping these teachers develop their identities. For example, both had profile information which provided a pithy description of who they were as educators. They adopted certain Discourses as part of their identity kits (Gee, 1990), as their profiles not only provided information to potential followers, but they reinforced their values on a personal level. Mrs. Brouillard's networks help demonstrate that there are different literacies with her online Twitter collaborators and her face-to-face colleagues. While her engagement was different with each, her engagement across networks illustrate the sieve between in-school and out-of-school contexts (Alvermann & Moore, 2011). Mrs. Brouillard and Mrs. Ogden's digital footprints, while very different, showed how teachers who tech may be able to develop strong teaching identities in both analog and digital realms, both of which inform pedagogy.

Purposeful Meaning-Making Choices Around Classroom Space and Mobility

Space seemed to be an important consideration for both of the teachers who tech in this study, as they had to create an environment that would be capable of accommodating the digital tools in their classrooms. There were a few features that set Mrs. Brouillard apart from the other classrooms on her hallway. The most noticeable difference was that she kept her overhead lights off, choosing instead to rely on strand lights strung across the ceiling panels and lowlight lamps positioned throughout the room. She did this because florescent lights bothered her and she had assumed that they

likely impacted students in a similar way as well. Mrs. Ogden also had strand lights hung on the perimeter of her classroom, but she rarely turned off her overhead florescent lights unless students were watching a video being projected at the front of the class. However, I also observed a day when the lights were out as students engaged in silent reading. While neither teacher drew a strong connection between their approach with low lights as a way to accommodate technology (with exception to the rare case of watching videos in Mrs. Ogden's class), it makes sense that screens are more easily seen when lights are out. Mrs. Brouillard's students in particular believed that her low-lit environment is what made her classroom unique. So, while the technology may not have been a primary consideration, it seems as though both teachers were mindful of how they could curate an atmosphere that would be ideal for helping students focus.

Desks were important actants in both classrooms as well. Mrs. Brouillard believed in the value of collaborative activities, so she set up her classroom in rows and columns so that all students sat next to a partner. All desks faced one centralized place: the projector screen. Even though she subscribed to a more de-centralized and project-based approach to learning, there were still times when Mrs. Brouillard needed students to give her all of their attention by focusing on the instruction-based technology in the front of the room. There were several instances during my classroom observations when Mrs. Brouillard would allow students to get out of their seats and find a space other than their assigned seats to work with partners on their Chromebooks. Students often chose to lay on the floor and sprawl out. Mobile devices allowed for this opportunity because students were not limited to parts of the classroom where power or internet were limited. So, arranging desks to allow for students to get comfortable with their technology was an

important consideration for Mrs. Brouillard, as she placed a premium on comfort and flexibility with her learning space.

Mrs. Ogden shared Mrs. Brouillard's philosophy when it came to using space as a way of facilitating the types of interactions she wanted out of students. Because students were engaging in book clubs during my observations, she arranged her seats in clusters of 4-5 desks. This allowed students to hold book club discussions and then easily transition into their timeline projects. Mrs. Ogden's main consideration when it came to her classroom space had more to do with her concern over access to power. She had experienced too many struggles with students coming to her class without a charged device and not being able to participate in the day's activities. So, she had to set up tables around the room where students could go if they needed to plug in their Chromebooks. As discussed, these tables afforded students, like Quincy, the ability to complete their work, but at the cost of moving them away from their book clubs. So, in cases like this, Chromebook batteries and electrical outlets became critical actants that allowed students to complete their work in the techie classroom, but often at the cost of isolating students from networks of peers.

Classroom space was also important for the mobility of these teachers who tech. Both had technology that was more instructional in nature, including a personal computer, projector, and wireless keyboard and mouse. Mrs. Brouillard used her wireless keyboard during whole class lectures as a way of toggling between Google Slides. She believed her keyboard was important because it allowed her to teach from the front of the classroom, because she would otherwise be forced to sit at her desktop computer to progress the slides. In this case, the Bluetooth connection between her keyboard allowed

for greater mobility, which impacted her ability to engage students during lectures. Mrs. Ogden also relied heavily on Bluetooth, but the instructional tool she used most often was her mouse. Again, this mouse was tethered to her teacher Chromebook which projected onto the SmartBoard at the front of the classroom. However, in addition to using her mouse during lectures, she would often take it with her during independent work time, in case she needed to refer back to a slide or another document as she was answering student questions. Again, the mobility that Bluetooth technology afforded Mrs. Ogden allowed her to stay tethered to her technology while still giving her the flexibility to move about the classroom and check in with students during independent work times.

Personal technology was a critical actant as well, specifically in Mrs. Ogden's classroom. Headphones served a dual purpose depending on how they were being used. Many students used Bluetooth headphones during independent work time, ostensibly to listen to music as they read and worked on their timelines. Music changed the learning experience for students, providing them with a unique context for learning and impacting the "classroom-ness" (Burnett, 2013) of Mrs. Ogden's room. Music provided a soundtrack for any given moment that stimulated the aural experience of students. Sensorially, students who listened to music were experiencing the classroom space differently from their peers who were not wearing headphones. Some students who wore wired headphones chose to share one earbud with a person seated next to them. In such cases, students were able to have a shared sensorial experience that literally allowed them to connect with a peer. So, like those students who listened individually, their classroom-ness was unique, but they shared another space that was mediated by actants like

headphones and music that became part of a larger network of the classroom as well as the assignment they were working on.

Responsive Classroom Technology Policies and Attention Literacy

School and classroom policies were other forms of discourses which had an impact on pedagogy. More than simple guidelines, school rules with technology dictated the way teachers approached the use of digital tools provided by the district as well as personal devices. Belville Middle School adopted a policy that personal devices were no longer necessary since students were given Chromebooks. However, Mrs. Brouillard believed that students could use a cell phone if there was a need for it. Mrs. Ogden was frustrated by the lack of consistency with a school policy regarding technology. But it gave her greater freedom to create her own classroom rules. Rather than adopting a strict classroom policy that insisted on students keeping their phones out of sight, she chose to encourage students to put their devices away and helped them understand how it was distracting them from completing their work. She was given the option to adopt her own discourse and she chose digital wisdom (Prensky, 2012). This seemed consistent with what one might imagine from a teacher who techs. More than simple tolerance, she took opportunities to teach students about the importance of attention literacy.

Mrs. Ogden also demonstrated a willingness to allow students to establish discourses in the classroom. During our interview, it was apparent that she had not thought much about the fact that many of her students would keep one ear bud out when she was addressing the entire class. She had mentioned that she had heard another teacher use the “one ear bud out” policy, but that she had not really considered it much. From an etic perspective, it appeared to me as a way for students to send a message that they were

"with her" and paying attention. Since this was a classroom rule established by Mrs. Ogden, it struck me as a courtesy or new social norm that students adopted on their own—an unspoken compromise between teacher and student.

Mrs. Ogden's willingness to allow students to struggle with their devices, particularly when they distracted them from completing their work, was an instructional move that might be regarded as helping them develop attention literacy—the awareness to identify appropriate times to use technology and recognize when it is serving as a distraction. Restrictive policies that mandate students put their phones away or in a centralized place in the classroom where they could not easily check them may have prevented classroom distractions. However, they would not allow students to develop the skills necessary to recognize when their personal devices were preventing them from thriving at any given time. Mrs. Ogden's willingness to allow students to keep their devices in their possession often left her asking students to put their phones away throughout any given class period. But it also provided her with multiple teachable moments to help students better understand the impact that technology was having on their academic performance. More importantly, it gave them an opportunity to sharpen their attention literacy through her mentorship.

Anticipation of Failure

Failure is another discourse that appeared in both classrooms as teachers who tech addressed the inevitability of failure when working with technology. It appeared during Mrs. Brouillard's class when a software update prevented a student from completing her online reading activity. Mrs. Ogden's students experienced it when their Chromebooks ran out of battery. Mrs. Ogden also felt frustrated when students could not seem to

understand how to use the technology to create their timelines. However, rather than preventing them from using technology, both teachers understood it, not as a consequence, but a mild side effect of using digital tools. For Mrs. Brouillard and Mrs. Ogden, technology failure was an expectation, but they had protocols, and sometimes embodied practices to solve problems. They possessed a willingness to work with technology, understanding that things may not go as planned. Discourses around the unpredictable and unreliable nature of technology may prevent other teachers from using technology. But for these teachers who tech, their experience with past failure seemed to provide them with the efficacy they needed to know that they could overcome future challenges with digital mishaps.

Balance

Perhaps one of the most surprising findings from this study is the ways both teachers reached a point where they were seeking balance in their classrooms between digital and analog tools. As mentioned above, both teachers believed that digital and analog tools could be combined to help create a workflow that allowed students to stay organized during class assignments. However, they also believed that there were times in the class where technology could be put away and students would work with more traditional technologies, like paper, pencil, and hardback books.

Mrs. Brouillard spoke about this process like a pendulum:

> Because we're now just 1:1, I think we've just kind of swung over and we're doing a lot with the Chromebooks. But we're realizing we kind of need to just come back a little bit and maybe do 1/3 of paper and 2/3 online or something to that effect.

Mrs. Brouillard suggested that the novelty of the Chromebooks made it so that teachers felt as though they needed to use them as much as possible in their classrooms. Certainly, Mrs. Ogden seemed to feel a similar pressure to use Chromebooks during the first years of the Griswold County 1:1 initiative. Just because these teachers who tech believed there is great power in technology does not mean that it should be the only tool used in their classrooms. Mrs. Ogden talked about her love of journals being done in notebooks and exit tickets being written on sticky notes. There are certain analog experiences which cannot be replicated through the digital.

The notion of balance is important because it helped demonstrate that English teachers who tech were not single-minded in their instructional practices. Their willingness to put a premium on student-centeredness and choice meant that it would be hypocritical to tell students that every activity they did in class had to be done digitally. Instead, they were encouraged to complete assignments using their talents and out-of-school literacies. When talking about her current approach to creating assignments, Mrs. Ogden said, “I have a digital option for them, but also like I have a drawing option because a lot of students would prefer to draw than work digitally. So, I feel like now I give a lot more options.” Balance was not just about giving students a limited number of teacher-selected options for students to choose from. It was about giving them the chance to make purposeful choices in how they would like to demonstrate their knowledge.

Collaborative Production (Not Consumption) of Knowledge

Something that separates teachers who tech from other techie teachers is that their purpose for implementing technology is centered around enhancing English content by engaging students in activities that are relevant and ask them to use their creativity to

compose a product. This often runs counter to teachers who view technology as a tool for efficiency and productivity. Teachers who use a learning management system to have students turn in work, take assessments, and play games might be using technology, but they are more teacher-centered in their approach. A quiz that is taken online and provides teachers with immediate feedback on how successfully a student mastered a particular skill is making a choice to leverage technology for *their* purposes of efficiency. A teacher who poses a problem and asks students to develop a project to demonstrate their understanding using a modality of their choosing is begging students to be creative in their academic pursuits. While there may be times where a teacher who techs asks students to turn in work via Google Classroom, they also aim to go beyond moving analog activities into the digital realm in much of what they do. If a handout can be done on a printed paper, then doing it online adds little value to such an assignment (Puentedura, 2009). So, it would be a mistake to conflate the techie teacher who uses technology for productivity and efficiency with the teacher who "techs."

Rebellion

One finding that both teachers spoke about was the impact of mentors during their student teaching and in their induction years. Mrs. Ogden had a rebellious mentor during student teaching who kept the Chromebooks in their classroom when they should have been returning them to the media center. Mrs. Brouillard did not go through a teacher preparation program but had a mentor at her first school who was a "divergent thinker" who inspired her to do things differently. Eventually, that interest in doing things unconventionally involved her use of technology, which she believed made her a "rebel" and "change agent" in her school.

It is worth pointing out that perhaps the word rebel is not an appropriate descriptor for these teachers. Mrs. Brouillard and Mrs. Ogden were not "shooting from the hip" when they used technology, nor were they being openly defiant when doing something different from their colleagues. Furthermore, they did not take their technology use to the extreme by seeking opportunities to use more futuristic tools like virtual reality or augmented reality. They still agreed to operate their classrooms within the confines of the norms and expectations set out by their school communities. But they were also not complacent with the status quo and brainstormed ways to think beyond perceived curricular limitations, as was the case with Mrs. Brouillard's prescriptive 8th grade curriculum provided by Creek County. While it is true that they were doing something different, they were not conducting their classrooms recklessly. They were doing what we know good teachers do: looking for creative ways to put students at the forefront of their English curriculum by capitalizing on their literacies.

Implications for Practice

This study sought to better understand what goes into the production of a teacher who "techs." Both Mrs. Ogden and Mrs. Brouillard were generous enough to share their classrooms with me, as they provided tremendous insight into the multifarious ways in which technology can be used in middle and high school English classrooms. If nothing else, this study demonstrates that a concept of the teacher who techs is not monolithic. In spite of the fact that both schools were in neighboring districts and adopted 1:1 Chromebook initiatives, their approaches were divergent in ways that only serve to explicate the complexity involved with helping teachers adopt a teaching philosophy that recognizes the potential for technology. Although Mrs. Brouillard and Mrs. Ogden's

approaches were unique to their learning contexts, this study has some potential implications for English teachers as well as English educators.

Impact on K-12 Teaching

The findings in this study demonstrate that teachers who tech possess unique dispositions when it comes to the art and practice of teaching. The teachers in this study were chosen purposefully because of their reputation for using technology. However, what came to light through interviews was that their identities as teachers who tech were part of a larger Discourse that involved their social media practices, school initiatives, professional development, and classroom experience. These teachers were unique in their school communities as their use of technology in the classroom set them apart from their less tech-savvy colleagues. This has some serious implications. While it is perhaps unfair to compare one teacher to another, it is worth trying to understand how such a divide in digital competencies persists in schools today. What does it mean for students when they can go through an educational career and only have a handful of teachers who use technology in meaningful, student-centered ways? Technology like cell phones, tablets, laptops, and netbooks are no longer considered cutting edge technology. Yet, if teachers who tech are the exception, rather than the rule, then perhaps there is a need to re-evaluate the ways in which pre-service and in-service teachers are supported in developing these pedagogical skills.

The lessons observed during this study were meant to portray a “week-in-the-life” of a teacher who techs. Because of this, the lessons themselves may not have seemed particularly remarkable or transformative. However, in looking deeply at the values situated at the heart of the activities in this study, it becomes evident that Mrs. Ogden and

Mrs. Brouillard believed that it was important that technology dovetails with pedagogy in order to make learning meaningful. No students were interviewed for this study as it was beyond the scope of the research questions. But observations seemed to suggest that students were engaged in digital projects. Scholarship has already made the argument that teachers have a responsibility to design curriculum that prepares students for their "social futures" (New London Group, 1996). If current trends are any indication of the world young people will adopt and adapt, then schools have a responsibility to help them navigate a digital landscape. When teachers who tech are outliers in schools, there is concern that, while students may receive excellent educations with regard to content knowledge, perhaps schools are not figuring out ways to infuse technology more consistently and naturally into the curriculum. If technology is an important literacy (Livingstone, 2012; Spires et al., 2012), then why might tech-savviness be a unique identifier that sets these teachers apart from the rest of their colleagues? It is my hope that a study like this might not only help conceptualize what teachers who tech are and how they are produced, but shed light on the possible disparity of technology that still exists in schools today.

Teaching with technology is an orientation toward English content. It values the affordances of technology, not just in engaging students differently with digital tools, but reinventing what is possible in the classroom as helping to redefine our culture's understanding of what it means to be literate in our modern society. Both teachers showed the value in thinking like a student and attempting to capitalize on their interests and literacies outside of school by using technology that brought relevance to English content. Mrs. Ogden's willingness to allow students to keep "one ear bud out" and

encourage them to put their phones away and explain how it distracted them provides a powerful example of how digital wisdom might inform classroom policies around personal devices. As schools today begin leaning toward policies that lock phones up to avoid student distraction (T. Smith, 2018), Mrs. Ogden illustrated how teachers might engage students in a learning process of thinking about the impact that technology has on their ability to focus. In addition to keeping order in schools, rules are disciplinary tools that ostensibly reflect societal norms. Students will eventually leave schools with the expectation that they will be able to manage their ability to focus at work and in social gatherings. So, in addition to teaching content, teachers have an opportunity to open conversations about cultural expectations with digital tools and help them develop their own sense of digital wisdom and attention literacy. Mrs. Ogden's approach provides an example of a possible way out of restrictive school and classroom policies which position technology as sites of distraction (Andersson et al., 2014; Tallvid et al., 2015), and instead opens up classrooms to discourses that allow teachers and students to explore practices that help young people manage their attention more responsibly.

Close attention to classroom space and the digital tools in the classroom allowed me to attend to considerations that get addressed by teachers in the beginning of the school year and often forgotten about by the end of the first semester. Classrooms have the potential to possess a level of vibrancy when a teacher is purposeful in their approach to designing a classroom with their students in mind. Technology must be a consideration when thinking about lighting, seating arrangements, access to power, and instructional tools as well. Such considerations are not inconsequential. Classroom matter cannot be an

afterthought, as the design of a room has an impact on the ways students are able to engage with one another, whether in face-to-face or online settings.

1:1 policies are perhaps the most obvious example of a discourse that impacts the techie classroom. Not only do they provide greater access to technology, but they also come with certain expectations that technology will be used. Certainly, less tech-savvy teachers may see this as an imposition. These teachers who tech were encouraged by the ability to craft lessons using their Chromebooks. Mrs. Ogden, in particular, seemed to be impacted by the discourses of Griswold County's initiative, as it was accompanied by professional development and support with planning that helped her develop her teaching philosophy with technology. When her district disbanded the technology support team, her inspiration for seeking out new tools to use with her students diminished. This is a problem that should not be overlooked. When some of the most accomplished teachers with technology lose support, they may also lose the time and resources they used to rely on for innovating and growing professionally.

Because Creek County is in their first year of their 1:1 rollout, Mrs. Brouillard seemed to express some of the same enthusiasm that Mrs. Ogden had during her first years of teaching. The novelty of the Chromebooks could be a possible reason for her excitement. But it seemed as though Mrs. Brouillard's history as an innovator at other schools made it so that she was glad that Creek County was finally catching up technologically with other schools she had worked at in the past. That said, the Creek County initiative came with some significant limitations, specifically the list of apps that teachers could use. It was evident to Mrs. Brouillard that her district believed it was important to be mindful that some students may not be mature enough to use certain apps

and there was little wiggle room in allowing students to use apps if they were not approved by the district. Top-down approaches like this reinforce certain discourses about the dangers of the internet and suggest that districts must be careful to make sure that they do not receive any criticism from parents about the ways in which the Chromebooks are being used. As a result, teachers are not only limited in the apps they can use, but they are also more likely to think twice before using an app that may have potential learning benefits out of fear of backlash from parents and administration.

Impact on Teacher Preparation

Understanding teachers who tech has implications for teacher preparation programs as well. Mrs. Ogden and Mrs. Brouillard discussed their journeys in education and the impact that mentors and initiatives had on their teacher identities. The findings in this study suggest that, if teachers who tech are unique within their school buildings, then they may have had experiences, both in and out of school, that differentiated them from their colleagues. There were several shared experiences that seemed to have a powerful impact on both teachers that could inform approaches to teacher preparation to help produce more teachers who tech.

Colleges of education are tasked with doing difficult identity work in helping future educators develop their "teacher-selves" (Danielewicz, 2001; Sallı & Osam, 2018). Teacher preparation is not simply about providing pre-service teachers with content knowledge and different teaching theories and methods. Professors, supervisors, and mentors help education majors develop identities that allow them to feel confident entering the teaching profession. As such, this system of advisors must be able to work together to help teachers develop identities recognize technology as a critical literacy for

modern times. Teaching is a Discourse (Gee, 1990) that possesses its own literacies, separate from those of being a lawyer, student, parent, athlete, etc. So, teacher preparation programs might be able to learn from the experiences of these teachers who tech in developing coursework that supports the curation of digital teacher identities.

This study also has important implications for how teacher preparation programs go about pairing pre-service teachers with mentors. In both cases, Mrs. Ogden and Mrs. Brouillard were impacted by mentors who helped them during their student teaching and first years of induction. They had teachers who they considered "rebellious" and "divergent" in their approach to teaching which showed them that they had agency and the ability to challenge the status quo in their own classrooms. Mrs. Ogden spoke directly to the importance of working with a mentor teacher who saw value in using technology in the classroom and the impact it had on her to be able how it engaged students in English content. The purposeful pairing of pre-service teachers with mentors is not something that can be overlooked in teacher preparation programs. Mentors have the ability to lay important foundations for future educators. Whenever possible, teacher preparation programs should attempt to work with mentors who are teachers who tech, or at least demonstrate a willingness to experiment with technology and be open to learning more about the digital practices that pre-service teachers may have learned during their methods coursework. In addition, teacher preparation programs might seek opportunities to provide professional development to mentors to ensure that their digital pedagogies and practices are up-to-date and align with the values of the program to ensure continuity between the university and field experience.

Social media also played an important role in helping these teachers who tech develop their digital identities. Teacher preparation programs can play a role in helping students establish their identities in online spaces by developing an online presence early in their careers. As of the writing of this study, students at The University of Georgia create teachergram accounts during reading and writing methods coursework. In addition to helping them develop a reflective practice, engaging in these online communities is a form of induction by giving pre-service teachers a tool that helps them observe the teaching-lives of practicing teachers. While this may seem beyond the purview of teacher preparation, the support in helping pre-service teachers curate these digital identities is becoming more valuable. This work is ongoing and should provide additional insight on how such online practices impact pre-service teachers' teaching identities and pedagogies in the classroom.

Implications for Future Research

While this study yielded valuable findings that can contribute to both teaching preparation and practice, there were also some limitations which provide possible next steps for future research. The most obvious limitation is the sample size and geographic location of this study. Both teachers taught in neighboring school districts outside of a major university in southeast United States. Because purposeful sampling (Patton, 2015) was used as a way of identifying possible participants, it significantly limited the location of the study. In addition, the video-cued approach is time consuming due to the nature of video production at multiple stages of the analysis and re-analysis process. As a result, a smaller sample size provided a more amenable timeline, particularly in considering the time-sensitivity of a dissertation. In addition to location, the fact that this study only

included two participants begs the question as to whether or not the findings are capable of producing a clear picture of what a concept of a teacher who techs might look like on a broad scale. This potential weakness suggests that future research might include greater variety of teachers from different regions of the United States.

Throughout this project, I was careful to identify my participants as *these* teachers who tech, as this project served primarily as a concept building project that would allow me to conduct further, more in-depth research in the future. By expanding this work to be more inclusive of various regions of the United States, I can interrogate other questions that look at teachers who come from different cultural backgrounds, graduated from different types of teacher preparation programs, and work in schools with different values and policies with regard to technology. This study was grounded in schools that have adopted 1:1 initiatives. However, teachers who tech can produce technology pedagogies without working in a 1:1 technology school district, as was the case with Mrs. Brouillard and Mrs. Ogden early in their careers. It would be interesting to study participants who are resilient and able to find creative ways to integrate technology into their classrooms when access is limited. Both participants identified as white, females as well. Including participants with different identity markers would likely produce valuable insight, particularly as identity production played such an important role in this study.

In continuing this work, it would be worthwhile to look at less tech-savvy teachers as well as a way of determining if the absence of technology in other classrooms is a purposeful one and how such a decision is informed by pedagogy and teaching philosophy. It is not enough to ask what experiences teachers who tech had that made them adopt a digital approach to teaching English. I would be interested in interrogating

what experiences were largely absent from less techie teachers educational histories that helped mold them into the teachers they became. One of the possible limitations of this study is that, by focusing so deeply on the use of technology in the English classroom, it also suggested that it is an essential tool for teaching. These teachers seemed to believe that it was important for students; I would happen to agree based on my epistemological stance. However, this study did not interview students to determine to what extent the adolescents and young adults in these classrooms believed that technology use added any value to their learning. Moreover, achievement was not measured during either learning segment. Both student input and other data markers, such as grades and feedback, could be helpful in determining whether or not these teachers' orientation toward the infusion of technology into the English classroom was successful. Just as this study focused on the making of the teacher who techs, future research might consider what types of students are then produced by these teachers.

Finally, this study helped provide a foundation for future approaches that use video in educational research. It was evident based on the feedback from both participants that the video-cued approach helped teachers gain a new perspective of their teaching. Teacher preparation today increasingly encourages teachers to record themselves, as it is more and more a requirement for state teaching certification. However, the work conducted in this study is unique in several regards. First, after teachers receive their certification, they will likely experience annual observations from administrators and curriculum leaders. In all likelihood, those observations will not also include video recording that helps them see their teaching from a new perspective. Mrs.

Brouillard and Mrs. Ogden both expressed how much they enjoyed the opportunity to be a part of this study. When asked about her experience, Mrs. Ogden said,

> It is weird seeing yourself on the screen because you noticed things going on in your classroom that you didn't notice, you know, as you were teaching obviously. But it's nice for me to like—to reflect on that so it was like a cool opportunity.

My position in the classroom allowed Mrs. Ogden to see things that she otherwise would not have had the perspective of seeing. Her students said that I was "ninja-like," which was important as I tried to be as unobtrusive as possible during video observations. Getting feedback like this suggested that I was successful in creating an environment where students and teachers were able to act naturally without the fear that I was recording them.

The greatest potential for this work is that it allowed both participants to think a little deeper about their teaching practice. Mrs. Ogden said that had it not been for this study "there would've been no reflection on [her book club activity] at all whatsoever." This is an important side effect of this work. As previously mentioned, video research has the potential for reciprocity by giving back to teachers in ways that benefit them professionally. Mrs. Brouillard seemed to suggest she benefitted from her participation in this study after our video-cued interview, stating,

> This was really cool to see. I've never had video of me as a teacher-no, I take it back I may have had one video as a teacher. But it's neat to see, like I know how I go into a lesson like how I want to create a space where kids feel safe and they feel empowered and they feel like they have a choice and they have opportunities—individual opportunities within the assignments, and it's neat to

> see that reflected back to me on the screen. Because, you know, sometimes you think you're doing it and it may not be coming out but to me that was a great reflection of, like that's me as a teacher on the [screen].

More than just being a reflective tool, the video was affirmative for her, showing her how her planning process looks and feels when captured on video. Comments like these serve as powerful testimonials for conducting video research in education. While I hope that this project can contribute to the scholarship on technology in English education, I am appreciative that this study already has had an impact on a local level by supporting these teachers who were willing to welcome me into their classrooms. I believe that such an approach serves as proof of concept for future studies by opening up new possibilities for conducting video research in other learning ecologies.

In thinking about other possibilities for future research, I spent significant time reflecting on this process and my resistance of methodology. As this project comes to a close, I cannot help but wonder whether the resistance of method was a self-righteous attempt to simply do something different and if I did indeed escape the methodology trap. Perhaps I need to come to terms with the fact that I created an ethnography which is not so different from other ethnographies. Certainly, I leaned heavily on the approaches that other video ethnographers used—and there is nothing wrong with that. At the very least, I hope that this project has tugged at the boundaries of what is understood as a dissertation by challenging the prescriptive and potentially positivist notions of how method produces knowledge. I cannot, however, deny that this study would have been different had I not chosen to produce a video. The process of working with the footage, analyzing and re-analyzing the events, and narrativizing a story that brought both classrooms together

assisted in bringing concepts like teachers who tech and tetheredness into greater focus. However this work is interpreted, I hope that the design of this project helps inform future researchers to think just a little differently about how to craft qualitative inquiry and to challenge what scholarship looks like.

ENVOI

In 2007, Fisch and McLoud created a YouTube video which boldly stated, “We are living in exponential times. We are currently preparing students for jobs that don't exist yet using technologies that have not been invented in order to solve problems we don't even know are problems yet” (n.p). I feel as though I would be remiss if I did not address the fact that, as this project comes to a close, our world is facing a world pandemic the likes of which most believed unthinkable in the modern world. As fears over COVID-19 shut down schools, churches, restaurants, businesses, sporting events, people are being asked to self-quarantine themselves through “social distancing” as a way of preventing further spread of disease. Local schools are challenged with thinking about what education looks like when face-to-face contact is impossible and what role technology will play in creating some sense of continuity while schools are closed. I have thought a lot about what it means to be a teacher who techs at this moment. In thinking more about the materiality of learning, I wonder what happens when the classroom space is no longer a part of the educational assemblage. Do teachers become disembodied when their teaching happens in asynchronous contact? Who becomes the dispenser of digital wisdom when young people are suddenly surrounded by the distractions of living room TVs, video game consoles, and tablets? This project in particular attempted to demonstrate how, in a digital age, we need humans more than ever. Advancement in technology means that young people have been able to do things in online spaces that

students before them have not had the fortune of doing. But at its best, technology is a mediator of human connection, not a substitution for it.

In this study I focused on the ways in which out-of-school literacies connect to in-school literacies. However, we find ourselves in a time when the arrow suddenly points in one direction from in-school literacies→out-of-school literacies. Technology, for some, allows education to continue. For others, this pandemic has exposed the inequities associated with digital access as students go to extremes to seek out means to get online with their teachers and peers. In other cases, families are choosing to simply opt out for the rest of the year because the digital divide is too vast. For those who are able to continue working online, school may feel more like an invasion of home life during a moment in history when what students really need is time for healing. Technology, as I hope I have demonstrated, is a valuable tool for learning. But it is not value-neutral and must be used cautiously. When schools begin positioning tools like Chromebook as repositories for handouts and busy work, they are missing the point. Digital tools provide possibilities for work that reaches authentic audiences. What if, instead of completing handouts, students were encouraged to blog, vlog, or podcast as a way of archiving these experiences? Students still have the opportunity to be social during a time of social distancing. What we need now, more than ever, are stories that connect (dare I say, tether) rather than educational initiatives that distract youth from this very strange moment in history. Why don't we allow students to lead us with their literacies and show us what they need?

During his NCTE Presidential Address, Ernest Morrell (2015) stated that English teachers need to be "doing tomorrow in today's classrooms" (p. 312). Times like these

present a unique challenge to imagining what tomorrow might look like. Assuming we are able to find a cure/solution to the COVID-19 conundrum, we will live in a post-coronavirus world which will highlight the need for greater technology in schools as we weigh the relative merits of foregoing social proximity in exchange for preventative health measures. Indeed, we are in "exponential times" and we, as a global community, find ourselves flatfooted in a time when we are facing a pandemic we could not anticipate. In cases like this, we might have greater consideration of a notion like tetheredness, as technology might be expected to bring students and teachers together in the same ways that classrooms currently do. We may be bracing ourselves for the next big jump in education, leaving behind brick and mortar schools altogether and imagining what education looks like in a socially distanced world. Then again, we may find ourselves months from now entangled closely with friends at a busy coffee shop laughing about how crazy these times were.

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APPENDIX A:

Recruitment Letter for Teachers

Hello,

My name is Will Fassbender and I am a doctoral student in Language and Literacy Education at The University of Georgia. This school year I will be working on my dissertation, which will revolve around the question, what makes a "techie" teacher? And what does the techie classroom look like? I got your name and contact information from Carrie Siegmund who mentioned that you might be an interesting teacher to talk to and perhaps include in my study based on your use of technology in your English classroom.

I know that school is just gearing back up and that this is an incredibly hectic time for you. But I was hoping that I might be able to meet with you, either face to face or over Skype/Facetime/Zoom, to chat about my project in order to see if you would be interested in being a participant. In general, it would likely involve some several interviews, observations, and perhaps some exploration of your lesson plans between September and November. Please be aware that my study will involve video, so if that will pose any issues with you and your school setting, your classroom may not be a viable study site.

Please let me know if this is something you would be willing to help me with and if there are any times in the next two weeks where we might be able to sit down and chat.

My schedule is flexible, so if you would prefer to meet during school hours or grab a cup of coffee in the afternoon, I will be more than happy to accommodate your schedule.

Thanks in advance,

Will

APPENDIX B:

Teacher Consent Form

UNIVERSITY OF GEORGIA
PARTICIPANT CONSENT FORM
Teachers Who Tech and The Connected Classroom

Researcher's Statement
I am asking you to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. This form is designed to give you the information about the study so you can decide whether to be in the study or not. Please take the time to read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information. When all your questions have been answered, you can decide if you want to be in the study or not. This process is called "informed consent." A copy of this form will be given to you.

Principal Investigator: William J. Fassbender
Department of Language and Literacy Education
Contact Information

Purpose of the Study
The purpose of this study is to observe teachers who have been identified as tech-savvy within their school communities and to determine how their values and interest with regard to technology translate into their teaching of secondary English students.

Study Procedures
If you agree to participate, you will be asked to participate in several interview sessions related to your use of technology in your personal life as well as in planning and implementing lessons around English content. In addition, you will be asked to identify specific lesson segments in which you believe you effectively implement technology. I may also ask to see lesson plans and other materials, such as student products related to the use of technology. On the days of those lessons, I will observe and gather video data in order to film your teaching as well as student use of technology. I will be showing you this video footage during later interview sessions so that you can describe events in greater depth and explain why you and your students may have made certain decisions. The video footage will be used for publishing and presentation purposes.

Risks and discomforts
I do not anticipate any risks from participating in this research

Benefits
One foreseeable benefit for teacher participants is to become more aware of their implementation of technology, specifically through reviewing video footage. The video clips will provide teachers with additional vantage points to help them take a closer look at how technology impacts their classroom community and how digital tools are used in productive ways and how their teaching practices could be improved.

Incentives for participation
Participants will not receive any monetary or non-monetary incentives.

Audio/Video Recording
Because I will be studying classroom practices with the hopes of receiving feedback and insight from teacher participants, video documentation will be critical for conducting follow up interviews. The video-cued interviews are also important in ensuring that my analysis is in line with what teachers see and experience in their classrooms during lessons in which technology is being used.

Please provide initials below if you agree to have the video recordings used in publications, presentations, and teacher training purposes.

_____I am not willing to allow video of myself and my class to be used for publications, presentations, and teacher training purposes.

_____I am willing to allow video of myself and my class to be used for publications, presentations, and teacher training purposes.

Privacy/Confidentiality
Any individually-identifiable information collected about you will be kept confidential unless otherwise required by law. Your identity will be protected and all data will be kept in a secured location. All data will be archived after transcription and kept indefinitely for education and/or teacher training purposes. The results of the research study may be published, but your name or any identifying information will not be used.

Taking part is voluntary
Although the Institutional Review Board of the University of Georgia has approved this study, your involvement in the study is voluntary and you may choose not to participate or to stop at any time without any bearing on your employment. This activity is scheduled as part of the regular classroom curriculum and as such, does not interfere with regularly scheduled class activities. You can decide to quit at any time without consequence. If you decide to withdraw from the study, the information that can be identified as yours will be kept as a part of the study and may continue to be analyzed, unless you make a written request to remove, return, or destroy the information.

If you have questions

Please ask any questions you have now. If you have questions later, you may contact Will Fassbender at 910-274-4624 or wfassbender@uga.edu or Dr. Sara Kajder at skajder@uga.edu. If you have any questions or concerns regarding your rights as a research participant in this study, you may contact the Institutional Review Board (IRB) Chairperson at 706.542.3199 or irb@uga.edu.

Research Subject's Consent to Participate in Research:
To voluntarily agree to take part in this study, you must sign on the line below. Your signature below indicates that you have read or had read to you this entire consent form, and have had all of your questions answered.

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

Please sign both copies, keep one and return one to the researcher.

APPENDIX C:

Minor Assent Form

Student Minor Assent Script/Form for Participation in Research
Teachers who tech and The Connected Classroom

I am doing a research study to find out how teachers use technology to help students learn in English language arts classrooms. We are asking you to be in the study because [Teacher's Name]'s uses often uses technology in engaging ways and I want to learn more about your experience in her classroom.

If you agree to be in the study, I will be video recording your class 5-10 days four six months. I will be focusing on the lessons your teacher creates and how you, the student, use technology in her classroom. I may ask you some questions ask you work with technology on days when I come in and record. I will also take notes as you as you work in class. Being in the study may help your teacher use technology in more effective ways in the future. It should also help other teachers learn how to use technology in their classrooms in more effective ways.

You do not have to say "yes" if you don't want to. No one, including your parents, will be mad at you if you say "no" now or if you change your mind later. We have also asked your parent's permission to do this. Even if your parent says "yes," you can still say "no." Remember, you can ask us to stop at any time. Your grades in school will not be affected whether you say "yes" or "no."

The footage will be used for written and video presentations at conferences with other teachers. Please be aware that by signing this form, you are giving permission for you face to be used for the purpose of publication. I will make every attempt to not include your name in any video publications, but it could be difficult if your teacher or classmates use your name during the recording process. However, I will use a pseudonym whenever possible in order to keep your identity hidden.

You can ask any questions that you have about this study. If you have a question later that you didn't think of now, you can contact Will Fassbender at 910-274-4624 or wfassbender@uga.edu.

Name of Child: _____ **Parental Permission on File:** ☐ Yes ☐ No**

***(If "No," do not proceed with assent or research procedures.)*

(For Written Assent) **Signing here means that you have read this paper or had it read to you and that you are willing to be in this study. If you don't want to be in the study, don't sign.**

Signature of Child: _____ Date: -
_____

(For Verbal Assent) **Indicate Child's Voluntary Response to Participation:** ☐ Yes ☐ No

Signature of Researcher: _____ Date: -
_____

APPENDIX D:

Parent Consent Form

UNIVERSITY OF GEORGIA
PARENT MINOR CONSENT FORM
Teachers Who Tech and The Connected Classroom

Researcher's Statement
I am asking you to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. This form is designed to give you the information about the study so you can decide whether to be in the study or not. Please take the time to read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information. When all your questions have been answered, you can decide if you want to be in the study or not. This process is called "informed consent." A copy of this form will be given to you.

Principal Investigator: William J. Fassbender & Dr. Sara Kajder
Department of Language and Literacy Education
wfassbender@uga.edu
910-274-4724

Purpose of the Study
The purpose of this study is to observe teachers who have been identified as tech-savvy within their school communities and to determine how their values and interest with regard to technology translate into their teaching of secondary English students. In addition, I am interested in studying how your child engages with technology in [Teacher's Name]'s class. By studying your child's classroom, I hope to better understand how English education teaching programs can better prepare teachers to use technology in effective and meaningful ways.

Study Procedures
If you agree to let your child to participate, your child will be observed and/or filmed for two weeks during the 2018-2019 school year. I will be filming your child's using technology to complete school related tasks in the classroom as well as possibly engaging them in casual discussions about their classwork. I may also ask the teacher to provide me with work samples from your child as part of the discussion around the effective use of technology.

Risks and discomforts

I do not anticipate any risks from participating in this research. Participation is voluntary and procedures occur within regular educational practice. I will not include any student on camera if you feel uncomfortable about being video recorded at any time.

Benefits
This study will contribute knowledge about how middle and high school teachers plan lessons with technology that they believe to be meaningful based on what they know about their students. These findings will help educators develop a deeper understanding the unique things that tech-savvy teachers do in preparing their students for an increasingly technological world.

Incentives for participation
Participants will not receive any monetary or non-monetary incentives.

Audio/Video Recording
Because I will be studying classroom practices with the hopes of receiving feedback and insight from teacher participants, video documentation will be critical for conducting follow up interviews related to specific moments in which technology played an important role in student engagement. I will be using the video footage as a starting point for interviews with teachers.

Please provide initials below if you agree to have the video recordings used in publications, presentations, and teacher training purposes.

_____I am not willing to allow video of my child to be used for publications, presentations, and teacher training purposes.

_____I am willing to allow video of my child to be used for publications, presentations, and teacher training purposes.

Privacy/Confidentiality
Any individually-identifiable information collected about your child will be kept confidential as much as possible. I will take every measure possible to protect your child's identity, bearing in mind that I will be using video to record and present my findings. As a result, your child's face and name may appear in video and in still images written publications. All data will be archived after transcription and kept indefinitely for education and/or teacher training purposes.

Taking part is voluntary
Your child's involvement in the study is voluntary, and you or she/he may choose not to participate or to stop at any time without any bearing on her/his grades or class standing. This activity is scheduled as part of the regular classroom curriculum and as such, does not interfere with regularly scheduled class activities. If you do not want your child to take part or she/he does not wish to take part, then she/he will participate unobserved in regularly scheduled class activities. You or your child can decide to quit at any time

without consequence. If you or your child decide to withdraw from the study, the information that can be identified as your child's will be kept as a part of the study and may continue to be analyzed, unless you make a written request to remove, return, or destroy the information.

If you have questions
Please ask any questions you have now. If you have questions later, you may contact Will Fassbender at 910-274-4624 or wfassbender@uga.edu or Dr. Sara Kajder at skajder@uga.edu. If you have any questions or concerns regarding your rights as a research participant in this study, you may contact the Institutional Review Board (IRB) Chairperson at 706.542.3199 or irb@uga.edu.

Research Subject's Consent to Participate in Research:
To voluntarily agree to take part in this study, you must sign on the line below. Your signature below indicates that you have read or had read to you this entire consent form, and have had all of your questions answered.

_____ _____ _____

Name of Researcher Signature Date

Your Child's Name: _____

Your Signature: _____ Date _____

Your Printed Name: _____

Please sign both copies, keep one and return one to the researcher.

APPENDIX E:

Adult Student Consent Form

UNIVERSITY OF GEORGIA
ADULT STUDENT CONSENT FORM
Teachers who tech and The Connected Classroom

Researcher's Statement
I am/We are asking you to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. This form is designed to give you the information about the study so you can decide whether to be in the study or not. Please take the time to read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information. When all your questions have been answered, you can decide if you want to be in the study or not. This process is called "informed consent." A copy of this form will be given to you.

Principal Investigator: William J. Fassbender & Dr. Sara Kajder
Department of Language and Literacy Education
wfassbender@uga.edu
910-274-4724

Purpose of the Study
The purpose of this study is to observe teachers who have been identified as tech-savvy within their school communities and to determine how their values and interest with regard to technology translate into their teaching of secondary English students. In addition, I am interested in studying how your child engages with technology in [Teacher's Name]'s class. By studying your child's classroom, I hope to better understand how English education teaching programs can better prepare teachers to use technology in effective and meaningful ways.

Study Procedures
If you agree to participate, I will observe and/or film you and your class for two weeks during the 2018-2019 school year. I will be filming your technology use while completing school related tasks in the classroom as well as possibly engaging them you casual discussions about your classwork. I may also ask the teacher to provide me with work samples from you as part of the discussion around the effective use of technology.

Risks and discomforts

I do not anticipate any risks from participating in this research. Participation is voluntary and procedures occur within regular educational practice. I will not include any student on camera if you feel uncomfortable about being video recorded at any time.

Benefits
This study will contribute knowledge about how middle and high school teachers plan lessons with technology that they believe to be meaningful based on what they know about their students. These findings will help educators develop a deeper understanding the unique things that tech-savvy teachers do in preparing their students for an increasingly technological world. As a result, students may benefit from teacher reflections and reviewing of video recordings in order to improve their own lesson planning and teaching.

Incentives for participation
Participants will not receive any monetary or non-monetary incentives.

Audio/Video Recording
Because I will be studying classroom practices with the hopes of receiving feedback and insight from teacher participants, video documentation will be critical for conducting follow up interviews related to specific moments in which technology played an important role in student engagement. I will be using the video footage as a starting point for interviews with teachers.

Please provide initials below if you agree to have the video recordings used in publications, presentations, and teacher training purposes.

_____I am not willing to allow video of myself to be used for publications, presentations, and teacher training purposes.

_____I am willing to allow video of myself to be used for publications, presentations, and teacher training purposes.

Privacy/Confidentiality
Any individually-identifiable information collected about you will be kept confidential as much as possible. I will take every measure possible to protect your identity, bearing in mind that I will be using video to record and present my findings. As a result, your face and name may appear in video and in still images written publications. All data will be archived after transcription and kept indefinitely for education and/or teacher training purposes.

Taking part is voluntary
Your involvement in the study is voluntary, and you may choose not to participate or to stop at any time without any bearing on your grades or class standing. This activity is scheduled as part of the regular classroom curriculum and as such, does not interfere with regularly scheduled class activities. If you do not want to take part, then you will participate unobserved in regularly scheduled class activities. You can decide to quit at

any time without consequence. If you decide to withdraw from the study, the information that can be identified as you will be kept as a part of the study and may continue to be analyzed, unless you make a written request to remove, return, or destroy the information.

If you have questions

Please ask any questions you have now. If you have questions later, you may contact Will Fassbender at 910-274-4624 or wfassbender@uga.edu or Dr. Sara Kajder at skajder@uga.edu. If you have any questions or concerns regarding your rights as a research participant in this study, you may contact the Institutional Review Board (IRB) Chairperson at 706.542.3199 or irb@uga.edu.

Research Subject's Consent to Participate in Research:

To voluntarily agree to take part in this study, you must sign on the line below. Your signature below indicates that you have read or had read to you this entire consent form, and have had all of your questions answered.

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

Please sign both copies, keep one and return one to the researcher.

APPENDIX F:

Data Sources, Collection Methods, and Research Questions Addressed

Guiding Research Questions

1. What new literacies practices are used by teachers who tech in and out of their classrooms? What is their digital footprint and how does it relate to their instructional decision making?
2. What do teachers who tech value about new literacies practices and how does it impact their approach to teaching?
3. What impact does technology have on the classroom space? What are the critical actants (both human and non-human) present in "techie classrooms?"
4. How do less visible actants (including discourses) impact classroom pedagogy, specifically related to technology?

	Data Source	Collection Methods	Artifacts	Research Question Addressed	Time Frame
Phase I: Tech-Savvy Teacher Dispositions	Teacher Interviews	Face-to-face semi-structured interviews-video recorded	Video footage Transcribed interviews Personal memos	RQ1 RQ2	30-60 minutes/teacher participant October-December 2018
Phase II: Technology in the Tech-Savvy Classroom	Classroom Observations	Observations of a "techie" lesson segment-video recorded	Video footage Personal memos Teacher lesson plans Student artifacts	RQ3 RQ4	3-10 days of lessons November 2018-January 2019
Phase III: Condensing Video Data	Video Footage	Editing video footage	Video footage from observations	RQ3 RQ4	3-5 days to finish editing December 2018-

					February 2019
Phase IV: Teacher Reflection	Teacher Video-Cued Interviews	Face-to-face video-cued interviews	Video footage Transcribed interviews Personal memos	RQ1 RQ2 RQ3 RQ4	30-60 minute interviews February 2019
*Note: data analysis will take place after each phase to study, but will play an important role during the editing of the video from classroom observations in preparation for the video-cued interviews					
Phase VII	Overall data analysis			RQ1 RQ2	April-June 2019
Phase VIII	Writing/Producing Final Video			RQ1 RQ2	July 2019-March 2020

APPENDIX G:

Semi-Structured Pre-Observation Interview Protocol

Interview Protocol

Hi. My name is Will Fassbender and I am a doctoral student in the Language and Literacy program in the College of Education at the University of Georgia. I am conducting a research project on the ways tech-savvy teachers incorporate technology in interesting and effective ways in their classrooms.

Before we begin the interview, I would like to remind you that the information you share during the interview will be kept confidential as explained in the consent form. I will not use your name or any other identifying information about you that might allow someone to figure out who you are. Feel free to skip any questions you do not want to answer and at any time you may end the interview. I anticipate that the interview with take approximately an hour. Though I will be asking you questions, if at any time you have questions throughout the interview, please feel free to ask. At this point, do you have any questions for me before we begin?

I would like to start our conversation by getting to know you a little better, so please tell me about yourself.

Before we dig into questions regarding technology in school, could you tell me a little bit about you. What is your name, where do you teach, how long have you been teaching, and if you don't mind, how old are you?

1. Tell me about your classroom set up. What types of things do you consider when you set up your classroom?
    a. Do you have to make any special considerations with regard to technology when planning your space?
    b. What is your cell phone policy for your classroom?
2. Tell me about your personal use of technology. Do you consider yourself particularly tech-savvy?
    a. How has your life been impacted by these tools? What do you (dis)like about them?
    b. How do you see your "teaching life" bleeding into your technology use (social media, blogging, related to teaching), if at all?
    c. Why do you think someone might label you as tech-savvy?
3. Tell me about the similarities and differences you see between you and your students' use of technology.
    a. When you think about your students and their relationship with technology, what word or phrase comes to mind?
4. Tell me about the role you think technology should play in the English classroom. (Why is the English classroom uniquely positioned to integrate technology?)

   a. What responsibility (if any) do you believe *English* teachers have to teach students about the responsible use of technology? Do you think it should be your job to teach them how to use technology?
   b. Tell me about the ways you see students responding to your use of technology.

5. Have you always used technology in the classroom? How has this approach changed over the span of your career?
   a. What word would you use to describe your role when students are working with devices (leader? Facilitator? Supporter? Etc.)?
   b. Tell me about your teacher preparation experience. Did you feel prepared to teach with technology during your first years of teaching? If not, how did you learn? Do you seek out support elsewhere?
6. Tell me about a lesson you are particularly proud of that used technology.
   a. Are there any lessons that you remember where things went terribly wrong using technology?
7. Tell me about your school's perception of the role of technology. How do you feel supported in your use of technology?
   a. Tell me about the 1:1 initiative in your district.
8. Tell me about your colleagues. Who, if any, do you usually collaborate with when it comes to technology?
9. Do you have anything else you want to add?

Show me the lesson plan you plan on teaching with technology.