10-22-2020

The Impact of Teacher Beliefs on Classroom Technology Use: A case study on the interplay between teachers' beliefs about students and technology and their classroom technology practices with a primarily minority student population

Tracee Miller
University of Missouri-St. Louis, miller.tracee@gmail.com

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Tracee Miller

M.Ed., Secondary Education, University of Missouri – St. Louis, 2013

B.S., Secondary Education, University of Missouri – Columbia, 2007
B.A., English, University of Missouri – Columbia, 2007

A Dissertation Submitted to The Graduate School at the University of Missouri – St. Louis
in partial fulfillment of the requirements for the degree
Doctor of Philosophy in Education with an emphasis in Leadership and Policy

December
2020

Advisory Committee

Matthew Davis, Ph.D.
Chairperson

Thomasina Hassler, Ph.D.

Carl Hoagland, Ph.D.

Keith Miller, Ph.D.

Abstract

The purpose of this study is to assess the intersection of teachers in urban public schools' digital beliefs and with their technology practices in the classroom, especially in classrooms where most students are students of color. It examines some subtopics of the primary research question, including what beliefs tech-savvy teachers hold about how technology should be used in classrooms, whether teachers use technology to empower students and encourage creativity, whether teachers integrate students' self-created digital identities in a classroom setting, and how school- or district-level expectations and support regarding technology integration into classroom settings impact teachers' implementation and students' experiences. Examining these aspects of technology in the classroom and teachers' beliefs sheds light on what training may facilitate student-centered technology use, and what may currently be standing in the way of effective implementation. This is a first step in ensuring that aspects of real-life scenarios are being considered in the research that informs policy and that inspires future research topics via the case study methodology.

Keywords: Critical Race Theory, Constructivism, Technology, Education, Teacher Education, Teaching Philosophy

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Chapter 1: Introduction

Increasingly, teachers and students are digital natives, and educators are expected to integrate some level of technology into their classrooms. According to a study by Johnson (2017), both policy and research suggest that teachers should have more student-driven activities, but do not account for the fact that teachers find this difficult to enact. Anecdotally, having worked in schools as both a classroom teacher and instructional coach, educators may generally not be prepared to integrate technology into the classroom in a way that is student-centered and promotes students' learning skills; and that will support them in the copious areas of real-life technology use. The understandings from this study will inform teacher education programs, as well as teacher support in schools. In addition, Kopcha and Sullivan (2007) note studies of classroom technology use, including self-report studies with educators as participants, inform policy at state and local levels. Thus, it is imperative that these studies accurately reflect teachers' beliefs, abilities, and practices.

Purpose

The purpose of this study is to assess the intersection of teachers in urban public schools' digital beliefs, including about students and technology but extending to other aspects of their belief systems, with their technology practices in the classroom, especially in classrooms where most students are students of color. It examines some subtopics of the primary research question, including:

- what beliefs tech-savvy teachers hold about how technology should be used in classrooms,
- whether teachers use technology to empower students

- whether teacher use technology to encourage creativity,
- whether teachers integrate students' self-created digital identities in a classroom setting, and
- how school- or district-level expectations and support regarding technology integration into classroom settings impact teachers' implementation

Examining these aspects of technology in the classroom and teachers' beliefs sheds light on what training may facilitate student-centered technology use, and what may currently be standing in the way of effective implementation. This is a first step in ensuring that aspects of real-life scenarios are being considered in the research that informs policy and that inspires future research topics via the case study methodology.

While there is current literature related to the purpose of this study, the literature primarily focuses on specific beliefs about technology and technology use, rather than on teachers' and students' holistic experiences and how these impact the way technology is experienced by each participant in a classroom setting. The literature also focuses on barriers to technology use and the need for more effective professional development. While these are, in part, strategies for addressing concerns with the democratic use of technology in today's classrooms, they are insufficient without foundational change that seeks to develop the belief systems that will enable this training to be effective. It is integral that we understand what teacher philosophies, beliefs, and approaches to curricula and students are needed to provide a democratic and liberatory experience with technology for students in American classrooms.

Research Question and Outline

The primary research question for this case study is: What is the interplay

between teachers in urban public schools' professed beliefs regarding the use of technology in an educational setting and those teachers' classroom technology practices? The study explores connections to current literature, details the methods for designing and conducting the study and its theoretical and practical frameworks, as well as the methods for collecting and analyzing data, and findings based on these data. It concludes with a discussion of the implications of the research, the limitations of the study, as well as suggestions for future research.

Theoretical Framework

The study is a mixed-methods case study with a primarily qualitative focus that explores the bounded system of teachers' use of technology in high school classes in public schools in an urban setting. The case study allows for in-depth examination of the environment and impact of the study topics and is an appropriate approach, as the purpose is to better understand and expose the real-life experiences of those impacted by current policy and school practices (Rogers, 2012). Like related studies, this study takes a constructivist approach, assuming that knowledge is created through interactions between teachers and students, between students and their peers, and through technology's interaction in both of these scenarios (Jonassen et al., 2003). The focus of the study is a better understanding of processes, emotions, beliefs, and practices involved with technology use in the classroom, and affect theory will be integrated into understanding the interaction between affect, experiences, and human and nonhuman participants.

Because the demographics of the participants and power structures must be considered when reflecting on teachers', schools', and districts' approach to student use of technology, Critical Race Theory (CRT) serves as an important lens through which to

approach the study. The five primary tenets include racism as a social construct, racism as ordinary and not an aberration; interest convergence, which is the idea that those in power act in the interest of oppressed groups only if it benefits themselves; centering of the oppressed, particularly through counternarratives; and whiteness as property, which can be used to access rights that are not afforded to other groups (Brown & Jackson, 2013). Comprehensively, this project draws on different critical theories to take a step toward ensuring that people's stories and selves are being considered in the research that informs policy, manifests in teacher expectations, molds students' educational experiences, and inspires future research topics. Narrative theory, described by Dettori and Pavia (2009), is central to the analysis of the interview transcript and observation notes.

Chapter 2: Literature Review

This paper focuses on the dynamics between authority figures, teachers, and students of color. For this reason, before discussing the interplay between teacher beliefs about students and the value of technology and teacher use of technology in the classroom, it is imperative to discuss racial power structures that are inherent in classrooms with or without technology. There are white participant teachers, and it is possible that these white teachers of primarily marginalized students would be presumed to be racial allies who are working toward the liberation of their students through education (Patton & Bondi, 2015). Because of this, the beginning of this review focuses on the description of racial allies in literature. I identify characteristics of racial allies that may or may not correlate with teacher beliefs and practices to serve as a foundation for thinking through whether teacher characteristics in the case study align or do not align with ideas about allyship, and how these characteristics interplay with the manifestation of technology use in the classroom for liberatory purposes. In many instances, I use Weiler's (2005) study of the life of Mable Carney, identified by the Black community as a racial ally, to illustrate these descriptions.

Teachers as Allies and Ally Identity

The term ally has been in use for decades to refer to members of the dominant group who work toward justice for marginalized populations. In more recent years, there has been pushback against use of this term. Much of this pushback insists that the term is too weak to describe what is truly necessary of white people in the fight for Black lives (Hackman, 2015). Others argue that the term ally is self-serving and plays into the savior complex that plagues many would-be social justice activists (Meyerson, 2016). Still

others point out that being an ally is an individual action and because racism is structural, the term itself works against recognizing the systemic approach that is necessary in addressing racism in today's society (Peterson-Smith & Bean, 2015).

There has also been a hesitance to define what is required of allies (Hackman, 2015). This is especially true in the areas of how allies might be able to work to subvert existing power structures and how they may be able to relinquish power and privilege (Peterson-Smith & Bean, 2015). In terms of allyship, this literature review will discuss only what has been written about ally characteristics, but I recognize this hesitance is part of the cause of the criticism of the use of the term and recommend further research into the definition, particularly of the characteristics defined below.

Aspirational-Only

It is important to point out one component of the ally identity, which is that it is an aspirational identity (Ahmed, 2004). In Weiler's (2005) article on Mabel Carney, a white woman declared a racial ally by the Black community, Carney never used the word to describe herself; rather, she was awarded an honorary doctorate by Howard University and was referred to as an ally by scholars who came after her. As Ahmed (2004) points out, self-identifying as an ally presents several problems, the first of which being that it centers the self. An action that centers the dominant population is, by definition, supporting structures of white supremacy (Ahmed, 2004). This contradicts the tenet of counter-narrative that is central to the CRT framework (Brown & Jackson, 2013). The act of declaring oneself an ally, then, is nonperformative in that it accomplishes the opposite of what it asserts (Ahmed, 2004).

In addition to Ahmed's (2004) description of the nonperformative nature of self-

declaring as an ally, it is impossible to arrive at the completion of one's journey as an ally (Weiler, 2005). To declare oneself an ally implies that that person's behaviors are the behaviors of an ally (Ahmed, 2004). However, no journey toward ally identity is ever complete, and suggesting that it is works against the characteristic of recognizing one's own racism and continually learning about and adapting to the ever-changing manifestations of injustice and inequality (Patton & Bondi, 2015). Finally, self-identifying as an ally is a self-congratulatory measure that has no place in ally work or identity (Ahmed, 2004). Weiler (2005) cites a note written by Mabel Carney from Rhodesia, "to this great human question I once more dedicated myself anew here… knowing that any individual's share in a task so large must be small" (Weiler, 2610).

Other authors agree that the ally identity can only be an aspirational one. In their article an article differentiating between being nice and being an ally, Patton and Bondi (2015) note that being an ally is "an aspirational journey that is never fully realized" (p. 503). These authors explain that even the discussion of allies re-centers, rather than disrupts, whiteness (Patton & Bondi, 2015). Ahmed's (2004) article goes so far as to state that even recognizing one's own racism when the act is assumed to be evidence of anti-racism is a self-centered and not anti-racist action. The author says that part of the reality of racism is that you are not always aware of it, but that saying that you are racist implies that you are not racist *in that way* (Ahmed, 2004). The entire exercise, then, can in fact be interpreted as supporting white supremacist power structures (Ahmed, 2004).

Another author who supports the aspirational feature of ally identity is Keith Edwards. In Edwards's (2006) article, the author traces the development of the ally identity, while recognizing that the identity will always be in flux. The article

acknowledges the challenge of intent versus impact when he states that "some who genuinely aspire to act as social justice allies are harmful, ultimately, despite their best intentions, perpetuating the system of oppression they seek to change" (Edwards, 2006, p. 39). It goes on, however, to recognize that these well-intentioned would-be allies can build on their good intentions to develop more effective understandings and actions (Edwards, 2006). Edwards (2006) adds to the aspirational nature of ally identity by stating that the development of this identity is also by nature nonlinear. The author recognizes that there are constant changes in the racial environment and within individuals that must constantly be worked through, which makes ultimate achievement of the ally identity impossible (Edwards, 2006). The article ends by stating explicitly that self-identifying as an ally is problematic, and that the most "authentic naming of social justice allies is done by members of the oppressed group" (Edwards, 2006, p. 54). All of these rationales for the aspirational nature of allyship are important to keep in mind when discussing beliefs with teachers who are in a position of authority and hold an oppressor identity.

Ability to Evolve/Necessity of Learning and Self-Awareness

The first characteristic of an ally that runs through Weiler's (2005) description of Mabel Carney is the ability to evolve, specifically in self-awareness and through the process of continual and deliberate learning. The characteristic of being able to evolve and deliberately doing so, as well as self-awareness and learning about the reality of racism, is aligned with the CRT components of racial realism, or racism as the ordinary and not an aberration, and the critique of liberalism and color-blind philosophies (Brown & Jackson, 2013). Allies who understand that racism is not aberrant, and that racism is a

normal part of daily life, according to Boutte and Jackson (2015) will take deliberate action to better understand the history behind the institution and the current circumstances under which racism operates. The understanding of oneself as racist further underscores this racial realism (Brown & Jackson, 2013). It engages the critique of liberalism and color-blindness but recognizes the power structures at play in today's society on individual and systemic levels (Brown & Jackson, 2013).

Connected to Edwards' ideas of nonlinear identity development and the potential to do harm while intending to do good, Boutte and Jackson (2015) recognize that "a constant frustration is the frequent inconsistencies in support… [which are] mutually irritating to both our White allies and ourselves" (p. 623). To minimize this irritation, the authors recommend continually growing in knowledge of literatures and research, as well as in understanding of racist policies, practices, and systems (Boutte & Jackson, 2015). In the same way that Weiler's (2015) description of Carney's deliberately engaging in relationships and conversations that challenged her and promoted personal growth, Boutte and Jackson (2015) recognize the necessity of being deliberate in placing oneself in conversations and situations that facilitate this evolution.

Other authors confirm the necessity of an ally's ability to evolve continually and deliberately. In their article on mentoring across races, Reddick and Pritchett (2015) explain that all participants in cross-race mentoring relationships reported that the relationship was deliberately initiated and cultivated. The white mentors of students of color described the necessity of becoming familiar with research embraced by scholars of color, exhibiting extra sensitivity concerning different worldviews, and reflecting on their own identities and the identities of their students (Reddick & Pritchett, 2015). In Patton's

(2015) article comparing nice white men with social justice allies, she recognizes the need for members of dominant groups to be mindful of how their needs are articulated and communicated, and of the extent to which those needs are perceived as maintaining or disrupting the status quo. This study revealed that most participants who were well-intentioned may have been able to mention their privileged status but were rarely able to disclose their participation in oppressive behaviors (Patton, 2015). Patton (2015) goes on to suggest that "white men who wish to be involved in multicultural coalitions… have much to learn about [their] own whiteness, maleness, and other bases of privilege" (p. 511).

Ahmed (2004) also recognizes the critical role of learning in being able to create a space to deal with the effects of racism. In their review of the literature on white teacher identity studies, Jupp et al. (2016) explain that productive understandings of white identities address, describe, and confront historically institutionalized racial inequalities, racism, and whiteness. These authors also recognize that as white identities become more reflexive, studies of identity become more critical and focused (Jupp et al., 2016). Edwards (2006) explains that those who are "committed to social justice education seek not only to develop their own critical consciousness… but also to educate students to engage in societal transformation" (p. 40), recognizing that those who continue to learn about racism are empowered to pass their understanding on to others in a coalition-building effort to disrupt dominant power structures.

Edwards (2006) also explains that as aspiring allies become more aware, their understanding increases in complexity and sophistication. Aspiring allies, according to Edwards (2006), move from a selfish orientation, to protect oneself or someone close, to

altruistic, or savior, orientation, to a blended orientation including interest convergence, moral outrage, and personal imperative. Helms's model of white racial identity (as cited in Edwards, 2006), including the following phases: contact, which is characterized by naïveté and ignorance and may involve advocating color-blindness and believing in assimilation; disintegration, which includes anger at different treatment and may involve becoming angry with dominant group or feeling guilt over association with that group; reintegration in which one accepts dominant messages and re-identifies with dominant group; pseudo-independence, or what is known as the guilty white liberal; immersion-emersion, involving a shift from trying to change people of color to trying to change whites; and autonomy, or the attainment of a centered and balanced identity that allows easy and natural formation of alliances across races and the ability to be effective as a result the building of these relationships (Edwards, 2006). I mention each of these phases as it is important to note that only in the last phase are whites functioning as effective allies. Evolution and deliberate and continual learning and awareness are the only pathways to ally identity development (Edwards, 2006).

Finally, Leonardo (2004) and Delgado and Stefancic (2013) are even more specific about what must be learned in the aspirational journey toward ally identity. In Leonardo's (2004) article, the author explains that it is not enough to understand privilege; it is also necessary to understand white supremacy. The article differentiates the two by describing privilege as the experiences of the oppressor identity, which re-centers whiteness, and describing supremacy as the reality of racial domination (Leonardo, 2004). Delgado and Stefancic (2013) explain that one must understand racism in order to respond to racial realities, but one must also understand how and when to act effectively.

All these authors emphasize the necessity of deliberately building effective understandings. This comes into play not only when evaluating teachers' beliefs, but also when considering the implications for professional development and the incorporation of identity into teaching and management strategies.

Centering of the Oppressed

The ability to evolve and to become self-aware often leads whites to become engaged with the sentiment of white guilt (Tochluk, 2007). This sentiment, however, like self-declaring one's ally identity, centers the self and is an impossible state for an ally to exist within (Ahmed, 2004). With that in mind, the second characteristic of ally identity that can be derived from Weiler's (2005) study of Mabel Carney's life is the centering of marginalized groups (Brown & Jackson, 2013). In her work as described by Weiler (2005), Carney deliberately entered relationships across racial lines that would challenge her and encourage personal growth. Carney engaged in discourse with the purpose of better understanding the world and alternate perspectives (Weiler, 2005). She acknowledged that Black leaders should be at the head of Black education programs, and that if the United States wanted to form stronger bonds with Africa, it would need to get to know more about Africa (Weiler, 2005). On a personal level, she took interest in the voices and success of individual Black students (Weiler, 2005). The centering of others is in direct alignment with the CRT components of counter-narrative and centering the voice of the oppressed (Brown & Jackson, 2013).

All authors of the articles in this review recognize the importance of this quality of ally identity. Boutte and Jackson (2015) state that white voices are important, but they should be secondary to and informed by voices of people of color. Ahmed (2004)

suggests that whiteness studies must begin with Black perspectives on how whiteness works as a privilege and the effects of that privilege on Black bodies. Edwards (2006) explains that individuals acting as allies work with members of the oppressed group in collaboration and partnership, and that they take responsibility for doing so rather than seeking to work separately. Jupp et al. (2016) explain that the intellectual traditions of non-whites have been underemphasized or overlooked, but that these perspectives provide important insight into understanding white identity, which is a critical component of ally development (Brown & Jackson, 2013).

Patton (2015) explains that the decentering of whiteness is an obligation of those who are engaged in social justice work. At the same time, the author recognizes the difficulty in accomplishing this when the use of dominant structures in an attempt to decenter the dominant groups serves to re-center instead (Patton, 2015). To avoid this pitfall, Patton (2015) recommends following the leadership of people of color through coalitions and collaborations. Leonardo (2004) echoes this sentiment when he explains that “white guilt blocks critical reflection because people become concerned with whether they ‘look racist’ and forsake the more central project of understanding the contours of structural racism” (p. 140). Crocco and Waite (2007) explain that the voices of mentors of the dominant group were necessary in lifting up the voices of Black women who were writing about their own race and gender. This article also discusses the high risk involved for Blacks pursuing higher education, which made white allies critical in the integration of Black scholars into the academic community and in the validation of the work of scholars of color (Crocco & Waite, 2007).

Interestingly, many authors give nonexamples of the centering of marginalized

voices, perhaps because this is an area that is difficult to address as a member of the dominant group, for the reasons discussed by Patton (2015). Reddick and Pritchett (2015) explain that allies find ways to hold themselves and to be held accountable "without placing the burden for accountability on the oppressed" (p. 61). The authors acknowledge that it is imperative that allies see the value of people of color and internalize the idea that others are worth learning from, but do not require oppressed populations to tailor their rhetoric for the comfort of dominant groups, or to be the teachers of dominant society regarding oppression (Reddick & Pritchett, 2015).

In an article about school desegregation in Cincinnati prior to 1954, Douglas (2003) explains centering others requires that we stop seeing education as a pathway to assimilation and Americanization. In their article on Inez Beverly Prosser, Benjamin et al. (2005) explain that even Blacks in the 1930s saw education as a process of assimilation, as Prosser described the type of child who could be successful in mixed schools as one who was introverted, would not be hurt by not participating fully in school activities, and who could deal well with racial hatred and prejudices. The same article does not explicitly call out the actions of one of Prosser's professors, Louis Pechstein, in his publishing of an article under the same title as Prosser's dissertation, but this is another example of what may have been an attempt or intent to center Prosser's work, while in fact appropriating her words and re-centering whiteness (Benjamin et al., 2005).

Ahmed (2004) goes so far as to suggest that even the idea of whiteness studies, with or without a critical lens and purpose, centers whiteness because whiteness is only unseen by whites. Jupp et al. (2016) elaborate on this concept when they recognize that study participants who recognize white privilege "simultaneously reincorporated

understandings… into race-evasive notions of humanist diversity" (p. 17). In other words, requiring that we see whiteness re-centers whites because only the white population is blind to whiteness to begin with (Ahmed, 2004). In addition, seeing whiteness in practice does not necessarily result in race-positive beliefs or actions, and may serve as a way for whites to feel they have made adequate progress toward centering others (Ahmed 2004). This idea is consistent with the theory of moral licensing, described by Merritt et al. (2010) as the phenomenon that allows individuals to engage in immoral behaviors so long as they have committed past good deeds.

This characteristic could have profound implications for teachers in planning and implementing lessons and behavior management strategies. If classroom activities, including those facilitated by or focusing on technology, are to center the voices of students, this would need to be done deliberately. Again, training and support would be needed for teachers to successfully use their classrooms and to use technology to give voice to students.

Motivated by Moral Outrage/Personal Imperative

Another component of Carney's ally identity, described by Weiler (2005), is her shift from being motivated by the idea of doing something nice for others to being motivated by a sense of moral outrage and personal conviction. Weiler (2005) explains that, in her early life, Carney "fit the pattern of nineteenth-century white women reformers who sought to save those in need" (p. 2600), but that later on Carney "more closely resembled women activists who were motivated by moral outrage at segregation and racism" (p. 2600). Lipsitz (1998), in his description of a similar process in his own life, notes that the murder of Bill Moore was the moment when he realized fighting

racism was not just a something done as a favor (Lipsitz, 1998). This component is a direct manifestation of the CRT element of interest convergence (Brown & Jackson, 2013). Moral outrage is a deeply personal conviction, and being motivated by one's own moral sense, even when it is to act in the interest of another, is an example of the ability of the convergence of the interests of the oppressor and the oppressed (Ahmed 2004).

This ethical motivation is addressed similarly by other authors. Boutte and Jackson (2015) explain that allies feel compelled to speak out against oppression and to challenge other members of the oppressor group to do the same. Patton and Bondi (2015) describe various forms that the ethical work of allies might take "depending on personalities, passions, power, and choices… to enact their beliefs in social justice" (p. 505). Jupp et al. (2016), Ahmed (2004), and Reddick and Pritchett (2015) discuss the necessity of moral outrage to overcome the naiveté of race-evasive white identities and the fear and guilt that often accompany the recognition of one's oppressor status.

As an accompanying component to moral outrage, Reddick and Pritchett (2015), as well as Delgado and Stefancic (2013), note that learning about oppression is often a pathway to the development of the ethical sense necessary to take action against dominant systems. Edwards (2006) also describes characteristics that predicate this moral sense, including "having precollege egalitarian values, gathering information, engaging in meaning-making processes, developing confidence, and being presented with opportunities to act" (p. 41). Diane Goodman, in a record from Teacher's College (as cited by Edwards, 2006) recognizes that "empathy, moral and spiritual values, and self-interest" (p. 42) are the main motivating factors that inspire members of privileged groups to act as allies.

In the discussion of motivation, Edwards (2006) reminds us that intent does not matter so much as impact when good intentions still result in oppressive actions, nor would intent matter to the target of oppression so long as the outcome of the behavior was to confront and disrupt that oppression. Edwards (2006) does point out, however, that "understanding underlying motivations can be a strong tool to develop more consistently effective ally behaviors" (p. 53). Motivation is important to deliberateness, and to evolution and consistency, which makes it important to the ally definition, even if motivation is not in itself a guarantee of actions (Edwards, 2006). Discerning the motivation for teachers' choices should at some level point to an understanding of and unwillingness to accept the current oppressive structures in our education system.

Subverts Structures of Power and Privilege

Perhaps the most important component of ally identity is the ability to recognize and subvert structures of power and privilege (Brown & Jackson, 2013). This characteristic, however, is also the most nebulous, as all members of society are socialized to support dominant structures (Brown & Jackson, 2013). The specifics of this component may also be up for debate, as some scholars suggest there are stages to ally identity, not all of which include this particular behavior (Edwards, 2006). Scholars recognize the difference between intent and impact (Tochluk, 2007). Some extol the good intentions of would-be allies. Although I recognize these perspectives as existing in the literature, I contend that ally identity necessarily includes conceptions of races and actions that subvert dominant power structures and white supremacy and that the argument for good intentions is, in fact, one source of weakening of the term.

In Carney's work (as cited by Weiler, 2005), her continual focus on the ends as

opposed to the means emphasizes that her primary concern was the lived reality of marginalized populations, and not the intentions of decision-makers. Again, this aspect of ally identity is aligned with a CRT framework in its focus on social change and its centering of the voices of the oppressed (Brown & Jackson, 2013). It also engages in avoidance of essentializing minority identities by recognizing power structures that create complicated manifestations of race and racism (Brown & Jackson, 2013).

Patton and Bondi (2015) recognize the action-oriented nature of ally identity and urge members of the dominant group to challenge the status quo through careful analysis of policies and decisions. Edwards (2006) explains that allies must engage in social service as well as social change. Leonardo (2004) distinguishes white privilege from white supremacy and explains it is necessary not only to address white privilege, but more important to dismantle white supremacy, which functions as the condition under which white privilege is allowed to exist. Leonardo (2004) states, "'Race treason' or the renunciation of whiteness is definitely a choice for many whites, but without the accompanying structural changes, it does not choke off the flow of institutional privileges that subjects who are constructed as white enjoy" (p. 137). Stefancic (2014) says simply that understanding without action is pointless.

The difficulty in recognizing which behaviors do in fact subvert systems of power contributes to the nebulous nature of this particular characteristic of ally identity. In their study of white teacher identities, Jupp et al. (2016) call out the problematic nature of professional development that is focused on white awareness of white privilege without addressing white supremacy in the structure of institutions. A study by Garza and Garza (as cited in Jupp et al., 2016) revealed the assimilationist perspective inherent in our

education system, as well as the race-evasive behaviors of teachers who engaged in all-children discourses and standards-based/can-do attitudes.

Ahmed (2004) presents even more nuanced examples of this challenge, one example being the publication by a university of a document speaking out against racism being used as a measure of good performance of that university. The author describes the processes through which whiteness is reproduced in its being declared in literature and in culture, and that description of ally work is worth quoting at length:

> Our task is not to repeat anti-racist speech in the hope that it will acquire performativity. Nor should we be satisfied with the 'terms' of racism, or hope they will acquire new meanings, or even look for new terms. Instead, anti-racism requires much harder work, as it requires working with racism as an ongoing reality in the present. Anti-racism requires interventions in the political economy of race, and how racism distributes resources and capacities unequally amongst others. Those unequal distributions also affect the business of speech, and who gets to say what, about whom, and where. We need to consider the intimacy between privilege and the work we do, even in the work we do on privilege. (Ahmed, 2004, p. 11)

Ahmed's (2004) focus not only on the behavior of allies, but also on the processes that allies employ in making decisions about their behavior, is an important consideration in the characteristic of ally identity.

Edwards (2006) explains that the action orientation of allies serves to liberate members of the dominant group who are dehumanized by their participation in oppression. Edwards's (2006) acknowledgment of the impact on allies may center allies

but is an important recognition in the context of interest convergence and the factor of selfish motivation that he identifies as an important component of ally identity development . As oppressor identities engage in behavior that dismantles their own systems of power, there will be loss and trauma on the part of the dominant group and ignoring this phenomenon will serve only to further the unhelpful emotion of white guilt and obstructive race-evasive behavior (Edwards, 2006). Identifying this characteristic in interviews, focus groups, and observations will take careful analysis, and the foundation of behaviors that do or do not subvert oppressive systems of power will be important to identify as areas to address with teachers through school-wide systems, professional development, and ongoing support.

Secondary Characteristics

In conjunction with the characteristics described above, two mindset trends stand out among ally literature. The first is a humanizing worldview that creates liberating community. This aspect, while connected to being motivated by moral outrage or conceiving of race and actions in ways that subvert systems of power, is unique in its emphasis on understanding how otherness dehumanizes the oppressor as well as the oppressed, as well as its highlighting of authenticity and relationship (Boutte & Jackson, 2015). This characteristic is consistent with CRT concepts of centering the voices of the oppressed and the avoidance of essentializing identities (Brown & Jackson, 2013).

Boutte and Jackson (2015) illustrate this component of ally identity when they describe a shift in thinking of members of the dominant group who observably support white supremacist power structures as resistant to thinking of them as learners. They suggest that

> In the interest of propelling, versus truncating, the social justice agenda, we suggest that it is often helpful and productive to look beneath the overt action of resistance and interpret the underlying cause of the action as the residual of an endemic oppressive cycle in schools and society designed to be self-protective and to teach people not to question the status quo and, indeed, to reject anything that counters it. (Boutte & Jackson, 2015, p. 627)

The implication is that seeing resistance in other lights would truncate the social justice process (Boutte & Jackson, 2015). As a result, it is obligatory that the ally identity regards all members of the dominant group as in the midst of a learning process (Boutte & Jackson, 2015). This unifying and humanizing world view is validated by Kleinman and Wilkinson (2016), in which the authors describe the importance of reflexivity in the work of social research and change.

Reddick and Pritchett's (2015) work describes the process by which members of dominant groups came to understand marginalization as related to personal feelings of otherness that allow the humanization of oppressed groups and individuals. The discussion of Jupp et al. (2016) regarding essentializing is at its core an argument against dehumanization. Edwards (2006) is transparent about the loss of authenticity experienced by members of dominant groups as a result of their active role in oppression, and even warns against over-intellectualization of oppression at the expense of losing sight of its personal and immediate manifestations. This author, too, warns against the dehumanizing behavior of judging still-aspiring allies (Edwards, 2006).

Benjamin et al. (2005), along with Crocco and Waite (2007), describe the divisive impact of not adopting this humanizing worldview. Crocco and Waite (2007) explain that

Black college-educated women had more white friends and "were less satisfied with living exclusively in black society" (p. 91) but were not fully accepted by white society. These women "hid their inner selves behind masks of distance and formality" (Crocco & Waite, 2007, p. 91). Benjamin et al. (2005) depict an entire field of study that was as recently as 40 years ago entire devoid of Black populations, either as researchers or subjects of research. These divided realities are the direct result of a failure to adopt a humanizing and liberating stance (Benjamin et al., 2005). This is related to literature that will be discussed later concerning constructivist teaching strategies, which are most helpful in supporting student learning and which acknowledge that students and teachers build knowledge together, rather that setting up a dichotomous classroom environment. The second characteristic is the acceptance of one's role in white supremacy and the deliberate relinquishing of privilege (Brown & Jackson, 2013). While similar to the idea of taking action to dismantle oppressive systems, it distinguishes itself by focusing on the individual responsibility to relinquish privilege adopted by the ally identity. It is in the same way, however, nebulous, and it also presents the challenge of being out of alignment with the idea of interest convergence.

In relation to the previous discussion of dehumanization, Leonardo (2004) points out that it is important to remember one's role in society's structuralized oppression. Leonardo states,

> White humanity is just that: humanity of whites. So it is not only the case that whites are taught to normalize their dominant position in society; they are susceptible to these forms of teachings because they benefit from them. It is not a process that is somehow done to them, as if they were duped, are victims of

> manipulation, or lacked certain learning opportunities. Rather, the color-blind discourse is one that they fully endorse. (Leonardo, 2004, p. 144)

Leonardo (2004) goes on to explain that whites do not believe they are racist, and so racism exists in the absence of racists. The author reports whites have the most to lose from the work of social justice and suggests the policy of 40 acres and a mule during Reconstruction would have been a good start at helping whites to understand what is needed (Leonardo, 2004).

Within the past five years, The New York Times Editorial Board (2016), among others, lauded Georgetown University for confronting its past by giving preferential admittance to the descendants of 272 men, women, and children who were sold as slaves by the university and has also named a building after one man who was sold. The university reasoned that it had benefited from oppression and owed a debt to those it had harmed (The New York Times Editorial Board, 2016). If this is true, then how much and what nature of tangible relinquishing of power is required of individuals, who have benefited from oppression and yet have been required to give back nothing?

Patton and Bondi (2015) enumerate some of the specific privileges of aspirational allies, including the ability to paraphrase or exploit Black struggle and having their arguments received as if it were their own struggle, the ability to express their view about racism without being dismissed as overly emotional, and the ability to be honored for anti-racist work while Black activists are denounced and derided. Patton and Bondi (2015) join Lipstiz (1998) in the discussing the idea of whiteness as property, the rights to which are protected by law. Whites benefit simply from being known as white (Lipsitz, 1998). If this is the case, and if whites have to and are able to choose to relinquish their

conferred dominance, even the act of being able to choose is a privilege characteristic of oppressor identity (Lipsitz, 1998). In addition, in the context of interest convergence (Brown & Jackson, 2013), there will always be a self-centered rationale for relinquishing privilege, which is inherently anti-ally performance. Allies, then, are defined only by marginalized groups with which they align (Weiler, 2005).

Teacher Beliefs and Actions Regarding Technology in the Classroom

While not all of these characteristics are commonly acted upon in a classroom setting, it is not always because teachers do not intend to behave as allies. Rather, the structures in place in traditional classrooms set up power structures that often perpetuate non-ally relationships. In addition, professional development and ongoing support to address racism in the classroom is often not a focus for districts or schools in practice or policy.

Several studies have discussed the relationship between teachers' beliefs about students and toward technology and their alignment or lack of alignment with those teachers' classroom practices. Domingo and Garganté's (2016) study shows that the instructional benefits of apps used in the study do not address all the motivations teachers have for using technology in the classroom because many of the apps do not have instructional benefits—they consist primarily of skill practice or information gathering functionality.

Johnson's (2017) study of elementary teachers' goals for and implementation around text discussions determined that teachers need more training and support through teacher education programs, professional development, and in-service opportunities in order to effectively execute textual discussions, and that further research is necessary

regarding effectively implementing strategies to support student-centered and democratic learning. These finding relate strongly to the use of technology in the classroom as well. Teachers struggle with knowing how much they should guide the class and how much students should, as well as how much they should incorporate students' outside lives into the classroom (Johnson 2017). They do not have the support that they need to implement strategies to ensure that students are accomplishing democratic goals (Johnson 2017). In addition, the communication aspect of this study applies to today's world in a profound way knowing that much communication occurs in the digital world.

In a study by Hermans et al. (2008), the researchers found that constructivist teacher beliefs were found to be a strong predictor of classroom technology use, while traditional teacher beliefs seem to have a negative impact on the integration of computers in the classroom. These beliefs were shown to be at least as important as technology-related teacher characteristics, such as computer experience and general attitudes toward computer use (Hermans et al., 2008). This indicates that fostering a constructivist philosophy of teacher is a critical component to enabling and encouraging the use of technology in the classroom.

In relation to the importance of teacher interaction and technology use, Palinscar et al. (2018) conducted a study to determine what is necessary to technology to facilitate instruction rather than skill building or information gathering. The researchers explain that, despite the richness of the digital supports, scaffolds would not have achieved their potential in the absence of teacher mediation and peer interaction, and without being embedded in a conceptually rich and coherent curriculum (Palinscar et al., 2018). As a result, Palinscar et al. (2018) note that digital supports must function in conjunction with

a well-planned and conceptually rich curriculum, as well as intentional peer and teacher interaction.

An important study by Kopcha and Sullivan (2007) explored teacher self-presentation bias. The authors found that, despite the widespread use of self-report surveys, self-presentation bias was widespread in the self-reports of the participating teachers (Kopcha & Sullivan, 2007). Teachers tended to portray their own personal practices as being more positive than those of 'other teachers they know and note early in the article that studies are used to create education policy, and so it is important not to use self-report studies to take political action (Kopcha & Sullivan, 2007). This stresses the importance of observing teacher practices rather than reporting only on teacher feelings or perceptions.

On the other hand, Ertmer et al. (2012) found that award-winning technology teachers were able to align their practices with their beliefs about using technology for student-centered education and as a tool to facilitate classroom interactions rather than simple to practice skills or gather information. However, the participants in the study were not representative of the general population of teachers, and the study did not include observations of classroom practice—the researchers looked solely at teachers' websites to determine alignment between professed beliefs and classroom implementation (Ertmer et al., 2012). It is possible, therefore, that the manifestation of these beliefs in implementation is not in fact aligned with teachers' beliefs or website information.

Need for Support via Teacher Ed Programs and Professional Development.

The conclusion of the study conducted by Hermans et al. (2008) was that the

strong correlation between constructivist perspectives and effective technology integration should have a significant impact on the field of teacher education and professional development. Johnson's (2017) findings state that teachers need more training and support through teacher education programs, professional development, and in-service opportunities in order to effectively execute textual discussions, and that further research is necessary regarding effectively implementing strategies to support student-centered and democratic learning. In addition, Viseu and Menezes's (2014) study of preservice teachers' fears about using technology to model with mathematics also sate preservice teachers' experiences as learners carry over to their ability and confidence in implementing student-centered technology-driven experiences in the classroom, particularly related to modeling with mathematics.

An action-research study by Luongo (2012) showed that even brief professional development on equity in technology practices had a profound impact on study subjects. Participating teachers in the study from all involved grade levels put forth effort to distribute equitable attention to the boys and girls after the professional development session and were able to identify the impact that their attitudes and behaviors regarding gender could have had in their classrooms and computer laboratories (Luongo, 2012). In addition, there was a change in teachers' perception of not having enough time with computers once they felt more confident about their usage of that time, and before the intervention, 31% of students thought that they received equal access to technology while that number rose to 50% after intervention (Luongo, 2012). The article concludes that teachers desperately need professional development to support equitable treatment of technology among students of different genders, and that gender equity should be built

into teacher education programs (Luongo, 2012).

Barriers and Biases.

Rafalow's (2018) study on disciplining play explores how students' digital skills are differently transformed by teachers' disciplinary practices into cultural capital for achievement or against achievement. This critical study finds that teachers have assumptions about the value of students' digital competencies as they apply to the educational setting (Rafalow, 2018). Rafalow (2018) notes that some of these assumptions are based on societal constructions of race and class, and some are contextual to the school and locale. These assumptions manifest in teachers' interactions with students regarding technology, as well as their pedagogical approach to technology in the classroom (Rafalow, 2018). The conclusion, as stated, is that

> teachers' shared perceptions of students' needs, rooted in assumptions about the race and class of their student population, inform well-intentioned pedagogical approaches to kids' digital skills. Teachers enact these perceptions through the messages that they transmit to children about the value of their digital culture. At a school with mostly wealthy and white youth, teachers communicate to children that skills from digital play represent valued capital for learning, whereas at schools with mostly minority and poor children, students learn that their digital skills are threatening or irrelevant to their education. Social reproduction occurs because of schools' different disciplinary approaches to play, spurring ahead youth at privileged schools over others. (Rafalow, 2018)

I argue that there is an opportunity to apply the same value to students' digital competencies, which are largely uniform across race and class, and in doing so to inspire

cultural mobility among disadvantaged youth, and that this opportunity is missed, and that in fact cultural mobility becomes even more stratified as a result of race and class assumptions and bias.

Viseu and Menezes (2014) conducted a study of preservice teachers that explored barriers to the use of technology for modeling in the classroom. Results of the study uncover fears that prevent preservice teachers from adapting technology-based modeling tasks into their classrooms. These include unsatisfactory content knowledge, unsatisfactory pedagogical knowledge, fear of unpredictable results, fears about ability to manage an exploratory-type class, fears about the amount of time that these tasks take and the ability to cover required material (Viseu & Menezes, 2014). In this case study, the participant had also not experienced this type of task in her own educational background, and so it shows that preservice teachers who are presented with this approach in their own experiences see the value of the activities and are more likely to feel comfortable with their ability to implement them in their own classrooms (Viseu & Menezes, 2014).

The literature suggests that teacher beliefs about students and the value of technology, as well as their philosophies of education, dramatically impact their implementation of technology in the classroom. It also recognizes that the training and support that teachers receive in their own schooling, in teacher education programs, through professional development, and from their schools, departments, and colleagues are critical to their effective implementation of technology. The barriers to effective implementation discussed in the studies in the literature include lack of training and support and the importance of teacher attitudes and interactions in the classroom, and the literature also point out the importance of research in these areas, as the information from

these studies are often used to inform policy, and therefore contribute to the shaping of the field of education.

Gaps in the Literature

Current literature does not specifically explore the critical role that affect and emotions, including racialized and gendered trauma, play in this increasingly important aspect of education. There is also scant literature on the impact of these phenomena on student emotions. This paper will draw on critical theory, specifically CRT, to take a step toward ensuring that people's stories and selves are being considered in the research that informs policy, that manifests in teacher expectations, molds students' educational experiences, and that inspires future research topics.

Chapter 3: Methodology

Participants, Setting, and Researcher Positioning

Selection of Sites and Participants (Sampling)

This study takes a purposeful sampling approach as described by Merriam (2016). It was important to identify teachers who feel comfortable with their use of technology in the classroom, and so I requested suggestions from principals, instructional coaches, and other administrative staff in the district. I conducted two observations of each participant's classroom and was an observer during each observation. The setting was high school classrooms in an urban public school that was currently using technology to enhance lessons. These classrooms had primarily minority student populations. Two participants were Black women, two were white women, and two were white men. Classrooms differed in size and in implementation methods.

Participation and Positioning (Ethical Considerations)

Marshall and Rossman (2016) discuss the idea of positioning oneself as a researcher. This came up for me as a teacher, as well, being a white woman working in predominantly Black and Hispanic schools. The authors note that researchers should reflect on their identity, voice, perspectives, assumptions, and sensitivities, and should do so at every step in the research process, from the project proposal to the final report. During the research for this study, I was a white woman walking into a classroom of primarily students of color whose other authoritative figure was, in two-thirds of the cases, also white. I made sure to dress in appropriate attire based on the school's expectations (Marshall & Rossman, 2016). In addition, I came early and stayed late during each visit and made sure to talk with students and staff in the hallways. Although I

was an observer for the study, this extra presence helped to build rapport both with the teachers and with others in the environment, including the students. I also made sure to give an appropriate amount of information regarding my purpose to all participants so that they felt like they were part of the process, rather than subjects being evaluated.

It is also important to note that a majority of my studies have been devoted to CRT, and a majority of my work in education has been with under-resourced schools and marginalized populations. I struggle with going into these settings holding assumptions about their teachers not being as effective as teachers in wealthier districts with primarily white populations. I needed to take care to avoid being evaluative, rather than observational, and to be careful to recognize this at every step of the process, from field notes to data collection and analyses to the writing of the final report.

Protection of Subjects

The principal and teachers were provided with a disclosure statement and consent form, which they read and signed prior to participation. They and their students are referred to during all phases of the study by pseudonyms, and every attempt was made to avoid personally identifiable information. All names in the text of this report and its appendices are pseudonyms. Pseudonyms are consistent throughout, and they are used during discussions outside of the writing of the report as well. Personally identifiable information has been removed to protect the identities of all subjects. If teachers provided class documents with student information, they were be taken into consideration but not included in the report or in discussions of the project. Consent forms can be found in Appendix A.

Data Collection

Data sources include a semi-structured interview with the principal of the high school and with participant teachers. A list of participants by pseudonym, as well as dates and times of interviews and observations, can be found in Appendix C. Data also include transcripts, which elicit responses about the participant teachers' digital experiences, practices both in and out of school, and beliefs. I collected notes from two classroom observations of each teacher and reflected on those experiences to examine the alignment or lack of alignment between teachers' beliefs and classroom practices. In addition, relevant documentation regarding technology use in the classroom, including the lesson plans, other curricular materials, school or district guidelines regarding technology, and professional development documents served to inform the data obtained through the interviews and observations but were not analyzed.

To collect interview data, an interview protocol was created to guide the conversation (Appendix B). The interview lasted between 45 and 60 minutes, and the principal and teachers chose times that fit best with their schedules. The interviews were conducted in-person at a location of each teacher's choosing, with the exception of one that was conducted over the phone. The interviews were recorded, and both the recording device and the interview questions were tested with a colleague who also works in education to determine that the length of the interview and sequencing of questions were appropriate. The interviews were relatively informal in the sense that I allowed the participants to guide the conversation, moving between different sections of the protocol as was natural.

During the observations, I was an observer only. I consulted with teachers to

determine the best class period to observe, and during this observation I typed field notes, which was appropriate as the classes involved technology use, often with students on their own laptops. I wrote these observations as objectively as possible, with my personal thoughts in a specific font to denote them as such.

Data Analysis Procedures

The data analysis process consisted of several steps for all data. The first step was open coding and was performed by transferring transcript and observation notes to an open-coding template. In this template are further notes regarding questions that were inspired by excerpts from the data, connections between ideas, and reflections on the data inspired by the excerpts. An example is provided in Table 1, and the complete open coding document can be found in Appendix D.

Table 1: An excerpt of open coding from interview transcript

B.150-154	Problem with tech in ed is that you learn one program and then a new one comes up and you have to learn that one so you don't end up learning things deeply.	Tech in ed (challenge)	Challenge with technology for teachers is ever-changing tools and expectations/initiatives.
B.156-159, 161, 163	Teachers think they use tech to get students' attention but it's really just the bright colors and movement. It's tricking them into engagement, but not learning. "I know nothing about elephants, but they're fun to watch."	Tech in ed, beliefs about students, beliefs about teachers	Teacher believe tech is critical for engagement, but engagement does not equal learning.

B.166-172, 176-180	It's a tool that you can use sometimes but not all the time. There are other tools and you have to know which one is the right one at the right time. Sources, interviews, the digital nature of a specific phenomenon. And tech tools can include anything from those digital sources to your cell phone. For a phone you should know what tools are available. Then you can study anywhere. But you have to know what to have, where to have it out, how to use it.	Tech in ed (purpose)	Technology should serve as a tool.
B.182	No [students aren't good at using tech for the right purposes]	Beliefs about students	How does he support this? How does it show up in observations?

The next step was a coding-to-concepts process, where open-coded excerpts and their notes were transferred to another template to develop themes or concepts that encapsulated the ideas from the open-coding step. During this step, I also made notes that tied concepts to literature, or that suggested further reading into a specific topic. An example of this step can be found in Table 2, and the complete coding-to-concepts document can be found in Appendix E.

Table 2: An excerpt of coding-to-concepts from interview transcript

B.150-154: Problem with tech in ed is that you learn one program and then a new one comes up and you have to learn that one so you don't end up learning things deeply.	Tech **changes so often**, or initiatives change, so teachers are constantly learning new programs	Challenges with Technology	Natural changes, expectations for teachers—would this be somewhat alleviated if teacher integrated more student-centered tech sources?

B.156-159, 161, 163: Teachers think they use tech to get students' attention but it's really just the bright colors and movement. It's tricking them into engagement, but not learning. "I know nothing about elephants, but they're fun to watch."	**Engagement versus learning**	Challenges with Technology	How does this align with other interviews? With how teachers use technology in the classroom?
B.166-172, 176-180: It's a tool that you can use sometimes but not all the time. There are other tools and you have to know which one is the right one at the right time. Sources, interviews, the digital nature of a specific phenomenon. And tech tools can include anything from those digital sources to your cell phone. For a phone you should know what tools are available. Then you can study anywhere. But you have to know what to have, where to have it out, how to use it.	Challenge is **knowing what tools to use at the right time**	Challenges with Technology	Purpose of using technology in schools is to support students' understanding of how and when to use it in real life—primarily as a tool/resource.
B.182: No [students aren't good at using tech for the right purposes]	**Students don't know** how to use technology **the right ways**	Challenges with Technology, Beliefs About Students	How will this look in observations?

The final step was axial coding, combining data from all sources into categories, subcategories, properties, and dimensions with related quotes and research. Each of these steps employed elements of the theoretical frameworks mentioned in the introduction, including constructivism and CRT. Narrative analysis was used to identify themes in the language and behavior of the teachers and school. An example of axial coding can be found in Table 3 below, and the complete axial coding document can be found in Appendix F.

Table 3: An excerpt of axial coding from combined data sources

Category 2: <u>Beliefs and Attitudes (Stated)</u>

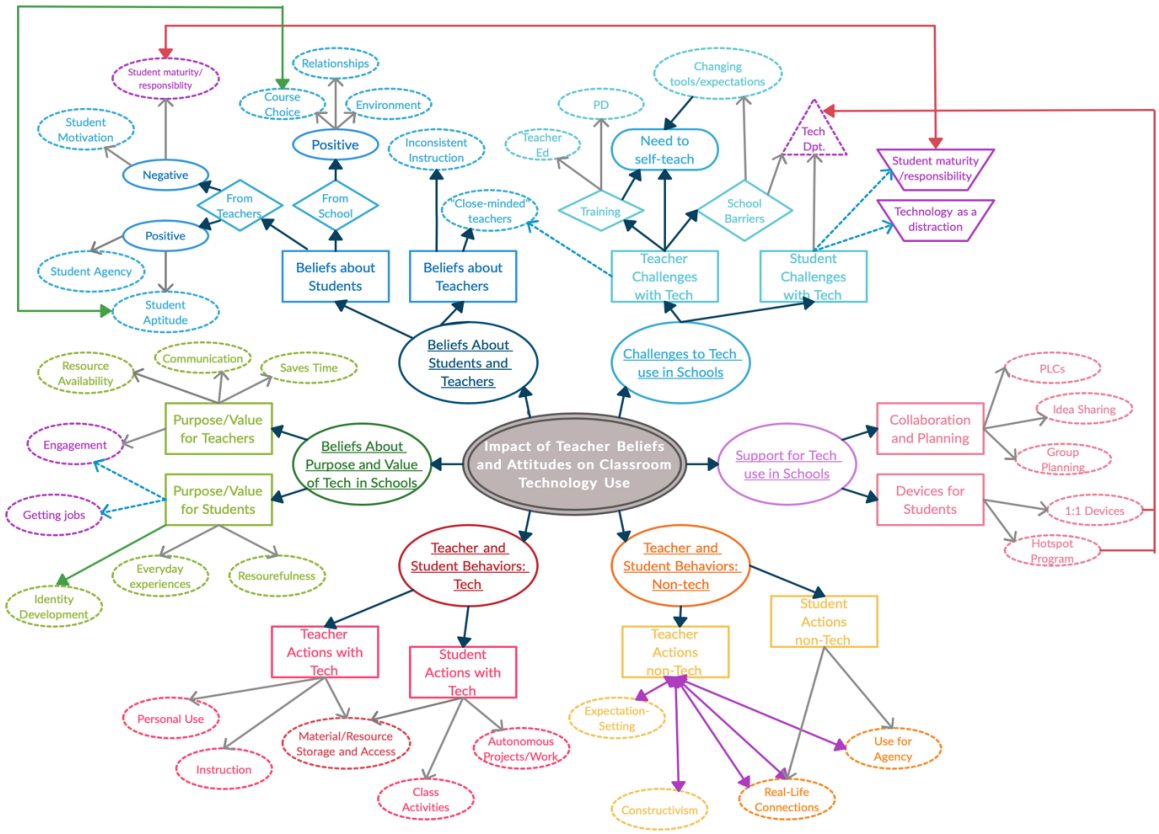
Subcategory	Property	Dimension	Data	Memos/ Scholarship
Beliefs and Attitudes About Teachers	**Positive from School and Teachers**	**Consistency**	E.395-397: Says she uses tech about the same as other teachers in her department	Consistency
		Quality Instruction	A.332-333: "[I am absolutely confident that technology is being used to enhance learning and isn't primarily a distraction."	Belief in Teachers, Autonomy
	Negative from Teachers	**Resistance to new ideas**	C.478-487: Need for teachers to be open and problem-solvers. Frustration with "older teachers"	**Kopcha:** Self-bias. **Viseu:** Teacher fears.
Beliefs and Attitudes About Students	**Positive from Teachers**	**Student Agency**	G.97-103,107-117: Students came up with idea for podcast topic; G.127-146,150-161, 163-170: Allows for student conversation and debate	Expresses care for and belief in students.
		Student Aptitude	G.95-96: Students asked for guidance, but CS knew she'd given them what they needed and pushed them to get there on their own.	
	Positive from School	**Student Aptitude**	B.11-15, 19: 10/11/12 AP dual-credit SS courses as part of early college program. Ss can accumulate college hours prior to HS/w HS diploma	
			C.19-21, 25, 27: Teachers AP Biology, Human Body Systems, 3rd year at this school, 16th total teaching	
			B1.2-3: These are advanced classes, not available at all schools	
	Negative from Teachers	**Students are irresponsible**	D.293-302, 306-312: Students break Chromebooks—but then says they do ok but can't use tech	**Rafalow:** Bias against students.

			effectively	
		Students are immature	C.76-87: “I would do technology in all the courses. It really is all about student maturity. I have found that my **lower-level courses**, and I think their lower level is just due to student maturity.”	
		Students don’t care	C.76-87: “I have students who struggle academically, but if they're **mature enough**, that **have the willingness,** too, they do well regardless of what course you put them in. So maturity level is my indicator…. in my [higher-level] class[es], I use it every day. If they are looking at emails or checking grades or sending me their homework in my Biomed class, everything's graded online so their answering questions via Google Forms. They turn their assignments in via Google Docs. I share with them rubrics based on their writing so they can see, and I share it via email because Google Docs does not have a seamless rubrics integration but apparently they're working on it.”	

After all necessary coding was complete, I organized themes graphically for accessibility. This allowed connections between concepts to be more clearly identified and explored. These themes and their connections served as the basis for research findings (see Figure 1). In this figure, the primary research question is at the center, and the six most prevalent concepts are connected directly to that question. Each of these concepts is connected to or divided into separate themes within that concept. These are

broken down until more specific themes or dimensions are identified, and then examples are tied to each, with connections between dimensions and examples signified by arrows. For example, the concept of challenges with technology is broken down into challenges faced by teachers and those faced by students. Both of these populations experience challenges with the technology department, while students face the additional challenge of being distracted by technology and teachers face the specific challenge of lack of training. Teachers who are "close-minded" when it comes to technology is an example of the concept of beliefs about teachers, as well as a challenge to technology use.

Figure 1



Chapter 4: Data Presentation and Interpretation

The findings of this case study address the question "What is the interplay between teachers' beliefs on their classroom technology use?" While teachers were able to articulate the belief that technology skills are an integral part of students' education, the demonstrated inconsistent ability to effectively integrate technology into their classrooms, according to the goals and values stated for this integration. While they noted that they felt supported by colleagues, they recognized, too, that what is needed most to bolster teachers' beliefs about the value of technology and its effective implementation in the classroom is further professional development and support from their school and district.

Through the process of thematic analysis, I identified six concepts that were relevant to the question of the interplay between teachers' stated beliefs on their classroom technology use. These included beliefs about/attitudes toward teachers and students, beliefs about the purpose and value of technology in schools, teachers' and students' behaviors as they were related to technology use in the classroom, challenges for teachers and students around technology use in schools, teacher and student behaviors that were unrelated to the use of technology in the classroom, and the support teachers received in terms of integrating technology effectively. See Table 3 in the coding section for an example of the axial coding for one of these themes, and Appendix F for the complete axial coding document. The primary components from the axial coding activity as well as their concepts and codes were used to create a visual to display these themes, their components, and connections between themes and components (see Figure 1).

I also identified differences in beliefs and behaviors between white and Black

teachers, but these findings were not strictly divided by race. Perhaps the most salient difference was the significant positive difference in one Black woman teacher's classroom compared with all others (see Table 4). These differences will be discussed further in the following sections.

Beliefs and Attitudes About Students and Teachers

A standout belief conveyed by the school was that students were worthy of trust and were capable of interacting with technology in an appropriate way. This is in alignment with the CRT idea of centering students by providing them with trust, autonomy, and voice (Brown & Jackson, 2013). The principal also stated that he was "confident that technology is being used to enhance learning and isn't primarily a distraction" (M. Parsons, personal communication, September 23, 2019); however, teachers did not share this belief, indicating a mismatch between the desire the school projects to create a liberatory community for students and teachers' unwillingness to relinquish control or trust students to interact with technology appropriately. The school also demonstrated its belief in student aptitude in its provision of higher-level courses, including dual-credit and AP courses, as well as its learning environments, which were bright, clean, and welcoming. The office was staffed around-the-clock, and there were adults in the hallways regularly greeting students by name and asking how they were doing.

Teachers generally expressed positive attitudes toward students in interviews, and in some cases during observations, through constructivist pedagogies and specific teaching strategies. That said, there were missed opportunities to demonstrate these attitudes—more with some teachers than others (see Table 4)—and overtly negative attitudes

expressed during interviews around student maturity and motivation. The differences between teachers' stated attitudes/beliefs and their actions are made clear in Table 4, and largely do not exemplify the CRT tenets of centering marginalized populations (Brown & Jackson, 2013), which in this case are students, or of self-awareness in the sense that they blamed students for being irresponsible and unmotivated rather than thinking of how they might motivate and support students in these areas. Incidences were tallied with execution as positive and missed opportunities as negative; for example, off-task behaviors and negative redirects are counted as negative. Totals are displayed in Table 4. The total for each teacher represents positive culture-building, alignment with goals, and student-centered instruction present in the classroom. These data show clear inconsistency in classroom culture among teachers.

One important discovery related to teacher race and their professed beliefs about students and technology was that all four white teachers at some point blamed students for challenges with technology while neither Black teacher did this—they blamed a lack of training or preparation. Only one white teacher mentioned bringing student identities from outside of school, especially social media, into the classroom, which both Black teachers mentioned doing so. Both Black teachers mentioned the importance of relationships with students and using technology to facilitate that, while no white teachers mentioned this aspect of technology use, or the goal of building relationships in general.

Teacher and Student Behaviors not Related to Technology in the Classroom

Teachers engaged in behaviors not related to technology that created both positive and negative classroom environments. Teachers whose classrooms included the most constructivist approaches and engaged student voice and agency most often were also

most likely to set clear expectations and procedures, engage in relationship-building behaviors, and draw real-life connections. These teachers also had the lowest incidences of off-task behaviors and of negative redirects. In Figure 1, these behaviors can be seen as both being impacted by and impacting the teachers' actions. Table 4 outlines each teachers' engagement with the components of culture-building, which ended up being highly correlated with the effective use of technology by both students and teachers in their classrooms.

It is worth noticing that both Black teachers has positive scores in the constructivist approaches and real-life connections. During interviews, all four white teachers stated that technology should be used as a tool, for work, for engagement as compared with learning, or because it made teaching easier. Both Black teachers mentioned relationship-building and collaboration as important aspects of technology in the classroom. One Black teacher also scored significantly higher than any other teacher in the category of providing student agency and voice, a critical aspect of the CRT tenet of centering students. This is also related to the idea of subverting power and privilege by ensuring that those who have traditionally not had a voice are given that opportunity.

Table 4: Teacher Actions and Missed Opportunities for Culture-Building by Teacher (Demographics: B = WM, C = WF, D = WM, E = WF, F = BF, G = BF)

Teacher	Strong Expectation	Relationship- and Culture-Building	Student Agency /Voice	Construc-tivist Approach	Real-Life Connection	Off-Task Incidence	Negative Redirect	Total
B	8	9	1	4	5	0	0	27
C	6	13	1	4	4	-3	0	25
D	-2	-1	0	-1	4	-3	-3	-6
E	-3	-2	0	0	2	-8	-6	-17
F	-2	-4	0	2	1	-7	-4	-14
G	11	9	10	11	6	0	0	47

Teacher Perceptions of the Purpose and Value of Technology in the Classroom

Although some teachers mentioned that they do not believe students take their time with technology seriously, most noted that engagement via technology is one of the most valuable aspects of technology in the classroom. One teacher explained, however, that engagement is not the same as learning. He described it with the example, “I know nothing about elephants, but they're fun to watch” (J. Williamson, personal communication, October 24, 2019). The same teacher did agree that one of the key values of technology for teachers is its ability to save time and provide access to a variety of previously unreachable resources. Some also mentioned that technology has eased communication with colleagues as well as with families. These stated values of technology are in conflict with the CRT ideas of centering the oppressed and subverting structures of privilege when they are the primary use case for teachers (Brown & Jackson, 2013). As mentioned earlier, white teachers were more likely to see technology as a tool or engagement strategy, and these actions played out in all four of these teachers using technology to display or have students look up information, and for administrative purposes that would make teachers’ lives easier, for example, with automatic grading.

For students, teachers also mentioned the value of engagement; however, the teacher who questioned this value is supported by Domingo and Garganté (2016) when they describe the primary function of technology revolving around skill practice and information-gathering rather than learning or engaging with new material. Teachers also describe future jobs as a primary benefit to students of engaging with technology in the classroom. Only one white teacher but both Black teachers mentioned attempting to bring students’ outside-of-school technology experiences into the classroom. Only white

teachers dismissed it outright as a source of conflict or used students' personal technology use a detrimental to their proficiency with technology in terms of college and career readiness. Few demonstrated evidence of executing on bringing students' technology interests into the classroom. Only one teacher, labeled G in Table 4, mentioned identity development as an important aspect of technology use in schools. Notably, this teacher scored the highest in the culture-building criteria in Table 4, and was the only teacher who, during observations, demonstrated openness to students' expressing agency in their technology use during a classroom assignment.

Teacher and Student Behaviors Related to Technology in the Classroom

Several teachers noted that technology is a resource and a tool, rather than a medium for learning in itself, and each of these teachers was white. This aligns with the findings of Palinscar et al. (2018) that technology is seen, but should not be seen, as a solution in a vacuum—that teacher and student interactions are key components to instruction and learning (pp. 191-208). In these classes, use of technology was primarily confined to displaying information, such as instructions for an activity or class-wide readings. The other primary use among teachers was storage of resources and materials, mostly in Google Classroom. One white teacher mentioned used technology for personal reasons—to record her lesson to review with her supervisor.

Students also used technology to access resources and materials provided by their teachers. In addition, they engaged with technology for notetaking or formal and informal assessments. In two classes, teachers C and G in Table 4, students used technology to analyze material or create their own online projects. As outlined in Table 4, teachers with strong culture-building behaviors, even if they were not stated as goals during their

interviews, that are not technology-related are more likely to engage students with technology in a way that is student-centered and encourages student agency and real-life connections.

Supports for the use of Technology

All teachers recognized that the biggest support they have for using technology in their classrooms is collaboration with colleagues. Their professional learning communities (PLCs) provide the opportunity to discuss what activities and programs they have found most beneficial. They also acknowledged that many of the ideas that they use in their planning come from planning with colleagues or sharing ideas with each other in informal settings. That said, the activities that teachers identify as their most effective or favorite technology-centric projects or assignments were often class-specific, suggesting that teachers would benefit significantly from additional administrative guidance or time allotted to discussing the value of these types of projects. The teachers who participated in the case study saw themselves as those who enjoyed learning about and using programs or activities that they had discovered outside of professional settings. These experiences emphasize the importance of teacher training in encouraging the use of technology in future educators' classrooms. At the same time, these behaviors were not always executed in their classrooms, which is a critical aspect of ally identify in the form of action-orientation (Edwards, 2006). It also is at odds with the idea of self-awareness in the use of technology to create a liberatory experience for their students (Edwards, 2006).

While teachers recognized the benefit of the school's ability to provide 1:1 devices for students, they saw the technology department and students' lack of training on the treatment and use of the devices as barriers to their use in the classroom. Both Black

teachers were more likely to recognize this as the primary barrier to students' technology us compared with the four white teachers' mentioning of student immaturity and/or irresponsibility. The school's principal mentioned a program that provided hotspots to families without internet access at home, but no teachers mentioned this program as a support for students, indicating another mismatch in the understanding of student technology us between classrooms and the school.

Challenges Around Technology use in Classrooms

Teachers' undergraduate and graduate experiences were primarily early enough in the world of technology that they did not have much opportunity for practice with technology in the classroom, except with typing papers. They also studied a variety of subjects outside of education, and in some cases did not originally intend to go into education.

A topic that might explain some of the dissonance between teachers' professed beliefs, attitudes, and goals regarding student use of technology and the implementation of technology in the classroom is the difficulty that teachers face in effectively enacting these practices. All teachers acknowledged that a lack of training that they receive through professional development (PD) from the school or district. Some mentioned that background knowledge or fear of new responsibilities, technology, or initiatives prevent many teachers from using technology in the classroom, one expressing frustration with "older teachers," whom she perceives to be less open-minded and less open to problem-solving. This judgment, while not directly related to judgment about ally identity, does not support the creation of a cohesive liberatory environment for students. Teachers recognized that they are burdened with many expectations and that without support they

are often required to find and teach themselves aspects of technology that may be useful in their classrooms. None mentioned what they are doing or might to do overcome these challenges.

In addition to these challenges, most teachers expressed concern with the ability of the school's technology department to handle the needs of both teachers and students. One teacher noted that the head of that department is responsible for exposing teachers to new technology, but that that exposure typically comes in the form of an email outlining several options rather than any specific suggestions or tips for implementation. Some teachers blamed student maturity or irresponsibility as a barrier to technology use—students forgetting to bring their devices to class or mishandling and breaking them. In these cases, and in cases where teachers did not place blame in students, teachers acknowledged that even when students attempt to get support with their devices from the technology department, they typically have long wait times or do not receive support at all. This is an example of structural oppression that may be less prevalent in schools and districts with more resources, which are typically wealthier and more predominantly white.

Chapter 5: Conclusions and Discussion

The findings of this case study address the question "What is the interplay between teachers and their classroom technology practices?" While teachers were able to articulate the belief that technology skills are an integral part of students' education and articulated a number of goals for its use, they demonstrated inconsistent abilities to effectively integrate technology in their classes. All recognized that what is needed most to enable teachers' beliefs about the value of technology being implemented in the classroom is further professional development and support.

The barriers that were uncovered through this research indicate that teachers' attitudes toward, as well as their confidence with implementing, technology in the classroom should be at the forefront of teacher education programs and PD. This training should include not only using technology effectively but using it to promote centering of student voices and subverting structures of power and privilege to create a liberatory educational experience (Brown & Jackson, 2013). Teachers should be aware of what biases they might have about students, technology, and students' technology use and these should be addressed during teacher education and PD.

It is also clear that schools and districts could provide better support in these areas, rather than simply instituting expectations without a clear path toward or support in meeting those expectations. Support with planning for technology activities, including the goals for those activities and an acknowledgement of the importance of student-centered learning and constructivist teaching philosophies, are the responsibility of those involved in education at every level, from policy makers to districts to schools and individuals. In order to reach the goal of student-centered, democratic learning, it is imperative that

biases and stereotypes against students be identified, discussed, and addressed during teacher education and when teachers move to the classroom.

Other interesting findings involved differences between beliefs about students and technology, and the implementation of technology in classrooms, between white and Black teachers. White teachers were more likely to blame students for challenges with technology, to see the value of technology for students as primarily displaying or referencing information and for teachers as making grading and administrative tasks easier, and to connect technology use in the classroom to future work possibilities. Black teachers were more likely to see the value of integrating student voice and autonomy, in addition to students' outside technology interests, into their technology use in the classroom, and as focusing on relationships and collaboration through technology. Although reasons for teaching were not a primary concept, it is also interesting to note that both Black teachers mentioned connecting with young people as reasons that they went into teacher. All four white teachers mentioned either that they wanted to help others or fell into it somewhat on accident, with one even making a reference to the book *Savage Inequalities*, implying a type of white savior attitude. While teachers' reasons for entering the profession are not in themselves important data, not addressing the biases that accompany these reasons, which often include biases against students of color and/or students in poverty, those biases are only perpetuated in the classroom and conflict with all CRT and ally theory tenets, from acting based on moral outrage and centering the oppressed to subverting structures of privilege and creating a liberatory community (Brown & Jackson, 2013).

Chapter 6: Limitations and Future Research

One limitation of this study is that it focused on a single school and a set of technology-proficient teachers in an under-resourced district with a primarily Black student body. The study itself was also time-constrained to a single semester and a limited amount of data. Future research should include interviews with other stakeholders, as well as explorations into similar questions in different settings. In the study by Ertmer et al. (2012) of award-winning teachers, many of the barriers that were present in this study were not present, and the findings were much different.

Future research should focus on the differences between environments, including how students are perceived and treated, how teachers are supported in their use of technology, and what aspects of the educational setting contribute to the alignment between teachers' goals and attitudes about student technology use and their implementation of technology in the classroom. It is also worth noting that this was originally meant to be a qualitative-only study, but that the quantitative insights were critical to gauging teacher practices. Future research should combine qualitative and quantitative data to create a well-rounded picture of teacher beliefs and practices.

References

Ahmed, S. (2004). Declarations of whiteness: The non-performativity of anti-racism. *Borderlands*, *3*(2). http://www.borderlandsejournal.adelaide.edu.au/vol3no2_2004/ahmed_declarations

Benjamin, L. T., Henry, K. D., & McMahon, L. R. (2005). Inez Beverly Prosser and the education of African Americans. *Journal of the History of Behavioral Sciences*, *4*(1), 43-62.

Boutte, G. S., & Jackson, T. O. (2013). Advice to white allies: Insights from faculty of color. *Race Ethnicity and Education*, *17*(5), 623-642. doi: 10.1080/13613324.2012.759926

Brown, K., & Jackson, D. D. (2013). The history and conceptual elements of Critical Race Theory. In Lynn, M. & Dixson, A. D. (Eds.), *Handbook of Critical Race Theory in education*. Routledge.

Crocco, M. S., & Waite, C. L. (2007). Education and marginality: Race and gender in higher education, 1940-1955. *History of Education Quarterly*, *47*(1), 69-91.

Delgado, R., & Stefancic, J. (2013). Discerning critical moments. In Lynn, M. & Dixson, A. D. (Eds.), *Handbook of Critical Race Theory in education*. Routledge.

Dettori, G., & Paiva, A. (2009). Narrative learning in technology-enhanced environments. In *Technology-enhanced learning*. Springer, Dordrecht.

Domingo, M. G., & Garganté, A. B. (2016). Exploring the use of educational technology in primary education: Teachers' perception of mobile technology learning impacts and applications' use in the classroom. *Computers in Human Behavior, 56,* 21-28.

Douglas, D. M. (2003). *The struggle for school desegregation in Cincinnati before 1954* [Faculty publications, paper 114]. http://scholarship.law.wm.edu/facpubs/114

Earick, M. 2009. *Racially equitable teaching: Beyond the whiteness of professional development for early childhood educators*. Peter Lang.

Edwards, K. E. (2006). Aspiring social justice ally identity development: A conceptual model. *NASPA*, *43*(4), 39-60.

Ertmer, P.A., Ottenbreit-Leftwich, A.T., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Teacher beliefs and technology integration practices: A critical relationship. *Computers & Education, 59*(2), 423-435.

Goodman, D. (2000). Motivating people from privileged groups to support social justice. *Teachers College Record*, *102*, 1061–1085.

Hackman, Rose. (2015, June 26). We need co-conspirators, not allies: How white Americans can fight racism. *The Guardian*. https://www.theguardian.com/world/2015/jun/26/how-white-americans-can-fight racism

Hermans, R., Tondeur, J., van Braak, J., & Valcke, M. (2008). The impact of primary teachers' educational beliefs on the classroom use of computers. *Computers & Education*, *51*, 1499-1509.

Johnson, E. M. (2017). Balancing comprehension and conversation: How elementary teachers manage multiple purposes for text discussions. *Teaching and Teacher Education*, *66*, 325-337.

Jonassen, D. H., Howland, J., Moore, J., & Marra, R. M. (2003). *Learning to solve*

problems with technology: A constructivist perspective. Pearson.

Jupp, J. C., Berry, T. R., & Lensmire, T. J. (2016). Second-Wave white teacher identity studies: A review of white teacher identity literatures from 2004 through 2014. *Review of Education Research, 86*(4), 1151-1191. doi: 10.3102/0034654316629798

King, S. O. (2016). Investigating the most neglected student learning domain in higher education: A case study on the impact of technology on student behavior and emotions in university mathematics learning. *Problems of Education in the 21st Century*, *72*, 31-52.

Kleinman, A., & Wilkinson, I. (2016). *A passion for society: How we think about human suffering.* University of California Press.

Kopcha, T. J., & Sullivan, H. (2007). Self-presentation bias in surveys of teachers' educational technology practices. *Education Tech Research Dev*, *55*, 627-646. doi: 10.1007/s11423006-9011-8

Leonardo, Z. (2004). The color of supremacy: Beyond the discourse of white privilege. *Educational Philosophy and Theory*, *36*(2), 137-152.

Lipsitz, G. (1998). *The possessive investment in whiteness: How white people profit from identity politics*. Temple University Press.

Luongo, N. (2012). Increasing elementary school teachers' awareness of gender inequity in student computer usage. *International Electronic Journal of Elementary Education, 4*(3), 519-544.

Marshall, C., & Rossman, G.B. (2016). *Designing qualitative research* (6th ed). Sage Publications.

Meriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation* (4th ed). Jossey-Bass.

Merritt, A. C., Effron, D. A., & Monin, B. (2010). Moral self-licensing: When being good frees us to be bad. *Social and Personality Psychology Compass*, 4(5), 344-357.

Meyerson, C. (2016). Dear white friends: Here's how to support BLM without making it about you. *Fusion*. http://fusion.net/story/329680/black-lives-matter-white-allies/.

Palincsar, A. S., Fitzgerald, M. S., Marcum, M. B., & Sherwood, C. (2018). Examining the work of "scaffolding" in theory and practice: A case study of 6th graders and their teacher interacting with one another, an ambitious science curriculum, and mobile devices. *International Journal of Educational Research*, *90*, 191-208.

Patton, L. D., & Bondi, S. (2015). Nice white men or social justice allies?: Using Critical Race Theory to examine how white male faculty and administrators engage in ally work. *Race Ethnicity and Education*, *18*(4), 488-514. doi: 10.1080/13613324.2014.1000289

Peterson-Smith, K., & Bean, B. (2015). Nothing Short of Liberation: Allyship isn't enough. To confront structural racism, we need a politics of solidarity. *Jacobin*. https://www.jacobinmag.com/2015/06/black-lives-matter-police-brutality-allies/.

Rafalow, M. H. (2018). Disciplining play: Digital youth culture as capital at school. *American Journal of Sociology, 123*(5), 1416-1452.

Reddick, R. J., & Pritchett, K. O. (2015). I don't want to work in a world of whiteness: White faculty and their mentoring relationships with black students. *Journal of the Professoriate*, *8*(1), 54-84.

Rogers, R. (2012). In the aftermath of a state takeover of a school district: A case study in public consultative discourse analysis. *Urban Education*, *47*(5), 910-938.

Stefancic, J. (2014). Discerning critical moments: Lessons from the life of Derrick Bell. *University of Pittsburgh Law Review*, *75*, 457-474. doi: 10.5195/lawreview.2014.355

Tatum, B. D. (1994). Teaching white students about racism: The search for white allies and the restoration of hope. *Teachers College Record*, *95*(4), 462-476.

The New York Times Editorial Board. (2016, September 1). Georgetown confronts its ugly past. *The New York Times*. http://www.nytimes.com/2016/09/02/opinion/georgetown-confronts-its-ugly-past.html

Tochluk, S. (2010). *Witnessing whiteness: The need to talk about race and how to do it* (2nd ed.). Rowman & Littlefield Education.

Viseu, F. & Menezes, L. (2014). Desenvolvimento do conhecimento didático de uma futura professora de matemática do 3.° ciclo: O Confronto com a sala de aula na preparação eanálise de tarefas de modelação matemática. *Revista Latinoamericana de Investigación en Mathemática Educativa, 17*(3), 347-375. http://www.redalyc.org/jatsRepo/335/33532494005/html/index.html. doi: https://dx.doi.org/10.12802/relime.13.1734

Weiler, K. (2005). Mabel Carney at Teachers College: From home missionary to white ally. *Teachers College Record*, *107*(12), 2599-2633.

Appendix A: Consent Forms

1) Administrator Consent Form

Department of Education

One University Blvd.
St. Louis, Missouri 63121-4499
Telephone: 314-516-4970
E-mail: tamty9@mail.umsl.edu
Personal email: miller.tracee@gmail.com

Informed Consent for Participation in Research Activities
Teachers Attitudes Toward and Practices Regarding Student Use of Technology in the Classroom

Participant _____ HSC Approval Number ___1736839____

Principal Investigator ___Tracee Miller___ PI's Phone Number ____812-208-205_____

---

1. You are invited to participate in a research study conducted by Tracee Miller under the supervision of Dr. Matthew Davis. The purpose of this research is to study expertise in student use of technology in the classroom, and teachers' attitudes toward that use. This project is conducted for a dissertation on the topic described above.

2. a) Your participation will involve
   - The identification of teacher experts in the field of technology use in the classroom
   - an interview about your philosophy of technology in education and rationale for what makes a teacher successful in this area
   - your permission to collection of documents that help describe and understand your special skills and your field of expertise, and your permission to document meaningful artifacts on site (photos, drawings, etc.)
   - participation in a focus group if a time a location for such an activity can be arranged

   Approximately 12 participants may be involved in this research.

b) The amount of time involved in your participation will be about 45 m.1` in - 1 hour minutes for the interview, and another hour for the focus group. I ask for your presence during my observation and for your provision of documents or artifacts but you will not need to invest more of your time, except for answering short questions that I may have.

3. There are no anticipated risks associated with this research.

4. There are no direct benefits for your participating in this study. However, your participation will contribute to research on what is needed (at all levels, from state and federal policy to district and building support and teacher training) to create an atmosphere that promotes student identity development and creativity, and that inspires them to participate, through technology, in the democratic and liberatory work that is critical for the future of our communities and society.

5. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. If you want to withdraw from the study, you can contact me at 812-208-2055 or miller.tracee@gmail.com. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw.

6. By agreeing to participate, you understand and agree that your data will be shared in my research methods course and with my instructor. The research will not be shared outside of the course. Your identity will not be revealed if you wish so. All data will be stored on a password-protected computer and/or in a locked office.

7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Trace Miller, at 81-208-2055. You may also ask questions or state concerns regarding your rights as a research participant to the Office of Research Administration, at 516-5897.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I consent to my participation in the research described above.

Participant's Signature	Date	Participant’s Printed Name	
Signature of Investigator or Designee	Date	Investigator/Designee Printed Name	

2) Teacher Consent Form

Department of Education

One University Blvd.
St. Louis, Missouri 63121-4499
Telephone: 314-516-4970
E-mail: tamty9@mail.umsl.edu
Personal email: miller.tracee@gmail.com

Informed Consent for Participation in Research Activities
Teachers Attitudes Toward and Practices Regarding Student Use of Technology in the Classroom

Participant _____ HSC Approval Number ___1736839____

Principal Investigator ___Tracee Miller____ PI's Phone Number ____812-208-205_____

---

1. You are invited to participate in a research study conducted by Tracee Miller under the supervision of Dr. Matthew Davis. The purpose of this research is to study expertise in student use of technology in the classroom, and teachers' attitudes toward that use. This project is conducted for a dissertation on the topic described above.

2. a) Your participation will involve

   - A minimum of two classroom observations of the site and your action/interaction as the expert
   - an interview about your field of expertise and what makes you an expert; the interview will take place at a location of your convenience and will be audio-taped and transcribed
   - your permission to collection of documents that help describe and understand your special skills and your field of expertise, and your permission to document meaningful artifacts on site (photos, drawings, etc.)
   - participation in a focus group if a time a location for such an activity can be arranged

   Approximately 12 participants may be involved in this research.

b) The amount of time involved in your participation will be about 45 min - 1 hour minutes for the interview, and another hour for the focus group. I ask for your presence during my observation and for your provision of documents or artifacts but you will not need to invest more of your time, except for answering short questions that I may have.

3. There are no anticipated risks associated with this research.

4. There are no direct benefits for your participating in this study. However, your participation will contribute to research on what is needed (at all levels, from state and federal policy to district and building support and teacher training) to create an atmosphere that promotes student identity development and creativity, and that inspires them to participate, through technology, in the democratic and liberatory work that is critical for the future of our communities and society.

5. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. If you want to withdraw from the study, you can contact me at 812-208-2055 or miller.tracee@gmail.com. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw.

6. By agreeing to participate, you understand and agree that your data will be shared in my research methods course and with my instructor. The research will not be shared outside of the course. Your identity will not be revealed if you wish so. All data will be stored on a password-protected computer and/or in a locked office.

7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Trace Miller, at 81-208-2055. You may also ask questions or state concerns regarding your rights as a research participant to the Office of Research Administration, at 516-5897.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I consent to my participation in the research described above.

Participant's Signature	Date	Participant’s Printed Name
Signature of Investigator or Designee	Date	Investigator/Designee Printed Name

Appendix B: Interview protocols

1) Administrator Interview Protocol

Begin by asking if they mind if I record our conversation, and letting them know that it should take between 45 minutes and one hour.

Introduction

At this point, students and, increasingly, teachers are digital natives, and teachers are expected to integrate some level of technology into their classrooms. I am interested in learning more about your and your teachers' beliefs and feelings about technology in the classroom, and in their practices engaging students with technology in the classroom. I'll start with some basics and then we'll get into questions related to the topic.

Name?

School where you are an administrator?

Teaching background?

Where or how did you get your administrative certification?

Why did you become a teacher? Administrator? Educator?

How long have you been an administrator?

Background/Training in Technology in Education

Tell me about the kind of training that you received in any teacher or administrator education programs that involved using technology in the classroom.

- Describe an example of a class or activity, either that you participated in or observed, that inspired you.
    - What was it?

    - Why was it so inspirational?
- Can you remember an experience that you participated in or observed that felt like a waste of time, or that left you feeling uninspired about the use of technology in the classroom?
    - What was it?
    - How did it leave you feeling?

Since you began your work as an administrator, can you describe the types of trainings that you or your teachers have engaged in where integrating technology was the focus of the training?

- What were the purposes of those trainings?
- Did you feel they were effective?
    - Why or why not?
- What were your main takeaways from those trainings?

If you could design the ideal professional development session about using technology in the classroom, what would that session look like?

- What goals would have you for participants?
- What messages or activities would you have participants engage with?
- If it went as well as possible, how would it change participants' practices?

If you had to give an elevator speech (a 30-second pitch) to someone who asked you why you encourage the use technology in your classroom, what would you say?

Goals for Students

What are your overarching goals, academic and/or personal, for students in your school?

- We can separate them into personal and academic if that is easiest.

How did you develop these goals?

How do you communicate these goals with teachers and students?

If I asked a student what their goals were for their academics at this school, what would they say?

Can you describe how you support teachers in incorporating these goals into the planning of your lessons?

Can you give an example of how you incorporate these goals into the execution of your responsibilities?

Value of Technology in Students Reaching Goals

Can you describe the requirements are placed on your school or other outside forces?

Specifically, what is the value of having students engage with technology during class?

What different ways do students use technology in your classrooms?

What is the biggest challenge that your teachers face in having students use technology during class?

What other obstacles are there that prevent your teachers from using technology as effectively as possible?

Can you describe any ideas you might have about using technology in the classroom that you don't feel like you are able to support your teachers in implementing?

What would the ideal technology experience in your school look like?

- Why would it have the components you listed?

Some people believe that student technology use should be highly regulated in the classroom so that students are trained to use computers and other devices in very specific class- or career-centered ways. What would you say to these people?

In what ways do your students use technology outside of the classroom, that you know of?

Describe any ways that you know of where students' use of technology inside and outside of the school overlap.

- Some teachers make sure to keep school-centered use of technology and personally motivated use of technology completely separate. Can you say whether this approach resonates with you and why or why not?

Choices Regarding Technology (Planning, Implementation, Reflection, etc.)

How do you make choices about the use of technology in your school?

Are the expectations for teachers based on these choices?

Conclusion

Is there anything else about your thoughts or feelings about using technology with students or teachers, or about your school's practices with technology, that you'd like to tell me about?

Are there any questions that you have for me?

Thank them for their time and looking forward to this research.

2) Teacher Interview Protocol

Begin by asking if they mind if I record our conversation, and letting them know that it should take between 45 minutes and one hour.

Introduction

At this point, students and, increasingly, teachers are digital natives, and teachers are expected to integrate some level of technology into their classrooms. I am interested in learning more about teachers' beliefs and feelings about technology in the classroom, and

in their practices engaging students with technology in the classroom. I'll start with some basics and then we'll get into questions related to the topic.

Name?

School where you teach?

Grade level(s)?

Where or how did you get your teaching certification?

Why did you become a teacher?

How long have you been a classroom teacher?

Background/Training in Technology in Education

Tell me about the kind of training that you received in your teacher education program that involved using technology in the classroom.

- Describe an example of a class or activity during your teacher ed program that helped you know how to support students in their use of technology for learning,
- Can you remember an especially powerful experience during your teacher education program that made you want to use technology with your students?
    - What was it?
    - Why was it so inspirational?
- Can you remember an experience that felt like a waste of time, or that left you feeling uninspired about using technology in the classroom?
    - What was it?
    - How did it leave you feeling?

Since you began your work in school, can you describe the types of trainings that you have engaged in where integrating technology was the focus of the training?

- What were the purposes of those trainings?
- What were your main takeaways from those trainings?

If you could design the ideal professional development session about using technology in the classroom, what would that session look like?

- What goals would have you for participants?
- What messages or activities would you have participants engage with?
- If it went as well as possible, how would it change participants' practices?

Can you give examples of how your teacher education program and the professional development that you have received have influenced the way that you have students use technology, or the way that you use technology with students, in your classroom?

If you had to give an elevator speech (a 30-second pitch) to someone who asked you why you use technology in your classroom, what would you say?

Goals for Students in your Classroom

What are your overarching goals, academic and/or personal, for students in your classroom?

- We can separate them into personal and academic if that is easiest.

How did you develop these goals?

How do you communicate these goals with students?

If I asked a student what their goals were for your class, what would they say?

Can you describe how you incorporate these goals into the planning of your lessons?

Can you give an example of how you incorporate these goals into the execution of your lessons?

Value of Technology in Students Reaching Goals

Why do you use technology in your classroom?

- Can you describe the requirements are placed on you by the school or other outside forces?
- What is the value of using technology during class?
    - Specifically, what is the value of having students engage with technology during class?

What different ways do students use technology in your classroom?

What ways do you use technology with students in your classroom?

Describe one of your favorite activities that you have had students complete using technology of some sort.

- Why was this your favorite?
- In what ways does it align with your goals for students?
- In what ways does it align with your earlier answer about the value of using technology during class?

What is the biggest challenge that you face in having students use technology during class?

What other obstacles are there that prevent you from using technology as effectively as possible?

Can you describe any ideas you might have about using technology in the classroom that you don't feel like you are able to implement?

What would the ideal technology experience in your classroom look like?

- Why would it have the components you listed?

Some people believe that student technology use should be highly regulated in the

classroom so that students are trained to use computers and other devices in very specific class- or career-centered ways. What would you say to these people?

In what ways do your students use technology outside of the classroom, that you know of?

Describe any ways that students' use of technology inside and outside of the classroom overlap.

- Some teachers make sure to keep school-centered use of technology and personally motivated use of technology completely separate. Can you say whether this approach resonates with you and why or why not?

Choices Regarding Technology (Planning, Implementation, Reflection, etc.)

Can you describe the typical process that you go through when you plan a lesson, particularly one that is going to involve students using technology?

Can you describe any differences that go into planning lessons that involve student use of technology?

Tell me about a lesson that you implemented where students were using technology and it went really well.

- How did you know that it went well?
- What were you doing and what were students doing during the lesson?
- If I asked a student what they learned that day, what would say?

Tell me about a lesson that you implemented where students were using technology and it went poorly.

- How do you know that it did not go well?
- What ideas do you have about how it could have gone differently?

- What was it like for you when the lesson didn't go well? How did it make you feel?

When I'm observing your classroom and your students are working on their computers or with other devices, what would you expect me to see and hear during the class?

- What would I see and hear from students?
- What would I see and hear from you?

Describe the support that you have in planning lessons that involve student use of technology.

Give examples of support that you get in implementing technology lessons in your classroom.

Can you describe any aspects of using technology with your students where you feel like you do not have the support that you need in order to be effective?

If you could make any changes to how your students engage with technology in your classroom or your school, what would they be?

Conclusion

Is there anything else about your thoughts or feelings about using technology with student, or about your classroom practices with technology, that you'd like to tell me about?

Are there any questions that you have for me?

Thank them for their time and looking forward to more observations.

Appendix C: Documents Key

Interviews (Document: Pseudonym, Demographic, Role, Date)

A: Mark Parsons, BM, School Leader, 23 Sept 2019
B: Noah Patrick, WM, AP SS, 29 Oct 2019
C: Sara Washburn, WF, Hum Bod Syst, 16 Oct 2019
D: Jacob Williamson, WM, Biomed Sci, 28 Oct 2019
E: Edda Barnett, WF, 9th English, 18 Oct 2019 (Phone Call)
F: Darlene Miller, BF, Alg 1, 6 Nov 2019
G: Cherie Sanders, BF, AP Eng, 9 Nov 2019

Observation 1 (Document: Pseudonym, Class, Date)

B1: Noah Patrick, AP Dual-Credit Social Studies, 23 Oct 2019
C1: Sara Washburn, Human Body Systems, 8 Oct 2019
D1: Jacob Williamson, Principles of Biomedical Science, 21 Oct 2019
E1: Edda Barnett, 9th-Grade ELA, 9 Oct 2019
F1: Darlene Miller, Algebra 1, 31 Oct 2019
G1: Cherie Sanders, AP ELA, 24 Oct 2019

Observation 2 (Document: Pseudonym, Class, Date)

B2: Noah Patrick, AP Dual-Credit Social Studies, 13 Nov 2019
C2: Sara Washburn, Human Body Systems, 29 Oct 2019
D2: Jacob Williamson, Principles of Biomedical Science, 13 Nov 2019
E2: Edda Barnett, 9th-Grade ELA, 20 Nov 2019
F2: Darlene Miller, Algebra 1, 10 Dec 2019
G2: Cherie Sanders, AP ELA, 19 Nov 2019

Appendix D: Open-Coding

Document A

Line	Transcript Notes	Initial code assignment
A.13-28	*Second year as principal. Taught HS math for seven years. Admin cert as part of MEd bc he wanted to affect broader change and felt confident in his ability to do so at that point in his career.*	Background, goals, attitude
A.39-72	Reading, writing, speaking, and reasoning on grade level which speaks to my expectations around literacy, which there is a specific focus on that for this school year, that's my specific area. Also, goals for me are the intentional development of soft skills in students. Such as, but not limited to, the ability to work in a team setting, appropriate attitude, timeliness, communication, humility, organizational skills. I'm also, if you want to include there are two other things that goals that I've set for students as well, to be resilient learners and to persevere and embrace opportunities to persevere through adversity. Very, very important as it relates to mental health, social and emotional learning for students, so the holistic needs of the student as well, those are goals, that they are able to self-regulate. Of course, being technologically literate as well. And to embrace, embrace standards and how can I say that, to the willingness to serve causes greater than ourselves. To advocate, self-advocacy. [Researcher: To sort of like challenge ideas. And make sure that you're, you know what you stand for. Not just going with the status quo or believing something because someone tells you.] Absolutely. That's very important here. Student voice.	Goals for students, student voice, standards, literacy, communication, attitude, life skills

A.74-147	To deliver the highest quality education to our students in every classroom. In my role in that as building leader, in my primary area of focus is to reduce the variability in instructional quality in our building. There is a variance here. I'm working very diligently to reduce the variance… for teachers as well, to develop strong relationships, strong positive relationships with students, those are goals. As a building goal, every student here should have a positive relationship with at least one adult. It's something that's important. With at least one adult, relationships are a critical component to everything we do. Teachers, to be, I guess to improve collective teacher efficacy as well, so for them to believe in our students and believe that they have the tools to reach and educate our students… Instructional goals as well, what I get as far as in terms of, another goal is to not lecture beyond the average age of students, in our classrooms as it relates to instructional delivery. To have no fewer than 80% of our students engaged in learning at any point in time during any lesson. To not have any more than three disruptions to instruction for every ten minutes of direct instruction. To afford students the opportunity to respond to at least two inquiries for every one minute of direct instruction or lecture. To show up invested in the process and willing to work, to make data informed decisions around instructional strategies, to embrace the concept of a single assessment, one common assessment, for every subject group team. To upon entering a classroom to have a daily learning target or objective written in student friendly language that begins with “I can” or “A student will be able to” that speaks to a particular skill that the student is expected to acquire. An agenda for the day's lesson. Relative vocabulary words for the lesson as well as an essential question per unit posted. These are also the goals that I would say have been setup for teachers to provide timely and effective feedback. For all formative assessments. To embrace our retake policy that requires teachers to extend at least one retake	Goals for teachers, relationships, instruction, high-quality, improvement, use of data, redirection of behavior

	for any assessment, summative or formative that a student scores less than mastery on. To embrace the expectations around our intervention blocks that I've embedded in our master schedule this year. Which students return to each of their core, each of their classes, excuse me, for ninety minutes, every Tuesday and Thursday, and teachers have been instructed not to deliver any new content. They have to remediate, that's their time to remediate, support, intervene, etc. for students. So, to operate in accordance with those expectations there. To create opportunities for students within lessons to engage in discourse, should hear discourse. See it, as well, to provide students the opportunity to construct viable arguments, deliver presentations, and then to critique the reasoning of each other. I'd also expect the teachers to embrace a mindset of collegiality, respectfully challenge each other too. They are encouraged to do that here. Another goal is for teachers to feel empowered, to be empowered to make decisions, and not wait for me… We're also doing a lot of work with assessment for learning. So timely and effective feedback is one thing I said. Showing examples, having examples, of strong and weak work available in the classroom… Correct use of formative and summative assessments. Trying to think of any other expectations or goals I would have for teachers. To communicate effectively with parents. And families too when the need arises. Administrator should not be making initial contact when there are behavioral related concerns. To utilize our counselors appropriately too, as first line support for academic needs as opposed to administrators… . And too for our tested areas to make significant discernible gains and we have goals that have been articulated by the state with regard to MPIs and I expect teachers to embrace those goals. To improve our MPI and proficiency rates in all of our tested areas.	

A.148-157	*1:1 at whole school, can check out and receive Chromebooks, program that offers mobile hotspots if they don't have internet at home.*	School resources, technology, home tech access
A.162-175	*Cell phones are expected to be put away during instructional time, but students can carry them to class and store them in lockers.*	Technology expectations, student agency (kind of), responsibility, student trust
A.184-191	*Student use of tech other than class activities: email teachers and counselors, schedule change emails, communication generally.*	Technology expectations
A.224-257	*PD priorities come from district priorities so in part determined by superintendent. At building level, modifies schedule to make sure the building is implementing priorities—no content; focus on relationships, restorative practices.*	Relationships, professional development
A.261-285	Relationship focus at beginning of the year helps establish relationships at center of PLCs, and focusing on expectations with teachers at the beginning of the year made it easier to trust they're doing things like not waiting for admin at PLCs. "I encourage and empower teachers to make decisions and to lead. They are professionals and I treat them as such, and if you can't handle that freedom than this may not be the type, the place for you to work. *This carries over to students.* . Culture of collaboration came through PLCs and the structure. And holding staff to that expectation, and in time it became the norm here, and it is now, it's embedded in the very fabric of our being. So, I know with confidence now, that when we have PLC time to meet, without me being present in the room, the meetings are occurring and the conversations are happening. But it happened through expectations.	Teacher expectations, empowerment, trust, school culture, class culture, professional development, collaboration, teacher agency
A.298-304	We have guidelines regarding the appropriate use of technology. Within the school, that's more of a behavioral expectation that's articulated. With others in our district's handbook.	Technology, behavior, teacher expectations, district expectations

A.306-308	But in terms of the expectations of the use of technology [for activities in a classroom], I think you would see, I don't communicate around that regularly from a building standpoint, but I would imagine the teachers would.	Technology, teacher expectations, empowerment, trust, school culture, class culture, professional development, collaboration, teacher agency
A.332-333	*Absolutely confident that technology is being used to enhance learning and isn't primarily a distraction.*	Technology, attitude

Document B

Line	Transcript Notes	Initial code assignment
B.11-15	*Teaches 10/11/12 AP dual-credit SS courses as part of early college program. Ss can accumulate college hours prior to HS/w HS diploma*	Respect for students
B.19	*Class is mixture of 10/11/12*	Class structure
B.23-27	*Family of educators. Originally from San Antonio, degrees in sociology and certification both in Texas.*	Background
B.29-30	Reasons I became a teacher and reasons I stayed in the profession are different	Teacher beliefs
B.32-44	I became a teacher because I knew I could and I knew the system. It was part of our lifestyle. But coming out of undergrad it wasn't my first choice. I wanted to do international relations. My mother said that's fine but you're going to work while you do it and when she asked what I wanted to do I said I could teach. So I put my master's on hold and did a certification program and student teaching in an impoverished area in San Antonio. *Also had a chapter in Savage Inequalities (like East St. Louis.)*	Teacher beliefs
B.53-55	That time was meaningful to me. I worked in a middle school and then switched from international relations to history.	Teacher beliefs

B.58, 60	*13 years in classroom, 2nd year at this school*	Teacher beliefs
B.62-67	*Moved to St. Louis because wife is from here and has hopped around because of promotions but* I stay in it because of that meaningfulness. I could see the positive impact I was having. Versus why I got into it which is because I needed to get a job.	Teacher beliefs
B.74-81, 84-87, 90	Nothing in education or master's programs that focused on technology. Nothing that I worked on there really transferred to real-life classrooms. And nothing focused on technology. Universities are starting to realize that teacher programs don't translate to real-life teaching and they're starting to look at schools and teams trying to figure out how to make this mirror the real-world experience. What the hell *(referring to non-transferability of skills from teacher ed).*	Teacher ed program – no tech
B.96-101, 103-104	You learned a craft with a history degree. Secondary sources like films were there but big data was just starting to emerge. I did SPSS/data work for sociology but otherwise nothing.	Teacher ed program – no tech
B.107-113, 115	Training since starting in schools has been mostly on using databases or websites with flashy graphics but they aren't transferrable. They're pretty limited.	Training at schools – limited
B.118-127	Learning styles have been misappropriated. Everyone has multiple intelligences and we can all learning in different ways. Students can learn in more than one style and that's something I try to communicate.	Teaching philosophy – multiple intelligences

B.132-140, 142-143	Theme would be tying functionality of technology to different professions. I reject the idea that students know more about technology because on their own they use it for entertainment. They don't know how to use it to enhance their learning experience or appropriate academic behavior or professionalism. Most don't even have email on their phones. So that would be it—how to use technology in a way that enhances productivity.	Ideal tech PD, Beliefs about students, tech tied to jobs
B.150-154	Problem with tech in ed is that you learn one program and then a new one comes up and you have to learn that one so you don't end up learning things deeply.	Tech in ed (challenge)
B.156-159, 161, 163	Teachers think they use tech to get students' attention but it's really just the bright colors and movement. It's tricking them into engagement, but not learning. "I know nothing about elephants, but they're fun to watch."	Tech in ed, beliefs about students, beliefs about teachers
B.166-172, 176-180	It's a tool that you can use sometimes but not all the time. There are other tools and you have to know which one is the right one at the right time. Sources, interviews, the digital nature of a specific phenomenon. And tech tools can include anything from those digital sources to your cell phone. For a phone you should know what tools are available. Then you can study anywhere. But you have to know what to have, where to have it out, how to use it.	Tech in ed (purpose)
B.182	No [students aren't good at using tech for the right purposes]	Beliefs about students
B.193-202, 204-205	To be interesting. Conversations from multiples points of view. That will let them gain attention and opportunity. To produce quality work in a variety of courses, opportunities open up. All this translates to increase in life satisfaction because of a lot of variables, especially increased income in a capitalist economy. That's the goal. You don't have to be rich to be happy, but you have to have a certain amount of income to be satisfied—to live an enriched life.	Goals for students, jobs, money, enriched lives

B.220-238	Don't communicate goals succinctly—mostly through the work I give them and constant conversations. Students might not be able to articulate expectations. For technology expectations, using things that are relevant to them and the history profession and having them synthesize and analyze.	Student expectations, Expectations around technology, real-life connections, higher-order thinking
B.246-248, 254-257	Teachers can choose what they want to be evaluated on and NP doesn't choose tech.	Teacher evals and tech
B.261, 263-266	Value of tech in class is "knowing when to use it." And he teaches that explicitly.	Tech in ed
B.284-288, 290-292	Uses technology mediums and history plus current day to have them create connections between history and present	Tech activities, student agency, creativity
B.300-308	Good with Chromebooks, problem is tech literacy. And Chromebooks are prone to wear and tear. Repair shop is understaffed.	Students prep for tech in ed
B.311-313	Challenges are Chromebook repair and distraction with tech	Tech challenges, school resources
B.317-318, 328-332, 342-344	No use of students' outside tech in class, no social media etc. Wife is counselor and says that most problems start on social media.	No student ID development *[IS THIS A CHANCE TO TEACH EXACTLY WHAT HE SAYS IS HIS GOAL?]*
B.348-351, 353-357	Planning with tech has been helpful and using the same platforms as other teachers is helpful (e.g., GC)	Tech and planning
B.385-391	Collaboration on tech for ppts, activities, jigsaw, etc.	Constructivism, collaboration

Document C

Line	Transcript Notes	Initial code assignment

C.19-21, 25, 27	Teaches AP Biology, Human Body Systems, 3rd year at this school, 16th total teaching	Background
C.29-30	SIUE w undergrad in Biology, BS in theater and dance ("which has nothing to do with what I do now")	Background, teacher style
C.36-40	Certified in Illinois, went to career fair and got hired in Missouri	Background
C.49-53	Jokes about making the money	Reasons for teaching
C.55-56, 58	Money at this school better than others + benefits.	Reasons for teaching, differences in environments
C.61-64	Uncertainty of teaching profession in Illinois because of financial situation	differences in environments
C.76-87	"I would do technology in all the courses. It really is all about student maturity. I have found that my **lower-level courses**, and I think their lower level is just due to student maturity. I have students who struggle academically, but if they're **mature enough**, that **have the willingness,** too, they do well regardless of what course you put them in. So maturity level is my indicator." "And so in my Biomed class and my Honors Bio class, I use it every day. If they are looking at emails or checking grades or sending me their homework in my Biomed class, everything's graded online so their answering questions via Google Forms. They turn their assignments in via Google Docs. I share with them rubrics based on their writing so they can see, and I share it via email because Google Docs does not have a seamless rubrics integration but apparently they're working on it."	Attitudes toward students, blame on students, use of technology
C.88-91	Try to imitate work life.	Technology purpose and jobs

C.101-103	Familiarity if nothing else. “I’ve seen that before”	Purpose of tech in class
C.104-107	“Now my **regular kids**, I just don't want to scream and cry trying to get the 50% that have it, and then what do I do with the 50% that don't. It would have to be a whole nother preparation, lesson plan to do a paper versus a technology. So, I try to make my life easy. I'm prepping for three.”	Beliefs about students, teacher attitudes, challenges
C.109-117	“This week I had them test online. It was a **testament to my patience**. I had to straight up get my namaste on for that, because asking them to sit quietly and patiently while the 60% of the kids that brought their technology could take it, took it. And then the other 40%, ... **and you couldn't get them to shut up**. Nothing you could do. And referring them and sending them out of the classroom, I guess I could've done that, but as people were exiting out I would just say, "Hey, can So and So borrow your Chromebook to take the test?" And I'd just move them through what should've taken 15 minutes took straight up 40 minutes. **What have I done?**”	Teach attitudes, beliefs about students
C.119-122	“So, I'm going to have to do better or just cut it out in its entirety. But I don't have any other option. There's no COW for the science department. There's nothing. Either kids bring it, or they don't. So the only option that I have, I do have charging cords, which is a lot more than I can say.”	Teacher responsibility, lack of resources
C.132-137	Old district didn’t have decent wifi but made tech requirements anyway	District challenges, lack of resources
C.149-156	How students treat Chromebooks	Blame students, attitudes toward students
C.170-174	Frustration with students not knowing the basics	Blame students, attitudes toward students
C.189-191	Wouldn’t meet standards if had to teach students to use tech AND standards	Lack of resources

C.200	Optional business class about using specific tech like spreadsheets	Tech in teacher ed and PD
C.219-220	Learning was on the job, not in teacher ed programs	Tech in teacher ed and PD
C.230-233	“You either pedagogically, if that's the right word I want to say, you have to make the decision professionally to say, "I'm going to move forward with this technology or I'm not." And so, I made that choice because I just felt that it was best practice.”	Tech as personal choice
C.240-247	Likes integration for teachers because it frees up ability to grade/work wherever and no/fewer papers to deal with	Tech for teachers
C.266-271	Uses tech to send info to parents and follows up in person	Family engagement
C.288-295	“I have yet to have a student get on my nerves for that, or a parent. I haven't had that, but this isn't a hover-y district. If I were teachings somewhere else where that was the norm, then I'm sure I would feel very different about it. Because I know I have colleagues that work in more affluent school districts and hover-y parents are kind of the norm. So yeah, I mean, I've had parents that were surprised the quickness with which I got back to them. I thought, "Dang. What were the other people doing?" "I don't check that email. Forget those people."”	Beliefs about students and parents
C.307-312, 314-321	Chose to use tech for **critical thinking** skills, and familiarity.	Why technology
C.328-337	Communicates goals explicitly at the beginning of the year and reinforces throughout	Goals for technology
C.339-341	“It just makes me want to bang my head up against the wall. Even my honors kids sometimes. I don't know if it's the fact that they feel ... It's not the fact that I don't think they can, it's just some of them just won't do it.”	Attitudes toward students

C.353-361	“My C and below just don't self-advocate at all. It's like, "Why would you let somebody bowl you over like that?" Some kids I'm like, "Do you not think you're worth it?" And they're like, "Well, what do you mean?" I said, "Well, when you don't self-advocate, that tells me you don't care enough about yourself to say, 'Hey, I need help to do better. Help me do better.'" And sometimes they don't see it what way. I don't know. I find it frustrating however they look. I'm not the most touchy-feely of people. I'm very cut and dry when it comes to stuff. And so, I'm not going to coddle you and be like, "Oh, I'm so sad." I'll be like, "No-"	Attitudes toward students
C.402-420	Attempt to describe goal relation to technology but unclear relation	Goals and tech?
C.425-430, 435-446	Planning and tech but unclear relation	Planning and tech?
C.472-477	Only 1 PD in 3 years on tech and that was on the required data tracker. Otherwise people find things and share them on their own.	PD and tech (lack of)
C.478-487	Need for teachers to be open and problem-solvers. Frustration with “older teachers”	Attitudes toward teachers
C.489-496	Need for clear instructions	Tech in classroom
C.547-551	Student needs and assumption that because some students don’t bring Chromebooks.	Attitudes toward students, Reflection
C.580-584, 586-588	Other students are frustrated with students who don’t bring tech/use appropriately. “It is. I let them insult their peers like, "You need to get it together. You need to sit down and shut up. I'm trying to learn. She's talking to you. I'm trying to get this, too. Shut your mouth."”	Tech in class
C.596-600, 603-605	Uses YouTube videos, posts community info connects with scholarships	Tech and real-life

Document D

Line	Transcript Notes	Initial code assignment
D.12-13, 15, 17	9-12 various science classes—observing principles of biomedical science, mixed grades	Background
D.24-26	Education at Mizzou. Started at Truman and finished at Mizzou. Cert. to teach biology and gen science and added chem later.	Background
D.30-32	Found education valuable—drilled into me by my dad. So I wanted to instill that in my students, and thought if they had the right teacher they would love learning also.	Why teach?
D.35	24th year teaching, 3rd at this school	Background
D.43-46, 56-60	We were trained on spreadsheets and word processors bc the Internet was a baby. Dial-up modems and computer labs and no cell phones. Students now use some of that—word processing and spreadsheets. Especially now that you can graph from spreadsheets. But I still do a lot of graphing by hand because it's good practice.	Tech in teacher ed
D.65-76	Early on we had PD days where you could choose a classroom to go to and learn specific tools (like PPT or implementing Paint into projects). Eventually learned how to get students designing sites but not with code. Now I'm doing trainings myself. But a lot of what I do is self-taught or through a colleague who says I should try something out. Like I was an early adopter with Kahoot and I still get it for free even though now it costs money.	Tech and PD
D.80	Tech is a particular interest to this teacher	Teacher beliefs
D.84-87	Kahoot PD felt exciting and when I used it with students they were engaged and involved so I was bought in.	PD and Tech

D.96-102	If I was giving a PD for teachers I think I'd do it on something like Canvas	PD and Tech
D.118-125	Would also lead a PD on programs like Kahoot to show teachers how to engage students	PD and Tech
D.131-149	Confidence. Proficiency. Mastery level but also confidence that they can learn. Relationships and strong learning environments. Knowing people care and they make a difference in others' lives. I had a student who became a doctor and even though it was when I was at another district she came to talk with my students here because we had a relationship.	Goals for students
D.145-146	Distraction with phone and Chromebooks	Challenge w tech
D.160-163	Small group work	Constructivism
D.170-175	Student articulation of goals	Learn. Enjoy and be excited. The rest is sort of embedded.
D.183-196	I use Project Lead the Way—activities are premade and I just have to plan how to use them. It's powerful and lots of folks are using it. So Canvas, PLtW, and GC.	Value of ease of use of tech.
D.209-210	Submissions on GC.	Tech in ed. GC AS CONTAINER
D.228-234	Ideas come from Bob Dylan. He gives updates about what people might find interesting but it's in an email and it takes effort to figure out what applies and how to use it. Only mandatory thing is about grades.	PD at schools

D.242-250	“I think a big part of it is learning how to correctly navigate the information that's out there, how to find it, how to navigate it, how to evaluate it. And then just familiarity with specific websites or softwares that they are going to use potentially in their profession. Every kid in my classroom knows how to use Instagram and Snapchat and TikTok and whatever else, but do they know how to use Google Drive on their phone and open a Google Doc and actually edit it if they don't have their Chromebook? Can they do their work on their phone? So little things like that, just being familiar with what, what the productivity options are.”	Tech and how to use
D.256-258	Don’t use much that students use outside of school because it’s distracting	MO real-life
D.266-274	Try to use the phones when possible.	Real-life application
D.279-287	Good lesson = students researching environmental issues and creating a website, then viewing others and critiquing/comments/etc.	Student autonomy
D.293-302	Broken Chromebooks, IRRESPONSIBILITY	Tech challenges, beliefs about students
D.306-312	Backtracks and says students are pretty good at taking care but they can’t create data tables and graphs in Sheets.	Challenges
D.328, 331-334,336-347	Planning with PLCs involves tech, planning with online curriculum (PLtW involves tech). T job is to find legit webistes, online simulations, lab stuff. Doing labs virtually is a huge deal.	Planning
D.350-354	“That's actually why I got my masters when I did, because I wanted to start creating those online labs. And the closest I could find was, I got my master's in EdTech. Everything I learned is completely outdated now and useless, because that was in '06, '07. And I learned how to write code in HTML and I learned how to do Java Scripts, and I've forgotten it all since then. But I got a pay raise.”	Tech in ed, Background

D.371	Yes [students are adequately prepared to use tech in classroom].	Tech in class, Prep,
D.375-380, 386-390	“Right. I think that happens late elementary, mid elementary level, and then it's reinforced up through the middle school level. By the time they get here, the stuff I teach them is very niche stuff. Very specific stuff. But they talk about, pardon me, internet, safety and security, and privacy, and what are the dangers of having an online presence as a child. That type of stuff is all taught to them before they get to the high school.” // “Yeah, I think I would say it's gotten better. I think because kids... Well we really were able to roll out the Chromebooks. We got a whole new batch of Chromebooks this year, so everybody has the same kind. The downside is none of the teachers have extra chargers, because we're financially responsible for those chargers and I don't want one.”	Prep
D.401-405	Students have become more responsible but not sure why/how.	Student beliefs

Document E

Line	Transcript Notes	Initial code assignment
E.22-23, 31	9th and 10th English, 12th year at this school	Position
E.27-29	BA in English, MA in teaching and license there, too.	Background
E.34-36, 38-46	Went into teaching because others said she couldn’t do it. Then realized how important expectations were and had good teachers in middle school.	Why teaching
E.65-74	Tech in teacher ed/undergrad programs was just typing papers and emailing	Tech in teacher ed
E.77-80	Boring tech class	Tech in teacher ed (boring)

E.90-100	PD on Google Classroom or other technologies but the PD isn't helpful and it's more like you have to train yourself. Most of the stuff I learn from colleagues or try out myself.	Tech PD
E.114-122, 132-138	Students use it the way they want but not always efficiently. Doesn't sound frustrated. Training comes from teachers in classes.	Tech in class, need for better student training
E.146-151	Best aspect is engagement, and efficiency for Ts.	Engagement
E.155-161	"sometimes I have to make assessments for students to learning things handwritten because their technology issues are just not getting resolved, whether it's an issue on the student's part or it's an issue on the technology department or an issue on timing. Because the technology department is not always open when it should be and our students sometimes they break the computers at the end of the day and they can't... they have to wait until the next day to find time to get in them."	Challenges: students, tech, resources
E.167-169	Better readers and writers and skills for college and career	Goals -- jobs
E.173	Students could not articulate these goals	Goals communication
E.187	Biggest value of tech in class is paperwork.	Value of tech for Ts
E.205	District expects tech to be used to enhance learning	District expectations
E.221-226, 231-235	Tries to find music/examples students can relate to. Students picked something and teacher was a little uncomfortable but trusted students that it was relatable and was able to make connections.	Tech and real-life, student agency
E.257	"When you have a bunch of boys, somehow making English class feel like a sport helps"	Attitudes about students

E.274-278, 291-296	Avoids social media etc. Talks about it if it relates to education. Did try having them use Snapchat but it didn't go well because students couldn't save photos. EB taught them how to do it. Was a pain but interesting that she could interact with their tech.	Real-life connection, Student agency, Student tech in class
E.310-321, 323-326	Used Serial podcast – was favorite tech-related activity.	Tech and real-life, tech in classroom
E.350-364	Cell phones became ubiquitous and EB tried to incorporate them but didn't seem like they were using phone appropriately. Now has them in lockers. "First year I feel like I'm not fighting phones"	Tech challenges
E.378-381	Planning: Tech isn't a lesson—it's a tool	Planning and tech
E.395-397	Self-reports that she uses tech about the same as other teachers in the department.	Other teachers
E.408-412	Best part of tech is engagement and resource for Ts for efficiency. **Can make last-minute changes**	Value of tech
E.421-435	Value of tech in class for researching, but have had to teach about reliable sources, comparing sources.	Challenges/Value?
E.441	"Students learn best through collaboration and socialization. I mean, they're a very social group. I mean, you look at the fact that they are so engaged in social media and somehow being in contact with the world constantly, I mean, that's kind of what we work on. We talk about things together as a class. I have the most amazing groups and then also I try to do more hands-on. So it's like, we might do something together just to give them a model and then I let them do it in a small group just to give them practice and then I have them practice on their own just to give them more individualized."	Constructivism
E.462-466	How to use tech to be a productive citizen: EB would focus on communication, emails, responding on social media, thinking through what they're leaving online.	Beliefs about tech and students

E.485-496	Parents often don't have the same level of savviness with tech	Challenge
E.549-551	Good hiring, good teachers, good leadership.	Creating culture

Document F

Line	Transcript Notes	Initial code assignment
F.15	9th and 10th Algebra 1	Position
F.19, 20, 23	Teacher certification through UMSL, 9th year teaching, 1st year in building	Background
F.26-28, 33-34	Always been in mind to teach. Felt like it was easiest way to make a difference, connected with young people	Why teach?
F.37-39	No real tech experience in teacher ed	Teacher ed
F.51-53, 71-76	Old school gave training on Alex but not super helpful because no students were there so they couldn't try out all aspects of program	PD
F.55-57	ALEX used to fill in gaps, makes it so some students see same material twice	Tech in class
F.76-77,95-101,103-108	"I felt more beneficial when I was actually in there learning things myself actually." Plus learning from colleagues	Learning on her own, with colleagues
F.123-124	"I'm very new to the calculators. The students actually know more about that particular calculator than I do because they do start using it in the middle school."	Student abilities
F.133-134	"We had a calculator training at the beginning of the year, but it was so much to learn that I couldn't take it in."	PD (not helpful)

F.150-159	“And the way I like to set it up is because I don't like to be at the board talking at them. I like them to be engaged. So, I wanted them to have something to go back and reference. So we began the notes as we normally would, paper pencil but then to just set simple switch over to Quizzes, it's like I have this right here to reference but I get to try it on my own and I know I have to get to the top of the leader board but not this time because she's not going to count this one, but I'll be able to do it again. And it's just simply from a sheet of paper to putting it on a Chrome book or an Ipad makes a world of difference. If we could just make those small changes in the classroom, I think we'll have greater mastery and understanding, and students are more willing to participate in the lessons.”	Value of tech in class
F.179-181, 184-188	Pulled problems from Facebook. Had students pull problems from social media timelines	Real-life connections
F.197-202, 208-209	“It's one of those things we can't run away from anymore and so we have to figure out how to use it. How to incorporate it on an educational level, so a lot of our meetings are geared towards the formal language and getting them away from that informal language, and so our task now is how can we formally introduce social media and what they use on a regular basis into a formal classroom. And I think other than having them create a quiz or a Kahoot by themselves, that's not what they use on a regular basis.” Thinks this will be helpful because it’s real-life	Student tech identity in classes, real-life connections
F.233-241/255-257, 243-244	Ideal PD would be on using tech for classroom management, clear expectations, goals for outcomes. “we have to incorporate if we want our students to be engaged and get the most out of our lessons”	Value of tech, PD, Engagement but also outcomes
F.299-308	Importance of relationships for teacher and emphasis on relationships at school and district	Relationships
F.321-323, 325	Understanding of math, passing EOC, and what they’re here for. College entrance exams.	Goals for ed

F.331-333	“And then I mean, unfortunately all the teacher education prep that we get, it's nothing until you get into the classroom and it's like, "Well the book told me to do this but that's not working."”	Teacher ed
F.345-358	Goals are to be able to learn. To not give up. To be able to practice and make mistakes. Work hard. Seeing them apply these things outside of math	Goals
F.369-381	Full-group discussions, especially if it feels like students are struggling. Can’t teach if their minds are elsewhere. Need to understand where they’re at.	Goals (but not explicit and somewhat unclear)
F.396-403	Tech can be like an extra teacher. Allows for research. Thinking outside of the box. Frees up teacher time.	Value of tech
F.413-415	Tech planning takes a lot of front-loading	Planning
F.417, 426-447	One teacher prepares some materials and that allows DM to focus on creating other materials like quizzes.	Planning
F.485-487	“We [teachers] share responsibilities.”	Planning
F.502-528	Can’t fully depend on tech. Always need backup plan. Always know policies. Made clear plans for tech in classes. Like to sit in middle of class to show students I’m paying attention.	Tech in ed
F.571-578	Less frustrated by students not bringing tech—has solution.	

Document G

Line	Transcript Notes	Initial code assignment
G.14-16	Teaches Lit & Comp 2 (sophomore English) and AP English Lang and Comp (juniors/seniors)	Position

G.22, 28, 31	Teaching certification at Lindenwood, 8th year in classroom, 2nd year at school	Background
G.33-43	Started working with runaway and homeless youth at a shelter, realized they didn't have resources, got tired of students not having positive experiences at school and not having advocates and quit to go back to school to be a teacher.	Background
G.49-63	Understand need for communication across the board—all facets of communication. They have a misconception of what communication means (think it's reading and writing). Want students to have the skills to impress others. Want them to be able to get attention and respect.	Goals
G.66-77, 80-87	Some students could articulate this. Sometimes they think they aren't capable of meeting my expectations but I believe they can—they just have to realize it. So I'm planting seeds and they might blossom now or later. But they could definitely give you pieces of it. I embed goals. Expectations at the beginning of the year. Throughout lessons. When challenges come up.	Communication of goals
G.95-96	Students asked for guidance but CS knew she'd given them what they needed and pushed them to get there on their own	Beliefs about students, student autonomy
G.97-103,107-117	Students came up with idea for podcast topic	Belief about students, student autonomy
G.127-146,150-161, 163-170	Allows for student conversation and debate	Constructivism, belief about students, student autonomy
G.180-184	"Yeah, yeah, and that's what I told them. My students who are now at different universities, Vanderbilt, Emory, SoCal, Mizzou, different schools, they told me that my class prepared them for college more than any other course, so I try to tell them these things. Of course, they think I'm just blowing smoke at them, but you'll appreciate it later."	Rigor, belief in students, college prep

G.185-196	Tech opens opportunity to expand circle of influence. “what we do in the classroom should act as a mirror and a window for kids. It should allow them to see their own cultures and beliefs and interests reflected back at them, and it should also give them a glimpse into the outside world that they never really get to touch her experience.” “And through technology, I get to do it because I can access curricula that is not what was given to me by the school district. "Oh, I don't have a set of novels for my kids to read." Okay. That's okay. We're going to get a PDF offline and et cetera. So yeah, I just believe in having a rich environment for kids to learn how to apply communication skills outside of the classroom and to not restrict it to the classroom.”	Rigor, belief in students, real-life connections
G.202-209	Text is anything you can read—so tech gives new opportunities to define text.	
G.218-222	Students brought in videos that had impacted them.	Student autonomy, belief about students
G.244-249, 267-271	Debate on current events, keep updating curriculum to remain relevant	Constructivism, student autonomy, real-life connections
G.277-294	Favorite activity incorporates different aspects of technology, different types of analysis, analysis of related materials, different types of text and how they all create meaning, then application by creating their own documentary.	Constructivism, student autonomy, real-life connections
G.307-313	Has background in speech communication and political science and speech writing and communication so was able to apply this to designing activities.	Background
G.332-334	PD was unhelpful. Knew most of the stuff discussed with Google and no other sessions.	PD

G.341-344, 388-390	Innovation director is supposed to support with incorporating technology but just sends updates monthly with app suggestions. Once gave us suggestions and they didn't work.	PD (unhelpful)
G.350-355	Students not prepared. No training etc. Teachers also aren't equipped.	Lack of resources
G.371-374	Teachers have to teach tech if they want students to use it.	Lack of resources, challenges
G.410-413, 415-432	"I would say that we are preparing kids for an uncertain future where we don't know what skills they'll really need. And even though we know that, right now, this technology is the latest and it's advanced for us, it is going to be outdated very soon." Students are technological beings. Most have grown up with it. So we have to learn to meet them where they're all, learn to speak their language, adopt practices in ways that they can apply in their language and with their values systems. Tech is a huge part of their lives. Need to use it so students can see usability and necessity	Tech in ed, real-life connections, student autonomy.
G.443-437	Says other teachers don't embrace tech the way she does. Admin is supportive, with minimal pushback. But "would venture to say that it's because the teachers did not develop lessons to use the iPads to enhance learning. It was just, again, let's give kids technology just for the sake of giving kids technology without really thinking through how to make them usable and how to make them enhance learning and not become the learning."	Other teachers
G.468-474	Planning every day requires technology. "have many teachers who have struggles getting kids just to bring it ... They're like, "They never bring their technology." And I would say, "It's just because you don't require it on a daily basis." My kids have to use them pretty much every day, so they know, just like you need to have a writing utensil when you come to my class, you need to have a charged Chromebook"	Other teachers, value of tech, planning

Document B1

Line	Fieldnotes	Initial code assignment
B1.2-3	These are advanced classes, not available at all schools	School resources
B1.4-8	Room is clean and bright. To the left of the door are four containers and that wall is covered with posters of famous people from history and an anchor chart about source documents. There is also a wooden cabinet with glass doors showing the books inside. On the back wall is a wall-sized map of the world that you can write on and erase. The next wall is all windows with cloth blinds and college flags above them. The front wall is all whiteboards, with a SmartBoard in the middle. Google Class with the agenda is projected, and there are newspaper front pages from famous events above the whiteboard.	School resources, teacher style, real-life connections
B1.8-9	Desks are arranged in a quadrilateral/circle for discussion. This in itself implies that NP believes that students are capable of and expected to participate in class conversations. *I love this*. There are 17 students—7 white and 10 Black, 11 presenting as female and 8 as male.	Teacher beliefs, teacher expectations, constructivism, communication
B1.13	7:26 As soon as class starts and students are walking in, NP is checking on their homework status. Shows that he expects them to be thinking about work from the moment they enter.	Teacher expectations
B1.16	7:28: NP: “Remember to check your Google Classroom at least every other day.” NP says this but doesn’t push it, implying that he believes students will follow through.	Technology, Teacher expectations
B1.17-18	Student responds to earlier question about what they’ve been working on: “Something about the American Revolution. Discussing the first continental congress.” Student feels comfortable speaking up	Relationships, class culture

B1.19-21	NP: "Put your phones away. I can see them." Some students have notebooks out and others are listening. Most students do put phones away. Does not wait for students to comply, immediately affirms student's answer, also implying that he believes students will follow directions.	Teacher expectations, technology, Constructivism?
B1.24-25	Quick discussion of homework and reminder to use ACE formula to write essays. Seems redundant and a little out of place but quickly moves of to lecture. Maybe he thinks they need extra reminders?	Against constructivism, Teacher style, teacher beliefs
B1.27-32	7:38 NP tells students to get their notebooks and uses SmartBoard to draw what students should be drawing in their notes, which is a diagram of two inverted triangles on top of each other—the one representing societal makeup is right-side-up and other representing wealth is upside-down showing that most wealth is at the top, where there are fewer people. As he draws, he asks students what the diagram means, and scaffolds where necessary, asking what each part represents.	Teacher beliefs, constructivism,
B1.36	NP: "Make a subheading." He is helping students learn how to take good notes as well. Class continues discussion of Revolutionary war with pictures on SmartBoard. NP is teaching life skills along with material.	Technology, teacher beliefs, life skills
B1.38	8:16 (approximately an hour into class) they take a bathroom/brain break. Some students stay and continue asking questions about the topic.	Relationships, student engagement
B1.41	Conversation changes to talk about the Declaration. NP lectures and has pictures in the background on the SmartBoard. He asks questions along the way—for example, when he talks about people trying to sell the idea of the pursuit of happiness and then change it to the pursuit of property in the Constitution, he asks who benefits. He asks how this compares to current events. Many students feel comfortable answering. NP himself draws connection to James Otis pretending to be a commoner to Trump.	Student engagement, technology, relationships, constructivism, real-life connections

B1.49	Discussion turns to Bacon's rebellion and points out that this was at least one point when the elite realized that they couldn't let the middle and lower classes unite.	Real-life connections
B1.53	NP asks students to start cleaning up. They know exactly what to do. NP continues to answer questions about homework or discussion.	Strong procedures, relationships

Document C1

Line	Fieldnotes	Initial code assignment
C1-4	SW sends a student to come and escort me from the office to the room.	Relationships
C1.5-25	The room is warm, bright, and smells like cinnamon. There are class objectives written on the whiteboard in the front of the class, and then the whiteboard is blank and stretches across the rest of the wall. The far wall has large windows with cloth curtains and pictures of X-rays that light up with the sun. The next wall has wooden cabinets with anchor charts, and on top are skeletons and human body models. In the corner along the same wall are lockers for phones and emergency kits. The final wall has a metal cabinet but the rest is covered with a bulletin board with wooden boarders that has motivational posters, emergency information, upcoming student birthdays, and other science posters. SW's desk is in the corner, and there are black-top, wooden science tables that seat 4 students each. The floor and desks are clean and orderly, and there are outlets for charging technology hanging above each table. This feels like a room where people are serious about science, but not a room that is so sterile that it dissuades relationship-building. There are 18 students; 12 present as female and 6 as male. 6 are white and the others are primarily Black.	Teacher style, Relationships, School resources
C1.27-33	9:10: Students are working on the questions on the SmartBoard, which also has a countdown timer. SW is circulating and passing out previous work, providing positive reinforcement.	Relationships, Teacher expectations, Technology

C1.35-38	A phone rings but SW ignores it and so do the students. SW asks the question that is on the board and student answers. SW asks to explain further but no one does.	Strong procedures, relationships, rigor (attempt)
C1.39-41	SW makes connections to previous class work and displays the agenda and reminds them of a lab that they had done before and the goal for the day. She also says who they will be working with and students move quietly to their groups. There is also extra work displayed in case students finish early. *I do wonder if she could have pushed student further to make the connection that she wanted or provided some kind of scaffolding.*	Teacher expectations, strong procedures, relationships
C1.43-45	SW says she wants to cover some housecleaning stuff. She reminds students about being able to retake their last test. She asks for volunteers for the STEM Expo and Career Night events and lets them know they'll get extra credit for these.	Teacher style
C1.48-59	9:20: SW uses funny phrases to make a transition to the activity of the day. As she is taking the materials out, she explains that she messed up the dying of their DNA samples. She calls another teacher quickly to see if they can fix it and the teacher says yes. SW tells the students they'll have to re-stain their samples, "so that should make fun and entertainment for everyone."	Teacher attitude, Relationships
C1.60-68	SW shows students on the SmartBoard exactly where all of the materials that they need are stored in Google Classroom. Some students have gotten their laptops out or are making notes to themselves. SW quickly gets pictures of one of the samples that worked correctly earlier and adds it to a GC folder so they know what they should see. Student jokingly asks when they'll see when their teacher disintegrated the material.	Relationships, Technology
C1.70-74	Students are arranging themselves. SW has made clear that as long as they are working they can chat quietly. Some are asking questions about turning in late assignments, which SW accepts.	Strong procedures, teacher expectations, relationships, teacher style

C1.76-83	9:33 Students are working and talking quietly. Off-topic conversations are minimal and students continue to work while they have them. Student asks if he can use his phone, but SW redirects him by saying his name. She is circulating and makes her way toward student, redirecting him again by gently pushing his shoulder. Students take turns using the restroom.	Strong procedures, teacher expectations, relationships, teacher style
C1.87-95	Students continue to work, and some continue to chat with SW, one suggesting she should teach chemistry. SW says they have great chemistry teachers and the student disagrees, to which she said that the class doesn't need naysayers. SW continues to circulate and answer questions. Student has her head down and says she doesn't feel good to SW. SW says she should go to the nurse.	Class culture, Strong procedures, teacher expectations, teacher style
C1.97-110	9:45: Student are working on different things, but all are engaged. SW circulates. Some are working on worksheets, reading articles on GC, looking at pictures of the activity online, or answering online questions through Google Forms.	Student engagement, technology, strong procedures
C1.115-130	SW calls groups up to re-stain their samples. Students remain seated, sometimes helping each other. *They seem very comfortable asking each other or SW questions*. SW walks through the re-staining process with different groups. Student asks what SW did when she was a student and had questions and she said that she always felt like she could find someone to ask who might be able to help.	Relationships, teacher style
C1.132-146	One of the groups wasn't able to see their sample but SW says, "We gave it the old girl scout try!" A timer goes off to remind SW to make sure to check in with groups. SW circulates more, frequently using student names. At this point several students are off-task. *They don't seem to be bothering others but I wonder if they are? I wonder if they still get their work done and so SW isn't worried about it?* SW does address student again and points out that even his peers have asked him to redirect. SW circulates more.	Teacher attitude, Relationships, Teacher style, Technology

C1.148-154	SW does not choose to redirect a specific student but says, “I know that you have a lot of work to do but that you’re so far ahead and that this class is so exciting that you can talk about other things but…” at this point almost all students are back on task and SW direct her words to student “NAME, you’re setting that academic example for others.” SW continues teaching, using the SmartBoard to show pictures and point out base pairs.	Relationships
C1.156-159	SW is still answering questions as students start to clean up of their own initiative. As the bell rings, students exit and SW continues to answer some questions.	Strong procedures, relationships, teacher style

Document D1

Line	Fieldnotes	Initial code assignment
D1.3-12	Clean, bright room. Student posters about themselves are on the wall to the left as you walk in the door. There is also a phone storage area and whiteboard with the date, essential questions, learning targets, and agendas. There is a closet with wooden doors and hanging on the doors are storage containers for student papers. On the front wall on both far sides are doors to a lab. There is a whiteboard with inspirational posters and with a science-class-style (black top, wooden legs) table under it. The SmartBoard is in the middle of this wall. To the right on the same wall is another, smaller whiteboard with class expectations and, under it, JW’s desk. Behind the desk is wooden shelf with binders and figurines/what look like action figures. The next wall and the final wall both have large windows with cloth blinds and St. Louis or college flags above them. There are trees in the corner and, along the final wall on the windowsills are career notebooks for each of the periods. There are 20 students; 4W, 16NW.	Relationships, School resources, school expectations, teacher style
D1.14-16	JW provides positive reinforcement saying he’s happy to see so many people getting their Chromebooks out. Students are chatting as they sit down and get logged in. On the SmartBoard are directions to log in and open Activity 2.1.1.	Relationships, teacher style, technology,

D1.18-22	9:10: JW talks about their last class when they talked about diabetes and explains that today's activity is about investigating whether a death may or may not be due to diabetes. The case study is projected on the board. JW start reading and stops after the first paragraph.	Class connections, real-life connections, technology
D1.23-29	Student continue popcorn reading (*which implies strong procedures)* and JW gives instructions to write down the definition of diabetes (without looking it up). Some are doing this in notebooks and others on their computers. He says he's going to call on three people to share what they wrote, and cold calls three people, but doesn't tell them if they are right or wrong at the time. After three students have answered, he says, "What is the same about what all three people said?" Student agree it's related to sugar.	Strong procedures, rigor, constructivism, relationships,
D1.29-33	Now a medical history document is projected. JW asks a student to read it and then asks what stands out as possible related to diabetes. Some students are still on the medical history doc, others are looking up diabetes facts, and some are off-track.	(Only time didn't give clear directions)
D1.34-37	9:22: JW pulls the class back together by giving strong instructions to highlight important information. Some students are working together and others independently but most are working. JW is circulating to answer questions and check work.	Strong procedures
D1.38-47	9:30: JW gives clear directions for splitting into groups and conducting two experiments. He has a graph projected and asks students to draw it in their notebooks. One of the students who had been on-and-off-task tells JW that he forgot his things and can he borrow paper and JW says of course. Students copy the graphs into their notebooks to prepare for the experiments.	Strong procedures, relationships, preparedness
D1.48-54	9:50: JW explains that to save time, one person from each group should complete the table and the others can fill theirs in later. Before heading into the lab, he explains that 3 groups will start with glucose testing and 3 will start with insulin testing and then they will rotate materials. He also says that each group will need at least one Chromebook and that when they get to the lab he'll give everyone an overview of the activity.	Strong procedures, preparedness

D1.55-62	Students are gathered around a table in the back to watch JW demonstrate. The lab is a big, open room with lab tables and the materials that students will need. Like in SW's room, outlets hang from the ceiling. There is an outline of a body on the floor, as well as an outline of a heart in blue and red tape. JW asks a student to encourage those who haven't joined yet to come to the lab in a nice friendly way. This happens quickly. JW gives demonstration.	Relationships, strong procedures, school resources
D1.63-87	10:01: Students break into groups and all are immediately working. Each group has a Chromebook with the instruction pulled up. JW is circulating, and students appear to be doing a good job of self-regulating. Even if they are laughing or chatting, they are doing their work. Groups rotate their bags until each group has interacted with each set of materials. JW circulates and answers questions or asks questions. By 10:28 all groups are finished and cleaning up efficiently.	Rigor, preparedness, strong procedures
D1.88-92	Students cleaned up quickly and returned to their seats in the main room. 10:31: JW announces "That was a pretty solid performance in the lab by all parties." He says they'll talk about what the results mean during their next class and that if they need to wash their hands they should.	Procedures
D1.93-94	10:32: Students have finished for the day and are on their phones, talking, standing, chatting, and taking selfies.	Procedures

Document E1

Line	Fieldnotes	Initial code assignment
E1.4-8	EB is giving instructions for the Do Now, which is projected on the board (Write about an even that impacted your perception of things) and pointed out that this is connected to the learning target of analyzing the structure of a text. There is a time on the board as well and quiet music is playing.	Teacher expectations, teacher style

E1.9-16	The room is bright with cloth curtains over the far wall of windows. Walking in, the front wall (to the left) has whiteboards on either side of the SmartBoard. EB's desk is next to the SmartBoard, and there are folders and pictures on the wall behind it. On the wall to the right, there is a bright, rainbow bulletin board about reading, a paintbrush with a Maya Angelou quote, and a wooden cabinet with books and a few pictures on it. Above that are Lord of the Rings posters. On the wall with windows are two anchor charts and a Yoda poster about reading. On the final wall to the right of the door is a door, a wooden built-in cabinet, and a whiteboard with the days' agendas, objectives, homework, expectations, and some student work and rubrics.	Teacher style, relationships, school resources
E1.17-20	Students are working quietly but EB is working with certain students on their computers. EB puts in attendance. 15 students; 7F, 8M, all Black.	Students, procedures
E1.22-27	7:33: EB asks if students need an example of the Do Now and stamps students' papers who have the Do Now completed. At 7:39 she asks if anyone wants to share what they wrote. Students do not volunteer but she asks a few and they read their experiences and EB asks if the events were cultural, personal, or something else.	Procedures
E1.28-31	EB goes through agenda, what activities they'll be working on today, including essays they've started, and through vocabulary words that are on Google Classroom	Preparedness, class connections, technology
E1.33-42	EB asks how many of the students have listened to some specific song by Lil Wayne. She says they're going to look for allusions in the song and that she'll model the first one. They listen to the song. EB does not offer a model. None of the students claim to know it. They joke that EB is too old. Some student mentions Ray Charles and how an allusion could be a compliment. EB agrees and asks the students for a different song to use.	Attempt at technology, real-life connections, relationships, student agency

E1.43-51	7:53: EB shows the words to a Childish Gambino song on the board and they listen to it. Students talk about the events that are being alluded to, such as gun violence. They notice that time speeds up and slows down but don't follow through with what that might mean. EB points out that silent seconds represent the people dying. She asks what is keeping gun laws from being put in place but students don't know.	Real-life connections, relationships,
E1.53-65	8:07: EB tells students to open textbooks to 73 and asks what she asked them to do while they read. Students say underline allusions. EB reads aloud and students follow along. They discuss the differences between being white and being Black and the impact on culture. They say American is not the land of opportunity. EB redirects students gently, "Hey ladies, I love you but let's focus."	Relationships, real-life connections, teacher style
E1.67-74	8:43: EB calls for quiet and reminds the class that the quiz they're about to take is for a grade. She does a whole-class redirect and calls out some students' names. They take a quiz on Google Forms. Two students sleep through the quiz.	Teacher style, technology
E1.76-84	8:49: EB tells students that if they're done they should start reading. She addresses the sleeping students and says she doesn't want to put a 0 in the gradebook. The students argue with the teacher about the quiz and EB says they're making a good argument for a new seating chart. Students complain that they don't know how to do the quiz. EB asks if they want to stay seated together. Some students are gathering their things.	Teacher style, (no) strong procedures
E1.87-88	9:02 Bell rings and students leave.	

Document F1

Line	Fieldnotes	Initial code assignment

F1.6-16	Walk in and face long wall of windows with cloth pull-down blinds. Smartboard is against that wall. On the far right is a table with printer, pencil sharpener, tissue, markers, and calculators. The wall to the left has a metal filing cabinet, bulletin board trimmed with wood that includes some anchor charts and motivational posters. Next to the bulletin board is a phone storage area and an iPad cart with chargers. The back wall is bright green, has whiteboard with Date, Learning Target, Do Now, Agenda, Essential Question. There is also a projector and some vocabulary posters next to the door. To the left of the door is a whiteboard divided with tape into a calendar with important dates and DM's desk is in front of this. Behind her desk on the other side is a wooden cabinet with glass paneling and pictures on the panels. Next to that, a colorful cart with supplies and a whiteboard trimmed with wood that stretches to the front wall. All students are Black.	School resources, teacher style
F1.18-26	9:05: Students come in and sit in assigned seats. Music is playing and a Quiz login number is on the board. They are using the Quizizz program. DM says thank you to the students who are doing what they should be. She reminds them that they have a Do Now every day and that when they finish they should log in… interrupted by intercom at 9:10, which is the principal saying they are on an educational lockdown—all students should be in their rooms and no passes will be written.	Teacher style, strong procedures,

F1.28-42	9:12: Students are talking but relatively quietly and appear to be working. DM moves and takes a seat in the middle of the room. As they finish they are logging on to Quizizz and DM can see their names and reminds them that they don't get points if they put "crazy names." She also reminds them that the number of quizzes they get to do depends on how and what they do. This is a review and she reminds students that the leaderboard shows speed but what goes in the gradebook is accuracy." The leaderboard is displayed throughout the quiz and the questions appear on students' devices. When the quiz is over, DM can show the questions and how many students got each one correct, and narrates what they did well on and what they need to work on as a class.	Relationships, teacher expectations, student agency, technology, student engagement, class culture
F1.43-50	They do a second quiz. DM shows that only 11 students have finished. She tells those who are finished to turn to page 6 in their notes. When they finish she pulls up the scores and says, "I l like our accuracy overall as a class. 70%. We could do better but overall not bad." A student asks if they can do more but she says maybe after they do their notes.	Technology, student engagement, teacher expectations, relationships
F1.51-63	9:22: DM turns the radio off and pulls up a PowerPoint. She says, "Normally we do notes on the board but there are a lot of graphs and I don't want to draw the graphs, to be honest." DM asks questions about vocabulary—any student can call out answers. DM says that they stopped last class with relations and today they'll work on functions. She defines a function and at this point most students have their notes out. DM says, "If it is on the board, you should be writing it." Some are and some are not.	Strong procedures, teacher expectations,
F1.64-72	9:27: DM writes on the board the way students should be writing in their notes. They go through different ways to tell if a relation is a function ordered pairs, tables, mappings, vertical line test. DM does some scaffolding to get students to relate these different approaches. She also uses real space to describe some of the models.	Procedures, Rigor, real-life connections, teacher style

F1.73-77	9:50: Students are doing problems independently and then sharing. 9:52: students are getting their computers back out and they're signing in to Quizizz. DM says, to researcher, that the whole math department made these quizzes.	Procedures, preparedness, collaboration
F1.78-89	10:00 Lockdown is over. DM: "Don't ask to go anywhere." Tells students to put their phones away and they do. All students are working on the Quizizz quiz. At 10:04 they are finishing and DM is scrolling through the leaderboard.	Rigor, technology, student engagement
F1.89-102	DM tells the class to put their computers away and get their notes back out. She says they're going to go through inequalities and she's going to write what they tell her. The class struggles for a while with -3 > x > 3 and DM discusses these sentences and shows them on graphs.	Strong procedures, rigor
F1.103-108	10:30: Students are working on problems in their notes on their own. DM asks students who aren't working when they plan to get the notes and she says when the talks to someone at home they might not like whatever the answer is. Students sound surprised that she talks to their families and she says she calls for "the good, the bad, and the ugly."	Relationships, (low) student engagement
F1.109-114	10:33: DM is answer questions from students who are working. 10:34: She says, "4 minutes lets get the room cleaned up please. Put the iPads away." Students follow instructions while talking quietly. DM reminds students to put calculators in the right place and push them all the way in.	Strong procedures,
F1.116-119	Students are gathered in the doorway and one leans on the office call button. DM loudly says, "Have a seat!" and afterward, "This is becoming a daily occurrence and I'm going to have to start writing y'all up. Y'all are too old for this."	(lack of) strong procedures.

Document G1

Line	Fieldnotes	Initial code assignment

G1.2-3	CS is singing and dancing a little as students leave and come in. Students are thanking her as they leave.	Teacher attitude, Relationships, class culture
G1.4-12	Class has windows with cloth blinds along back wall. CS's desk is also along this wall, with a lamp, printer, table with plants and computers, and a couch. Along the front wall are phone holders, another small desk, the SmartBoard, and a whiteboard with a calendar. There are anchor charts above the whiteboard. Next to it is a cabinet with books. Along the left wall as you walk in, there is a bulletin board with and whiteboard with essential questions, agenda, learning targets, expectations, test-taking strategies. Along far right wall is a wooden cabinet with books and a bulletin board on either side—one with student data and one with student work. There are paintings, shorter wooden bookshelves, a wooden podium in the corner, and an armchair with a footstool. This is the most welcoming room I've been in. There are 12 students, 5 Black, 7 white, 6 presenting as female, 6 presenting as male.	School resources, class culture, teacher style, real-world connections
G1.13-24	9:06: CS reminds students to use their time wisely and that the Do Now is up. Two minutes later she asks who is ready. Students are silently working. Some have Chromebooks open and some don't. CS cold calls a student and he doesn't have an answer. CS says they'll wait for it and he answers. The class has a high-level, nuanced discussion agreeing and disagreeing about the tone of the Do Now. CS describes the difference between sarcastic and sardonic.	Rigor, teacher style, class culture, teacher expectations. constructivism
G1.26-31	CS reminds them that they're preparing for the AP test where things won't be pointed out to them. 9:20: They go through another example. CS tells student she's coming to her first.	Rigor, teacher style, class culture, teacher expectations, real-life connections
G1.32-38	9:39: CS reminds students about homework and students work on tone quietly. Move to more comfortable positions, CS circulating, giving verbal praise. Students are noticing vocab words in the text.	Rigor, class culture, strong procedures, teacher expectations.
G1.39-47	9:54 CS says to get their clickers and projects Google Classroom. She uses positive reinforcement for transitions. When a question is projected, students hold up cards with answers and CS scans them with an iPad. There are discussions of different answers.	Technology, strong procedures, teacher style, relationships,

G1.48-49	Redirections are quick and give rational ("Don't say anything out loud--give people the opportunity to think.")	Relationships, respect for students
G1.50	Projects student scores	Class culture, relationships
G1.51-65	CS discusses the class's next big project—a podcast that they will submit to NPR's student podcast project and that they will turn into part of the 16/19 project. The class discusses how they feel about discussing race in school. Students have conversation about younger students are treated like they don't understand it and some say they feel like they're taught lies like Christopher Columbus. CS suggests is that we should talk about it because if they don't they end up with adults who don't know anything about it. Topic of podcast is HOW race should be discussed in the classroom. She says the class will start on it when CS isn't there so that they aren't swayed by her thoughts.	Student agency, technology, real-life connections, respect for students

Document B2

Line	Fieldnotes	Initial code assignment
B2.5-6	NP asks what students did with day off, work is displayed on overhead	Relationships, class culture
B2.7-9	NP has to vote as teacher for what kind of schedule to have on Friday. Asks students for their thoughts.	Relationships, student agency
B2.10-16	NP says he visited a charter school and explains what a charter school is. S asked if it was diverse and NP says racially mostly Black but income was mixed.	Relationships, respect for students
B2.18-23	"First I'm going to give you 3 to 4 minutes to go over your answers to the multiple choice quiz and then we're going to grade it." Students are allowed to talk with each other about their quiz answers	Constructivism, relationships, class culture
B2.26	Actually gave them more than 10 minutes rather than 3 or 4	MO Expectations?, Class culture, MO procedures?

B2.27	"Trade papers with your neighbor and grade in something other than what they wrote in."	Class culture, procedures
B2.28	Gives students utensils if they need them	Expectations
B2.19-30	Goes through answers, has student mark incorrect ones in margins	Class culture
B2.31	UMSL Rep talks about AP exam	Real-world connections
B2.32-34, 39	NP asks students to say which ones they missed and talks about the ones that are most missed first. Discusses annotating graphs, shows example on docscanner	Class culture
B2.36-38	Discussion of how owning property is still the biggest method of upward mobility in US	Real-world connections
B2.42-43	S says when NP does it it seems easy but when she does it on her own it doesn't make as much sense. NP doesn't respond	MO relationships? MO constructivism/life skills?
B2.48-49	"What is the skill that I'm teaching you" Pull things apart and put them back together	Life skills
B2.50	Students put papers in their boxes	Procedures
B2.41	"Okay take 90 seconds and then we're gonna continue what we need to do."	Student needs, relationships, class culture
B2.52	"Someone set a timer for 20 minutes" (for lecture)	Student agency, class culture, procedures
B2.54-57	Lecture with pictures on overhead. Has topic, learning target, essential question, and agenda on projector.	Technology use
B2.59	Switches to PPT	Technology use

B2.60-65	Shows texts and pictures and paintings that create a narrative (e.g., "the founding father represent everyone") and shows how	Relationships, real-world connections

Document C2

Line	Fieldnotes	Initial code assignment
C2.3	Tells students to put away cell phones and headphones	MO Procedures? MO Expectations?
C2.4	Do Now is about communicating with friends	Real-life connections
C2.5-6	"I noticed some people aren't reading all of the articles that I put online." One student says she didn't realize they needed to read all of it.	MO instructions, MO relationships, technology use
C2.8-12	Discussed Do Now answers, related to the theme of communication and how the body talks to itself	Real-life connections
C2.13-16	Tells students to get with their partner and that the instructions are on the board. Students move quickly.	Procedures
C2.17-25	Activity where students are back-to-back and give instructions for creating a structure out of blocks. Then return to desks.	Real-life connections
C2.28	Answering questions in pairs on handouts	Class culture, relationships, constructivism
C2.30	Class goes through answers together	Class culture, relationships, constructivism
C2.32	There is a quiz that students complete on Google Forms while SW passes out old work. Class ends.	Technology use

Document D2

Line	Fieldnotes	Initial code assignment
D2.5-6	Overhead instructs students to get out materials. Most have Chromebooks out.	Technology use
D2.7	Discusses careers that should have been added to career journals	Real-life connections
D2.8-9	Reminds students of what they did last class	Class Culture
D2.10-11	JW says they didn't start on food labels and asks if anyone has food. No one volunteers but I can see that some students do have food.	MO Relationships? MO class culture?
D2.12-13	Asks a student to read the first paragraph of an article that is projected on the board and that some students also have pulled up on their computers	Class culture
D2.14-17	JW says they're going to test nutrients in food and names some. Also ties to the larger forensics project—"We'll have a chance to look at Anna Garcia—remember there was a notebook at the crime scene? People who are diabetic often keep food diaries."	Real-life connections
D2.19-23	Hands out papers for terms used in analyzing food labels. Tells them they can work in a small group to define the terms and why it's important. Says they'll have 20 minutes and he'll put the time up. Tells them to find a group or partner and get started while he takes attendance.	Procedures, class culture, constructivism?
D2.25-27	JW circulates and asks who is doing which words. Says he has laptops if someone needs them. Students are mostly working—looking up definitions on computers	Technology use
D2.28-31	This assignment is on Quizlet. JW reminds students that most of the material there is made by students so it isn't always reliable and they should double check the info.	Technology use; student agency

D2.33-34	JW stops students from looking up definitions. Student asks if they can have more time and JW says no because they have a lot to cover but they have all the time they want after class.	Expectations
D2.36-37	JW passes out food labels and asks which is the healthiest. Students highlight good parts of food in one color and bad in another.	MO Instructions?, MO procedures; MO expectations?; real-life connections
D2.38-40	After 15 minutes students have been highlighting but there are still questions. JW says he must not have been clear with his instructions. It isn't clear to me what they should be doing other than highlighting.	MO Instructions?, MO procedures; MO expectations?
D2.41-44	Asks for everyone's attention and says they're going to move into the last phase of the activity and to find the Oreos food label	Instructions, procedures
D2.45-47	Goes through and asks how good/bad Oreos are for you. Asks if they are a good source of saturated fat? (Feels confusing because sat fat is bad). Students generally aren't answering.	MO Relationships; MO student agency; MO expectations
D2.48-51	"Now I'm going to pass out the last worksheet and this will take us through the end of class." Passes out worksheets and projects a chart to fill out analysis of food labels and has students fill in columns for each food. Students work as class wraps up	Technology use; instructions

Document E2

Line	Fieldnotes	Initial code assignment
E2.2	Classlink.com is written on the board	Technology use
E2.5	Two students are cuddling through most of class so far.	MO Expectations? MO Class Culture? MO Relationships?
E2.9-10	Class discusses rhetorical device triangle: logos, pathos, or ethos	Teacher style

E2.11	EB has an iPad set up on a tripod that is tracking her and recording as she moves	Technology use
E2.13-15	EB tells students to get textbooks and most don't have theirs. She says it's an expectation but doesn't do anything about it. The pages and questions to discuss are written on the board	MO Expectations, MO Relationships, MO Class Culture
E2.16-23	Reads passage about Native Americans being run off land. EB asks how the writer sounds and student says said but that the reason is how EB read it. EB asks students to underline words that make the writer sound sad. Asks if it is logos, pathos, or ethos.	Constructivism, MO real-life connection
E2.25-29	Student quietly read passage by Susan B. Anthony. Discusses whether women and men have equal rights. Many male students jump in and say women have better rights than men. EB says she appreciates input but for conversation to respect person who has the ball (this is the speaker).	MO class culture?, MO relationships?, expectations, procedures,
E2.30-35	EB asks what happens when a woman stands up for their rights. Male student says, "You're too emotional." EB ignores and asks female student to start reading and then asks this student to answer a question but a male student jumps in to answer. EB ignores and reads second paragraph.	MO class culture?, MO relationships?,
E2.40-45	Discussion of language around white and Black and whether this is logos, pathos, or ethos. Male student says logos because she discusses the constitution. EB doesn't say right or wrong.	MO real-life connections, student agency?
E2.47-54	EB directs table to find as many emotionally loaded words as possible. Student are having side conversations One student starts listing their group in order from lightest skin to darkest. EB says the conversation isn't appropriate, and they need to focus on work.	MO Class culture, MO relationships, MO real-life connections

E2.56-64	Handout about a mother who used social media pretending to be her daughter and bulled another girl who committed suicide. EB asks if minors should be able to post online. Encourages student to analyze prompt and think of pros and cons. Students mention creating a platform, expressing themselves, communicating.	Real-life connections, student agency, constructivism
E2.66-71	EB is doing most of the work, students walk in late, one student swears but EB doesn't acknowledge	MO student agency?, MO class culture, MO relationships, MO expectations, MO constructivism
E2.73-75	EB reflects on activity of the day. Says they had fun, read, wrote, and supported with evidence. "This is what a learning environment should look like."	Teacher beliefs

Document F2

Line	Fieldnotes	Initial code assignment
F2.5-12	DM says no one has read the board. Student reads out loud to see DM for Do Now. DM: "So I guess you should come over here." Student mostly work in silence and some have gotten out calculators. DM tells student take off headphones while she takes attendance	MO Relationships, MO Class Culture, MO Expectations, MO Procedures
F2.14-24	DM gives overview of what to expect during the next few days, describes upcoming quiz, gives directions for day's activity, and reviews material on y-intercept and slope. Tells everyone they'll need iPad or Chromebook	Expectations, Procedures
F2.26-28	Students are working while DM is grading at desk. Music is playing. Some students are asking each other questions	MO relationships, MO class culture, MO constructivism
F2.29-32	DM is looking at students' Desmos work from her computer. Shows what they're getting right and wrong and what they're working on.	MO intervention, MO relationships, MO constructivism
F2.33-24	Student asks for help and DM says to bring the work to her desk. Asks questions to support student.	Constructivism, Scaffolding, Teacher style

F2.36	Student asks question about HW and DM says to ask a classmate	Student agency
F2.37	DM says to get review for quiz as they finish activity	Procedures
F2.38	Student comes to desk to ask for help and DM asks questions	Constructivism, Scaffolding, Teacher style
F2.40-44	DM passes out graded work and ask why they did the Desmos activity and what it's meant to do. Makes ties between activity and what they'll be asked to do on tests.	Real-life connections
F2.45-49	DM circulates and gives instructions. Some students have heads down. DM makes it clear that students are responsible for their grades and she is available for help.	Student agency
F2.51-57	Students are working, mostly on review packets. DM is reviewing answers on Desmos. DM calls out names of students who are off-task	Teacher style, class culture, relationships
F2.59-63	Students ask questions, some are off-task/singing, continues through end of class	MO procedures, MO expectations, student agency though?

Document G2

Line	Fieldnotes	Initial code assignment
G2.5-8	Students are silent and working on the Do Now as the bell rings. CS is putting a news story on the projector and covering it with butcher paper. The timer goes off	STRONG procedures and expectations, class culture
G2.9-12	CS has students talk with another student about their Do Now. She circulates and listens to conversations, planting questions for students to ask the class.	Relationships, student agency, constructivism

G2.14-22	Student explains rhetoric and says the author goes into too much detail. Student asks for example. Another student says the author comes back to details later. First student restates and accepts 2nd student's point. Another student gives an example of what the second pointed out.	Class culture? CRT? Student agency, constructivism
G2.23-32	Review of rhetorical triangle. CS reminds students not to forget terminology. Four white male students jump in. Two while female student try to say something but are drowned out and give up.	Class culture? Gender? Constructivism
G2.33-44	Logos/Pathos/Ethos more nuanced in this class than lower-level with EB.	Expectations
G2.41-64	Class discusses an assignment everyone felt lost on. CS says that nothing this semester is new so if they're lost they should think critically about why and gives examples: not taking good notes, not reviewing notes, finding a way that works for you, listening more closely to expectations. Goes through Cornell notes format and apologizes for assuming students had note-taking down.	Student agency, real-life connections, expectations
G2.65-77	CS explains that they'll use the same rhetorical devices to analyze visual texts as written texts. Has students get out notebooks and textbooks and everyone does. Students work quietly. It's clear that the "rhetorical situation" is something that has been make clear to students.	Expectations, procedures, class culture

G2.79-90	CS gives groups different rhetorical devices to analyze for an ad for a Dodge truck. Dodge ad has a picture of a truck pulling a trailer. Appears to be moving through an empty highway. Text says, “It’s a big fat juicy cheeseburger in a land of tofu.” Smaller text says: Dodge Durango. This is the most affordable SUV when a V-8. Dodge Durango. With nearly four tons of towing,* this baby carries around chunks of those wimpy wanna-bes in its tail pipe. For more info, call 800-4 A DODGE or visit dodge.com (no period). Next to it: GRAB LIFE BY THE HORNS with dodge logo. *TINY TEXT says Depending on model and when properly equipped. There’s a man driving who is in the shadows and a woman in the passenger seat who is more illuminated and seems very happy. CS reminds students to focus on their part of the analysis.	Constructivism, real-life connections
G2.91-95	CS reminds students that their conversations should have decorum and respect other groups. Black male in audience group speaks loudly about this ad being for people who think they’re above vegans and white female student asks that group to speak more quietly.	Class culture, expectations
G2.96-97	Audience group continues out loud. CS asks if the ad is not for her, then. White male from audience groups says that the ad is for people who want to appear more masculine, not just for men.	MO class culture, MO expectations
G2.99-101	White female suggests it is for fragile men (male students try to interrupt and she says, “I’m sorry am I still talking?”). Male students continue to jump in and female student says, “Yeah, welcome to our class.” When I ask why she doesn’t jump in too she says it isn’t worth it.	MO Relationships, MO class culture
G2.102-107	CS quiets class down and calls on Black female student, who says there’s a chance it is for families who don’t want to drive minivans. White male students jumps in and points to cheeseburger as appealing to men. CS says women and eating less meat and are less likely to jump at the idea of a juicy cheeseburger, and that “wimpy” is more of a term men use against each other than women.	MO constructivism? MO relationships? Real-life connections

G2.108-115	CS calls on occasion group White female student says this is from early 2000s and context was different but can't come up with example. White male student suggests that 9/11 is on everyone's mind and the cheeseburger is appealing to our patriotism. CS agrees and says if you miss this and don't consider what is going on in society your analysis will be less insightful.	Constructivism
G2.116-120	White female student says, "This might be unpopulated but I'm going to go ahead" and then says it's offensive because the ad is basically calling vegetarians wimps. White male student asks when vegetarianism became popular. CS asks if this would be acceptable now.	Constructivism
G2.122-123	CS: "Excuse me. When someone raises their hand I need you to respect it and this is the last time I'm going to tell you."	Expectations, class culture
G2.124-128	Black male says Dodge and GM have some credibility already. White male student says the only red in the picture is Dodge symbol to make it stand out. Black male student says the shades of red are different but whole class agrees this doesn't matter.	CRT? Constructivism
G2.129-141	CS has students individually analyze the tone and then use one word to describe it. Students share words. CS pushes to describe what type of humor, and also says if there are negative words she's going to push back and ask why because it's an ad meant to evoke positive associations. There is a discussion of connotations of words like pride and how when used in a patriotic context they are positive. She encourages students to think outside of the ad and into what choices went into creating the ad.	Constructivism, student agency
G2.142-163	CS shifts class to talking about the podcast they listened to and what made it impactful so students can incorporate those aspects into the podcast they're making. Students write does ideas and share.	Constructivism, student agency
G2.165	End class by discussing how creation of class podcast will work	Constructivism, expectations, procedures

Appendix E: Codes to Concepts

Document A

Lines from Transcripts (Open Coding)	Codes/Concept defined	Concept
A.13-28: Second year as principal. Taught HS math for seven years. Admin cert as part of MEd because he wanted to affect broader change and felt confident in his ability to do so at that point in his career.	Background as teacher.	Reasons for Teaching
A.13-28: Second year as principal. Taught HS math for seven years. Admin cert as part of MEd because he wanted to affect broader change and felt confident in his ability to do so at that point in his career.	Desire to affect broader change.	Goals for Students, Beliefs About Students
A.39-72: "…how can I say that, to the willingness to serve causes greater than ourselves. To advocate, self-advocacy. [Researcher: To sort of like challenge ideas. And make sure that you're, you know what you stand for. Not just going with the status quo or believing something because someone tells you.] Absolutely. That's very important here. Student voice."	Goals include academic skills, "soft skills", critical thinking, technology use, self-advocacy, social and emotional health.	Goals for Students, Beliefs About Students, Student Autonomy, Student Voice
A.39-72: "Reading, writing, speaking, and reasoning on grade level which speaks to my expectations around literacy, which there is a specific focus on that for this school year, that's my specific area… Of course, being technologically literate as well. And to embrace, embrace standards...	Goals around literacy, including technology literacy.	Goals for Students, Academic Skills
A.39-72: Also, goals for me are the intentional development of soft skills in students. Such as, but not limited to, the ability to work in a team setting, appropriate attitude, timeliness, communication, humility, organizational skills. I'm also, if you want to include there are two other things that goals that I've set for students as well, to be resilient learners and to persevere and embrace opportunities to persevere through adversity. Very, very important as it relates to mental health, social and emotional learning for students, so the holistic needs of the student as well, those are goals, that they are able to self-regulate.	Goals include academic skills, "soft skills", critical thinking, technology use, self-advocacy, social and emotional health.	Goals for Students, Life Skills, Beliefs About Students
A.74-147: "To deliver the highest quality education to our students in every classroom. In my role in that as building leader, in my primary area of focus is to reduce the variability in instructional quality in our building. There is a variance here. I'm working very diligently to reduce the variance."	Goals for teachers around high-quality instruction, academic excellence, and consistency.	Goals for Teachers

A.74-147: “for teachers as well, to develop strong relationships, strong positive relationships with students, those are goals. As a building goal, every student here should have a positive relationship with at least one adult. It's something that's important. With at least one adult, relationships are a critical component to everything we do.”	Goals for teachers and students around relationships.	Goals for Teachers, Goals for Students, Relationships
A.74-147: “Teachers, to be, I guess to improve collective teacher efficacy as well, so for them to believe in our students and believe that they have the tools to reach and educate our students…”	Goals for teachers around efficacy and consistency.	Goals for Teachers, Beliefs About Students
A.74-147: “To create opportunities for students within lessons to engage in discourse, should hear discourse. See it, as well, to provide students the opportunity to construct viable arguments, deliver presentations, and then to critique the reasoning of each other.”	Goals for teachers around providing opportunities for discourse and for students around engaging in discourse.	Goals for Teachers, Goals for Students, Beliefs About Students, Student Autonomy
A.74-147: “I'd also expect the teachers to embrace a mindset of collegiality, respectfully challenge each other too. They are encouraged to do that here. Another goal is for teachers to feel empowered, to be empowered to make decisions, and not wait for me…”	Goals for teachers also include collaboration, autonomy, and growth.	Goals for Teachers, Beliefs About Teachers, Teacher Autonomy, Collaboration
A.74-147: Standardized testing improvement goals	Goals around standardized test scores.	Goals for Teachers, Goals for Students, Standardized Testing
A.148-157: 1:1 at whole school, can check out and receive Chromebooks, program that offers mobile hotspots if they don’t have internet at home.	Technology resources: 1:1 at whole school and hotspots for homes.	School Resources, Student Resources, Technology Use, Resources
A.162-175: Cell phones are expected to be put away during instructional time, but students can carry them to class and store them in lockers.	No cell phones in class.	Technology Use
A.184-191: Student use of tech other than class activities: email teachers and counselors, schedule change emails, communication generally.	Technology used to email teachers, counselors, etc.	Technology Use
A.224-257: PD priorities come from district priorities so partly determined by superintendent.	Professional Development from district.	Professional Development
A.261-285: Relationship focus at beginning of the year helps establish relationships at center of PLCs, and focusing on expectations with teachers at the beginning of the year made it easier to trust they’re doing things like not waiting for admin at PLCs.	Expectations around relationships.	Relationships, Teacher Expectations, School Culture, Collaboration, Teacher Autonomy, Professional Development
A.306-308: “…in terms of the expectations of the use of technology [for activities in a classroom], I think you would see, I don't communicate around that regularly from a building standpoint, but I would imagine the teachers would.”	Expectations around technology are left to teachers.	Expectations for Teachers
A.332-333: Absolutely confident that technology is being used to enhance learning and isn’t primarily a distraction.	Believes that teachers are using technology well.	Technology Use, Beliefs About Teachers

Document B

Lines from Transcripts (Open Coding)	Codes/Concept defined	Concept
B.11-15, 19: 10/11/12 AP dual-credit SS courses as part of early college program. Ss can accumulate college hours prior to HS/w HS diploma	Class is mixture of 10/11/12 grades and students can earn college credit.	Resources, Beliefs About Students
B.23-27: Family of educators. Originally from San Antonio, degrees in sociology and certification both in Texas.	Background in sociology	Background
B.32-44, 53-55: Became a teacher because he knew he could, but it wasn't first choice. Was in master's program but had to work and took time out to do certification and student teaching in impoverished area in San Antonio. Found the work meaningful so switched to history instead of international relations.	Background in history. Became a teacher because he needed a job.	Background, Teacher Attitude
B.58, 60: 13 years in the classroom and 2nd year at this school.	Background as teacher	Background
B.62-67: "I stay in it because of that meaningfulness. I could see the positive impact I was having. Versus why I got into it which is because I needed to get a job."	Reasons for getting into teaching and reasons for staying in are different. Find work meaningful and can see positive impact.	Background, Teacher Attitude, Beliefs About Students
B.74-81, 84-87, 90: Nothing in education or master's programs that focused on technology and nothing transferred to real-life classrooms. Thinks universities are starting to realize this.	Teacher ed programs don't prepare teachers. **No technology focus** in teacher ed.	Background, Teacher Education
B.107-113, 115: Training since starting in schools has been mostly on using databases or websites with flashy graphics but they aren't transferrable. They're pretty limited.	**Limited helpfulness in terms of PD** and how to use technology.	Professional Development, Collaboration, Challenges with Technology
B.118-127: Learning styles have been misappropriated. Everyone has multiple intelligences and we can all learning in different ways. Students can learn in more than one style and that's something I try to communicate.	Believes all students can learn in more than one style.	Pedagogy, Teaching Philosophy, Beliefs About Students
B.150-154: Problem with tech in ed is that you learn one program and then a new one comes up and you have to learn that one so you don't end up learning things deeply.	Tech **changes so often**, or initiatives change, so teachers are constantly learning new programs	Challenges with Technology
B.156-159, 161, 163: Teachers think they use tech to get students' attention but it's really just the bright colors and movement. It's tricking them into engagement, but not learning. "I know nothing about elephants, but they're fun to watch."	**Engagement versus learning**	Challenges with Technology

B.166-172, 176-180: It's a tool that you can use sometimes but not all the time. There are other tools and you have to know which one is the right one at the right time. Sources, interviews, the digital nature of a specific phenomenon. And tech tools can include anything from those digital sources to your cell phone. For a phone you should know what tools are available. Then you can study anywhere. But you have to know what to have, where to have it out, how to use it.	Challenge is knowing what tools to use at the right time	Challenges with Technology
B.182: No [students aren't good at using tech for the right purposes]	Students don't know how to use technology the right ways	Challenges with Technology, Beliefs About Students
B.193-202, 204-205: Conversations from multiples points of view. That will let them gain attention and opportunity. To produce quality work in a variety of courses, opportunities open up. All this translates to increase in life satisfaction because of a lot of variables, especially increased income in a capitalist economy. That's the goal. You don't have to be rich to be happy, but you have to have a certain amount of income to be satisfied—to live an enriched life.	Wants to students to be able to engage in conversations, which translates to attention and opportunity, which translates to life satisfaction.	Goals for Students, Life Skills
B.220-238: Communicates expectations through the work given to students. Students might to be able to articular expectations	Doesn't give explicit expectations	Expectations for Students, Expectations for Technology
B.261, 263-266: Value of tech in class is "knowing when to use it." And he teaches that explicitly.	Explicit teaching of knowing when to use technology	Value of Technology
B.284-288, 290-292: Uses technology mediums and history plus current day to have them create connections between history and present	Technology and connections to history and present	Technology Use, Real-Life Connections
B.300-308, 311-313: Students are good with Chromebooks but not tech literacy. And repair shop is understaffed. Also tech can be distracting	**Students generally good but Chromebooks** wear down and can be difficult to repair on time.	Resources, Beliefs About Students, Challenges with Technology
B.317-318, 328-332, 342-344: No use of students' outside tech in class. Wife is a counselor and says most problems start on social media.	No student identity development, and no integration of tech outside and inside educational settings	Beliefs about Students, Challenges with Technology
B.348-351, 353-357: Planning with tech has been helpful and using the same platforms as other teachers is helpful (e.g., GC)	Planning and using consistent platforms is helpful	Collaboration, Consistency
B.385-391: Collaborates on things like PPTs, activities	**Collaboration** makes life easier	Collaboration

Document C

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
C.19-21, 25, 27: Teachers AP Biology, Human Body Systems, 3rd year at this school, 16th total teaching	Background in teaching	Background

C.29-30: SIUE w undergrad in Biology, BS in theater and dance ("which has nothing to do with what I do now")	Background in biology, theater, and dance but says this has nothing to do with teaching	Background
C.36-40: Certified in Illinois, went to career fair and got hired in Missouri	Certification and job through career fair	Background
C.49-53, 55-56, 58: Jokes about making money as reason for teaching, but does say money is better at this school man many others	Reason for teaching is somewhat money-related	Reasons for Teaching, Resources
C.61-64: Worries about teaching profession in Illinois because of the state's financial situation	**Financial issues** impact teachers	Challenges with Teaching
C.76-87: "I would do technology in all the courses. It really is all about student maturity. I have found that my **lower level courses**, and I think their lower level is just due to student maturity. I have students who struggle academically, but if they're **mature enough**, that **have the willingness,** too, they do well regardless of what course you put them in. So maturity level is my indicator…. in my [higher-level] class[es], I use it every day. If they are looking at emails or checking grades or sending me their homework in my Biomed class, everything's graded online so their answering questions via Google Forms. They turn their assignments in via Google Docs. I share with them rubrics based on their writing so they can see, and I share it via email because Google Docs does not have a seamless rubrics integration but apparently they're working on it."	Students in **lower-level** courses are less mature and she uses technology less with these students.	Beliefs about Students, Technology Use
C.88-91: Try to use technology to imitate work life	Technology should be used to help students into **working environment**	Beliefs About Students, Pedagogy, Real-Life Connections, Purpose of Technology
C.101-103: Familiarity if nothing else. "I've seen that before"	Make students aware of tech uses	Beliefs About Students, Purpose of Technology
C.104-107: "Now my **regular kids**, I just don't want to **scream and cry** trying to get the 50% that have it, and then what do I do with the 50% that don't. It would have to be a whole nother preparation, lesson plan to do a paper versus a technology. So, I try to make my life easy. I'm prepping for three."	Insists that "regular kids" will have her "scream[ing] and cry[ing]" just trying to get 50% of them to use tech correctly	Beliefs About Students, Challenges with Technology
C.109-117: "This week I had them test online. It was a **testament to my patience**. I had to straight up get my namaste on for that, because asking them to sit quietly and patiently while the 60% of the kids that brought their technology could take it, took	Expresses frustration trying to get "regular kids" to test online	Beliefs About Students

it. And then the other 40%, ... **and you couldn't get them to shut up**. Nothing you could do. And referring them and sending them out of the classroom, I guess I could've done that, but as people were exiting out I would just say, "Hey, can So and So borrow your Chromebook to take the test?" And I'd just move them through what should've taken 15 minutes took straight up 40 minutes. **What have I done?**"		
C.119-122"So, I'm going to have to do better or just cut it out in its entirety. But I don't have any other option. There's no COW for the science department. There's nothing. Either kids bring it, or they don't. So the only option that I have, I do have charging cords, which is a lot more than I can say."	Gives up on tech with specific students.	Beliefs About Students
C.132-137: Old district didn't have decent WIFI but made tech requirements anyway	District out-of-touch	Challenges with Technology, Resources
C.149-156, 170-174: Frustration with how students treat Chromebooks and students not knowing the basics	Challenges blamed on students	Beliefs About Students, Challenges with Technology
C.189-191: Wouldn't cover standards if had to teach and teach students to use tech.	High-pressure, lack of resources	Expectations for Teachers, Resources
C.219-220: Learning was on the job, not in teacher ed programs.	Teacher ed programs fail to prepare for real classrooms	Teacher Education
C.230-233: "You either pedagogically, if that's the right word I want to say, you have to make the decision professionally to say, "I'm going to move forward with this technology or I'm not." And so, I made that choice because I just felt that it was best practice."	**Teachers have to take on technology** learning/integration/philosophy rather than hoping they'll be given guidance.	Professional Development, Teacher Education
C.240-247, 266-271: Technology frees up teacher time; can send info to parents easily	Tech as **saving time**, family engagement	Purpose of Technology, Family Engagement
C.288-295: "I have yet to have a student get on my nerves for that, or a parent. I haven't had that, but this isn't a hover-y district. If I were teachings somewhere else where that was the norm, then I'm sure I would feel very different about it. Because I know I have colleagues that work in more affluent school districts and hover-y parents are kind of the norm. So yeah, I mean, I've had parents that were surprised the quickness with which I got back to them. I thought, "Dang. What were the other people doing?"	Parents who use tech are more engaged	Beliefs About Families, Beliefs About Students
C.307-312, 314-321: Communicates goals explicitly at the beginning of the year and reinforces throughout	Explicit and reinforced expectations	Expectations for Students, Expectations for

		Teachers
C.402-420, 425-430, 435-446: Attempted to describe goals and relation to tech, and planning in relation to tech, but both connections were unclear	Unclear ability to relate goals and planning to tech	Expectations for Teachers, Collaboration
C.472-477: Only 1 PD in 3 years on tech and that was on the required data tracker. Otherwise people find things and share them on their own	**Lack of PD** to help teachers use prep, mostly have to **find things on their own and share**.	Professional Development, Collaboration, Challenges with Technology
C.478-487: Need for teachers to be open and problem-solvers. Frustration with "older teachers"	Frustration with "older teachers" about not being problem-solvers or open to new things	Beliefs About Teachers
C.580-584, 586-588: Other students are frustrated with students who don't bring tech/use appropriately. "It is. I let them insult their peers like, "You need to get it together. You need to sit down and shut up. I'm trying to learn. She's talking to you. I'm trying to get this, too. Shut your mouth.""	Allows peers to criticize each other	Beliefs About Students, Pedagogy
C.596-600, 603-605: Uses YouTube videos, posts community info connects with scholarships	Connects tech to real-life in some ways	Real-Life Connections

Document D

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
D.12-13, 15, 17: 9-12 various science classes—observing principles of biomedical science, mixed grades	Variety of grades in science class	Background
D.24-26, 35: Education at Mizzou. Started at Truman and finished at Mizzou. Cert. to teach biology and gen science and added chem later.	Studied education and then certified to teach biology and then chemistry. 24th year teaching and 3rd at this school.	Background
D.30-32: Found education valuable—drilled into me by my dad. So I wanted to instill that in my students and thought if they had the right teacher they would love learning also.	Want students to find education valuable like he was taught to.	Reasons for Teaching, Goals for Students
D.43-46, 56-60: "We were trained on spreadsheets and word processors because the Internet was a baby. Dial-up modems and computer labs and no cell phones. Students now use some of that—word processing and spreadsheets. Especially now that you can graph from spreadsheets. But I still do a lot of graphing by hand because it's good practice."	Learned basics in teacher education programs. Still finds doing manual work that technology could do valuable.	Teacher Education, Value of Technology
D.65-76: Early on we had PD days where you could choose a classroom to go to and learn specific tools (like PPT or implementing Paint into projects). Eventually learned how to get students designing sites but not with code. Now I'm doing trainings myself. But a lot of what I do is self-taught or through a colleague who says I should try something out. Like I was an early adopter with Kahoot and I still get it for	Lack of professional development—most teachers have to find things or use platforms suggested by colleagues	Professional Development, Collaboration, Challenge with Technology

free even though now it costs money		
D.84-87: Kahoot PD felt exciting and when I used it with students they were engaged and involved so I was bought in.	Student **engagement** was higher	Value of Technology
D.96-102, 118-125: If I was giving a PD for teachers I think I'd do it on something like Canvas; would also lead on programs like Kahoot for engagement	Ideal PD would be to help teachers use admin tools better	Professional Development, Value of Technology
D.131-149: Confidence. Proficiency. Mastery level but also confidence that they can learn. Relationships and strong learning environments. Knowing people care and they make a difference in others' lives. I had a student who became a doctor and even though it was when I was at another district she came to talk with my students here because we had a relationship.	**Soft-skill** goals for students	Beliefs About Students, Goals for Students
D.145-146: Distraction with phone and Chromebooks	**Distraction** is an issue	Challenges with Technology
D.160-163: Uses a lot of small-group work	**Constructivism**	Beliefs About Students, Pedagogy, Constructivism
D.183-196: I use Project Lead the Way—activities are premade and I just have to plan how to use them. It's powerful and lots of folks are using it. So Canvas, PLtW, and GC.	**Ease of use/saves time** with pre-made materials	Value of Technology
D.228-234: Tech admin gives lists in an email but teachers have to figure out how to use his suggested platforms	Professional Development is insufficient; teachers still have to **learn and share** on their own.	Challenges with Technology
D.242-250: "I think a big part of it is learning how to correctly navigate the information that's out there, how to find it, how to navigate it, how to evaluate it. And then just familiarity with specific websites or software that they are going to use potentially in their profession. Every kid in my classroom knows how to use Instagram and Snapchat and TikTok and whatever else, but do they know how to use Google Drive on their phone and open a Google Doc and actually edit it if they don't have their Chromebook? Can they do their work on their phone? So little things like that, just being familiar with what, what the productivity options are."	Sees value in supporting students in using tech they have effectively.	Beliefs About Students, Real-Life Connections, Value of Technology
D.256-258: Don't use much that students use outside of school because it's distracting	Tech can be **distracting**	Challenges with Technology, Beliefs About Students
D.279-287: Good lesson = students researching environmental issues and creating a website, then viewing others and critiquing/comments/etc.	Favorite less had real-life connections and student voice.	Student Autonomy
D.293-302, 306-312: Students break Chromebooks—but then says they do ok but can't use tech effectively	Blames students for irresponsibility	Beliefs About Students, Challenges with Technology

D.328, 331-334,336-347: Planning with PLCs involves tech, planning with online curriculum (PLtW involves tech). Teacher job is to find legit websites, online simulations, lab stuff. Doing labs virtually is a huge deal.	Most of the responsibility for using technology/integrating into lessons is on teachers	Challenges with Teaching, Collaboration, Planning
D.350-354: "That's actually why I got my masters when I did, because I wanted to start creating those online labs. And the closest I could find was, I got my **master's in EdTech**. Everything I learned is completely outdated now and useless, because that was in '06, '07. And I learned how to write code in HTML and I learned how to do Java Scripts, and I've forgotten it all since then. But I got a pay raise."	Has a background in using technology	Background, Teacher Education
D.371: Yes [students are adequately prepared to use tech in classroom].	Student are prepared to use tech in class	Beliefs About Students

Document E

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
E.22-23, 31: 9th and 10th English, 12th year at this school	Class structure	Background
E.27-29: BA in English, MA in teaching and license there, too.	Background in English, teaching	Background
E.34-36, 38-46: Went into teaching because others said she couldn't do it. Then realized how important expectations were and had good teachers in middle school.	Reason for going into teaching	Reason for Teaching
E.65-74, 77-80: Tech in teacher ed/undergrad programs was just typing papers and emailing; Boring tech class	Lack of tech in teacher education, or it was boring	Teacher Education
E.90-100: PD on Google Classroom or other technologies but the PD isn't helpful and it's more like you have to train yourself. Most of the stuff I learn from colleagues or try out myself.	Lack of tech PD—have to learn yourself or from colleagues	Professional Development, Collaboration
E.114-122, 132-138: Students use it the way they want but not always efficiently. Doesn't sound frustrated. Training comes from teachers in classes.	Lack of ability of students to use tech "efficiently"	Beliefs About Students
E.146-151: Best aspect is engagement, and efficiency for Ts.	**Engagement** and **saves time** for teachers	Value of Technology
E.155-161: "sometimes I have to make assessments for students to learning things handwritten because their technology issues are just not getting resolved, whether it's an issue on the student's part or it's an issue on the technology department or an issue on timing. Because the technology department is not always open when it should be and our students sometimes they break the computers at the end of the day and they can't... they have to wait until the next day to find time to get in them."	Resources to support students with technology are lacking	Challenges with Technology, Resources
E.167-169: Better readers and writers and skills for college and career	Goal is **jobs**	Goals for Students
E.173: Students couldn't articulate goals	Goals not communicated to students	Communication, Goals for

		Students
E.187: Biggest value for teachers is lack of paperwork	Ease of use/Save time	Value of Technology
E.205: District expects tech to be used to enhance learning	District expectations but no follow-up	Expectations for Teachers
E.221-226, 231-235: Tries to find music/examples students can relate to. Students picked something and teacher was a little uncomfortable but trusted students that it was relatable and was able to make connections.	Tries to bring in pop culture to engage students	Real-Life Connections
E.225: "When you have a bunch of boys, somehow making English class feel like a sport helps"	Stereotype?	Beliefs About Students
E.274-278, 291-296: Avoids social media etc. Talks about it if it relates to education. Did try having them use Snapchat but it didn't go well because students couldn't save photos. EB taught them how to do it. Was a pain but interesting that she could interact with their tech.	No student use of tech they use regularly	Beliefs About Students
E.310-321, 323-326: Used Serial podcast – was favorite tech-related activity.	Tech for engagement AND learning	Real-Life Connections, Value of Technology
E.350-364: Cell phones became ubiquitous and EB tried to incorporate them but didn't seem like they were using phone appropriately. Now has them in lockers. "First year I feel like I'm not fighting phones"	Tried to use phones but they seemed like distractions. Stopped using them and now it's easier.	Challenges with Technology, Pedagogy
E.378-381: Planning: Tech isn't a lesson—it's a tool	Doesn't see tech value in planning much except as a tool to include	Planning
E.395-397: Says she uses tech about the same as other teachers in her department	Self-report says she thinks she's average with tech use	Beliefs About Teachers
E.408-412: Best part of tech is engagement and resource for teachers for efficiency. Can make last-minute changes	Reiterates values of engagement and saving time	Value of Technology
E.421-435: Value of tech in class for researching, but have had to teach about reliable sources, comparing sources.	Tech can be good for research but hard to get students to use reliable sources	Value of Technology, Challenges with Technology
E.441: "Students learn best through collaboration and socialization. I mean, they're a very social group. I mean, you look at the fact that they are so engaged in social media and somehow being in contact with the world constantly, I mean, that's kind of what we work on. We talk about things together as a class. I have the most amazing groups and then also I try to do more hands-on. So it's like, we might do something together just to give them a model and then I let them do it in a small group just to give them practice and then I have them practice on their own just to give them more individualized."	Believes students learn best together, and practice individually—**constructivism**	Pedagogy, Constructivism
E.462-466: How to use tech to be a productive citizen: EB would focus on communication, emails, responding on social media, thinking through what they're leaving online.	Would ideally focus tech use on how to be a productive citizen—communication like email,	Real-Life Connections, Goals for Students

	social media, thinking through what they're putting online	
E.485-496: Parents often don't have the same level of savviness with tech	Parents have less tech experience	Challenges with Technology, Beliefs About Families

Document F

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
F.15: 9th and 10th Algebra 1	Class structure	Background
F.19, 20, 23: Teacher certification through UMSL, 9th year teaching, 1st year in building	Background in education	Background
F.26-28, 33-34: Always been in mind to teach. Felt like it was easiest way to make a difference, connected with young people	Always wanted to teach to "make a difference"	Reasons for Teaching
F.37-39: No tech experience in teacher ed	Teacher education doesn't prepare for tech use with students	Teacher Education
F.51-53, 71-76: Old school gave training on Alex but not super helpful because no students were there so they couldn't try out all aspects of program… "I felt more beneficial when I was actually in there learning things myself actually." Plus learning from colleagues"	**Not helpful** to train without being able to try it out. More helpful to **play with it herself or collaborate**	Professional Development, Collaboration
F.55-57: ALEX used to fill in gaps, makes it so some students see same material twice	Students see material twice for remediation	Technology Use
F.123-124: "I'm very new to the calculators. The students actually know more about that particular calculator than I do because they do start using it in the middle school."	Students know more than teacher	Beliefs About Students
F.133-134: "We had a calculator training at the beginning of the year, but it was so much to learn that I couldn't take it in."	PD **unhelpful** again	Professional Development
F.150-159: "And the way I like to set it up is because I don't like to be at the board talking at them. I like them to be engaged. So, I wanted them to have something to go back and reference. So we began the notes as we normally would, paper pencil but then to just set simple switch over to Quizzes, it's like I have this right here to reference but I get to try it on my own and I know I have to get to the top of the leader board but not this time because she's not going to count this one, but I'll be able to do it again. And it's just simply from a sheet of paper to putting it on a Chrome book or an iPad makes a world of difference. If we could just make those small changes in the classroom, I think we'll have greater mastery and understanding, and students are more willing to participate in the lessons."	Tech is valuable for engagement, immediate feedback, use same info you'd use on paper	Value of Technology
F.179-181, 184-188: Pulled problems from Facebook. Had students pull problems from	Connected to social media	Real-Life Connections,

social media timelines.		Student Autonomy
F.197-202, 208-209: “It's one of those things we can't run away from anymore and so we have to figure out how to use it. How to incorporate it on an educational level, so a lot of our meetings are geared towards the formal language and getting them away from that informal language, and so our task now is how can we formally introduce social media and what they use on a regular basis into a formal classroom. And I think other than having them create a quiz or a Kahoot by themselves, that's not what they use on a regular basis.”	Believes students need to learn to **codeswitch**. Thinks it’s important to help them understand what they’re leaving online. Allows them to create some online activities themselves.	Pedagogy, Beliefs About Students, Student Autonomy
F.233-241/255-257, 243-244: Ideal PD would be on using tech for classroom management, clear expectations, goals for outcomes. “we have to incorporate if we want our students to be engaged and get the most out of our lessons”	Wants PD on tech for classroom management—believes this will help with engagement AND learning	Professional Development, Class Culture
F.299-308: Importance of relationships for teacher and emphasis on relationships at school and district	Relationship importance	Relationships
F.321-323, 325: Understanding of math, passing EOC, and what they’re here for. College entrance exams.	Academic goals and college readiness	Goals for Students
F.331-333: “And then I mean, unfortunately all the teacher education prep that we get, it's nothing until you get into the classroom and it's like, "Well the book told me to do this but that's not working."	Teacher education doesn’t prepare you for classrooms	Teacher Education
F.345-358: Goals are to be able to learn. To not give up. To be able to practice and make mistakes. Work hard. Seeing them apply these things outside of math	Goals to be able to apply, and be ok with mistakes	Goals for students
F.396-403: Tech can be like an extra teacher. Allows for research. Thinking outside of the box. Frees up teacher time.	Tech saves teachers time	Value of Technology
F.417, 426-447, 485-487: One teacher prepares some materials and that allows DM to focus on creating other materials like quizzes…. “We [teachers] share responsibilities.”	Collaboration and planning togethers also saves time	Value of Technology, Planning, Collaboration
F.502-528: Can’t fully depend on tech. Always need backup plan. Always know policies. Made clear plans for tech in classes. Like to sit in middle of class to show students I’m paying attention.	Tech is valuable but not the only thing. Should know the policies and make clear plans but make sure you’re engaged with students	Value of Technology, Challenges with Technology, Beliefs About Students, Pedagogy, Teaching Philosophy

Document G

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
G.14-16: Teaches Lit & Comp 2 (sophomore English) and AP English Lang and Comp (juniors/seniors)	Class structure	Background

G.22, 28, 31: Teaching certification at Lindenwood, 8th year in classroom, 2nd year at school	Background in teaching	Background
G.33-43: Started working with runaway and homeless youth at a shelter, realized they didn't have resources, got tired of students not having positive experiences at school and not having advocates and quit to go back to school to be a teacher.	Background in working with students outside of schools	Background
G.49-63: Understand need for communication across the board—all facets of communication. They have a misconception of what communication means (think it's reading and writing). Want students to have the skills to impress others. Want them to be able to get attention and respect.	Goals are around **communication**—gaining attention and respect	Goals for Students
G.66-77, 80-87: "Some students could articulate this. Sometimes they think they aren't capable of meeting my expectations but I believe they can—they just have to realize it. So I'm planting seeds and they might blossom now or later. But they could definitely give you pieces of it…. I embed goals. Expectations at the beginning of the year. Throughout lessons. When challenges come up."	Expectations and communicated. Students don't always believe in themselves but CS believes in them. Embeds goals throughout the year and as challenges come up	Goals for Students, Beliefs About Students
G.95-96: Students asked for guidance but CS knew she'd given them what they needed and pushed them to get there on their own	Doesn't enable students; challenges them to think for themselves.	Beliefs About Students, Student Autonomy
G.97-103,107-117: Students came up with idea for podcast topic	Students determine what they're working on/toward based on what's important to them	Beliefs About Students, Student Autonomy
G.127-146,150-161, 163-170: Allows for student conversation and debate	Believes students should have conversation even if they disagree.	Beliefs About Students, Student Autonomy
G.180-184: "Yeah, yeah, and that's what I told them. My students who are now at different universities, Vanderbilt, Emory, SoCal, Mizzou, different schools, they told me that my class prepared them for college more than any other course, so I try to tell them these things. Of course, they think I'm just blowing smoke at them, but you'll appreciate it later."	Previous students have given feedback about this class preparing them for college, so confident that students will see value.	Beliefs About Students, Expectations for Students
G.185-196: Tech opens opportunity to expand circle of influence. "what we do in the classroom should act as a mirror and a window for kids. It should allow them to see their own cultures and beliefs and interests reflected back at them, and it should also give them a glimpse into the outside world that they never really get to touch her experience." "And through technology, I get to do it because I can access curricula that is not what was given to me by the school district. "Oh, I don't have a	Classrooms should reflect and be a window for students, Goals around participating in the real world v just jobs	Value of Technology, Beliefs About Students, Real-Life Connections, Goals for Students

set of novels for my kids to read." Okay. That's okay. We're going to get a PDF offline and et cetera. So yeah, I just believe in having a rich environment for kids to learn how to apply communication skills outside of the classroom and to not restrict it to the classroom."		
G.202-209, 218-222, 244-249, 267-271: Text is anything you can read—so tech gives new opportunities to define text… Students brought in videos that had impacted them. Debate on current events, keep updating curriculum to remain relevant	Expanding students' worldviews and allowing them to have a say in class material. **Constructivist** approach	Beliefs About Students, Pedagogy, Student Autonomy, Real-Life Connections, Constructivism
G.277-294: Favorite activity incorporates different aspects of technology, different types of analysis, analysis of related materials, different types of text and how they all create meaning, then application by creating their own documentary.	Activity involved rigor, discussions, creating meaning, creating materials	Constructivism, Student Autonomy, Real-Life Connections
G.307-313: Has background in speech communication and political science and speech writing and communication so was able to apply this to designing activities.	Speech and political science and speech writing background	Background
G.332-334: PD was unhelpful. Knew most of the stuff discussed with Google and no other sessions.	**Unhelpful** PD	Professional Development
G.341-344, 388-390: Innovation director is supposed to support with incorporating technology but just sends updates monthly with app suggestions. Once gave us suggestions and they didn't work.	**Unhelpful** support from school	Professional Development, Professional Support
G.350-355: Students not prepared. No training etc. Teachers also aren't equipped.	Blames students' lack of preparedness on adults and says teachers also aren't equipped	Resources, Beliefs About Students
G.371-374: Teachers have to teach tech if they want students to use it.	Lack of PD	Professional Development
G.410-413, 415-432: "I would say that we are preparing kids for an uncertain future where we don't know what skills they'll really need. And even though we know that, right now, this technology is the latest and it's advanced for us, it is going to be outdated very soon." Students are technological beings. Most have grown up with it. So we have to learn to meet them where they're all, learn to speak their language, adopt practices in ways that they can apply in their language and with their values systems. Tech is a huge part of their lives. Need to use it so students can see usability and necessity	Tech is necessary. It's part of students' lives	Beliefs About Students, Value of Technology
G.443-437: Says other teachers don't embrace tech the way she does. Admin is supportive, with minimal pushback. But "would venture to say	Says she uses tech more than others. Others just see it as a necessity rather than thinking	Beliefs About Teachers

that it's because the teachers did not develop lessons to use the iPads to enhance learning. It was just, again, let's give kids technology just for the sake of giving kids technology without really thinking through how to make them usable and how to make them enhance learning and not become the learning.”	of how they should use it to enhance learning instead of making tech the learning.	
G.468-474: Planning every day requires technology. “have many teachers who have struggles getting kids just to bring it ... They're like, "They never bring their technology." And I would say, "It's just because you don't require it on a daily basis." My kids have to use them pretty much every day, so they know, just like you need to have a writing utensil when you come to my class, you need to have a charged Chromebook”	Blames teachers for many challenges.	Challenges with Technology, Beliefs About Teachers, Planning, Value of Technology

Document B1

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
B1.2-3: These are advanced classes, not available at all schools	School offers advanced classes	Beliefs About Students, Resources
B1.4-9: Room is clean and bright. To the left of the door are four containers and that wall is covered with posters of famous people from history and an anchor chart about source documents. There is also a wooden cabinet with glass doors showing the books inside. On the back wall is a wall-sized map of the world that you can write on and erase. The next wall is all windows with cloth blinds and college flags above them. The front wall is all whiteboards, with a SmartBoard in the middle. Google Class with the agenda is projected, and there are newspaper front pages from famous events above the whiteboard. Desks are arranged in a quadrilateral/circle for discussion. This in itself implies that NP believes that students are capable of and expected to participate in class conversations. *I love this*. There are 17 students—7 white and 10 Black, 11 presenting as female and 8 as male.	Learning environment is clean, bright, desks arranged for discussion.	Learning Environment, Beliefs About Students, Student Demographics
B1.13: 7:26 As soon as class starts and students are walking in, NP is checking on their homework status. Shows that he expects them to be thinking about work from the moment they enter.	Teacher has established procedures and routines	Expectations for Students
B1.16: 7:28: NP: “Remember to check your Google Classroom at least every other day.” NP says this but doesn’t push it, implying that he believes students will follow through.	Reminder about using technology but doesn’t push on it. Believes students will follow through?	Beliefs About Students, Expectations for Students
B1.17-18: Student responds to earlier question about what they’ve been working on: “Something about the American Revolution. Discussing the first continental congress.” Student feels comfortable speaking up	Student feels comfortable brining up something from before.	Relationships, Class Culture

B1.19-21: NP: "Put your phones away. I can see them." Some students have notebooks out and others are listening. Most students do put phones away. Does not wait for students to comply, immediately affirms student's answer, also implying that he believes students will follow directions.	Reiterates expectations about cell phones but then answers question implying NP believes students will follow instructions	Relationships, Expectations for Students, Class Culture
B1.24-25: Quick discussion of homework and reminder to use ACE formula to write essays.	Discussion of homework and reminder about formula for writing essays.	**Constructivism**, Beliefs About Students
B1.27-32: 7:38 NP tells students to get their notebooks and uses SmartBoard to draw what students should be drawing in their notes, which is a diagram of two inverted triangles on top of each other—the one representing societal makeup is right-side-up and other representing wealth is upside-down showing that most wealth is at the top, where there are fewer people. As he draws, he asks students what the diagram means, and scaffolds where necessary, asking what each part represents.	Good scaffolding with questioning	Beliefs About Students, Constructivism
B1.36: NP: "Make a subheading." He is helping students learn how to take good notes as well. Class continues discussion of Revolutionary war with pictures on SmartBoard. NP is teaching life skills along with material.	Life skills along with material	Beliefs About Students, Real-Life Connections, Technology Use
B1.38: 8:16 (approximately an hour into class) they take a bathroom/brain break. Some students stay and continue asking questions about the topic.	Respect for students' need to take a break to reengage.	Relationships, Class Culture
B1.41: Conversation changes to talk about the Declaration. NP lectures and has pictures in the background on the SmartBoard. He asks questions along the way—for example, when he talks about people trying to sell the idea of the pursuit of happiness and then change it to the pursuit of property in the Constitution, he asks who benefits. He asks how this compares to current events. Many students feel comfortable answering. NP himself draws connection to James Otis pretending to be a commoner to Trump.	Allows students to fill in parts of conversation.	Real-Life Connections, Technology Use, Relationships, Constructivism
B1.49: Discussion turns to Bacon's rebellion and points out that this was at least one point when the elite realized that they couldn't let the middle and lower classes unite.	Discussion of how not having the middle and lower classes unite benefits those in power	Real-Life Connections
B1.53: NP asks students to start cleaning up. They know exactly what to do. NP continues to answer questions about homework or discussion.	Good **procedures** and reiteration of **expectations**, and willingness to continue answering questions.	Relationships, Class Culture, Expectations for Students

Document C1

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
C1-4: SW sends a student to come and escort me from the office to the room.	Kindness and consideration	Relationships

C1.5-25: The room is warm, bright, and smells like cinnamon. There are class objectives written on the whiteboard in the front of the class, and then the whiteboard is blank and stretches across the rest of the wall. The far wall has large windows with cloth curtains and pictures of X-rays that light up with the sun. The next wall has wooden cabinets with anchor charts, and on top are skeletons and human body models. In the corner along the same wall are lockers for phones and emergency kits. The final wall has a metal cabinet but the rest is covered with a bulletin board with wooden boarders that has motivational posters, emergency information, upcoming student birthdays, and other science posters. SW's desk is in the corner, and there are black-top, wooden science tables that seat 4 students each. The floor and desks are clean and orderly, and there are outlets for charging technology hanging above each table. This feels like a room where people are serious about science, but not a room that is so sterile that it dissuades relationship-building. There are 18 students; 12 present as female and 6 as male. 6 are white and the others are primarily Black.	Learning Environment is clean, orderly, and bright.	Learning Environment, Student Demographics
C1.27-33: 9:10: Students are working on the questions on the SmartBoard, which also has a countdown timer. SW is circulating and passing out previous work, providing positive reinforcement.	Students start working quickly, so teacher has set strong expectations and procedures.	Relationships, Expectations for Students, Technology Use
C1.43-45: SW says she wants to cover some housecleaning stuff. She reminds students about being able to retake their last test. She asks for volunteers for the STEM Expo and Career Night events and lets them know they'll get extra credit for these.	SW engages students outside of class	Relationships, Beliefs About Students
C1.48-59: 9:20: SW uses funny phrases to make a transition to the activity of the day. As she is taking the materials out, she explains that she messed up the dying of their DNA samples. She calls another teacher quickly to see if they can fix it and the teacher says yes. SW tells the students they'll have to re-stain their samples, "so that should make fun and entertainment for everyone."	SW can admit she made a mistake—good role modeling that mistakes are ok and how to get support	Relationships, Soft Skills
C1.60-68: SW shows students on the SmartBoard exactly where all of the materials that they need are stored in Google Classroom. Some students have gotten their laptops out or are making	Trusts that students are working on what they should be.	Relationships, Technology Use, Beliefs About Students

notes to themselves. SW quickly gets pictures of one of the samples that worked correctly earlier and adds it to a GC folder so they know what they should see. Student jokingly asks when they'll see when their teacher disintegrated the material.		
C1.70-74: Students are arranging themselves. SW has made clear that as long as they are working they can chat quietly. Some are asking questions about turning in late assignments, which SW accepts.	SW trusts students to work and talk quietly. Allows students to turn in late work.	Expectations for Students, Relationships
C1.76-83: 9:33 Students are working and talking quietly. Off-topic conversations are minimal and students continue to work while they have them. Student asks if he can use his phone, but SW redirects him by saying his name. She is circulating and makes her way toward student, redirecting him again by gently pushing his shoulder. Students take turns using the restroom.	SW clearly has strong relationships and expectations. Mutual respect.	Relationships, Expectations for Students
C1.87-95: Students continue to work, and some continue to chat with SW, one suggesting she should teach chemistry. SW says they have great chemistry teachers and the student disagrees, to which she said that the class doesn't need naysayers. SW continues to circulate and answer questions. Student has her head down and says she doesn't feel good to SW. SW says she should go to the nurse.	SW is understanding and helpful	Expectations for Students, Relationships
C1.115-130: SW calls groups up to re-stain their samples. Students remain seated, sometimes helping each other. *They seem very comfortable asking each other or SW questions*. SW walks through the re-staining process with different groups. Student asks what SW did when she was a student and had questions and she said that she always felt like she could find someone to ask who might be able to help.	The way SW uses GC allows students to see everything they need in one place. I wonder if it's also easy for her to tell what they've done or haven't done. I wonder what the structure of the class is and make a note to ask for a screenshot with no personal information. In any case, I love the mixture of online work, workbooks, worksheets, and experiments.	Relationships, Expectations for Students
C1.132-146: One of the groups wasn't able to see their sample but SW says, "We gave it the old girl scout try!" A timer goes off to remind SW to make sure to check in with groups. SW circulates more, frequently using student names. At this point several students are off-task. SW does address student again and points out that even his peers have asked him to redirect. SW circulates more.	Stresses trying / effort. Circulates to answer questions but some students are now off task. Redirects some.	Relationships, Use of Technology, Class Culture

C1.148-154: SW does not choose to redirect a specific student but says, "I know that you have a lot of work to do but that you're so far ahead and that this class is so exciting that you can talk about other things but…" at this point almost all students are back on task and SW direct her words to student "NAME, you're setting that academic example for others." SW continues teaching, using the SmartBoard to show pictures and point out base pairs.	Doesn't dwell on redirecting.	Relationships, Use of Technology, Class Culture
C1.156-159: SW is still answering questions as students start to clean up of their own initiative. As the bell rings, students exit and SW continues to answer some questions.	Teacher is focused on learning from bell to bell. I wonder if there should be some kind of indication that students should start wrapping up, but they seem to know the procedures.	Relationships, Class Culture

Document D1

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
D1.3-12: Clean, bright room. Student posters about themselves are on the wall to the left as you walk in the door. There is also a phone storage area and whiteboard with the date, essential questions, learning targets, and agendas. There is a closet with wooden doors and hanging on the doors are storage containers for student papers. On the front wall on both far sides are doors to a lab. There is a whiteboard with inspirational posters and with a science-class-style (black top, wooden legs) table under it. The SmartBoard is in the middle of this wall. To the right on the same wall is another, smaller whiteboard with class expectations and, under it, JW's desk. Behind the desk is wooden shelf with binders and figurines/what look like action figures. The next wall and the final wall both have large windows with cloth blinds and St. Louis or college flags above them. There are trees in the corner and, along the final wall on the windowsills are career notebooks for each of the periods. There are 20 students; 4W, 16NW.	Learning environment is bright and clean. Student-centered. College info.	Learning Environment, Student Demographics
D1.14-16: JW provides positive reinforcement saying he's happy to see so many people getting their Chromebooks out. Students are chatting as they sit down and get logged in. On the SmartBoard are	Positive reinforcement and trust in students as they chat and get started.	Relationships, Use of Technology

directions to log in and open Activity 2.1.1.		
D1.18-22: 9:10: JW talks about their last class when they talked about diabetes and explains that today's activity is about investigating whether a death may or may not be due to diabetes. The case study is projected on the board. JW start reading and stops after the first paragraph.	I notice that the name from the case study being projected is the same that I saw on some posters approaching the room, so I wonder if they are spending a unit/term/etc. going through one investigation. Good for engagement.	Real-Life Connections, Use of Technology
D1.23-29: Student continue popcorn and JW gives instructions to write down the definition of diabetes (without looking it up). Some are doing this in notebooks and others on their computers. He says he's going to call on three people to share what they wrote, and cold calls three people, but doesn't tell them if they are right or wrong at the time. After three students have answered, he says, "What is the same about what all three people said?" Student agree it's related to sugar.	Strong procedures implied.	Relationships, Class Culture
D1.29-33: Now a medical history document is projected. JW asks a student to read it and then asks what stands out as possible related to diabetes. Some students are still on the medical history doc, others are looking up diabetes facts, and some are off-track.	Keeps students engaged with reading but **some are off-task, no clear expectations/instructions**	Use of Technology, **Class Culture, Expectations for Students**
D1.34-37: 9:22: JW pulls the class back together by giving strong instructions to highlight important information. Some students are working together and others independently but most are working. JW is circulating to answer questions and check work.	Better instructions, most are working now.	Relationships, Class Culture
D1.38-47: 9:30: JW gives clear directions for splitting into groups and conducting two experiments. He has a graph projected and asks students to draw it in their notebooks. One of the students who had been on-and-off-task tells JW that he forgot his things and can he borrow paper and JW says of course. Students copy the graphs into their notebooks to prepare for the experiments.	Supports student who asks for help but could've recognized this earlier?	Relationships, **Class Culture**
D1.48-54: 9:50: JW explains that to save time, one person from each group should complete the table and the	Good instructions again	Class Culture

others can fill theirs in later. Before heading into the lab, he explains that 3 groups will start with glucose testing and 3 will start with insulin testing and then they will rotate materials. He also says that each group will need at least one Chromebook and that when they get to the lab he'll give everyone an overview of the activity.		
D1.55-62: Students are gathered around a table in the back to watch JW demonstrate. The lab is a big, open room with lab tables and the materials that students will need. Like in SW's room, outlets hang from the ceiling. There is an outline of a body on the floor, as well as an outline of a heart in blue and red tape. JW asks a student to encourage those who haven't joined yet to come to the lab in a nice friendly way. This happens quickly. JW gives demonstration.	Good modeling and students are paying attention. Takes a minute to get all students engaged. Could use better procedures/instructions/expectations	**Class Culture, Relationships, Expectations for Students**
D1.63-87: 10:01: Students break into groups and all are immediately working. Each group has a Chromebook with the instruction pulled up. JW is circulating, and students appear to be doing a good job of self-regulating. Even if they are laughing or chatting, they are doing their work. Groups rotate their bags until each group has interacted with each set of materials. JW circulates and answers questions or asks questions. By 10:28 all groups are finished and cleaning up efficiently.	Exhibits rigor, preparedness, strong procedures. Answers individual questions	Class Culture, Relationships
D1.88-92: Students cleaned up quickly and returned to their seats in the main room. 10:31: JW announces "That was a pretty solid performance in the lab by all parties." He says they'll talk about what the results mean during their next class and that if they need to wash their hands they should.	Positive reinforcement, prep for next class.	Class Culture, Relationships
D1.93-94: 10:32: Students have finished for the day and are on their phones, talking, standing, chatting, and taking selfies.	Could have better end-of-class procedures	**Class Culture**

Document E1

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**

E1.9-20: The room is bright with cloth curtains over the far wall of windows. Walking in, the front wall (to the left) has whiteboards on either side of the SmartBoard. EB's desk is next to the SmartBoard, and there are folders and pictures on the wall behind it. On the wall to the right, there is a bright, rainbow bulletin board about reading, a paintbrush with a Maya Angelou quote, and a wooden cabinet with books and a few pictures on it. Above that are Lord of the Rings posters. On the wall with windows are two anchor charts and a Yoda poster about reading. On the final wall to the right of the door is a door, a wooden built-in cabinet, and a whiteboard with the days' agendas, objectives, homework, expectations, and some student work and rubrics. Students are working quietly but EB is working with certain students on their computers. EB puts in attendance. 15 students; 7F, 8M, all Black.	Room bright and clean. Home-y.	Learning Environment, Student Demographics
E1.4-8: EB is giving instructions for the Do Now, which is projected on the board (Write about an even that impacted your perception of things) and pointed out that this is connected to the learning target of analyzing the structure of a text. There is a time on the board as well and quiet music is playing.	Music is nice. Instructions are clear on board.	Technology Use, Class Culture
E1.22-27: 7:33: EB asks if students need an example of the Do Now and stamps students' papers who have the Do Now completed. At 7:39 she asks if anyone wants to share what they wrote. Students do not volunteer but she asks a few and they read their experiences and EB asks if the events were cultural, personal, or something else.	Lack of expectations if she's jumping in during Do Now and it lasts this long	**Class Culture, Expectations for Students**
E1.28-31: EB goes through agenda, what activities they'll be working on today, including essays they've started, and through vocabulary words that are on Google Classroom	Prepared, gives overview	Class Culture, Use of Technology
E1.33-42: EB asks how many of the students have listened to some specific song by Lil Wayne. She says they're going to look for allusions in the song and that she'll model the first one. They listen to the song. EB does not offer a model. None of the students claim to know it. They joke that EB is too old. Some student mentions Ray Charles and how an allusion could be a compliment. EB agrees and asks the students for a different song to use.	Attempt at technology, real-life connections, relationships, student agency	Relationships, Student Autonomy, Real-Life Connections, Class Culture
E1.43-51: 7:53: EB shows the words to a Childish Gambino song on the board and they listen to it. Students talk about the events that are being alluded to, such as gun violence. They notice that time speeds up and slows down but don't follow through with what that might mean. EB points out that silent seconds represent the people dying. She asks what is keeping gun laws from being put in place but students don't know.	Has students engage with popular text (song) but **has to provide a lot of support**.	Real-Life Connections, **Class Culture, Beliefs About Students**
E1.53-65: 8:07: EB tells students to open textbooks to 73 and asks what she asked them to do while they read. Students say underline allusions. EB reads aloud and students follow along. They discuss the differences between being white and being Black and the impact on	Gives gentle redirection and instructions.	Relationships, Real-Life Connections, Class Culture

culture. They say American is not the land of opportunity. EB redirects students gently, "Hey ladies, I love you but let's focus."		
E1.67-74: 8:43: EB calls for quiet and reminds the class that the quiz they're about to take is for a grade. She does a whole-class redirect and calls out some students' names. They take a quiz on Google Forms. Two students sleep through the quiz.	Instructions and **lack of engagement**	Use of Technology, **Class Culture**
E1.76-84: 8:49: EB tells students that if they're done they should start reading. She addresses the sleeping students and says she doesn't want to put a 0 in the gradebook. The students argue with the teacher about the quiz and EB says they're making a good argument for a new seating chart. Students complain that they don't know how to do the quiz. EB asks if they want to stay seated together. Some students are gathering their things.	**Bad example of building relationships**—reinforces idea that students can't access material.	**Relationships, Beliefs About Students**
E1.87-88: 9:02 Bell rings and students leave.	Felt a little **depressing**	**Class Culture**

Document F1

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
F1.6-16: Walk in and face long wall of windows with cloth pull-down blinds. Smartboard is against that wall. On the far right is a table with printer, pencil sharpener, tissue, markers, and calculators. The wall to the left has a metal filing cabinet, bulletin board trimmed with wood that includes some anchor charts and motivational posters. Next to the bulletin board is a phone storage area and an iPad cart with chargers. The back wall is bright green, has whiteboard with Date, Learning Target, Do Now, Agenda, Essential Question. There is also a projector and some vocabulary posters next to the door. To the left of the door is a whiteboard divided with tape into a calendar with important dates and DM's desk is in front of this. Behind her desk on the other side is a wooden cabinet with glass paneling and pictures on the panels. Next to that, a colorful cart with supplies and a whiteboard trimmed with wood that stretches to the front wall. All students are Black.	Classroom is welcoming and colorful.	Learning Environment, Student Demographics
F1.18-26: 9:05: Students come in and sit in assigned seats. Music is playing and a Quiz login number is on the board. They are using the Quizizz program. DM says thank you to the students who are doing what they should be. She reminds them that they have a Do Now every day and that when they finish they should log in… interrupted by intercom at 9:10, which is the principal saying they are on an educational lockdown—all students should be in their rooms and no passes will be written.	Must have been missing strong procedures or wouldn't have to make these announcements at the beginning of class. But good at thanking students who are on-task.	**Class Culture, Relationships**
F1.28-42: 9:12: Students are talking but relatively	Again with having to	**Class Culture,**

quietly and appear to be working. DM moves and takes a seat in the middle of the room. As they finish they are logging on to Quizizz and DM can see their names and reminds them that they don't get points if they put "crazy names." She also reminds them that the number of quizzes they get to do depends on how and what they do. This is a review and she reminds students that the leaderboard shows speed but what goes in the gradebook is accuracy." The leaderboard is displayed throughout the quiz and the questions appear on students' devices. When the quiz is over, DM can show the questions and how many students got each one correct, and narrates what they did well on and what they need to work on as a class.	remind students NOT to do something,	**Expectations for Students,** Technology Use
F1.43-50: They do a second quiz. DM shows that only 11 students have finished. She tells those who are finished to turn to page 6 in their notes. When they finish she pulls up the scores and says, "I l like our accuracy overall as a class. 70%. We could do better but overall not bad." A student asks if they can do more but she says maybe after they do their notes.	Does NOT let students determine course of class.	**Class Culture,** Expectations for Students, Relationships, Technology Use, **Student Autonomy**
F1.51-63: 9:22: DM turns the radio off and pulls up a PowerPoint. She says, "Normally we do notes on the board but there are a lot of graphs and I don't want to draw the graphs, to be honest." DM asks questions about vocabulary—any student can call out answers. DM says that they stopped last class with relations and today they'll work on functions. She defines a function and at this point most students have their notes out. DM says, "If it is on the board, you should be writing it." Some are and some are not.	Better procedures	Technology Use, **Expectations for Students**
F1.64-72: 9:27: DM writes on the board the way students should be writing in their notes. They go through different ways to tell if a relation is a function ordered pairs, tables, mappings, vertical line test. DM does some scaffolding to get students to relate these different approaches. She also uses real space to describe some of the models.	Nice scaffolding with space in real life.	Class Culture, Real-Life Connections
F1.73-77: 9:50: Students are doing problems independently and then sharing. 9:52: students are getting their computers back out and they're signing in to Quizizz. DM says, to researcher, that the whole math department made these quizzes.	Good procedures and preparedness.	Collaboration, Class Culture
F1.78-89: 10:00 Lockdown is over. DM: "Don't ask to go anywhere." Tells students to put their phones away and they do. All students are working on the Quizizz quiz. At 10:04 they are finishing and DM is scrolling through the leaderboard.	Expectations and technology for engagement	Technology Use, Expectations for Students

F1.89-102: DM tells the class to put their computers away and get their notes back out. She says they're going to go through inequalities and she's going to write what they tell her. The class struggles for a while with -3 > x > 3 and DM discusses these sentences and shows them on graphs.	Good procedures and engagement even without technology	Class Culture, Expectations for Students
F1.103-108: 10:30: Students are working on problems in their notes on their own. DM asks students who aren't working when they plan to get the notes and she says when the talks to someone at home they might not like whatever the answer is. Students sound surprised that she talks to their families and she says she calls for "the good, the bad, and the ugly."	Culture is worse with low engagement and then talking about calling parents.	**Class Culture**
F1.109-114: 10:33: DM is answer questions from students who are working. 10:34: She says, "4 minutes let's get the room cleaned up please. Put the iPads away." Students follow instructions while talking quietly. DM reminds students to put calculators in the right place and push them all the way in.	Better procedures, especially with calculators	Expectations for Students, Class Culture
F1.116-119: Students are gathered in the doorway and one leans on the office call button. DM loudly says, "Have a seat!" and afterward, "This is becoming a daily occurrence and I'm going to have to start writing y'all up. Y'all are too old for this."	Not great end of class—low expectations and procedures.	**Class Culture**

Document G1

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
G1.2-12: CS is singing and dancing a little as students leave and come in. Students are thanking her as they leave. Class has windows with cloth blinds along back wall. CS's desk is also along this wall, with a lamp, printer, table with plants and computers, and a couch. Along the front wall are phone holders, another small desk, the SmartBoard, and a whiteboard with a calendar. There are anchor charts above the whiteboard. Next to it is a cabinet with books. Along the left wall as you walk in, there is a bulletin board with and whiteboard with essential questions, agenda, learning targets, expectations, test-taking strategies. Along far right wall is a wooden cabinet with books and a bulletin board on either side—one with student data and one with student work. There are paintings, shorter wooden bookshelves, a wooden podium in the corner, and an armchair with a footstool. This is the most welcoming room I've been in. There are 12 students, 5 Black, 7 white, 6 presenting as female, 6 presenting as male.	Class is welcoming, teacher seems excited, class feels like home with an armchair etc.	Learning Environment, Student Demographics

G1.13-24: 9:06: CS reminds students to use their time wisely and that the Do Now is up. Two minutes later she asks who is ready. Students are silently working. Some have Chromebooks open and some don't. CS cold calls a student and he doesn't have an answer. CS says they'll wait for it and he answers. The class has a high-level, nuanced discussion agreeing and disagreeing about the tone of the Do Now. CS describes the difference between sarcastic and sardonic.	There is rigor and strong expectations. Strong discussion among students = **constructivist** approach.	Class Culture, Relationships, Expectations for Students, Constructivism
G1.26-31: CS reminds them that they're preparing for the AP test where things won't be pointed out to them. 9:20: They go through another example. CS tells student she's coming to her first.	Great communication, procedures, and real-life connections	Class Culture, Beliefs About Students, Real-Life Connections
G1.32-38: 9:39: CS reminds students about homework and students work on tone quietly. Move to more comfortable positions, CS circulating, giving verbal praise. Students are noticing vocab words in the text.	Same as above	Class Culture, Beliefs About Students, Real-Life Connections
G1.39-47: 9:54 CS says to get their clickers and projects Google Classroom. She uses positive reinforcement for transitions. When a question is projected, students hold up cards with answers and CS scans them with an iPad. There are discussions of different answers.	Positive reinforcement for transitions, opportunity for discussion	Technology Use, Class Culture, Relationships, Constructivism
G1.48-49: Redirections are quick and give rational ("Don't say anything out loud--give people the opportunity to think.")	Great instructions and respect for students	Constructivism, Relationships, Beliefs About Students
G1.50: Projects student scores	This couldn't happen in every classroom	Class Culture, Relationships
G1.51-65: CS discusses the class's next big project—a podcast that they will submit to NPR's student podcast project and that they will turn into part of the 16/19 project. The class discusses how they feel about discussing race in school. Students have conversation about younger students are treated like they don't understand it and some say they feel like they're taught lies like Christopher Columbus. CS suggests is that we should talk about it because if they don't they end up with adults who don't know anything about it. Topic of podcast is HOW race should be discussed in the classroom. She says the class will start on it when CS isn't there so that they aren't swayed by her thoughts.	Shows a real respect for and belief in student abilities.	Technology Use, Real-Life Connections, Student Autonomy, Beliefs About Students

Document B2

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
B2.32-34, 39: NP asks students to say which ones they missed and talks about the ones that are most missed first. Discusses annotating graphs, shows example on docscanner.	Students feel comfortable talking about problems they missed	Technology Use, Class Culture
B2.36-38: Discussion of how owning property is still the biggest method of upward mobility in US	Connection of material to today's climate	Real-Life Connections

B2.42-43: S says when NP does it it seems easy but when she does it on her own it doesn't make as much sense. NP doesn't respond	Unsure about why NP doesn't respond but ties to life skills after	Life Skills, Class Culture
B2.48-49: "What is the skill that I'm teaching you" Pull things apart and put them back together	Gives rationale for having students engage with productive struggle	Life Skills, Class Culture, Relationships, Pedagogy
B2.50: Students put papers in their boxes	Strong procedures	Class Culture
B2.41: "Okay take 90 seconds and then we're gonna continue what we need to do."	Recognizes student needs	Relationships, Class Culture
B2.52: "Someone set a timer for 20 minutes" (for lecture)	Allows students to own part of lesson	Student Autonomy, Relationships, Class Culture
B2.54-57: Lecture with pictures on overhead. Has topic, learning target, essential question, and agenda on projector.	Prepared	Technology Use
B2.59: Switches to PPT	Prepared with tech	Technology Use
B2.60-65: Shows texts and pictures and paintings that create a narrative (e.g., "the founding father represent everyone") and shows how.	No real constructivism	**Constructivism**, Real-Life Connections, Technology Use

Document C2

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
C2.3-6: Tells students to put away cell phones and headphones. Do Now is about communicating with friends. "I noticed some people aren't reading all of the articles that I put online." One student says she didn't realize they needed to read all of it.	**Missed opportunity for procedures** and expectations, but nice that Do Now is about real-life topic	**Expectations for Students, Class Culture,** Real-Life Connections
C2.8-12: Discussed Do Now answers, related to the theme of communication and how the body talks to itself	Discussion and opportunity for student engagement in discourse	Student Autonomy, Class Culture, Real-Life Connection, Relationships
C2.13-16: Tells students to get with their partner and that the instructions are on the board. Students move quickly.	Good procedures and instructions	Class Culture
C2.17-25: Activity where students are back-to-back and give instructions for creating a structure out of blocks. Then return to desks.	More great instructions and activity gets students up and moving	Real-Life Connections, Constructivism
C2.28: Answering questions in pairs on handouts	Constructivism, culture, and believes that students can do this in pairs	Beliefs About Students, Constructivism, Real-Life Connections
C2.30: Class goes through answers together	Allows for discussion and building knowledge together	Constructivism, Class Culture
C2.32: There is a quiz that students complete on Google Forms while SW passes out old work. Class ends.	Use of technology to reinforce learning	Technology Use

Document D2

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**

D2.5-6: Overhead instructs students to get out materials. Most have Chromebooks out.	Procedures and expectations	Class Culture, Technology Use
D2.7: Discusses careers that should have been added to career journals	***Missed opportunity*** for setting this as an expectation students don't have to be reminded about	**Expectations for Students,** Real-Life Connections
D2.8-9: Reminds students of what they did last class	Reminding can be good. Why not have students say this? ***Missed opportunity*** for student autonomy.	**Class Culture**
D2.10-11: JW says they didn't start on food labels and asks if anyone has food. No one volunteers but I can see that some students do have food.	**Missed opportunity for relationships if no one volunteers. Lack of engagement**	Class Culture, Relationships
D2.12-13: Asks a student to read the first paragraph of an article that is projected on the board and that some students also have pulled up on their computers	Good for engagement? But not for learning?	**Class Culture**
D2.14-17: JW says they're going to test nutrients in food and names some. Also ties to the larger forensics project—"We'll have a chance to look at Anna Garcia—remember there was a notebook at the crime scene? People who are diabetic often keep food diaries."	Reminder again	**Class Culture,** Real-Life Connections
D2.19-23: Hands out papers for terms used in analyzing food labels. Tells them they can work in a small group to define the terms and why it's important. Says they'll have 20 minutes and he'll put the time up. Tells them to find a group or partner and get started while he takes attendance.	Strong enough procedures if he's letting them work together, but **teacher is disengaged** if taking attendance while students are working	**Class Culture, Constructivism**
D2.25-27: JW circulates and asks who is doing which words. Says he has laptops if someone needs them. Students are mostly working—looking up definitions on computers	Supports students with extra technology and by circulate. Most students are working.	Technology Use, Resources
D2.28-31: This assignment is on Quizlet. JW reminds students that most of the material there is made by students so it isn't always reliable and they should double check the info.	Describes the benefits and drawbacks of Quizlet	Technology Use, Student Autonomy
D2.33-34: JW stops students from looking up definitions. Student asks if they can have more time and JW says no because they have a lot to cover but they have all the time they want after class.	Lack of flexibility for student needs, ***missed opportunity*** for culture and relationships	**Class Culture, Expectations for Students, Relationships**
D2.36-37: JW passes out food labels and asks which is the healthiest. Students highlight good parts of food in one color and bad in another.	***Missed opportunity*** for instructions, procedures, expectations.	Real-Life Connections, **Expectations for Students**
D2.38-40: After 15 minutes students have been highlighting but there are still questions. JW says he must not have been clear with his instructions. It isn't clear to me what they should be doing other than highlighting.	***Missed opportunity*** for instructions and procedures	**Class Culture**
D2.41-44: Asks for everyone's attention and says they're going to move into the last phase of the activity and to find the Oreos food label	Better instructions	Class Culture, Expectations for Students

D2.45-47: Goes through and asks how good/bad Oreos are for you. Asks if they are a good source of saturated fat? (Feels confusing because sat fat is bad). Students generally aren't answering.	Students are confused and generally not answers. ***Missed opportunity*** for relationships, autonomy, and expectations	Class Culture, Student Autonomy, Expectations for Students
D2.48-51: "Now I'm going to pass out the last worksheet and this will take us through the end of class." Passes out worksheets and projects a chart to fill out analysis of food labels and has students fill in columns for each food. Students work as class wraps up	**Clearer instructions but doesn't make up for a day of confusion and *missed opportunities.***	Technology Use, **Class Culture**

Document E2

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
E2.2-5: Classlink.com is written on the board. Two students are cuddling through most of class so far.	Students are no paying attention. No clear expectations/procedures/routines.	Technology Use, **Class Culture, Expectations for Students**
E2.9-10: Class discusses rhetorical device triangle: logos, pathos, or ethos.	Missed opportunity for student agency.	**Class Culture, Student Autonomy**
E2.11: EB has an iPad set up on a tripod that is tracking her and recording as she moves.	iPad is set up for teacher use	Technology Use (not student-directed)
E2.13-15: EB tells students to get textbooks and most don't have theirs. She says it's an expectation but doesn't do anything about it. The pages and questions to discuss are written on the board.	EB says that there's an expectation around textbooks but if this had been reinforced it wouldn't be as struggle. ***Missed opportunity***	**Expectations for Students, Class Culture, Relationship**
E2.16-23: Reads passage about Native Americans being run off land. EB asks how the writer sounds and student says said but that the reason is how EB read it. EB asks students to underline words that make the writer sound sad. Asks if it is logos, pathos, or ethos.	***Missed opportunity*** real-life connections but there is some joint knowledge-building	**Constructivism,** Real-Life Connections
E2.25-29: Student quietly read passage by Susan B. Anthony. Discusses whether women and men have equal rights. Many male students jump in and say women have better rights than men. EB says she appreciates input but for conversation to respect person who has the ball (this is the speaker).	***Missed opportunity*** for class culture and relationships. Procedures seem ok with the discussion structure.	**Class Culture, Relationships, Expectations for Students**
E2.30-35: EB asks what happens when a woman stands up for their rights. Male student says "You're too emotional." EB ignores and asks female student to start reading and then asks this student to answer a question but a male student jumps in to answer. EB ignores and reads second paragraph.	***Missed opportunity*** class culture and relationships	**Class Culture, Relationships,** Real-Life Connections

E2.40-45: Discussion of language around white and Black and whether this is logos, pathos, or ethos. Male student says logos because she discusses the constitution. EB doesn't say right or wrong.	***Missed opportunity*** for real-life connections and student agency	**Real-Life Connections, Student Autonomy**
E2.47-54: EB directs table to find as many emotionally loaded words as possible. Student are having side conversations One student starts listing their group in order from lightest skin to darkest. EB says the conversation isn't appropriate, and they need to focus on work.	***Missed opportunity*** for class culture	**Class Culture, Relationships,** Real-Life Connections
E2.56-64: Handout about a mother who used social media pretending to be her daughter and bulled another girl who committed suicide. EB asks if minors should be able to post online. Encourages student to analyze prompt and think of pros and cons. Students mention creating a platform, expressing themselves, communicating	Good asking a critical-thinking question	Real-Life Connections, Student Autonomy, Constructivism
E2.66-71: EB is doing most of the work, students walk in late, one student swears but EB doesn't acknowledge	***Missed opportunity*** student autonomy, low expectations and lack of constructivist approach	**Student Autonomy, Class Culture, Relationships, Expectations for Students, Constructivism**
E2.73-75: EB reflects on activity of the day. Says they had fun, read, wrote, and supported with evidence. "This is what a learning environment should look like."	Ended up saying this is what a learning environment should look like but number of ***Missed opportunities*** suggests she's not as self-aware as would be helpful.	Beliefs About Students

Document F2

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**
F2.5-12: DM says no one has read the board. Student reads out loud to see DM for Do Now. DM: "So I guess you should come over here." Student mostly work in silence and some have gotten out calculators. DM tells student take off headphones while she takes attendance	***Missed opportunity*** for expectations and class culture	**Relationships, Class Culture, Expectations for Students**
F2.14-24: DM gives overview of what to expect during the next few days, describes upcoming quiz, gives directions for day's activity, and reviews material on y-intercept and slope. Tells everyone they'll need iPad or Chromebook	Instructions are clearer	Expectations for Students, Technology Use
F2.26-28: Students are working while DM is grading at desk. Music is playing. Some students are asking each other questions	***Missed opportunity*** for constructivism, expectations	**Relationships, Class Culture, Constructivism**

F2.29-32: DM is looking at students' Desmos work from her computer. Shows what they're getting right and wrong and what they're working on.	***Missed opportunity*** for constructivism, class culture	**Relationships, Class Culture, Constructivism**
F2.33-24: Student asks for help and DM says to bring the work to her desk. Asks questions to support student.	Good scaffolding and not giving answers	Student Autonomy, Constructivism
F2.36: Student asks question about HW and DM says to ask a classmate	Good at promoting resourcefulness	Student Autonomy
F2.37: DM says to get review for quiz as they finish activity	Good instructions	Expectations for Students
F2.38: Student comes to desk to ask for help and DM asks questions	Good scaffolding and not giving answers	Constructivism, Class Culture
F2.40-44: DM passes out graded work and ask why they did the Desmos activity and what it was meant to do. Makes ties between activity and what they'll be asked to do on tests.	Student opportunity for autonomy and connections	Real-Life Connections, Constructivism
F2.45-49: DM circulates and gives instructions. Some students have heads down. DM makes it clear that students are responsible for their grades and she is available for help.	***Missed opportunity*** for class culture	**Student Autonomy, Expectations for Students**
F2.51-57: Students are working, mostly on review packets. DM is reviewing answers on Desmos. DM calls out names of students who are off-task	***Missed opportunity*** for class culture. Good for student autonomy.	**Class Culture, Relationships**
F2.59-63 Students ask questions, some are off-task/singing, continues through end of class	***Missed opportunity*** for	**Expectations for Students, Student Autonomy**

Document G2

Lines from Transcripts (Open Coding)	**Codes/Concept defined**	**Concept**	**Analytic Memo/Connection to Articles/Scholarship**
G2.5-8: Students are silent and working on the Do Now as the bell rings. CS is putting a news story on the projector and covering it with butcher paper. The timer goes off	Cleary has put up expectations	Class Culture	
G2.9-12: CS has students talk with another student about their Do Now. She circulates and listens to conversations, planting questions for students to ask the class.	Constructivism and student discourse	Relationships, Student Autonomy, Constructivism	
G2.14-22: Student explains rhetoric and says the author goes into too much detail. A student asks for example. Student says the author comes back to details later. First student restates and accepts student's point. Another student gives an example of what the student pointed out. Conversation feels like a lot of white student explanation.	***Missed opportunity*** for class culture building	**Class Culture,** Student Autonomy, Constructivism	

G2.23-32: Review of rhetorical triangle. CS reminds students not to forget terminology. Four students jump in. Two students try to say something but are drowned out and give up.	Expectations are upheld	Class Culture, Constructivism	
G2.33-44: Logos/Pathos/Ethos more nuanced in this class than lower-level with EB.	Rigor	Expectations for Students	
G2.41-64: Class discusses an assignment everyone felt lost on. CS says that nothing this semester is new so if they're lost they should think critically about why and gives examples: not taking good notes, not reviewing notes, finding a way that works for you, listening more closely to expectations. Goes through Cornell notes format and apologizes for assuming students had note-taking down.	Believes students can do better and says so	Student Autonomy, Real-Life Connections, Expectations for Students, Relationships, Beliefs About Students	
G2.65-77: CS explains that they'll use the same rhetorical devices to analyze visual texts as written texts. Has students get out notebooks and textbooks and everyone does. Students work quietly. It's clear that the "rhetorical situation" is something that has been make clear to students.	Clear expectations and procedures	Class Culture	
G2.79-90: CS gives groups different rhetorical devices to analyze for an ad for a Dodge truck. Dodge ad has a picture of a truck pulling a trailer. Appears to be moving through an empty highway. Text says "It's a big fat juicy cheeseburger in a land of tofu." Smaller text says: Dodge Durango. This is the most affordable SUV when a V-8. Dodge Durango. With nearly four tons of towing,* this baby carries around chunks of those wimpy wanna-bes in its tail pipe. For more info, call 800-4 A DODGE or visit dodge.com (no period). Next to it: GRAB LIFE BY THE HORNS with dodge logo. *TINY TEXT says Depending on model and when properly equipped. There's a man driving who is in the shadows and a woman in the passenger seat who is more illuminated and seems very happy. CS reminds students to focus on their part of the analysis.	Same as above	Constructivism, Real-Life Connections	
G2.91-95: CS reminds students that their conversations should have decorum and respect other groups. Student in audience group speaks loudly about this ad being for people	Reminder about soft skills	Class Culture, Expectations for Students, Soft Skills, Beliefs About Students	

who think they're above vegans and another student asks that group to speak more quietly.			
G2.96-97: Audience group continues out loud. CS asks if the ad is not for her, then. A student from audience groups says that the ad is for people who want to appear more masculine, not just for men.	***Missed opportunity*** for giving clear expectations	Class Culture, **Expectations for Students**	
G2.99-101: Student suggests it is for fragile men (male students try to interrupt and she says, "I'm sorry am I still talking?"). Male students continue to jump in and student says, "Yeah, welcome to our class." When I ask why she doesn't jump in too she says it isn't worth it.	***Missed opportunity*** for relationships and class culture	**Relationships, Class Culture**	
G2.102-107: CS quiets class down and calls on a student, who says there's a chance it is for families who don't want to drive minivans. Students jumps in and points to cheeseburger as appealing to men. CS says women and eating less meat and are less likely to jump at the idea of a juicy cheeseburger, and that "wimpy" is more of a term men use against each other than women.	***Missed opportunity*** for constructivism, relationships	**Constructivism, Relationships**, Real-Life Connections	
G2.108-115: CS calls on occasion group and a student says this is from early 2000s and context was different but can't come up with example. A student suggests that 9/11 is on everyone's mind and the cheeseburger is appealing to our patriotism. CS agrees and says if you miss this and don't consider what is going on in society your analysis will be less insightful.	Students get to express their thoughts and share their experiences	Constructivism, Student Autonomy	
G2.116-120: One student says, "This might be unpopulated but I'm going to go ahead" and then says it's offensive because the ad is basically calling vegetarians wimps. One student asks when vegetarianism became popular. CS asks if this would be acceptable now.	Students get to express their thoughts and share their experiences	Constructivism, Student Autonomy	
G2.122-123: CS: "Excuse me. When someone raises their hand I need you to respect it and this is the last time I'm going to tell you."	Good redirect with rationale	Expectations for Student, Class Culture	
G2.124-128: Student says Dodge and GM have some credibility already. Student says the only red in the picture is Dodge symbol to make it stand out. Student says the shades of red are	Students get to express their thoughts and share their experiences	Constructivism	

different but whole class agrees this doesn't matter.			
G2.129-141: CS has students individually analyze the tone and then use one word to describe it. Students share words. CS pushes to describe what type of humor, and also says if there are negative words she's going to push back and ask why because it's an ad meant to evoke positive associations. There is a discussion of connotations of words like pride and how when used in a patriotic context they are positive. She encourages students to think outside of the ad and into what choices went into creating the ad.	Students get to express their thoughts and share their experiences	Constructivism, Student Autonomy	
G2.142-163: CS shifts class to talking about the podcast they listened to and what made it impactful so students can incorporate those aspects into the podcast they're making. Students write does ideas and share.	Students get to express their thoughts and share their experiences	Constructivism, Student Autonomy	
G2.165: End class by discussing how creation of class podcast will work	Students get to express their thoughts and share their experiences	Constructivism, Student Autonomy, Expectations for Students	

Appendix F: Axial Coding

Category 1: Context, Background, and Training

Subcategory	Property	Dimension	Data	Analytic Memo/ Connection to Scholarship
Feelings About Teaching	**Why Teach?**	**Fulfilling**	B.62-67: "I stay in it because of that meaningfulness. I could see the positive impact I was having. Versus why I got into it which is because I needed to get a job."	Are there some versions of "fulfillment" that are white-savior-y and others that are not? How do we distinguish?
			D.30-32: Found education valuable—drilled into me by my dad. So I wanted to instill that in my students and thought if they had the right teacher they would love learning also.	
			F.26-28, 33-34: Always been in mind to teach. Felt like it was easiest way to make a difference, connected with young people	
			G.33-43: Started working with runaway and homeless youth at a shelter, realized they didn't have resources, got tired of students not having positive experiences at school and not having advocates and quit to go back to school to be a teacher.	
			B.32-44, 53-55: Became a teacher because he knew he could, but it wasn't first choice. Was in master's program but had to work and took time out to do certification and student teaching in impoverished	

			area in San Antonio. Found the work meaningful so switched to history instead of international relations.	
		Good Teachers	E.34-36, 38-46: Went into teaching because others said she couldn't do it. Then realized how important expectations were and had good teachers in middle school.	Recognizes the difference that bad and good teaching can make.
	Challenges	**Money**	C.49-53, 55-56, 58, 61-64: Jokes about making money as reason for teaching, but does say money is better at this school man many others. Lives in Illinois and is worried about the financial status of that state.	Common concern among teachers.
		Time and Pressure	C.104-107: "I try to make my life easy. I'm prepping for three [classes]."	**Viseu and Menezes**: Fear about the amount of time that these tasks take and the ability to cover required material.
			C.189-191: Wouldn't cover standards if had to teach and teach students to use tech.	
Teacher Education	**Preparation for Role as Teacher**	**Lack of preparation for real-life classrooms**	B.74-81, 84-87, 90: Nothing in education or master's programs that… transferred to real-life classrooms.	**Ertmer, Johnson, Luongo:** Teachers need more support to use tech effectively—PD, collaboration, and teacher ed programs. **Palinscar:** fears. **Viseu**: Teacher fears. **Johnson:** Teachers struggle with knowing how much they should guide the class and how much students should take the lead, as well as how much they should incorporate students' outside lives into the classroom.
			C.219-220: Learning was on the job, not in teacher ed programs.	
			F.331-333: "And then I mean, unfortunately all the teacher education prep that we get, it's nothing until you get into the classroom and it's like, "Well the book told me to do this but that's not working."	

	Preparation to Use Technology in the Classroom	**Positive**	D.43-46, 56-60: "We were trained on spreadsheets and word processors because the Internet was a baby. Dial-up modems and computer labs and no cell phones. Students now use some of that—word processing and spreadsheets. Especially now that you can graph from spreadsheets. But I still do a lot of graphing by hand because it's good practice."	Anomalous and not consistently relevant.
		Negative	B.74-81, 84-87, 90: Nothing in education or master's programs that focused on technology	Characteristics: enjoys tech, enjoys learning, open to new ideas. **Ertmer, Johnson, Luongo:** Teachers need more support to use tech effectively—teacher ed programs are an important component. Is old enough to not have had much tech in or prior to undergrad. Identifies this as a challenge for some teachers. **Palinscar:** Teacher fears. **Viseu:** Teacher fears.
			D.350-354: "I got my master's in EdTech. Everything I learned is completely outdated now and useless, because that was in '06, '07. And I learned how to write code in HTML and I learned how to do Java Scripts, and I've forgotten it all since then. But I got a pay raise."	
			E.65-74, 77-80: Tech in teacher ed/undergrad programs was just typing papers and emailing; Boring tech class	
			F.37-39: No tech experience in teacher ed	
Support from School	**Helpful**	**Collaboration**	B.385-391: Collaborates on things like PPTs, activities	**Ertmer, Johnson, Luongo:** Teachers need more support to use tech effectively—collaboration is one effective support.
			D.65-76: Now I'm doing trainings myself.	
			D.328, 331-334,336-347: Planning with PLCs involves tech, planning	

			with online curriculum (PLtW involves tech). Teacher job is to find legit websites, online simulations, lab stuff. Doing labs virtually is a huge deal.	
			F.51-53, 71-76: "I felt more beneficial when I was actually in there learning things myself actually." Plus learning from colleagues"	
			F.417, 426-447, 485-487: One teacher prepares some materials and that allows DM to focus on creating other materials like quizzes…. "We [teachers] share responsibilities."	
		Planning	B.348-351, 353-357: Planning with tech has been helpful and using the same platforms as other teachers is helpful (e.g., GC)	**Fitzgerald, Marcum, and Sherwood:** Tech use requires strong planning.
	Hindering	**Professional Development**	B.107-113, 115: Training since starting in schools has been mostly on using databases or websites with flashy graphics but they aren't transferrable. They're pretty limited.	**Ertmer, Johnson, Luongo:** Teachers need more support to use tech effectively—PD is one important aspect. **Viseu:** Fear of learning new things; Teachers are afraid because they don't have the training.
			B.150-154: Problem with tech in ed is that you learn one program and then a new one comes up and you have to learn that one so you don't end up learning things deeply.	
			C.230-233: "You either pedagogically, if that's the right word I want to say, **you have to make the decision professionally** to say, "I'm going to move	

			forward with this technology or I'm not." And so, I made that choice because I just felt that it was best practice."	
			C.472-477: Only 1 PD in 3 years on tech and that was on the required data tracker. Otherwise **people find things and share them on their own**	
			D.65-76: A lot of what I do is **self-taught** or through a colleague who says I should try something out. Like I was an early adopter with Kahoot and I still get it for free even though now it costs money	
			E.90-100: PD on Google Classroom or other technologies but the PD isn't helpful and it's more like **you have to train yourself.** Most of the stuff I learn from colleagues or try out myself.	
			F.51-53, 71-76: Old school gave training on ALEX but not super helpful because no students were there so they couldn't try out all aspects of program…	
			F.133-134: "We had a calculator training at the beginning of the year, but it was so much to learn that I couldn't take it in."	
		Tech Support for Teachers	D.228-234: Tech admin gives lists in an email but teachers have to figure out how to use his suggested platforms	The school's tech lead does bare minimum and is unhelpful.

School Context	**School Atmosphere**	**Safe, Welcoming Student-Centered**	Main office is always staffed and has clear procedures.	School environment expresses care for and belief in students.
			Building has adults greeting students, student work on walls, and teachers seem genuinely excited to be there.	
			C1-4: SW sends a student to come and escort me from the office to the room.	
	Student Demographics	**More Diverse**	B1.4-9: There are 17 students—7 white and 10 Black, 11 presenting as female and 8 as male.	Generally higher-level classes are more diverse.
			C1.5-25: There are 18 students; 12 present as female and 6 as male. 6 are white and the others are primarily Black.	
			G1.2-12: There are 12 students, 5 Black, 7 white, 6 presenting as female, 6 presenting as male.	
		Less Diverse	D1.3-12: There are 20 students; 4W, 16NW.	Generally lower-level classes are less diverse. Why does this happen? How are students tracked?
			E1.4-20: 15 students; 7F, 8M, all Black.	
			F1.6-16: All students are Black.	

Category 2: Beliefs and Attitudes (Stated)

Subcategory	Property	Dimension	Data	Analytic Memo/ Connection to Scholarship
Beliefs and Attitudes About Teachers	**Positive from School and Teachers**	**Consistency**	E.395-397: Says she uses tech about the same as other teachers in her department	Consistency

		Quality Instruction	A.332-333: "[I am] absolutely confident that technology is being used to enhance learning and isn't primarily a distraction."	Belief in Teachers, Autonomy
	Negative from Teachers	**Resistance to new ideas**	C.478-487: Need for teachers to be open and problem-solvers. Frustration with "older teachers"	**Kopcha:** Self-bias. **Viseu:** Teacher fears.
Beliefs and Attitudes About Students	**Positive from Teachers**	**Student Agency**	G.97-103,107-117: Students came up with idea for podcast topic; G.127-146,150-161, 163-170: Allows for student conversation and debate	Expresses care for and belief in students.
		Student Aptitude	G.95-96: Students asked for guidance but CS knew she'd given them what they needed and pushed them to get there on their own.	
	Positive from School	**Student Aptitude**	B.11-15, 19: 10/11/12 AP dual-credit SS courses as part of early college program. Ss can accumulate college hours prior to HS/w HS diploma	
			C.19-21, 25, 27: Teachers AP Biology, Human Body Systems, 3rd year at this school, 16th total teaching	
			B1.2-3: These are advanced classes, not available at all schools	
	Negative from Teachers	**Students are irresponsible**	D.293-302, 306-312: Students break Chromebooks—but then says they do ok but can't use tech effectively	**Rafalow:** Bias against students.
		Students are immature	C.76-87: "I would do technology in all the courses. It really is all about student maturity. I have found that my **lower-level courses**, and I	

			think their lower level is just due to student maturity."	
		Students don't care	C.76-87: "I have students who struggle academically, but if they're **mature enough**, that **have the willingness,** too, they do well regardless of what course you put them in. So maturity level is my indicator…. in my [higher-level] class[es], I use it every day. If they are looking at emails or checking grades or sending me their homework in my Biomed class, everything's graded online so their answering questions via Google Forms. They turn their assignments in via Google Docs. I share with them rubrics based on their writing so they can see, and I share it via email because Google Docs does not have a seamless rubrics integration but apparently they're working on it."	
Pedagogy and Teaching Philosophies	**Constructi-vism**	**Small groups**	D.160-163: Uses a lot of small-group work	**Valcke**: Fostering a constructivist philosophy of teacher is a critical component to enabling and encouraging the use of technology in the classroom.
		Collaboration	E.441: "Students learn best through collaboration and socialization. I mean, they're a very social group. I mean, you look at the fact that they are so engaged in social media and somehow being in contact with the world constantly, I mean, that's kind of what we work on. We talk about things together as a class. I have the most amazing groups and then also I try to do more hands-on. So it's like, we might do	

			something together just to give them a model and then I let them do it in a small group just to give them practice and then I have them practice on their own just to give them more individualized."	
	Multiple Intelligences	**Rejects Learning Styles**	B.118-127: Learning styles have been misappropriated. Everyone has multiple intelligences and we can all learning in different ways. Students can learn in more than one style and that's something I try to communicate.	**Johnson**: Importance of student-centered learning strategies.
Goals	**For Teachers**	**High-Quality Instruction and Academic Growth**	A.74-147: "Teachers, to be, I guess to improve collective teacher efficacy as well, so for them to believe in our students and believe that they have the tools to reach and educate our students…"	**Domingo and Garganté**: Instructional benefits of apps used the study classrooms do not address the motivations teachers profess have for using technology, as many of the apps do not have instructional benefits—they consist primarily or solely of skill practice or information-gathering functionality.
			A.74-147: Standardized testing improvement goals	
		Collaboration, Relationships, and Autonomy	A.261-285: Relationship focus at beginning of the year helps establish relationships at center of PLCs, and focusing on expectations with teachers at the beginning of the year made it easier to trust they're doing things like not waiting for admin at PLCs.	Believes relationships are important in the classroom. **Ertmer:** Importance of interaction.
			A.74-147: "for teachers as well, to develop strong relationships, strong positive relationships with students, those are goals. As a building goal, every student here should have	

			a positive relationship with at least one adult. It's something that's important. With at least one adult, relationships are a critical component to everything we do."	
			A.74-147: "I'd also expect the teachers to embrace a mindset of collegiality, respectfully challenge each other too. They are encouraged to do that here. Another goal is for teachers to feel empowered, to be empowered to make decisions, and not wait for me…"	
			F.299-308: Importance of relationships for teacher and emphasis on relationships at school and district	
	For Students	**Academic Growth**	A.74-147: Standardized testing improvement goals	**Domingo and Garganté**: instructional benefits of apps used the study classrooms do not address the motivations teachers profess have for using technology, as many of the apps do not have instructional benefits—they consist primarily or solely of skill practice or information-gathering functionality.
			F.321-323, 325: Understanding of math, passing EOC, and what they're here for. College entrance exams.	
			E.167-169: Better readers and writers and skills for college and career	
		Communica-tion and Literacy	A.39-72: "[Reading, writing, speaking, and reasoning on grade level which speaks to my expectations around literacy, which there is a specific focus on that for this school year, that's my specific area… Of course, being technologically literate as well.	**Palinscar:** Value in interactions facilitated by tech, Belief: communication necessary for ed/math.

			G.49-63: Understand need for communication across the board—all facets of communication. They have a misconception of what communication means (think it's reading and writing). Want students to have the skills to impress others. Want them to be able to get attention and respect.	
		Life Skills	A.39-72: "[Teachers are expected to develop] soft skills in students. Such as, but not limited to, the ability to work in a team setting, appropriate attitude, timeliness, communication, humility, organizational skills. I'm also, if you want to include there are two other things that goals that I've set for students as well, to be resilient learners and to persevere and embrace opportunities to persevere through adversity. Very, very important as it relates to mental health, social and emotional learning for students, so the holistic needs of the student as well, those are goals, that they are able to self-regulate."	**Ertmer, Johnson, Luongo:** Teachers need more support to use tech effectively—PD, collaboration, and teacher ed programs to be able to effectively teach life skills as well. **Johnson**: Importance of student-centered learning strategies. **Ertmer:** Importance of interaction. **Palinscar:** Value in interactions facilitated by tech, Belief: communication necessary for ed/math.
			A.39-72: "the willingness to serve causes greater than ourselves. To advocate, self-advocacy. [Researcher: To sort of like challenge ideas. And make sure that you're, you know what you stand for. Not just going with the status quo or believing something because someone tells you.] Absolutely. That's very important here. Student voice."	

			B.193-202, 204-205: Conversations from multiples points of view. That will let them gain attention and opportunity. To produce quality work in a variety of courses, opportunities open up. All this translates to increase in life satisfaction because of a lot of variables, especially increased income in a capitalist economy. That's the goal. You don't have to be rich to be happy, but you have to have a certain amount of income to be satisfied—to live an enriched life.	
			D.131-149: Confidence. Proficiency. Mastery level but also confidence that they can learn. Relationships and strong learning environments. Knowing people care and they make a difference in others' lives. I had a student who became a doctor and even though it was when I was at another district she came to talk with my students here because we had a relationship.	
			F.345-358: Goals are to be able to learn. To not give up. To be able to practice and make mistakes. Work hard. Seeing them apply these things outside of math	
			B2.48-49: "What is the skill that I'm teaching you" Pull things apart and put them back together	
			B.193-202, 204-205: Conversations from multiples points of view. That will let them gain	

			attention and opportunity. To produce quality work in a variety of courses, opportunities open up. All this translates to increase in life satisfaction because of a lot of variables, especially increased income in a capitalist economy. That's the goal. You don't have to be rich to be happy, but you have to have a certain amount of income to be satisfied—to live an enriched life.	
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			F.345-358: Goals are to be able to learn. To not give up. To be able to practice and make mistakes. Work hard. Seeing them apply these things outside of math	

Category 3: Beliefs and Attitudes (Actions)

Subcategory	Property	Dimension	Data	Analytic Memo/ Connection to Scholarship
Beliefs and Attitudes About Teachers	**Strong Expectations**	**Positive**	B1.13: 7:26 As soon as class starts and students are walking in, NP is checking on their homework status.	Against **Rafalow's idea:** Bias against students.

			B1.16: 7:28: NP: "Remember to check your Google Classroom at least every other day."	
			B1.53: NP asks students to start cleaning up. They know exactly what to do. NP continues to answer questions about homework or discussion.	
			C1.27-33: 9:10: Students are working on the questions on the SmartBoard, which also has a countdown timer.	
			D1.14-16: JW provides positive reinforcement saying he's happy to see so many people getting their Chromebooks out. Students are chatting as they sit down and get logged in. On the SmartBoard are directions to log in and open Activity 2.1.1.	
			D1.48-92: Strong directions, positive reinforcement	
			F1.51-114: Better directions for activities following online quiz.	
			G2.5-8: Students are silent and working on the Do Now as the bell rings. CS is putting a news story on the projector and covering it with butcher paper. The timer goes off	
		Negative	D1.29-33: Now a medical history document is projected. JW asks a student to read it and then asks what stands out as possible related to diabetes. Some students are still on the	**Rafalow:** Bias against students.

			medical history doc, others are looking up diabetes facts, and some are off-track.	
			D1.93-94: 10:32: Students have finished for the day and are on their phones, talking, standing, chatting, and taking selfies.	
			E1.22-27: 7:33: EB asks if students need an example of the Do Now and stamps students' papers who have the Do Now completed. At 7:39 she asks if anyone wants to share what they wrote. Students do not volunteer but she asks a few and they read their experiences and EB asks if the events were cultural, personal, or something else.	
			F1.18-26: 9:05: Students come in and sit in assigned seats. Music is playing and a Quiz login number is on the board. They are using the Quizizz program. DM says thank you to the students who are doing what they should be. She reminds them that they have a Do Now every day and that when they finish they should log in…	
			F1.28-42: 9:12: Students are talking but relatively quietly and appear to be working. DM moves and takes a seat in the middle of the room. As they finish they are logging on to Quizizz and DM can see their names and reminds them that they don't get points if they	

			put “crazy names.” She also reminds them that the number of quizzes they get to do depends on how and what they do. This is a review and she reminds students that the leaderboard shows speed but what goes in the gradebook is accuracy.”	
			C2.3-6: Tells students to put away cell phones and headphones. Do Now is about communicating with friends. “I noticed some people aren’t reading all of the articles that I put online.” One student says she didn’t realize they needed to read all of it.	
			D2.7-11: Unclear expectations and lack of participation	
			D.33-48: Students seem confused, not all are engaged, teacher is disengaged and instructions are unclear (which JW recognizes).	
			E2.13-15: EB tells students to get textbooks and most don’t have theirs. She says it’s an expectation but doesn’t do anything about it. The pages and questions to discuss are written on the board.	
			E2.47-75: Many missed opportunities for clear instructions and engaging students. At the end mentions that the learning environment looks good.	
			F2.45-63: Missed opportunities for	

			expectations and instructions.	
	Relationships	**Positive**	B1.17-18: Student responds to earlier question about what they've been working on: "Something about the American Revolution. Discussing the first continental congress."	Believes relationships are important in the classroom. **Ertmer:** Importance of interaction.
			B1.36: NP: "Make a subheading." He is helping students learn how to take good notes as well. Class continues discussion of Revolutionary war with pictures on SmartBoard.	
			C1.27-33: 9:10: SW is circulating and passing out previous work, providing positive reinforcement.	
			C1.43-45: SW says she wants to cover some housecleaning stuff. She reminds students about being able to retake their last test. She asks for volunteers for the STEM Expo and Career Night events and lets them know they'll get extra credit for these.	
			C1.48-59: 9:20: SW uses funny phrases to make a transition to the activity of the day. As she is taking the materials out, she explains that she messed up the dying of their DNA samples. She calls another teacher quickly to see if they can fix it and the teacher says yes. SW tells the students they'll have to re-stain their samples, "so that should make fun	

			and entertainment for everyone.”	
		Negative	E2.13-45: Missed opportunities for connections to real-life and constructivist approach to discussion.	Believes relationships are important in the classroom. **Ertmer:** Importance of interaction.
Beliefs and Attitudes About Students	**Positive from Teachers**	**Learning Environments**	B1.4-9: Small class; learning environment is clean, bright	Environment expresses care for and belief in students.
			C1.5-25: Learning environment is clean, orderly, and bright.	
			D1.3-12: Bright, clean, and student-created materials around the room.	
			E1.4-20: Music playing, bright, clean, home-y.	
			F1.6-16: Classroom is welcoming and colorful.	
			G1.2-12: CS is singing and dancing a little as students leave and come in. Students are thanking her as they leave. Class is welcoming, teacher seems excited, class feels like home with an armchair etc.	
			B1.4-9: Desks arranged for discussion.	
	Agency From Teachers	**Aligned**	G1.51-65: CS discusses the class’s next big project—a podcast that they will submit to NPR’s student podcast project and that they will turn into part of the 16/19 project. The class discusses how they feel about discussing race in school. Students have conversation about younger students are treated like they don’t	**Johnson**: Importance of student-centered learning strategies.

			understand it and some say they feel like they're taught lies like Christopher Columbus. CS suggests is that we should talk about it because if they don't they end up with adults who don't know anything about it. Topic of podcast is HOW race should be discussed in the classroom. She says the class will start on it when CS isn't there so that they aren't swayed by her thoughts.	
			B1.13: 7:26 As soon as class starts and students are walking in, NP is checking on their homework status.	
			B1.16: 7:28: NP: "Remember to check your Google Classroom at least every other day." NP says this but doesn't push it.	
			C1.70-74: Students are arranging themselves. SW has made clear that as long as they are working they can chat quietly. Some are asking questions about turning in late assignments, which SW accepts.	
	Aptitude From Teachers	**Aligned**	F2.38-44: Scaffolds instead of answering questions, has students ask each other for help and makes ties to real-life.	
		Not Aligned	E1.43-51: 7:53: EB shows the words to a Childish Gambino song on the board and they listen to it. Students talk about the events that are being alluded to, such as	No appropriate scaffolding; blames students for lack of understanding.

			gun violence. They notice that time speeds up and slows down but don't follow through with what that might mean. EB points out that silent seconds represent the people dying. She asks what is keeping gun laws from being put in place but students don't know.	
	Meeting Expectations	**Not Aligned**	E1.53-74: Students are regularly off-task and EB redirects, sometimes individuals and sometimes the whole class. This doesn't seem to solve the problem throughout most of the class, including some students sleeping through a quiz.	**Valcke**: Fostering a constructivist philosophy of teacher is a critical component to enabling and encouraging the use of technology in the classroom.
Pedagogy and Teaching Philosophies	**Constructi-vism**	**Aligned with Stated**	G1.13-24: Students are silently working. Some have Chromebooks open and some don't. CS cold calls a student and he doesn't have an answer. CS says they'll wait for it and he answers. The class has a high-level, nuanced discussion agreeing and disagreeing about the tone of the Do Now. CS describes the difference between sarcastic and sardonic.	**Palinscar:** Value in interactions facilitated by tech. **Hermans, Tondeur, van Braak, and Valcke**: Fostering a constructivist philosophy of teacher is a critical component to enabling and encouraging the use of technology in the classroom. IMPORTANT considering **Domingo and Garganté**: Instructional benefits of apps used the study classrooms do not address the motivations teachers profess have for using technology, as many of the apps do not have instructional benefits—they consist primarily or solely of skill practice or information-gathering functionality.
			B2.36-38: Discussion of how owning property is still the biggest method of upward mobility in US	
			C.13-32: Students complete activities and work together.	
			G2.9-12: CS has students talk with another student about their Do Now. She circulates and listens to	

			conversations, planting questions for students to ask the class.	
			G2.108-115: CS calls on occasion group and a student says this is from early 2000s and context was different but can't come up with example. A student suggests that 9/11 is on everyone's mind and the cheeseburger is appealing to our patriotism. CS agrees and says if you miss this and don't consider what is going on in society your analysis will be less insightful.	
			G2.116-120: One student says, "This might be unpopulated but I'm going to go ahead" and then says it's offensive because the ad is basically calling vegetarians wimps. One student asks when vegetarianism became popular. CS asks if this would be acceptable now.	
		Not Aligned with Stated	F2.26-32: Missed opportunities for students to work together/help each other.	Against **Palinscar's** idea of value in interactions facilitated by tech, Against **Hermans, Tondeur, van Braak, and Valcke**: Fostering a constructivist philosophy of teacher is a critical component to enabling and encouraging the use of technology in the classroom.
Goals	**Real-Life Connections**	**Aligned with Stated**	B1.49: Discussion turns to Bacon's rebellion and points out that this was at least one point when the	Integrating tech from students' real lives is the same way you would integrate any of their

			elite realized that they couldn't let the middle and lower classes unite. Then connects to similar phenomena in today's society	interests—by just mentioning it in a story problem. Not by using the same types of tech that they're familiar with for education purposes. **Ertmer:** Use students' tools.
			B1.41: Conversation changes to talk about the Declaration. NP lectures and has pictures in the background on the SmartBoard. He asks questions along the way—for example, when he talks about people trying to sell the idea of the pursuit of happiness and then change it to the pursuit of property in the Constitution, he asks who benefits. He asks how this compares to current events. Many students feel comfortable answering. NP himself draws connection to James Otis pretending to be a commoner to Trump.	
			D1.18-22: 9:10: JW talks about their last class when they talked about diabetes and explains that today's activity is about investigating whether a death may or may not be due to diabetes. The case study is projected on the board. JW start reading and stops after the first paragraph.	
			F1.64-72: 9:27: DM writes on the board the way students should be writing in their notes. They go through different ways to tell if a relation is a function ordered pairs, tables, mappings, vertical line test. DM does some	

			scaffolding to get students to relate these different approaches. She also uses real space to describe some of the models.	
		Not Aligned with Stated	E2.13-45: Missed opportunities for connections to real-life and constructivist approach to discussion.	

Category 4: Beliefs and Attitudes About Technology (Stated)

Subcategory	Property	Dimension	Data	Analytic Memo/ Connection to Scholarship
Purpose	**For Teachers**	**Engagement (NOT learning)**	B.156-159, 161, 163: Teachers think they use tech to get students' attention but it's really just the bright colors and movement. It's tricking them into engagement, but not learning. "I know nothing about elephants, but they're fun to watch."	**Ertmer:** Use tools student are interested in already. **Domingo and Garganté**: Instructional benefits of apps used the study classrooms do not address the motivations teachers profess have for using technology, as many of the apps do not have instructional benefits—they consist primarily or solely of skill practice or information-gathering functionality. NOT LEARNING.
			D.84-87, 118-125: Kahoot PD felt exciting and when I used it with students they were engaged and involved so I was bought in…. 118-125: If I was giving a PD… [it would be] on programs like Kahoot for engagement.	
			E.146-151: Best aspect is engagement, and efficiency for teachers.	
			F.150-159: "I like them to be engaged…. And it's just simply from a sheet of paper to putting it on a Chrome book or an iPad makes a world of difference. If we could just make those small changes in the classroom, I think we'll have greater mastery and understanding, and students are more willing to participate in the lessons."	

		Learning (Resourcefulness and Enhancing Learning)	G.185-196: “And through technology, I get to do it because I can access curricula that is not what was given to me by the school district. "Oh, I don't have a set of novels for my kids to read." Okay. That's okay. We're going to get a PDF offline and et cetera. So yeah, I just believe in having a rich environment for kids to learn how to apply communication skills outside of the classroom and to not restrict it to the classroom.”	**Ertmer, Johnson, Luongo:** Teachers need more support to use tech effectively—PD, collaboration, and teacher ed programs.
	For Students	**Identity Development**	G.185-196: Tech opens opportunity to expand circle of influence. “what we do in the classroom should act as a mirror and a window for kids. It should allow them to see their own cultures and beliefs and interests reflected back at them, and it should also give them a glimpse into the outside world that they never really get to touch her experience.”	Belief: Online personalities are important for getting (or not getting) jobs.
		Jobs	C.88-91: Try to use technology to imitate work life	**Rafalow**: Bias against students? Minority student need more job training than support with using tech in other ways, but less of this here than in other studies.
		Resourceful-ness	D.242-250: “I think a big part of it is learning how to correctly navigate the information that's out there, how to find it, how to navigate it, how to evaluate it. And then just familiarity with specific websites or software that they are going to use potentially in their profession. Every kid in my classroom knows how to use Instagram and Snapchat and TikTok and whatever else, but do they know how to use Google	**Johnson**: Importance of student-centered learning strategies.

			Drive on their phone and open a Google Doc and actually edit it if they don't have their Chromebook? Can they do their work on their phone? So little things like that, just being familiar with what, what the productivity options are."	
			E.421-435: Value of tech in class for researching, but have had to teach about reliable sources, comparing sources.	
Value	**For Teachers**	**Saves Time**	C.104-107: "Now my **regular kids**, I just don't want to **scream and cry** trying to get the 50% that have it, and then what do I do with the 50% that don't. It would have to be a whole nother preparation, lesson plan to do a paper versus a technology. So, I try to make my life easy. I'm prepping for three."	**Viseu and Menezes**: Fear about the amount of time that these tasks take and the ability to cover required material.
			C.240-247, 266-271: Technology frees up teacher time.	
			D.183-196: I use Project Lead the Way—activities are premade and I just have to plan how to use them.	
			E.146-151: Best aspect is engagement, and efficiency for teachers.	
			F.396-403: Tech can be like an extra teacher. Allows for research. Thinking outside of the box. Frees up teacher time.	
		Supports Efficient Communi-cation	C.240-247, 266-271: [Technology make it so teacher c]an send info to parents easily	**Palinscar:** Value in interactions facilitated by tech, Belief: communicatio n necessary for ed/math. **Viseu and Menezes**: Fear about the amount of time that these tasks take and the ability to
			C.288-295: "I have yet to have a student get on my nerves for that, or a parent. I haven't had that, but this isn't a hover-y district. If I were teachings somewhere else where that was the norm, then I'm sure I would feel very different about it. Because I know I have colleagues that work in more affluent school districts and hover-y parents are kind of the norm. So	

			yeah, I mean, I've had parents that were surprised the quickness with which I got back to them. I thought, "Dang. What were the other people doing?"	cover required material.
	For Students	**Citizenship**	E.462-466: How to use tech to be a productive citizen: EB would focus on communication, emails, responding on social media, thinking through what they're leaving online.	**Palinscar:** Value in interactions facilitated by tech.
		Everyday Experiences	F.197-202, 208-209: "It's one of those things we can't run away from anymore and so we have to figure out how to use it. How to incorporate it on an educational level, so a lot of our meetings are geared towards the formal language and getting them away from that informal language, and so our task now is how can we formally introduce social media and what they use on a regular basis into a formal classroom. And I think other than having them create a quiz or a Kahoot by themselves, that's not what they use on a regular basis."	**Palinscar:** Value in interactions facilitated by tech, Belief: communicatio n necessary for ed/math. **Ertmer:** Use tools student are interested in already.
Challenges	**Teacher Perceptions of challenges – Student blame**	**Students not prepared**	B.182: No [students aren't good at using tech for the right purposes]… B.300-308, 311-313: Students are good with Chromebooks but not tech literacy. And repair shop is understaffed. Also tech can be distracting	Belief: It's students' faults they don't have the skills they should. **Rafalow:** Bias against students.
			C.149-156, 170-174: Frustration with students not knowing the basics	
			E.114-122, 132-138: Students use it the way they want but not always efficiently. Doesn't sound frustrated. Training comes from teachers in classes.	
		Students irresponsible	C.109-117: "This week I had them test online. It was a **testament to my patience**. I had to straight up get my namaste on for that, because asking them to sit quietly and patiently while the 60% of the	**Rafalow:** Bias against students but also one teacher expresses level

			kids that brought their technology could take it, took it. And then the other 40%, ... **and you couldn't get them to shut up**. Nothing you could do. And referring them and sending them out of the classroom, I guess I could've done that, but as people were exiting out I would just say, "Hey, can So and So borrow your Chromebook to take the test?" And I'd just move them through what should've taken 15 minutes took straight up 40 minutes. **What have I done?**"	of reflection.
			C.149-156, 170-174: Frustration with how students treat Chromebooks .	
		Technology is a distraction	D.145-146: Distraction with phone and Chromebooks	Belief: Students see tech as being for fun not for learning **Rafalow:** Bias against students.
	Teacher Perceptions of challenges – Technology issues	**Technology department is not sufficiently equipped**	D.293-302, 306-312: Students break Chromebooks—but then says they do ok but can't use tech effectively	Against **Ertmer's** claim that tech access is not a barrier.
			E.155-161: "Sometimes I have to make assessments for students to learning things handwritten because their technology issues are just not getting resolved, whether it's an issue on the student's part or it's an issue on the technology department or an issue on timing. Because the technology department is not always open when it should be and our students sometimes they break the computers at the end of the day and they can't... they have to wait until the next day to find time to get in them."	

Category 5: Beliefs and Attitudes About Technology (Actions)

Subcategory	Property	Dimension	Data	Analytic Memo/ Connection to

				Scholarship
How Teachers Use Technology	**Personal Use**	**Development**	E2.11: EB has an iPad set up on a tripod that is tracking her and recording as she moves.	**Ertmer, Johnson, Luongo:** Teachers need more support to use tech effectively—PD, collaboration, and teacher ed programs. **Domingo and Garganté**: Instructional benefits of apps used the study classrooms do not address the motivations teachers profess have for using technology, as many of the apps do not have instructional benefits—they consist primarily or solely of skill practice or information-gathering functionality.
	Instruction / Materials	**Modeling**	C1.60-68: SW shows students on the SmartBoard exactly where all of the materials that they need are stored in Google Classroom. Some students have gotten their laptops out or are making notes to themselves. SW quickly gets pictures of one of the samples that worked correctly earlier and adds it to a GC folder so they know what they should see. Student jokingly asks when they'll see when their teacher disintegrated the material.	
		Materials	E1.28-31: EB goes through agenda, what activities they'll be working on today, including essays they've started, and through vocabulary words that are on Google Classroom	
	Integrated into Class	**Students Use as Needed**	G1.13-24: 9:06: CS reminds students to use their time wisely and that the Do Now is up. Two minutes later she asks who is ready. Students are silently working. Some have Chromebooks open and some don't.	
		Lectures	B2.54-65: Lecture with pictures on overhead. Has topic, learning target, essential question, and agenda on projector. Shows texts and pictures and paintings that create a narrative (e.g., "the founding father represent	

			everyone") and shows how.	
How Students Use Technology	**School-focused**	**Informal Assessments**	G1.39-47: 9:54 CS says to get their clickers and projects Google Classroom. She uses positive reinforcement for transitions. When a question is projected, students hold up cards with answers and CS scans them with an iPad. There are discussions of different answers.	**Ertmer:** Use tools student are interested in already. (But is this LEARNING?). **Ertmer, Johnson, Luongo:** Teachers need more support to use tech effectively—PD, collaboration, and teacher ed programs. **Domingo and Garganté**: Instructional benefits of apps used the study classrooms do not address the motivations teachers profess have for using technology, as many of the apps do not have instructional benefits—they consist primarily or solely of skill practice or information-gathering functionality
		Formal Assessments	C2.32: There is a quiz that students complete on Google Forms.	
	Activities	**Competition**	F.150-159: "So we began the notes as we normally would, paper pencil but then to just set simple switch over to Quizzes, it's like I have this right here to reference but I get to try it on my own and I know I have to get to the top of the leader board but not this time because she's not going to count this one, but I'll be able to do it again."	**Palinscar:** Value in interactions facilitated by tech.
		Collaboration	C1.27-95: Students work in groups on activities and online assignments	
		Independent Work	D2.28-31: This assignment is on Quizlet. JW reminds students that most of the material there is made by students so it isn't always reliable and they should double check	

			the info.	
	Student-Centered	**Integrates student interests and needs/ Intentional relations to class material**	C.596-600, 603-605: Uses YouTube videos, posts community info connects with scholarships	**Ertmer:** Use tools student are interested in already. (But is this LEARNING?)
			E.221-226, 231-235: Tries to find music/examples students can relate to. Students picked something and teacher was a little uncomfortable but trusted student that it was relatable and was able to make connections.	
			E.310-321, 323-326: Used Serial podcast – was favorite tech-related activity.	
			F.179-181, 184-188: Pulled problems from Facebook. Had students pull problems from social media timelines.	
			F.197-202, 208-209: "Our task now is how can we formally introduce social media and what they use on a regular basis into a formal classroom. And I think other than having them create a quiz or a Kahoot by themselves, that's not what they use on a regular basis."	
		Failed to use student tools	E.274-278, 291-296: Avoids social media etc. Talks about it if it relates to education. Did try having them use Snapchat but it didn't go well because students couldn't save photos. EB taught them how to do it. Was a pain but interesting that she could interact with their tech.	**Rafalow:** Student bias. **Domingo and Garganté**: Lack of alignment between beliefs and actions.

			F.55-57: ALEKS used to fill in gaps, makes it so some students see same material twice	The school does have some restrictions—doesn't let teacher do just anything they want. **Domingo and Garganté**: Lack of alignment between beliefs and actions.
Access to Resources	**At school**	**1:1**	A.148-157: 1:1 at whole school, can check out and receive Chromebooks	**Ertmer** claims that tech access is not a barrier.
	At home	**Programming**	A.148-157: Program that offers mobile hotspots if they don't have internet at home.	