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WHAT ARE THEY THINKING?: A QUALITATIVE STUDY OF SECONDARY
STUDENTS' CRITICAL THINKING IN ONLINE CLASSES

by

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DEDICATION

This dissertation is dedicated to all secondary teachers who empower their students and challenge them to think critically, but especially my teachers from Roseau Valley School: Joanne Graydon, Sandra Schultz, Richard Maslanka, Bev Berrington, and Dave Kirkpatrick.

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ABSTRACT

This action research study emerged in response to students' struggle to understand what critical thinking is and teachers' corresponding struggle to develop students' critical thinking skills. In my role as an instructional designer, I studied student and teacher reactions to interdisciplinary course design that used disciplinary inquiry, problem-posing, and concept-based online learning. The primarily qualitative study focused on students' reflections across five different social studies and English courses, along with interview data from their teachers and post-course survey data. Exploring how students experience instruction designed to develop their critical thinking skills and how instruction in critical thinking impacts students' critical consciousness, I found students can demonstrate substantial confidence in critical thinking and metacognition when instruction is explicit and strategic. Students were able to apply specific metacognitive strategies to their learning, and even when they struggled, they demonstrated astute awareness of their own thinking. Specific elements of critical consciousness evident in my data included students' seeing themselves, displaying empathy and criticality when instruction combined relevant concepts, showcasing disciplinary thinking skills, and responding to compelling content.

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LIST OF ABBREVIATIONS

AP ....Advanced Placement

CoI ....community of inquiry

NCSS...National Council for the Social Studies

CHAPTER 1

INTRODUCTION

The term *critical thinking* is ubiquitous in education today, along with strategies or models advertised as skill-based, inquiry, critical literacy, and problem-based learning (Erickson, 2007; Hammond, 2015; Muhammad, 2020; National Council for the Social Studies [NCSS], 2013; Savery, 2009). However, as much as teachers talk about critical thinking, including the need to build and assess students' critical thinking skills, achieving those goals is challenging. As a high school history teacher in North Carolina, I saw how powerful a student's critical thinking can be in the classroom, even as I recognized the difficulty of developing students' critical thinking skills. Then and now, as an instructional designer developing online courses, I have also observed how teachers and students struggle with teaching and learning these skills. As important as critical thinking is, reliable instructional strategies for cultivating it and students' own understanding of the concept remain elusive.

I have had students at the top of their class, in their final year of high school, confess their inability to define *critical analysis*. They have heard the words and been asked to engage in the process but cannot really explain what it is or recognize when they are doing it. I was once in a faculty meeting 2 weeks before final exams, and the assistant principal for instruction recommended reviewing key vocabulary, such as *analyze*, for an upcoming exam. In another

instance, a colleague shared his concern that freshmen in our college prep program were incapable of critical thinking, causing him to focus only on content. These anecdotes suggest we educators have more work to do.

Critical thinking was one of the cornerstones of my social studies instruction as a teacher. It engages students, transfers to other subjects, and relates to the 21st-century world. Even standardized history tests in North Carolina and Advanced Placement (AP) history tests prioritize and assess critical thinking over content recall. However, in my experience as a department chair, history teacher, and instructional designer, teachers emphasize memorization rather than critical thinking skills. Teachers who want to teach these skills are often unsure of how to proceed, which leaves many students without deliberate instruction on how to think critically.

My own development as a teacher of critical thinking took time. When I started teaching, I did not deliberately teach students to think critically. My high school teachers and college professors had not specifically taught me how to be a critical thinker. I could and did think critically but did not have the metacognitive awareness of what I was doing. In my first years as a teacher, Bloom's Taxonomy (Anderson et al., 2001) was a frequent professional development topic and a stated priority but faced a strong tradition of content recall. High-stakes assessments at the state and national levels further reinforced traditional instruction. My colleagues had similar backgrounds, unfamiliar with and anxious about what instruction that emphasizes thinking over memorization looks like. As a result, they asked of their students what their teachers asked of them.

In the last 10 years, discussion of Bloom's levels of critical thinking has incorporated other topics like concept-based instruction and curriculum (Erickson, 2007), inquiry-based learning (NCSS, 2013), problem-based learning (Savery, 2009), and culturally responsive teaching (Hammond, 2015), just to name a few. Each framework prioritizes critical thinking and challenges traditional instructional methods that equate content recall and learning. Despite this greater emphasis on teaching critical thinking, what is missing is understanding critical thinking from the students' perspective, especially their experiences with instruction that develops both their thinking skills and awareness of those skills. Although I have prioritized critical thinking for over 15 years as an educator, I realized I knew little about how those skills develop in students' minds.

Problem of Practice

The causes of students' underdeveloped critical thinking skills and limited understanding thereof are widespread but mostly center on a lack of strong instruction on critical thinking. At the root of such poor instruction is a tradition of teaching content, evident in social studies (Cash, 2017), English (Pescatore, 2007), and science (Leider, 2017). Buoncristiani and Buoncristiani (2012) suggested teaching factual information is simply easier than designing more complex lessons.

Teachers are not the only ones responsible for students' underdeveloped critical thinking: the available curriculum and resources do not help, prompting Anderson (2019) to design a unit on critical thinking for AP English because the existing curriculum was insufficient. According to Buoncristiani and Buoncristiani

(2012), curriculum specialization in disciplines is happening in younger and younger grades, isolating subjects like math, history, and science, rather than creating opportunities for complex interdisciplinary thinking. Textbooks have also contributed to the problem. Hillocks (2010) evaluated a college-level writing textbook and found scant—and vague—information on critical thinking, and even in the medical field, Kowalczyk (2011) found the curriculum, training, and resources for preparing radiologists insufficient for building critical thinking.

Government-mandated standardized tests are also responsible for poor critical thinking instruction (Cash, 2017; Hillocks, 2010; Pescatore, 2007). The tests themselves do not have to kill critical thinking, but teachers often sacrifice skill instruction for simple content instruction with tests hanging over their head (Pescatore, 2007). A strong emphasis on high-stakes tests since 1990 has prioritized rote memorization at the expense of curiosity, big-picture thinking, complexity seeking, and a nonconformist attitude in students (Kim, 2021). However, tests are just one example of how the U.S. government has standardized education and sacrificed skills instruction. From the *Elementary and Secondary Education Act* signed by President Johnson in 1965 to the Obama administration's Race to the Top initiative, government actions have consistently stifled better instruction in critical thinking (Cash, 2017).

Some of the other challenges of teaching critical thinking are more complex. Beyer (2001) documented teachers' failure to apply research-supported strategies in teaching students how to think critically, while acknowledging questions about what skills to teach and that teachers may try to teach too many

skills. That problem has only worsened in the last 20 years. Suggesting Bloom's Taxonomy is partially to blame, Wineburg (2018) recommended flipping it on its head because teachers start at the bottom by focusing on knowledge and never get to the true significance of learning at the highest levels. According to Wineburg, starting with complex ideas and concepts enables students to create meaning from what they are learning.

From a social perspective, students of color may be especially unlikely to develop positive metacognitive practices, like habits of mind, because of early achievement gaps that teachers worsen by fostering dependent learners through teacher-centered instruction of simple content recall (Hammond, 2015). Freire (2000) suggested a more nefarious reason for not teaching critical thinking: content recall, as a process akin to banking, reinforces conformity to the existing power structure. The banking system of education treats students as objects and seeks to assimilate students to their circumstances, rather than empowering and equipping them to change their world. It avoids critical thinking or problem-posing education and can thus "minimize or annul students' creative power" and reinforce "the interests of the oppressors, who care neither to have the world revealed nor see it transformed" (Freire, 2000, p. 73).

Although tradition, government mandates, limited or inadequate resources, and social causes contribute to students' underdeveloped critical thinking, instructional practice remains a significant problem within a teacher's— or instructional designer's—power to fix. As a teacher who designed instruction around critical thinking, and now as an instructional designer serving online

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secondary courses across disciplines, I needed to understand how students respond to lessons and strategies deliberately designed to develop their understanding and ability to think critically.

Theoretical Framework

I used action research to improve my understanding of students' development of critical thinking—including their struggle and growth. Multiple theories guided my examination of the problem, the intervention, and my assessment of the results. Critical theory (Freire, 2000) was foundational, emphasizing the importance of critical thinking as well as beliefs in student learning and priorities of instruction. I also used Webb's (1999) levels of thinking or depth of knowledge theory to identify and define critical thinking instruction, and Costa's (2001) habits of mind contributed to my instructional design and enabled me to identify and assess student critical thinking competencies. To link critical thinking instruction to online instruction, I applied the community of inquiry (CoI) model from Garrison et al. (1999).

Critical pedagogy, the most important lens of my framework that influenced how I viewed the problem and my entire study, prioritizes critical thinking and critical consciousness to empower students to improve their place in society by introducing them to "a critical form of thinking about their world" (Freire, 2000, p. 104). Freire believed that developing critical thinking requires a problem-posing style of education, in which students are actively involved in their learning and the teacher's role is to present the students' world in a way that facilitates investigation. The teacher can guide students as co-investigators, react

as students pose answers or create more questions, and provide additional problems for students to investigate.

Beyond encouraging teacher–student collaboration to explore and critically investigate students' circumstances, Freire (2000) prioritized teachers' and students' collective action to improve those circumstances, achieved through the trusting partnership of dialogical education. As the student learns from the teacher, the teacher learns from the student. This cycle of learning fueled by continual dialogue develops students' critical thinking and self-understanding, while also empowering them in the learning process.

To gain a more concrete understanding of critical thinking for the sake of designing instruction and assessing students' progress, I turned to Webb's (1999) four levels for categorizing depth of knowledge: recall and reproduction, skills and concepts, strategic thinking, and extended thinking. I specifically developed instruction to target the third and fourth levels. Strategic thinking is evident when students solve complex problems independently or answer questions with multiple answers. Extended thinking occurs when students can transfer understanding between disciplines, connect different concepts and themes, and synthesize multiple pieces of evidence to create their own argument or understanding (Aungst, 2014).

I also identified and assessed students' critical thinking skills using Costa's (2001) habits of mind, 16 different practices for solving problems or thinking critically, such as thinking flexibly, thinking about thinking, thinking and communicating with clarity, and learning continuously. Demonstration of these

habits indicates critical thinking and critical consciousness in students, so Costa's habits factored into my course design and were the basis of evaluating and measuring students' growth in both critical thinking and critical consciousness. Students used and reflected on their learning using the habits of mind in each course. Although students applied each habit of mind at one time or another, four habits were used most often by students: persisting, thinking flexibly, applying past knowledge to new situations and striving for accuracy.

The final lens accounted for my new role as an instructional designer and the need to consider how critical thinking and consciousness develop in an online context. The CoI framework emphasizes social, cognitive, and teacher presence for effective online learning (Garrison et al., 1999). Most important was cognitive presence, which prioritizes reflection and discourse through inquiry learning, and social presence, which is integral to developing student identity and expression (Garrison, 2017).

Each theoretical lens aligned with my research focus on the importance of critical thinking in the development of critical consciousness and empowering learners to understand and impact their world. Freire's (2000) instructional priorities of inquiry and dialogical interaction enabled me to design instruction for developing students' strategic and extended thinking, Webb's (1999) third and fourth levels. Applying the importance of presence and inquiry from CoI helped me apply that instruction in an online context (Garrison, 2017), and using the habits of mind as indicators guided my evaluation of students' critical thinking and critical consciousness (Costa, 2001).

Overview of the Study

Students struggle with critical thinking and sometimes cannot even define it because teachers have not effectively taught this pivotal skill or deliberately choose not to teach it (Buoncristiani & Buoncristiani, 2012; Cash, 2017; Pescatore, 2007). The purpose of this study was to improve my teaching of critical thinking by evaluating students' experiences, challenges, and growth in response to strategic changes in my course design. My research questions were:

1. How do students experience instruction designed to develop their critical thinking skills?

2. How does instruction in critical thinking impact students' critical consciousness?

For the purpose of the research questions and this study, critical thinking will be defined as asking questions within a discipline, being able to make evidence-based arguments, and being self-aware of one's thinking. Critical consciousness applies the skills of critical thinking to empower students towards civic engagement, action and liberation (Freire, 2000; Giroux, 2010).

As noted, I explored these questions through action research, which gives practitioners opportunity for systematic but practical investigation of a problem (Efron & Ravid, 2020). Action research is deliberate and follows tried methods, while at the same time being relevant and practical to educators in their setting and role. This style of research reflects the nature of education: practitioners constantly experiment with new strategies, assess the results, and adjust their practice accordingly. Action research represents the values Dewey espoused

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regarding the construction of new knowledge from active learning and experience (Herr & Anderson, 2015).

My action research relied primarily on qualitative data, but I also used quantitative data to evaluate changes in students' understanding and opinions of critical thinking and critical consciousness. To explore students' successes and challenges with developing critical skills and understand their critical consciousness in response to my research questions, I collected the reflections they completed at the end of each instructional module (Appendix A). These data were readily available, serving as naturally occurring artifacts for research (Efron & Ravid, 2020). At the end of the term, I also conducted interviews with the teachers who facilitated the online classes, using a semi-structured protocol to gain additional perspective on the students' experiences (Appendix B). Quantitative measures through a post-course survey (Appendix C) provided supplementary evidence of students' opinions and understanding of critical thinking and critical consciousness as a result of the intervention.

As Chapter 3 explains, I established predetermined categories for analyzing the qualitative data based on my guiding theories and literature review in Chapter 2. However, I remained open to emerging categories in response to the data I received and coded. As Efron and Ravid (2020) advised, themes and patterns within the different categories enabled me to develop a concept map to facilitate interpretation of the data.

To ensure the integrity of my study, I applied Herr and Anderson's (2015) recommendations for process, democratic, catalytic, and dialogic validity. To

establish process validity, I collected qualitative data from multiple sources along with quantitative data to facilitate triangulation, situated as much as possible within students' natural context. However, I undertook the study to explore students' development and self-awareness of their own critical thinking, so ensuring they understood their important role in the research added democratic validity. To establish catalytic validity, I evaluated data as the study progressed and adjusted as important understandings or ideas emerged. To identify themes and provide insight, I reviewed my qualitative data with an interdisciplinary team of teacher participants, demonstrating dialogic validity by mitigating my biases and subjectivity. Also, my use of reflections as archived data that is a regular part of the course accurately aligned with the research questions, while the research did not interfere with or influence the data (Merriam & Tisdell, 2016).

Researcher Positionality

Action research is situational, rooted in the unique contexts of the researcher and participants (Efron & Ravid, 2020). It empowers practitioners to be involved in their research projects, yet as insiders, they must acknowledge and reflect upon, rather than avoid, their subjectivity (Herr & Anderson, 2015). Therefore, I had to consider my subjectivity and positionality in relation to the research setting and participants before undertaking the study.

First, my personal history factors into my professional perspective. I am a White man who grew up in Canada in a rural, working-class home, where reading and critical thinking were valued, although formal and higher education may not have been. From my teenage years on, I was most comfortable in

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academic settings, and although I never faced the socioeconomic or physical insecurity many of my students have, the opportunities education provided were clear to me.

My professional experiences also shaped the view I brought to this study. As a high school teacher of 20 years, I taught students from diverse socioeconomic, racial, and ethnic backgrounds in all course levels with varying degrees of critical thinking ability. Over the past 10 years, I have applied a concept-based teaching approach to encourage creative and critical thinking (Erickson, 2007), while standardized tests for history in my state of North Carolina and the history AP tests were redesigned to assess critical thinking.

More recently, I adapted my emphasis on relevant and timeless concepts by applying elements of culturally responsive teaching to recognize each learner's unique context and empower my students (Hammond, 2015). My firm belief that all students should learn to be critical thinkers especially applies to disadvantaged groups, or as Freire (2000) emphasized, the oppressed. Beyond uplifting individuals and groups, I also view critical thinking as vital for a democratic society. In my new role as an instructional designer for online secondary learning, critical thinking and student identity are not only key factors for students' learning, but also integral for student engagement and satisfaction (Ice et al., 2017; Jackson et al., 2013, Pifarré et al., 2014; Zhang & Lin, 2021).

Carefully weighing all these perspectives, I positioned myself in the study as an insider and practitioner researcher (Herr & Anderson, 2015). Taking on the dual role of researcher and instructional designer, I involved students not as

subjects, but as empowered participants. In my role as an instructional designer who does not facilitate or teach the courses I design, my position as insider differs from that of a traditional teacher. Although I am responsible for the course work and learning meant to develop critical thinking and consciousness, once designed, I pass the course to the facilitator to teach, and while I support teachers, I have no active involvement in teaching. While the course is being taught, I provide instructional support and advice to teachers and receive informal feedback on the course and student progress, but teachers did not provide formal feedback on their experience until the teacher interviews.

Significance

Teachers struggle to teach critical thinking, and efforts are seldom deliberate or structured (Buoncristiani & Buoncristiani, 2012; Cash, 2017; Leider, 2017; Pescatore, 2007). Even when that instruction does take place, evaluation focuses on the product: the test, quiz, or project, rather than the student. This study addressed this significant problem of practice and generated new understanding of students' successes, challenges, and changes in response to instruction in critical thinking in their own words.

As Chapter 4 and 5 reveal, this research led me to be more deliberate and reflective about instructional decisions. Although students did not actively take part in the study, given my use of archived reflection and survey data, reviewing their reflections on their thinking along with the product of that thinking was illuminating. Providing me with insight for refining my practice, the study enabled

me to evaluate which strategies are conducive to learning to think critically and developing critical consciousness from the student perspective.

Additionally, the course facilitators also gained insight on their practice through the opportunity to reflect on students' experiences outside the day-to-day grind of teaching. Seeing how I coded students' words for evidence of critical thinking gave them a different perspective by exposing them to deliberate analysis of data not in the form of test scores. What we collectively learned about students' successes and challenges with developing critical thinking skills may inform our and our fellow educators' efforts toward guiding other students who are developing their skills.

As action research, this study did not yield generalizable results regarding how to teach critical thinking skills, especially because critical thinking and critical consciousness are complex processes, such that no one right way to do or teach them exists. Nevertheless, my study offers anecdotes, insights, or ideas for educators to consider as they facilitate and assess their own students' development. Educators around the world have been challenged by Freire's (2000) observations of and insights from rural adult learners in South America, even without generalizable, objective data. Likewise, my study reinforced some previous research and uncovered some new insights regarding students' perspectives on their development of critical thinking and critical consciousness in the 21st-century United States.

CHAPTER 2

LITERATURE REVIEW

In Chapter 1, I introduced my need as an instructional designer to better understand how students experience and develop critical thinking and critical consciousness. This chapter reviews literature related to this problem of practice, expands on my theoretical framework, and provides historical context for my action research. I used primary research in the form of peer-reviewed studies derived from the University of South Carolina databases, EBSCO, the Education Resources Information Center, APA PsycINFO, and other applicable databases. I also consulted books and edited anthologies of work on critical thinking and critical consciousness.

I begin the chapter by elaborating on the theoretical framework that shaped my understanding of the problem and the design of my study. Next, I offer historical perspectives on the study, including how the role of critical thinking in instruction has changed, giving rise to new methods and strategies for teaching critical thinking. The literature review also discusses the importance of critical consciousness for individuals and society. Lastly, I survey related research and conclude with a chapter summary.

Theoretical Framework

As I explained in Chapter 1, critical theory (Freire, 2000) aligns with my views on critical thinking's value to students and society and thus guided my

attempts to develop students' critical thinking and critical consciousness.

Culturally responsive pedagogy, an application of Freire's ideas that prioritizes

critical consciousness, academic growth, and critical thinking (Hammond, 2015;

Ladson-Billings, 1995), also informed my efforts. Webb's (1999) levels of thinking

and Costa's (2001) habits of mind offered specific conceptual tools for identifying

and assessing students' critical thinking in response to my instructional design,

and Garrison et al.'s (1999) CoI model guided its application to online learning.

Figure 2.1 illustrates how the theories intersect to support my aim to design

relevant, learner-centered inquiry that develops critical thinking skills.

Critical consciousness theories
critical pedagogy (Freire, 2000)
culturally responsive teaching (Gay, 2002; Ladson-Billings, 1995; Hammond, 2015)

Critical thinking theories
depth of knowledge (Webb, 1999)
habits of mind (Costa, 2001)

Online learning theory
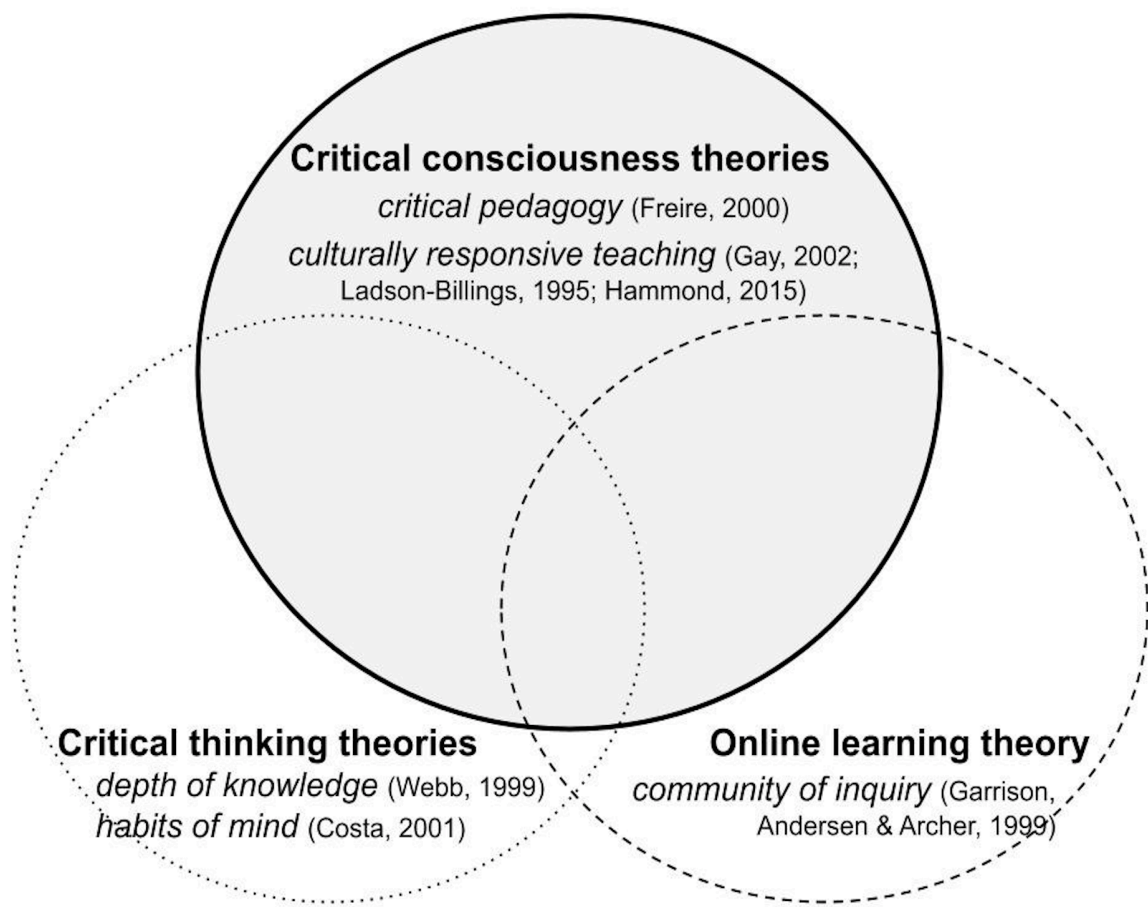*community of inquiry* (Garrison, Andersen & Archer, 1999)

Figure 2.1 *Relationships Within the Theoretical Framework*

Conceptualizing critical pedagogy made Freire a leading educator in the 20th century (Dale & Hyslop-Margison, 2011; Giroux, 2010). Freire argued education should liberate and humanize rather than assimilate and oppress. To liberate, education must be dialogical and truly consider learners' perspective. It cannot simply transfer knowledge from teacher to student; it must engage learners in problem-solving. Freire's (2000) vision of such critical pedagogy prioritizes critical thinking and building critical consciousness or *conscientização* to empower students to improve their social standing. Through Freire's problem-posing approach, teachers can help students grapple with the problems of their world and strive to understand their place within it.

As the primary lens in my framework, critical pedagogy sharpened my view of the problem and reinforced my aim to resolve it. Adding to my understanding of critical thinking as an integral element of critical consciousness, Freire's (2000) work also prompted me to prioritize dialogical teaching and problem-posing in my intervention, as I explain in Chapter 3. The next chapter also elaborates on how critical consciousness and praxis of action informed my interview questions (Appendix B) and my plan for coding data.

To extend and apply critical pedagogy, Ladson-Billings (1995) defined culturally responsive teaching as countering oppression, empowering individuals and groups, prioritizing all students' academic success, and building their cultural competence in a way that inspires critical consciousness and action. Gay (2002) explained that culturally relevant or responsive teaching recognizes the value of learning through lived experiences, meaning teachers must situate learning in

students' own experiences, context, or culture. Along with understanding and respecting students' culture, culturally responsive teaching prioritizes students' critical thinking and literacy skills and helps students extend their thinking (Ladson-Billings, 2009). Operating within a culturally responsive framework, Hammond (2015) used neuroscientific principles to provide methods for students to become better information processors, independent learners, and critical thinkers. Alternatively, Muhammad (2020) proposed methods for developing students' critical thinking based on 19th-century education among Black literacy societies. Within their writing, Muhammad found the same key elements: identity, skills, intellect, and criticality.

Whereas critical pedagogy and culturally relevant teaching drove the instructional design of my intervention, Webb's (1999) levels of thinking extended beyond the planning stage as I assessed students' progress. As I explained in Chapter 1, Webb identified four levels to describe different depths of knowledge: recall and reproduction, skills and concepts, strategic thinking, and extended thinking. My study focused especially on the latter two. Students applied strategic thinking to solve complex problems independently and extended thinking to transfer and connect understanding between different disciplines and their own context and circumstances, synthesizing evidence to develop their own arguments (Aungst, 2014).

According to Hammond (2015), culturally responsive teachers' primary aim is "to help dependent learners learn how to learn" (p. 122). In support of that goal, Costa's (2001) habits of mind framed my efforts to identify, develop, and

assess students' critical thinking skills. Of the 16 different habits Costa identified, thinking flexibly, thinking about thinking, thinking and communicating with clarity, and learning continuously factored into my study, serving as a basis for evaluating and measuring students' growth in critical thinking.

To apply critical consciousness and critical thinking to an online learning environment, I used Garrison et al.'s (1999) CoI framework, focusing specifically on cognitive and social presence. Cognitive presence is higher order thinking that includes reflection and discourse (Garrison, 2017), and Pifarré et al. (2014) described it as "sustained communication between members of a community that leads to meaning making" (p. 73). To stimulate cognitive presence, online instructors can infuse a text- and writing-based course with time for reflection and the development of higher order thinking skills (Garrison et al., 1999). Cognitive presence also emphasizes how critical thinking does not happen in isolation, as the collaborative nature of the CoI model reflects the "inseparability of the individual and community" (Garrison, 2017, p. 11). Within that context, cognitive presence arises from a four-phase inquiry model that includes a triggering event, exploration, integration, and resolution (Garrison et al., 1999). In this manner, students develop perception and awareness, engage in deliberation, build conceptual understanding, and are ideally encouraged to act.

While cognitive presence develops critical thinking and some metacognitive skills, social presence engages students through cultural and personal relevance (Garrison et al., 1999). It is the extent that online students see themselves and their classmates as real people and their ability to express

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themselves and their identity. More than just casual interactions or a series of ice-breaker activities, it is the building of identity and relationships to foster connectedness and a safe place for inquiry (Garrison, 2017).

Interweaving these ideas, my study positioned critical thinking as an integral element of critical pedagogy and an ingredient of critical consciousness (Freire, 2000). Webb (1999) and Costa (2001) also informed my definition of critical thinking and shaped my instructional design, as did culturally responsive teaching (Ladson-Billings, 1997), as an extension of critical pedagogy. The CoI framework for virtual learning (Garrison et al., 1999) enabled me to apply and evaluate these interrelated concepts, as shown in Figure 2.2.
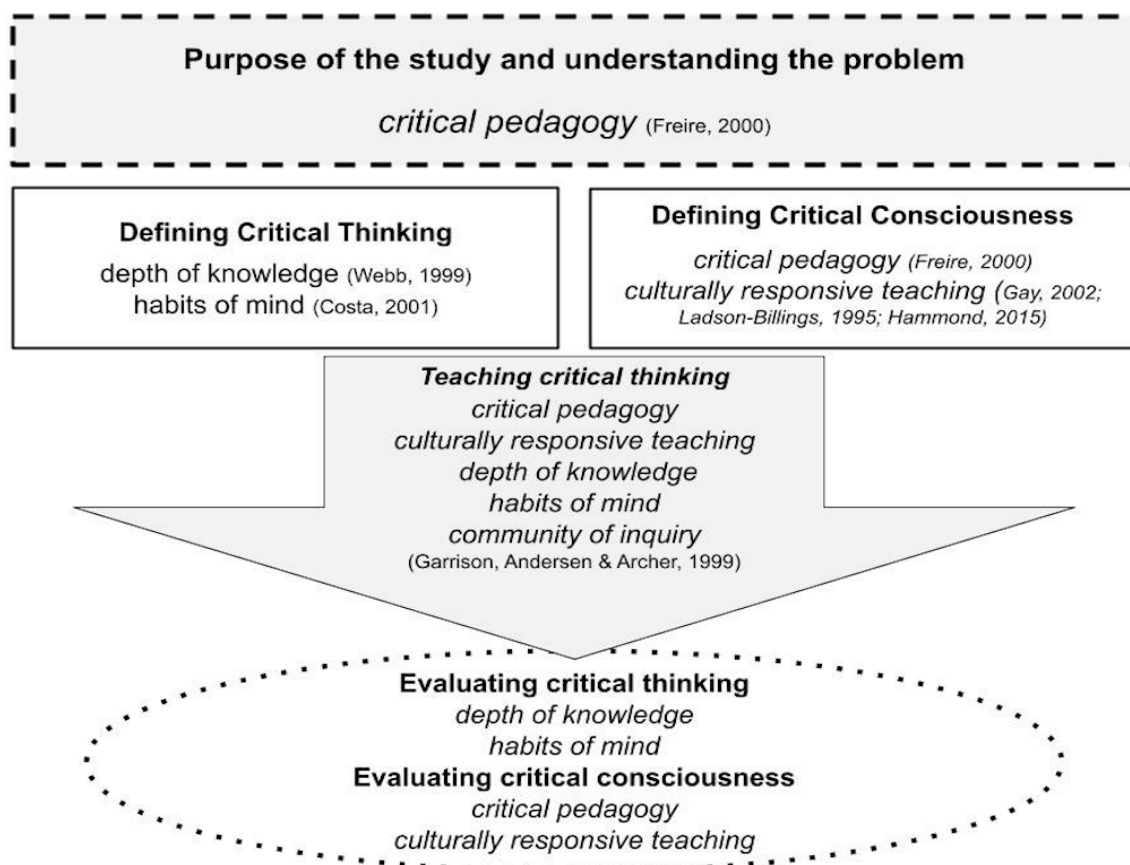
Figure 2.2 *Application of the Theoretical Framework*

Historical Perspectives

Developing critical thinking has been a priority since ancient Greek intellectuals believed it would uncover universal truths (Doughty, 2006). In the early 20th century, Dewey associated critical thinking with learner-centered education that prioritized inquiry (Barrow, 2006). Dewey believed instruction in critical thinking should create doubt in students' minds through complex, relevant problems, after which the teacher can help students remove that doubt (Haber, 2020). Subsequently, Perry's cognitive research in the 1960s identified stages of critical thinking across four different levels: dualism, multiplicity, relativism, and commitment (Nilson, 2021).

After the research in the 1960's, the 1980s witnessed a critical thinking movement in U.S. education, when reports and committees reemphasized the need for critical thinking skills in a democratic society (ten Dam & Volman, 2004). During this time, Facione's (1989) Delphi group deliberated to define six critical thinking skills: interpretation, analysis, evaluation, inference, explanation, and self-regulation. Advances in cognitive psychology yielded a textbook for critical thinking centered on the skills of verbal reasoning, argument analysis, scientific reasoning, statistical reasoning, decision-making, and problem-solving (Halpern, 2014; Nilson, 2021). In the 1990's, Paul and Elder's work contributed 10 intellectual standards, eight intellectual traits, and six progressive stages for a critical thinker's development (Nilson, 2021). Even in recent history, simply defining and explaining critical thinking is complex and constantly changing.

As the industrial age gave way to the technology age, critical thinking became necessary not only for democracy but also for a modern workforce and society, hence the advent of 21st-century learning, wherein critical thinking is a key skill (Kivunja, 2014). However, the technology age has also ushered in new emphasis on critical thinking in society and culture. Online scams, social media, advertising, and fake news have all created a world where critical thinking skills are necessary for survival (Nilson, 2021). Despite the longstanding challenges of defining and delineating critical thinking and critical consciousness, their undeniable value compelled me to explore both capacities and identify promising strategies for developing them.

Defining Critical Thinking

Developing students' critical thinking has been a priority for years, but what exactly teachers are trying to develop is unclear. Most scholars agree critical thinking is based on a set of dispositions rather than a simple criterion (Miri et al., 2007; ten Dam & Volman, 2004), and the higher categories of Bloom's taxonomy—applying, analyzing, evaluating, and creating—have become synonymous with critical thinking in the classroom (Anderson et al., 2001). A Delphi panel of experts from the American Philosophical Association included interpretation, inference, and self-regulation as key critical thinking skills, along with 16 sub-skills and 19 additional dispositions (Abrami et al., 2008). Many definitions of critical thinking also include formulating a claim or argument, articulating how it is developed, and providing evidence to support its validity (Moore, 2013; Shaughnessy, 2012; Willingham, 2020).

Moore (2013) found that professors agreed critical thinking was important but disagreed about what it meant. Many avoided a narrow definition of easily identifiable cognitive processes and believed it should be a contested idea. Likewise, Anderson (2015) associated critical thinking with wonder, skepticism, and more questions, emphasizing its necessarily messy and untidy nature. In other words, critical thinking is instrumental in answering and asking questions.

Moreover, critical thinking is not solely cognitive. It goes beyond logic and analytics to address bias and subjectivity, recognizing the impact of individual and group perspectives (Shaughnessy, 2012). Its complexity includes multiple possibilities and uncertainty (Miri et al., 2007). It is new and creative—not simply reproduction of something that already existed (Adorno & Pickford, 2010; Willingham, 2020). More than simple cognitive development, critical thinking should manifest in action (Moore, 2013).

Another essential element of critical thinking is being self-aware and adaptive. Many definitions of critical thinking highlight metacognition (Bermudez, 2015; Halpern, 1998; Miri et al., 2007; Paul, 2005; Willingham, 2020). Beyond thinking about thinking at a metacognitive level, critical thinking is a "self-corrective process in which individuals monitor the quality of their thinking, detecting and rectifying flaws in arguments, thinking procedures, problem-solving strategies, and decision-making processes" (Bermudez, 2015, p. 104). Critical thinking also encompasses improving thinking, replacing weak with strong in a continual cycle (Paul, 2005). A critical thinker not only demonstrates skepticism,

but also actively and aggressively counters what is already known, seeking out evidence to contradict prior beliefs (van Gelder, 2005).

Critical Thinking and Critical Consciousness

Critical thinking and critical consciousness are closely related. Critical consciousness includes three components undergirded by critical thinking: critical reflection, sociopolitical efficacy, and critical action (Godfrey & Grayman, 2014; Watts et al., 2011). Critical reflection requires applying the skills and dispositions of critical thinking to one's context to examine the social, political, and economic conditions, being especially critical of inequalities, oppression, or conditions that "constrain well-being and human agency" (Watts et al., 2011, p. 47). In other words, critical thinking is not about knowing one's place, but determining and considering one's position (ten Dam & Volman, 2004).

The relationship between critical thinking and critical consciousness has instructional implications. Lessons focused on knowing one's place would emphasize understanding the system, whereas lessons emphasizing critical action would promote changing the system, reflecting Freire's belief that critical thinking is a tool of self-determination and civic engagement (Giroux, 2010). Therefore, developing critical consciousness requires teaching critical thinking in a manner that goes beyond simply treating students as receptacles for certain cognitive skills (Anderson, 2015). It means teaching students not only to analyze texts, but also to make moral judgments about that analysis that lead to action (Giroux, 2010).

To achieve that aim of empowering and motivating students to act, instruction should include topics that are relevant to their experiences (ten Dam & Volman, 2004). This Freirean pedagogy, as Giroux (2010) described it,

> is not a method or an *a priori* technique to be imposed on all students but a political and moral practice that provides the knowledge, skills, and social relations that enable students to explore the possibilities of what it means to be critical citizens while expanding and deepening their participation in the promise of a substantive democracy. (p. 716)

A classroom that develops critical consciousness is interactive and dialogical, encouraging students to practice, apply, and share the critical thinking skills and dispositions they are developing (ten Dam & Volman, 2004).

Related Research

In addition to reviewing conceptual scholarship, I also reviewed several empirical studies related to teaching critical thinking and specific instructional strategies that develop students' ability to think critically and develop critical consciousness. Doing so provided insight on how to develop these abilities in my students and evaluate the student experience, thus strengthening the foundation for this action research study.

Teaching Critical Thinking

Developing critical thinking in students is hard (van Gelder, 2005). Effective instruction in critical thinking depends on two things: explicitly teaching critical thinking skills and dispositions and doing so in the context of a discipline. Explicit instruction in critical thinking can develop students' skills and dispositions

when combined with deliberate practice in those skills (Heijltjes et al., 2014; McLaughlin & McGill, 2017; Miri et al., 2007; van Gelder, 2005), whereas immersing students in complex or thought-provoking content without explicitly teaching critical thinking skills is not as effective (Abrami et al., 2008). According to van Gelder (2005), making skills an explicit part of instruction, along with graduated tasks that develop simple to more complex skills paired with consistent feedback, is most effective. Marin and Halpern (2011) also recommended explicit instruction and practice, adding that practice designed to allow students to transfer or apply their skills to new situations or contexts is important. Likewise, Abrami et al. (2008) emphasized making explicit skill instruction a clear part of course design and goals.

In addition to explicit instruction, teaching critical thinking in the context of a discipline and integrating those skills with content knowledge has also proven effective (Bermudez, 2015; McLaughlin & McGill, 2017; Paul, 2005; Willingham, 2009). Cognitive science dictates that thinking deeply and critically requires the use of disciplinary content and a rich understanding of factual knowledge (Willingham, 2009). As Willingham (2020) explained, "Literary criticism has its own internal logic, its norms for what constitutes good evidence and a valid argument. These norms differ from those found in mathematics, for example. Thus, our goals for student critical thinking must be domain-specific" (p. 42). Each discipline provides its own idea of critical thinking, such as scientific thinking, literary criticism, or historical thinking (Paul, 2005), yet critical thinking is necessary across all disciplines.

Moreover, some general critical thinking skills transcend disciplines, yet demonstrating those skills requires disciplinary and content knowledge (Bermudez, 2015). Otherwise, students may fail to apply or transfer them to new situations (McLaughlin & McGill, 2017; Willingham, 2020). Thus, Marzano and Pollock's (2001) analysis of standards documents across 12 disciplines found skills such as comparison, problem-solving, argument, decision-making, and use of logic and reasoning throughout the sample, alongside "explicit or implicit reference to the fact that thinking and reasoning should be reinforced in the context of authentic tasks within each content area" (p. 33).

Teaching critical thinking requires teaching metacognition, given that self-reflection and self-monitoring are key elements (Halpern 1998; Miri et al., 2007; Moore, 2013). Self-awareness of the following characteristics is especially useful: persistence through complex tasks, open-mindedness, and flexible thinking or willingness to adjust tactics or strategies when solving problems (Halpern, 1998). A skilled critical thinker consistently monitors their thinking, asking:

What is my purpose? What question am I trying to answer? What data or information do I need? What conclusions or inferences can I make (that are based on this information)? If I come to these conclusions, what are the implications and consequences? What is the key concept (theory, principle, axiom) I am working with? What assumptions am I making? What is my point of view? (Paul, 2005, p. 29)

Like critical thinking skills in general, these metacognitive skills require explicit and deliberate instruction, opportunities to practice, and teacher feedback (Halpern, 1998).

In sum, teaching critical thinking requires explicit instruction in critical thinking and metacognitive skills together with practice and feedback in the context of a discipline. Various methods for teaching critical thinking all require students to apply and practice the skills and dispositions of a critical thinker. My study incorporated the following insights about dialogic teaching, problem-posing, inquiry, argument, and real-world problems to develop students' skills.

Dialogic Teaching

Facilitating student discussion and dialogue in which they confront opposing views as active learners can develop their critical thinking skills (ten Dam & Volman, 2004). Teachers can participate and provide feedback and guidance, but empowering students to participate in back-and-forth discussion where they must consider their own perspective is especially powerful (Acosta et al., 2017; Lennon, 2017). Both large and small groups can effectively develop a deeper understanding through listening, collaborating, cooperating, and building alternative perspectives on complex issues (Karabulut, 2012). Discussions must include everyone; cannot become hostile; and benefit from love, humility, hope, humor, silence, and faith (Shih, 2018). Dialogic teaching requires developing an open classroom climate that promotes the discussion of controversial issues and creates a comfortable space for dialogue, rather than simply sharing one right answer (Godfrey & Grayman, 2014; Karabulut, 2012). As Martin-Young (2020)

explained, dialogic teaching can even use traditional textbooks to help students question their own assumptions, push back against norms, and inspire action.

Problem-Posing

Critical thinking flourishes when students are able to formulate their own questions (Bermudez, 2015; Freire, 2000; Karabulut, 2012; Lennon, 2017; Miri et al., 2007). Rather than just answering questions given to them, students can be freed to pose their own questions. Teachers and students can be co-investigators when teachers react as students develop answers or create more questions (Freire, 2000). The more students can consider relevant problems they will encounter in the world, the more engaged learners will be (Merrill, 2002). Encouraging students in this natural process of posing their own questions prompts them to reflect on things they take for granted, reconsider traditional practices and beliefs, and begin to recreate a coherent belief system (Berman, 2001).

Inquiry

Guiding students to pursue relevant questions or problems and collect evidence in a deliberate manner also develops critical thinking (Karabulut, 2012). Although inquiry is widespread in science, other disciplines, like social studies, have also made inquiry a pedagogical priority, as evident in the NCSS (2013) college, career, and civic life—or C3—framework. As Young and Miner (2015) explained, the framework's emphasis on developing questions, exploring across disciplines, evaluating sources, using evidence, and communicating results can

even apply in elementary school classrooms. Moreover, collaborative inquiry allows students to learn together and share knowledge (Miri et al., 2007).

Argument

In addition to developing students' critical thinking skills, helping students craft arguments by applying a claim, ground, and warrant framework can improve their opinions of a course (Akbas et al., 2019; Yılmaz-Özcan & Tabak, 2019). Argument-based tasks should require students to analyze and synthesize evidence (Halpern, 1998). Moreover, teaching students how to construct their own arguments also supports their ability to distinguish claims from evidence in other arguments, which in turn helps them form counterarguments (Walker & Kettler, 2020).

Real-World Problems

Using real-world scenarios and relevant problems not only engages learners but also helps them apply their learning to day-to-day situations outside of class (Acosta et al., 2017; Halpern, 1998; Merrill, 2002; Miri et al., 2007). As Merrill (2002) explained, problem-centered instruction must include a complete task that represents something the learner may encounter in the real world. Encountering such real-world situations in class develops learners' evaluative ability, which they can extend to other relevant circumstances (Miri et al., 2007).

Other Findings

Many studies on students' critical thinking and critical consciousness have been conducted in the last 5 years, although few have looked at both critical thinking and critical consciousness from a student's perspective. For example,

Akbas et al. (2019) implemented argumentation in a seventh-grade social studies class to develop critical thinking and used mixed methods to evaluate the results of the intervention. Both quantitative and qualitative results indicated the argument-based approach was an effective model. Students in the experiment group scored statistically better on the assessment, and interviews confirmed that students enjoyed the argument-based approach, appreciated the interaction, and were aware that they were using higher order thinking skills. Students also indicated they enjoyed the current news stories that made the argument-based approach more relevant and that it positively impacted their view of social studies class. Akbas et al. endorsed the argument-based system in social studies but recommended using it carefully and deliberately because of the challenges of any new instructional system. They also suggested a need for further research on students' reaction to these new instructional strategies.

Cash (2017) applied a problem-based approach to develop critical thinking skills in a suburban high school in the United States, studying whether project-based learning impacts critical thinking skills. However, because of the small sample size, the quantitative study did not yield a statistically significant result for the connection between project-based learning and critical thinking skills, although it did warrant further investigation. Cash also found many challenges to implementing and expanding the project-based approach in other classrooms.

Looking specifically at developing critical consciousness, Clark and Seider (2017) conducted a qualitative study on 60 urban high school students from six different charter schools in the northeastern United States. Students were asked

about the extent to which they believed instruction developed their views on critical consciousness, especially ideas of race and class inequality. Results showed the kind of instruction that most impacted students' critical curiosity provided new information, used relevant examples, and incorporated new perspectives, especially from their peers. Students were also especially interested in hearing multiple, conflicting perspectives.

El-Amin et al. (2017) also evaluated critical consciousness in a number of high schools in the northeast. This mixed-methods study included interviews with 50 Black students as a means of understanding their sense of how critical consciousness prepares them for challenges in U.S. society. The most effective strategies provided students with language about inequality, created space to interrogate and discuss racism, and taught students to act. The study also suggested that for students to succeed academically, instruction must prepare them for the challenges they face from oppressive social forces.

These studies on critical thinking and critical consciousness indicate current scholarly interest in the topic of my study. Despite scant quantitative data, qualitative studies have uncovered important insight. No study that I found examined the intersection of critical thinking and critical consciousness, and few interrogated the challenges students face, suggesting my study, beyond an attempt to resolve my problem of practice, could address this gap in scholarship.

Critical Thinking, Critical Consciousness, and Democracy

Action research does not always address a gap in the scholarship, but its purpose is more practical designed to improve practice in a cycle of continuous

improvement (Efron & Ravid, 2020). Action research is also influenced by the legacy of Paulo Freire and its participatory nature is also democratic and emancipatory (Herr & Anderson, 2015). Instruction in the skills and dispositions of critical thinking should develop in students a critical consciousness that is necessary for citizenship education in a just and equal democracy. Effective instruction in critical thinking takes a problem-posing approach as students discuss, debate, and listen to issues and challenges in their individual lives and society at large. Placing instruction in the context of real-world problems, as well as students' own position and place within those problems, increases their ability to influence those problems (Berman, 2001; ten Dam & Volman, 2004). Developing students' critical consciousness allows them to see themselves and their identity within mainstream society, lifting the "veil" of exclusion or marginalization Du Bois described to convey the idea of double consciousness (Muller & Bryan, 2020).

Educators have a responsibility to promote reason, freedom, and equality as part of larger efforts toward citizenship education (Giroux, 2010). Critical thinking within the discipline of history "is thought to provide a reflective basis for values such as global awareness, pluralism, and respect for diversity, independent thinking, and openness to controversial issues" (Bermudez, 2015, p. 105). Such education requires students to think critically and with skepticism about controversial issues, but also with a caring, empathetic, and committed attitude to act not only for themselves but also for their fellow citizens (ten Dam & Volman, 2004). Teaching and allowing students to analyze and interrogate their

own circumstances should ultimately encourage them to take action and become actively involved (El-Amin et al., 2017).

Chapter Summary

This chapter elaborated on the framework underlying the concepts of critical thinking and critical consciousness in this study. Although the definition of critical thinking is debatable, some key dispositions and skills are widely accepted, as are certain instructional priorities for developing those skills and dispositions. Drawing on these principles, the research design in the next chapter also reflects my understanding that critical thinking and critical consciousness can empower students in their communities and as citizens.

CHAPTER 3

METHODOLOGY

As the prior chapters established, teaching critical thinking is challenging, due in part to an incomplete understanding of how students develop and understand their own critical thinking. As an instructional designer, I saw students' poorly developed critical thinking and lack of metacognition as a problem of practice in which I have a stake. For resolution, I turned to critical consciousness and student empowerment as guiding instructional principles (Freire, 2000). Freire's emphasis on problem-posing and the dialogical relationship between teacher and student shaped the intervention I introduce in this chapter, as did Webb's (1999) levels of thinking and Costa's (2001) habits of mind. Further, this chapter explains the systematic approach I took to assess the impact of my actions in an online learning context shaped by Garrison et al.'s (1999) CoI model.

Research Design

In this action research study, I was both instructional designer and researcher. Action research, which recognizes the uniqueness of students and circumstances and the challenges that applying generalized theories creates, empowers practitioners to investigate relevant problems systematically, reflectively, and critically (Efron & Ravid, 2020). Consistent with participatory action research (Herr & Anderson, 2015), teachers who facilitated the online

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courses I designed acted as empowered co-investigators of their students' critical thinking by engaging in focused conversation about my investigation. As a reminder, the research questions were:

1. How do students experience instruction designed to develop their critical thinking skills?

2. How does instruction in critical thinking impact students' critical consciousness?

Rather than looking for generalizable understandings, action researchers develop as practitioners and generate, through qualitative study, insight transferable to other practitioners (Merriam & Tisdell, 2016). Qualitative methods were especially useful for illuminating students' successes, challenges, and understandings as their critical thinking and critical consciousness evolved.

Intervention

To investigate students' learning experiences, including their successes, challenges, and perspectives, I first designed the instruction they experienced. The intervention applied various pedagogical methods to develop students' higher-level critical thinking skills, their awareness of those skills (i.e., metacognition), and their critical consciousness. I targeted students' strategic and extended thinking skills (Webb, 1999) through problem-posing and concept-based inquiry lessons, tasking students with investigating and growing their understanding using disciplinary evidence and critical thinking skills. I also sought to empower students and develop their critical consciousness through deliberate connections to students' perspectives and context. Moreover, I intentionally

included lessons on the habits of mind to develop students' metacognitive awareness (Costa, 2001).

The intervention was students' regular instruction, systemic to how their entire course was designed, and took place during the 18-week Fall 2022 semester. All students in the courses experienced the intervention and instruction in critical thinking and critical consciousness, and I randomly collected student reflections from the modules. During each module or unit of students' courses, they completed five types of assignments: (a) engage and explore, (b) problem-posing, (c) inquiry tasks, (d) assessments, and (e) integration and evaluation. Several priorities derived from my literature review informed the tasks' design: disciplinary inquiry and analysis to develop critical thinking skills, student–student and student–teacher interaction and collaboration, student identity, and relevance to ensure students applied their own experiences to their learning.

Engage and Explore

Each module began with an Engage and Explore task, which invited students to make relevant connections to the topic of study. I expected students to connect to prior lessons or units of study from their current or previous coursework or draw on their own lives or current events. To complete the task, students made personal connections to the learning objectives and reflected on their contemporary importance.

Problem-Posing

In each module, students also posed their own questions or problems about the central topic. I gave students a prompt and tasked them with identifying

one or more questions that were relevant to the topic, concept, or skill for that unit. Throughout the unit, students responded to other students' problems or questions they posed, as well as answering and reflecting on their own problem.

Inquiry Tasks

Throughout each module, I asked students to develop their own understanding of learning objectives using disciplinary evidence and skills. I strategically sequenced tasks to develop students' personalized understanding of targeted concepts and skills by incorporating reflection, problem-posing, and making relevant connections to their own lives and contexts. Some tasks allowed students to review classmates' analysis and respond, while some were private assignments, where students had the opportunity to resubmit after receiving feedback from their teacher.

Assessments

Students' mastery of learning objectives manifested in tasks where they applied strategic and extended thinking (Webb, 1999). Rather than objective tests, assessments were shorter projects where students applied disciplinary learning and skills to situations and contexts relevant to their lives and experiences, ideally exhibiting both critical thinking and critical consciousness. Learning throughout each module scaffolded and culminated in the assessment.

Integration and Evaluation

At the end of each module, students self-evaluated their learning and reflected on how what they learned is relevant to their or others' lives, experiences, culture, and perspective. I asked students to comment on how they

integrated new learning into their previous understanding, applied a habit of mind (Costa, 2001), or posed or reiterated questions about their learning. Students also reflected on how their learning enhanced their understanding of themselves or the world by responding to specific prompts. As the examples in Appendix A illustrate, these exercises encouraged them to:

- relate learning to their own lives, experiences, culture, and perspective;

- recognize the lives, experiences, culture, and perspective of others;

- contemplate real-world problems and current events;

- articulate how their lives, experiences, culture, and perspective shape their learning;

- examine their identity in relation to their culture and experiences, those of others, and their learning; and

- apply their learning to reflect on their place in society.

Each module in each course and discipline followed this same design of learning that prioritizes inquiry, rich interactions with peers and teachers, personal relevance, and reflection.

Participants and Setting

Archived reflection data from high school students taking one of several online courses I designed at a fully virtual public academy served as my primary data source, which made the students de facto participants in my study. However, teachers of those online courses served as more active participants by agreeing to participate and letting me interview them. Although the virtual academy is an elective program with some admission requirements, the student

population is academically, culturally, and socioeconomically diverse, and students attend for various reasons.

I initially envisioned students' having a more active role in my study, in a form of youth participatory action research (Herr & Anderson, 2015). I intended to empower them to review and consider their data, directly contribute to findings, and suggest other interventions or questions. However, when I sought to recruit participants, the invitations from an unknown instructional designer (i.e., not their teacher) during the first weeks of school were unsuccessful. To yield rich data from a diverse sample for increased transferability and validity (Merriam & Tisdell, 2016), I had hoped to recruit at least 12–15 students of various ages and personal and cultural contexts and with varying academic success and abilities related to critical thinking and critical consciousness. These students would have completed additional journal entries and participated in focus group interviews, giving me even greater insight into their experiences.

Adjustments are a natural part of action research, given the researcher's subjective engagement in the inquiry setting as a source of opportunity and challenge as compared to the detached, third-party nature of traditional research (Efron & Ravid, 2020). Therefore, I adapted my original plan and was fortunate to be able to rely on the student reflections already embedded in each module in the Integration and Evaluation task. I also changed from preparing for student focus group interviews to facilitating teacher focus group interviews, reasoning that teachers' perspectives on the students' development of critical thinking would enhance my own understanding.

Data Collection

As noted, my study focused primarily on qualitative data. Instead of using journals and interviews outside of students' regular classroom experience, I pivoted and relied primarily on the reflections students completed at the end of each course module. I triangulated the reflection data with teacher interviews and quantitative data from students' post-course surveys.

Student Reflections

The last task of every module, Integration and Evaluation, included reflection. Students reflected on their learning that unit, how they integrated it into their understandings, and their evaluation of their growth and experience. Each reflection included four or five prompts, some specific to the module, such as:

- What questions do you still have about American identity and the time period of the American Revolution? Explain.

- These last three units we've been writing and rewriting our own story. How did writing your story, revising it, adding to it, and annotating your own story help you as a writer?

As Appendix A shows, reflections also included recurring prompts asking students to apply habits of mind (Costa, 2001) to their learning, articulate what most surprised or challenged them, explain how the module had answered their questions, or provide examples of how their learning helped them better understand themselves or others.

To obtain reflection data aligned with my research aims, I sought random sets of reflections from different modules and courses. To ensure the data would

span the beginning, middle, and end of each course, I isolated at least three different units of study from each class. For each module reflection, I collected the first 20 reflections submitted for each task. To prepare the data for analysis, I removed students' names and compiled the text into a single document for ease of coding.

Interviews

Focus groups are more dynamic than individual interviews and provide an opportunity for participants to hear each other's responses and generate new, more insightful responses based on the group dynamic (Merriam & Tisdell, 2016). When I pivoted from my plan for student focus groups to teacher focus groups, I attempted to create interdisciplinary groups. However, teachers signed up in pairs with the other teacher in their same discipline.

Like the student reflections, teacher interviews were a natural data source, part of their expected post-course reflection and debriefing. To make the most of this opportunity to collect feedback on the courses I designed, I constructed a slate of 10 questions (Appendix B) to examine participants' experience facilitating the course and ask about the priorities of the institution, including critical thinking. In each group, I alternated who would answer a question first, gave each person a chance to respond, and then invited the other to add to their initial responses. Interviews took place virtually for ease of recording and transcribing and lasted between 40 and 60 minutes. Teachers were given the option of not using their interview responses in the study, using a pseudonym, or using their names. All

teachers elected to have their names used in the study and their responses attributed.

Student Surveys

My final source of data also reflects guidance for action research to be "a part of, rather than apart from . . . practice" (Dana, 2015, p. 167), providing another actionable set of data within the course design. All students complete pre and post surveys for the online academy. Using a Likert scale, students responded to questions on the importance of critical thinking for them in school and their future, their confidence in critical thinking, their understanding of critical consciousness, and their use of habits of mind or other metacognitive strategies (Appendix C). Survey results were anonymous but organized by course, allowing me to isolate the data from the courses represented in my other data sets.

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Data Analysis

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Data analysis began at the end of the semester, after the courses concluded and the focus group interviews with the teachers had taken place. Although I took notes during the interviews, I did not analyze the transcripts until I delved into the reflection data. I analyzed the first set of reflections across each course and open coded for successes and challenges with critical thinking and evidence of critical consciousness. Next, I created categories to begin to identify patterns or deeper meaning behind the data (Merriam & Tisdell, 2016).

For the next sets of reflections, I applied the categories developed from the first set. I coded each subsequent set of reflections for the preliminary categories, but also for data that fell outside the categories and challenged the

preliminary categories. This process of looking for disconfirming evidence mitigates researcher bias, addresses all relevant data, and includes all participants' perspectives (Creswell & Miller, 2000).

Turning to the interview data, I prepared for analysis by reviewing the recordings to verify the transcripts. By coding the transcripts in comparison to the existing categories, I used the interviews to put the other qualitative data in context (Efron & Ravid, 2020). Specifically, I examined teachers' responses to confirm or contradict evidence on critical thinking from student reflections.

I anticipated using the pre and post surveys to measure students' growth in critical thinking and critical consciousness, capturing quantitative data to complement the qualitative evidence. However, due to the instrument's anonymity, students were able to—and many did—submit the survey multiple times, rendering the data unreliable for pre and post comparison. Consequently, I chose to use data only from the post-intervention survey that measure students' self-reported understanding of critical thinking, its importance, and their use of habits of mind. In Chapter 4, this descriptive data adds more context to the qualitative data from student reflections.

Multiple strategies ensured internal validity. I triangulated data from various sources and of different types and engaged in systematic thematic analysis (Creswell & Miller, 2000). I coded and categorized participant reflections and interviews, and as Creswell and Miller advised, continually sought disconfirming evidence to ensure I looked beyond my own perspective and prior beliefs. Teachers had access to the coded reflections from their students as well

as the interview transcripts (i.e., my preliminary analysis). This process of member checking allowed them to review the data for errors, misinterpretation, and bias (Merriam & Tisdell, 2016). From Chapter 1 onward, I have transparently acknowledged my positionality, perspective, and influence on the study to establish reflexivity, and I believe the outcome is detailed and thorough, providing sufficient context for readers to connect. Such thick, rich description lends credibility to my primarily qualitative study, enabling readers to apply the findings to their own circumstances (Creswell & Miller, 2000).

Chapter Summary

This chapter demonstrates my effort to conduct a well-designed study to gain a better understanding of students' critical thinking and critical consciousness for the sake of improving my practice. Action research does not provide universal, generalizable rules for application to every class or student, nor does it uncover consistent and reliable truths. However, the findings in the next chapter may resonate with educators' own challenges to promote students' understanding of critical thinking and development of critical consciousness, ideally illuminating potential solutions.

CHAPTER 4

FINDINGS

In my role as an instructional designer, to design coursework that fosters

critical thinking skills across different disciplines and develops students' critical

consciousness, I need to understand how students experience critical thinking.

My problem of practice, students' underdeveloped critical thinking skills and lack

of awareness of their own critical thinking and critical consciousness, reflected

this need. Therefore, the purpose of this action research study was to improve

my teaching of critical thinking by evaluating students' experiences, challenges,

and growth in courses strategically designed to develop their critical thinking and

critical consciousness.

As Chapter 3 explained, student reflections completed at the end of each

instructional module became my primary set of data. I collected over 300

reflections from students in English I, English II, American History, and Civic

Literacy. Because I greatly overestimated students' willingness to volunteer,

during their first weeks of school, for interviews with an instructional designer

they do not know, I also interviewed their teachers at the end of the semester—in

other words, those who facilitated online courses I designed. Lastly, because I

encountered logistical challenges with the intended pre-intervention survey, the

post survey data helped me contextualize the reflection and interview data,

contributing to triangulation (Creswell & Miller, 2000).

Intervention

Because I sought to evaluate students' responses to online courses I deliberately and strategically designed to develop their critical thinking skills, the courses themselves constituted the intervention. Course objectives and design components included instruction tied to universal concepts, discipline-specific analysis and inquiry, and argumentation using disciplinary evidence and skills. These design principles were the same across the 5 courses in English and social studies. Table 4.1 displays the five courses from which I derived all data; survey results and reflections from a total of 196 students and interviews from the 5 teachers.

Table 4.1 *Courses and Participants*

Course	Subject	Grade(s)	Level(s)	Instructor	Students (n)
English I A	English	9	regular	Harper	41
English I B	English	9	honors	Hicks	34
English II	English	10	regular and honors	Kozak	19
Civic Literacy	social studies	9–10	regular and honors	Faust	80
American History	social studies	11	regular and honors	Harwood	22

Presentation of Findings

For each research question, different themes emerged from the complete set of data. Proceeding by question, I define and illustrate individual themes, primarily using evidence from student reflections. Consistent with the plan in Chapter 3, I also cite evidence from the teacher interviews and post surveys to confirm and contextualize the reflection data.

Research Question 1

My first research question centered on understanding how students experience instruction designed to develop their critical thinking skills. By design, the modules they completed included application of prior knowledge and their personal experience, problem-posing, disciplinary inquiry, and reflection on their own and other students' work. They had also interacted with their teacher and other students, and immediately prior to each reflection, submitted an assessment as demonstration of their skills and understanding. Looking across the entire set of reflections, I found that students demonstrated unexpected confidence and self-awareness of their learning and thinking and seemed very comfortable discussing their critical thinking and metacognition. Through this process, I identified three themes: (a) gaining confidence and self-awareness, (b) facing worthwhile challenges, and (c) applying habits of mind. As I elaborate on each theme, I pull from the other data sets.

Confidence and Self-Awareness

From my first reading of students' reflections, I was overwhelmed by the general confidence and ease with which students reflected on their learning and discussed complex disciplinary skills. Students cited disciplinary skills like literary analysis, source analysis, and narrative writing, along with metacognitive skills and reflection. Admittedly, not every student had mastered critical thinking. Many reflections demonstrated students had not developed the desired skills or found a deeper meaning in their work, which the teachers echoed in their interviews. Nevertheless, students' reflections included more examples than I anticipated of

discussing their learning, evaluating their strengths and areas for improvement, and talking about their own strategies or applying the habits of mind they had used to learn. The prompts in Appendix A clearly guided their responses, but I was surprised to see students' reflecting and discussing their own learning honestly and confidently. The action of reflection and the awareness of their own learning were impressive, and the survey data reinforced that they had become reflective learners through the experience of the intentionally designed instruction. As Figure 4.1 shows, almost 52% (n = 108) of respondents said they frequently or almost always reflect on their learning, thinking, or skills, with another 37% saying they sometimes reflect. Only 12% of respondents said they rarely or never reflect on their learning, thinking, or skills.
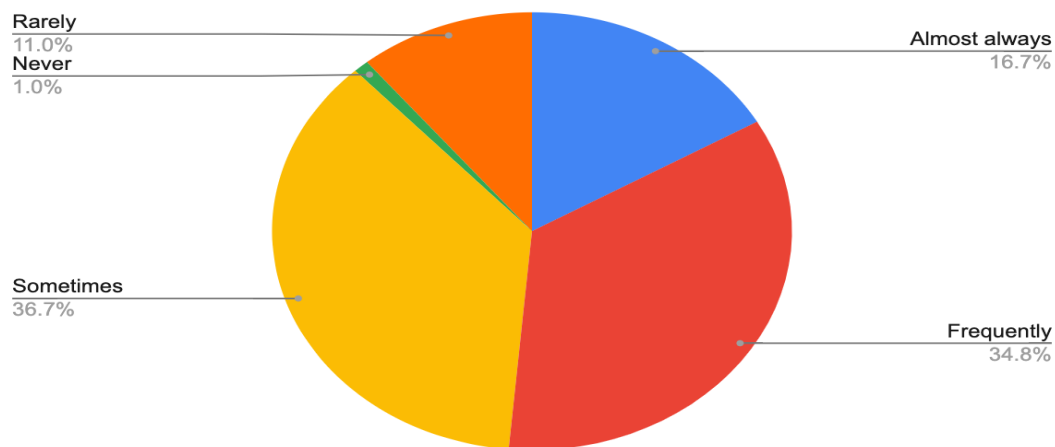

Figure 4.1 *How Often Students Reflect on Their Learning, Thinking, or Skills*

One of the biggest successes I saw in the reflections was students' going beyond the surface—beyond the assignments and specific tasks—to see a deeper meaning and purpose to their work. For example, a 10th-grade student in English II shared, "the work we read was more advanced than what I usually

read. This really helped me use my critical thinking and inferring skills to decipher what the literal meaning was under all the poetic language." The student supported the claim with specific examples, "Ballad of Birmingham" and "Mother to Son," in which "the authors used real events but expressed them from a personal perspective so which helps the reader empathize with the storyline." Students were able to see deeper meaning and purpose in works, looking past the surface meaning.

Another student identified deeper understanding in speeches, commenting specifically on identifying context to better understand a deeper meaning: "I always thought that all speeches were self-explanatory and easy to understand. But after this unit I realized that all speeches are not that way, and that we actually have to analyze and understand it through the context." That same student went on to say, "It was definitely really interesting to dwell deep into those topics and understand what the speeches were saying on a deeper level," which gave the student confidence in the form of "insight on how to make [their] writing more deep, and how to make [their] writing more powerful."

Students were also aware of how specific processes and steps helped develop their skills to think critically. A ninth-grade student who shared, "I normally don't understand poetry," explained how the steps or assignments in a poetry unit developed their understanding, owing to the "extremely good" design of the unit, in that "it was broken down into smaller pieces, which helped [the student's] comprehension a lot." Another student addressed process by explaining the benefits of "having laid out templates on how to analyze the

poems." Others identified specific steps, such as a student who described how "Writing . . ., revising it, adding to it, and annotating helped [them] by letting [them] explain it in different ways."

This awareness was especially evident in reflections on English classes, where I designed units to combine reading or analytical skills with student writing. Students used their reading to improve their writing. One student shared,

I was writing my narrative because throughout this unit we have read stories that other authors wrote about themselves and their lives, so I was able to compare and contrast those stories to my narrative in order to see what I could do better or need to fix.

Other students also made connections between what they read and their writing. One student noted about using a different genre, "reading and analyzing nonfiction helps me focus more on the reality while writing a narrative," while another used the persuasive strategies in their reading to improve their writing. Having "learned from analyzing nonfiction how power can be used in various ways," the student intentionally applied "strategies that speakers used throughout their speeches to . . . get better at persuading overall."

Students identified, and for the most part appreciated, the incorporation of practice and repetition, a strategy that contributed to their confidence. Especially in English class, students discussed the importance of being able to revise and resubmit their narrative or research papers. Several students commented on the accessibility of the resources in the online course and taking advantage of rereading the assignment, source, or work they were analyzing multiple times to

be successful. One student implemented their own strategy to analyze short stories, "taking [their] time to break apart the sections of the story in order to maximize [their] chances of fully grasping the topics." Another cited a similar approach with poetry: "I learned a lesson to actually read the poem multiple times to understand it." Likewise, a Civics student described rereading sources "when [they] didn't immediately understand a concept or had questions about it," explaining, "I knew that by continuing to engage with the material, I would eventually gain a better understanding."

Because of the independent nature of online learning, which afforded students flexibility regarding their pace for completing the work, students could take a greater degree of ownership of their learning. For example, a ninth-grade student confided, "I would sometimes take two days to complete one assignment just to make the assignment as best as possible… since we don't have a late grade this is better for me." Even students who did not like the repetition in the course design begrudgingly admitted it developed their skills. As one wrote, "There was constant repetition with articles and history overall which was kind of tedious . . . nevertheless, it definitely helped me become more aware."

Students were also aware of their ability to learn from their peers and take advantage of discussion posts where they could see their classmates' responses. An American History student reflected,

> In this unit we did a total of 5 discussions and in almost every discussion I have gone through and read the things that my peers have said and used that to help me think deeper and come up with more detailed answers.

Other students who commented about learning from others demonstrated self-evaluation and adjustment of their own learning. A Civics student shared, "Some of my classmates mentioned why they chose that answer also. So now I try to give an answer and different details about that answer." Another student explained how using classmates' responses fostered self-reflection and growth by surfacing "points [the student] may have missed that could have made [their] post stronger." The student realized, "We all miss things, so it's great when you find someone who made a good point on something you missed." A student even connected learning from others through discussion posts to the overall nature of history and the importance of seeing history as subjective: "Discussion posts allowed an insight to other people's thoughts and since History is largely debatable, their perspective can be different from mine."

The post survey data also attest to the students' confidence in their critical thinking because of their instructional experiences. When asked whether they agreed that the course developed their ability to read and think critically, 54% of respondents (n = 113) agreed or strongly agreed, with only 15% of respondents disagreeing or strongly disagreeing (Figure 4.2).

Strongly Disagree 5.7%
Disagree 9.5%
Strongly Agree 19.0%
Agree 34.8%
Undecided 31.0%
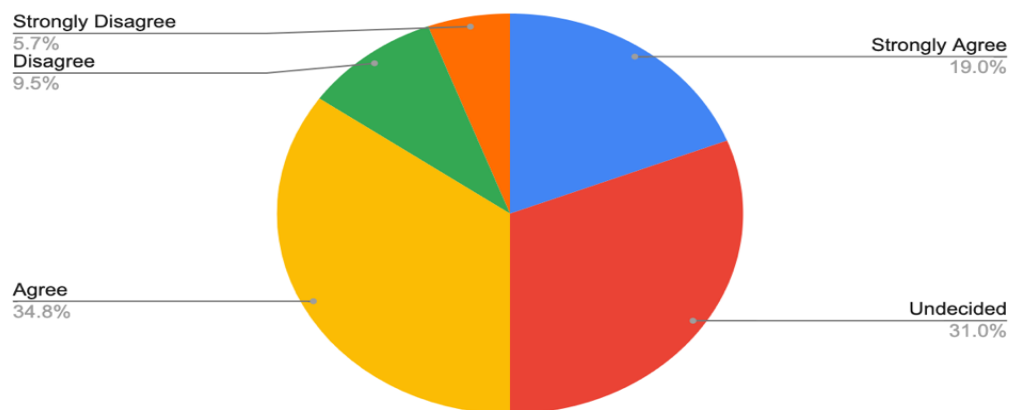
Figure 4.2 *Students' Ability to Read and Think Critically*

Students were even more confident with their ability to make an evidence-based argument. After experiencing the design of a course to develop their critical thinking skills, 44% of respondents indicated they were excellent and above average, with another 50% feeling they had average critical thinking skills. Only 5% of respondents believed they had poor or below average ability to make an evidence-based argument, demonstrating a great degree of self-confidence, whether or not they can actually demonstrate that ability (Figure 4.3).
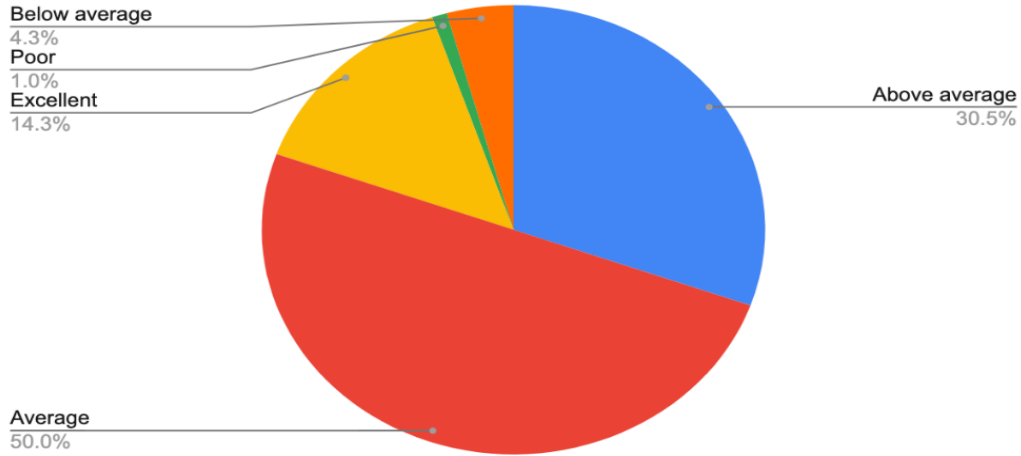
Figure 4.3 *Students' Evidence-Based Argumentation*

Interview data from the teachers interviews expanded my view of this finding. Hicks, the English I honors teacher, was equally impressed with students' ability to make evidence-based arguments. She estimated around 75% of students were able to do so successfully due to the honors level and online nature of the course, which granted students access to the digital content. Other teachers saw some powerful critical thinking but did not share students' confidence in their skills. Harper, another English teacher, mentioned impressive

growth in students' evidence-based arguments from the beginning of the class to the end: "They were lengthier, they were using quotations . . . I definitely saw a lot of improvement with a lot of my students." However, Kozak noted the challenge of teaching social studies students to support their arguments, using the metaphor of a courtroom to help them understand the need for evidence. Nevertheless, Harwood, the other social studies teacher, spoke to student success in completing the assignments, assessments, and reflections, which he attributed to the units' structural design: "Once they got through those first couple, the kids were on a roll because it's a pattern." Similarly, Faust, the Civics teacher, said, "A lot of [ninth graders] lack the ability" to engage in critical thinking while conceding, "If they were willing to go through the process . . . you slowly gain the skills, [and] every assignment asked them to do that." In sum, although teachers saw growth, they shared that most students struggled with critical thinking, suggesting students reflected on it more successfully than they demonstrated it.

Worthwhile Challenges

Across the complete data set, I found students had varying successes with thinking critically and faced many challenges. However, such challenges further demonstrated their awareness of the skills and a desire to seek more complex understandings or skills. Students often recognized a given challenge not as an insurmountable obstacle or a personal deficit, but as a skill or understanding they had not yet mastered.

In their reflections, some students reported struggling to find evidence to support their claims, while others grappled with the next argumentative step, such as a student who admitted, "I need more practice on explaining my claim better," or more simply, "I'm not good at connecting the evidence to the argument in my explanation." Although students recognized their underdeveloped skills, they were aware of the importance and various elements of evidence-based arguments. Echoing the prior section, a student discussed having to reread sources to find their meaning, "to try and think through various perspectives before [deciding] what the claim and its corresponding evidence would be," thus demonstrating self-awareness and metacognitive strategies. In history, students also referenced taking their time and rereading multiple times, specifically when discussing analyzing primary documents, due to their language and length.

One area where students faced considerable challenges was the task of applying or developing conceptual understanding within a topic. Students recognized a deeper meaning existed even when they could not find or apply it. As Faust, a social studies teacher, shared in her interview, "They could learn the facts, but then to apply them back to the concept . . . that was very difficult." Indeed, one student, articulating the difference between content and concepts, suggested, "It's easier to find things that happened but to find the message and principle is a lot harder."

This student struggled to analyze poetry and addressed that challenge by reading and rereading the poems. Further, the student saw the value in developing those skills outside of class to "improve how [they] perceive things . . .

and . . . how others feel about things." One student managed to connect the conceptual understanding about success and failure in English I to the stories they read, in which "the characters have always failed at least once," as well as to their own experience: "In order to succeed you got to fail at least once i have learned that because when submitting some of my assignments i have always failed at least once and had to re do them."

The teachers also talked about students' challenges with different aspects of critical thinking. Noting the ninth-grade students came in with few critical thinking skills, Faust commented, "I do think that the assignments forced them into learning how to do that. If they were willing to go through the process, they slowly gained skills in that. Every assignment asked them to do that." Hicks suggested the biggest challenge was that the course "made [students] put more work in—that they had to put more effort in." She observed, "a lot of those assignments took a little bit longer to get turned in." Hicks also mentioned that students who did put in the time and stayed on track in the course tended to see more value in critical thinking, while students who fell behind were more focused on catching up. She commented, "If they already valued their . . . what they were doing, the critical thinking really pushed them. They didn't . . . they weren't just playing catch up to get it done."

Harwood described students' challenges as the kind of productive struggle that yields questions:

It took time to think and time to go back over previous modules and sources and add it all together and figure it all up . . . that first complex

argument assignment was the one where I got the most questions like, 'Is

this good? What should I do?'

Harper concurred, "It just took practice. It took feedback. It took consistency, and

some of my students still didn't get it at the end." Harper did go on to say that

consistency in the design, the assignments, and the rubrics helped communicate

the value of critical thinking: "I think they knew that I valued it in my feedback.

'OK, if I want to do well on this, I'm going to have to show that I really understand

this at a different level.'" Kozak agreed that the repetitiveness helped, "even

though you were changing the genre you weren't changing the questions . . . and

once that feedback got in, it clicked." In sum, although students struggled at

times, they demonstrated an understanding of critical thinking skills, the value

thereof, and—maybe most impressively—metacognitive awareness of skills to

improve. Their teachers recognized these nuances, too.

Applying Habits of Mind

The prompts in Appendix A consistently invited students to identify and

explain which habit(s) of mind (Costa, 2001) they used in a given module or

applied to the discipline in general. All 16 habits appeared at some point in the

complete set of reflection data, but after I read through the first set of reflections

for each class, I noticed some habits occurring more frequently. To glean

additional insight, I counted the occurrence of each habit in all 338 reflections. As

Table 4.2 shows, persistence, applying past knowledge, thinking flexibly, and

striving for accuracy were the most common habits and thus warrant further

discussion. To understand more about those common habits, I re-coded earlier

data and added that lens when analyzing subsequent reflections. After reporting the outcome of this process, I also take the related interview data into account.

Table 4.2 *Applications of Habits of Mind in Student Reflections*

Habit	*n*
1. Persisting	52
2. Managing Impulsivity	24
3. Listening with Understanding and Empathy	19
4. Thinking Flexibly	48
5. Thinking about Thinking	20
6. Striving for Accuracy	35
7. Questioning and Posing Problems	12
8. Applying Past Knowledge to New Situations	48
9. Thinking and Communicating with Clarity & Precision	18
10. Gathering Data Through All Senses	15
11. Creating, Imagining, Innovating	16
12. Responding with Wonderment and Awe	1
13. Taking Responsible Risks	3
14. Finding Humor	5
15. Thinking Interdependently	11
16. Remaining Open to Continuous Learning	15

Persistence. According to students' reflections, the most common habit of mind was persistence (Table 4.2), and in most cases, applying it meant

completing their work and working through the assignments. Students also referenced their challenges with or how much they (dis)liked the subject, distractions, and falling behind. One student commented, "Sometimes I just couldn't focus and I just felt like giving up most of the time," but followed, "I pushed hard and tried to stay on top." One student specifically referenced how getting distracted is especially easy in an online class. Discussion of persistence also included honest responses about the challenges they faced, like a student who confessed, "There were definitely times that I just felt like I couldn't understand or do anything."

In the face of such challenges, students associated their persistence with specific strategies. Many were simple, such as "not quitting, finding motivation, and keeping a positive mental attitude." Another student declared, "I kept my eyes on the finish line." Other students indicated more creative strategies they employed, like focusing their attention on one task at a time. As one stated, "Every time I start an assignment I won't do anything else until I'm done with that assignment." Some students discussed prioritizing. For example, a student who "start[s] every morning with [their] English work" explained, "I like to knock it out first so then I don't have to worry about it later." Students also associated persistence with goal-setting: "I'm a little behind and I've worked hard to catch back up and stayed persistent getting a few assignment done each day."

Along with applying persistence to make their way through the assigned coursework, students also applied persistence when developing their critical thinking or disciplinary skills. A student who struggled with conceptual

understandings "knew that by continuing to engage with the material, [they] would eventually gain a better understanding and be able to apply what [they] had learned to real-world situations," but in this case persisted because of the value of developing that understanding. One student aptly assessed the mental lifting of analyzing: "It takes a lot of effort to stick to the task . . . causing me to try and think through various perspectives before I decide what the claim and its corresponding evidence would be." Despite this student's struggle with analysis and argumentation, the recognition that critical thinking requires patience and persistence is promising. As another student said of evidence-based reasoning, "it's not always easy to find credible information but you need to continue."

Applying Past Knowledge. Another common habit was applying past knowledge (Table 4.2). Students most often applied it in the sense of using content they learned in a prior unit or another class, which one student saw as beneficial: "Sometimes I would not have to search up questions relating to the topic since I already had background information." Applying content knowledge was more common in the social studies courses, where students reflected on applying previous history they had learned (e.g., early colonial history, slavery, or the Montgomery bus boycott). In the English courses, students reflected on applying skills like literary analysis or understanding diction, even going back to their eighth-grade lessons on the plot pyramid and analyzing perspective. One student applied past personal experiences by sharing, "I used how I won arguments with my parents or my friends and used the same strategies with my work." Another simply stated, "some of this stuff I learned by myself."

Students also sensed the habit of mind in the instructional design of their course. Noting how modules built on one another, they instinctively used skills and assignments from previous modules to complete the current module. Prior tasks also informed their work for the final assessment. As one student shared, "I applied knowledge from the previous unit to do the Module assessment."

Maybe the most noteworthy application of the habit of applying past knowledge was this vignette:

Election day was yesterday and my mom was watching tv to see who gets elected. I asked her questions about some things I didn't know about. But because of this module, I understood some of what was happening. I understand what the roles are and why they're important which is vital to know before voting.

The student's application of past knowledge manifested in using what they learned in class to understand world events.

Thinking Flexibly. Thinking flexibly occurred in student responses as frequently as applying past knowledge (Table 4.2). Students most often associated this habit with disciplinary skills, especially analyzing different literature or considering different perspectives on sources and readings. It also manifested in their writing. One student said, "I used the ability to think flexibly by understanding how to make an argument successful, and how to make an influence on your audience," and another shared, "I used thinking flexibly really well when finding more ways to portray my feelings in the story." One student reflected on the importance of "viewing everything in multiple perspectives to

enhance the reader's interest," thus demonstrating consideration of one's audience when writing.

Some students applied the habit to specific assignments and tasks in the module, as in the following reflection:

When we had to complete an assignment from this module and i had to look at it from a different perspective and also think how many answers there could be so i had to consider my options so i could find the answers.

Another student reflected on how some assignments required them to "take into account other classmates' thoughts and ideas," adding, "sometimes I agreed and sometimes not as much, but either way I took the ideas into consideration."

The most common iteration of this theme was students' using the habit of thinking flexibly to understand other perspectives. In English, students entertained "the different perspectives the author may have had making their story," attempting to understand the author's purpose. One student empathized with characters: "I tried to envision myself in there [*sic*] shoes or trying to figure out what they are experiencing or expressing." In another thoughtful reflection, a student described a broader view: "not just using how i think and feel about something and changing my perspective to how others feel about something."

In social studies, thinking flexibly to understand different perspectives took the form of students' putting themselves in the shoes of historical figures to better understand what they experienced and the legacy they left. Civics students applied the skill to societal interactions. One posited, "citizens have to learn to respect and put their self in other people's shoes that have different beliefs," and

another student noted, "people have to be able to agree and consider the thoughts and ideas of other people and the government."

Striving for Accuracy. At 35 instances, striving for accuracy was also relatively common in students' reflections (Table 4.2). Most students reported applying the habit in terms of completing their assignments not just well but even being perfect and scoring 100%. Many students talked about taking advantage of the opportunity to resubmit assignments for which they received low scores, fixing errors after receiving feedback, or being especially diligent before submitting to make sure they would not have to resubmit. As one wrote,

> Usually if I get an assignment I would just submit a small paragraph of what it's asking for. But after experience in my prior assignments, I know that won't get me good grades. This is why on all my assignments I try to do them with the absolute most of my ability, and I try to make it even better than it was by checking it over and over and changing lines.

Like this student, most students reflected on striving for accuracy in terms of grades and assignments, as opposed to critical thinking. Nevertheless, it was a driving force behind students' efforts, and there was strong evidence of students' pride in their work. One student shared, "I mainly doubled checked and read through my narrative several times to make sure that it was written to the best of my abilities. Double-checking made me have a better piece of writing without many mistakes." Another talked specifically about taking pride in their writing, noting, "I applied the habit of mind by trying to strive for accuracy specially in my personal narrative. I love writing so I took extra pride in writing my narrative

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because I wanted it to be perfect." Some students did find a deeper meaning in their work, such as one who asserted, "I wanted to properly get my message across in my story," but that attitude was rare.

The one place students did apply striving for accuracy to critical thinking skills was with argument and analysis. One claimed, "in this civics course when you use historical evidence, you don't want to be historically inaccurate because if you are your explanation is automatically wrong." Another student applied it more simply to all their answers, sharing, "I have also tried to make sure that all of my answers that I gave could be backed up with evidence."

Overall, students had no problem applying different habits of mind to their assignments, their learning, disciplinary skills, and their progress throughout the class. When their coursework required critical thinking and applying metacognitive skills—and specifically asked them to reflect on those skills, they cited almost every habit of mind at some point. Harwood captured this phenomenon in his interview, saying, "I don't know how much they thought about it in real time, but I mean . . . they had to think about it on the evaluations every module, so . . .," trailing off to imply the link between the task and students' thinking. Faust also pointed to my instructional design: "You gave them the habits of mind that they kept referring back to. Just having some sort of jumping-off point was helpful for the ninth graders, just to add some structure."

Thus, the challenges students faced with different thinking skills were also evidence of their metacognition. Students demonstrated their awareness of their own learning and thinking, and many voiced a desire to improve those skills.

Supporting students' assessments of their experiences, the teachers I interviewed also articulated that the design of the learning helped students reflect on their learning and apply specific habits of mind.

Research Question 2

My second research question focused on assessing the impact of my instructional design on students' critical consciousness. Again, I read through the first set of reflections from each course, using the critical consciousness lens of my framework (Freire, 2000). This process resulted in four codes I used to analyze the reflections: (a) students' seeing themselves in their learning, (b) empathy, (c) questioning and criticality, and (d) agency and action. I found the richest evidence for the first three codes, with direct connections to instructional design components. In each of those instances, three ingredients were always present: universal concepts embedded in the learning, course content, and disciplinary skills (Table 4.3). For this research question, I present my analysis around those three key ingredients and how they each align with students' development of different elements of critical consciousness. Then, I address the less salient code, agency, and action.

Table 4.3 *Frequency of Critical Consciousness Ingredients in Student Reflections*

Code	Instructional design component		
	Concepts	Content	Skills
Seeing themselves	33	12	16
Empathy	10	35	11
Questioning and criticality	20	37	13

Concepts

As Figure 4.4 indicates, each curriculum included at least four relevant, universal concepts to help students connect to their learning and develop deeper, complex, and transferable meaning (Erickson, 2007). Such concepts enabled students to apply content and skills to themselves, others, or their world. Throughout the reflection data, these concepts played an especially important role in students' seeing themselves in their learning (Table 4.3). I also found ample evidence of students' questioning and challenging different ideas, whereas students' references to building empathy were least likely to refer to concepts.

English I	English II	American History	Civic Literacy
choice and consequences	personal identity	identity	identity
success and failure	community	unity and ideals	power
power	culture	expansion	justice and equality
identity and change	power	power and equality	citizenship

Figure 4.4 *Course Concepts*

Students were very explicit and offered rich explanations about how they were able to see themselves in their learning through the concepts. An English I student said of success and failure, "You can't succeed without failing a few times and learning how to persevere and have a new perspective and I can do this in my own life." Similarly, choices and consequences helped a student see "how [their] actions can affect those around [them]." An English II student's study

of community sparked awareness of the advantages of their friendships at school: "It made me realize how lucky I am to have groups of people who I can count on when I'm in a time of need." Exploring identity was especially powerful, as one student shared, "I was able to look in myself and figure out what situations have impacted me and made me into who I am."

The survey data echoed this trend in the reflections: 33% of respondents (*n* = 70) indicated they were able to relate the learning to themselves always or very often, and another 44% indicated they were sometimes able to see themselves in the course (Figure 4.5).
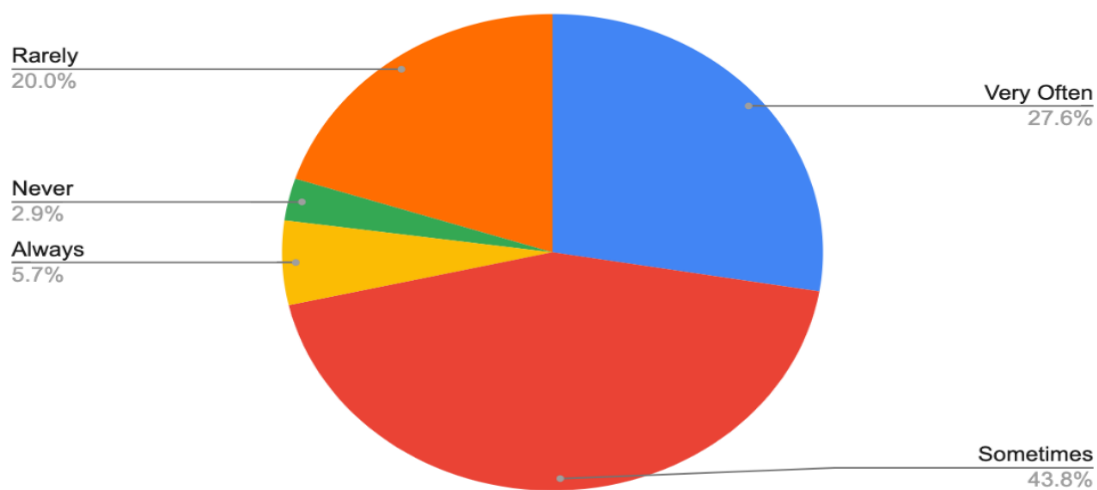
Figure 4.5 *Students' Relating to Their Learning*

While most examples of students' seeing themselves through the concepts they were learning emerged from the English classes, the social studies courses provided more evidence of students' building empathy through the concepts. Specifically, social studies reflections showed students' using the concepts to understand and empathize with other people. As an example of how multiple students reflected on the experiences of others when analyzing equality,

one student wrote, "The most important thing I learned about justice and equality in this unit was the hardships that minorities had to go through to get equal rights, which gave the student "a whole new outlook on the hardships that they had to go through in the past to get where they are today." Another student shared a similar sentiment: "My understanding of American identity changed from me thinking about just one group of people's point-of-view to me now thinking about all different types of people's perspectives on equality."

Concepts like culture, choices, and consequences were also common across students' responses, reflecting their efforts to understand others. One student demonstrated a deep understanding of culture when they reflected, "It helped me by showing me that what people do in their day to day lives can be a deeper part of their culture." When another student wrote a narrative on choice and consequence, they saw the broader impact of their choices, explaining, "I noticed that the choices I made and the consequences presented were all affecting my parents and my sister too, not only just me."

In my discussions with the teachers, Hicks referenced how much of the personal application was surface-level unless students felt strongly enough about the topic to provide more specific details and depth. Harper specifically cited the consequences module as effectively designed to reinforce that concept in a way that helped students relate to their learning. She shared, "Module 1 talks about those intended and unintended consequences, and they carried that through starting with the chart and then going into their module assessments, those short stories that they had to write." That progression allowed her to build students'

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confidence. She explained, "In my feedback, I could say, 'Don't forget, we've already been doing this. This isn't something new.'"

As for evidence of students' questioning and criticality, specific concepts, especially power, were salient in the reflections. One student wrote, "Analyzing power from past presidents . . . helped me figure out how to understand my world today and its current events." Another observed, "No matter what you are talking about power will play some role in it." At times, students applied that criticality to specific issues. For example, an article that "talked about how girls are not likely to partake in engineering or computer science careers because of societal standards" prompted a student's reflection on gender: "I learned that power exists in stereotypes of a specific group of humans."

In social studies, a student pronounced, "I learned . . . that equality is harder to fix than to ensure justice." Another suggested, "Many of our current problems in society have been occurring for many years now and has to be solved. This unit showed me that power can be used in many different ways." One student connected justice and equality to another concept, intersectionality, asserting, "justice and equality cannot be achieved solely by addressing one form of oppression."

Beyond power, students also posed questions and demonstrated criticality by drawing upon the concepts of justice and equality, identity, ideals, and unity. One student's extensive response, worth quoting at length, thoroughly demonstrates how their understanding of the relevance of the related concepts of justice and equality is still developing:

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The most important thing I learned about . . . justice and equality in this

unit is the fight continues today. Justice and equality are complicated.

Justice is a complicated idea because it has different meanings to different

people. Justice is being on the right side, being just and being fair. It can

include law, religion, diversity, individual rights or equity. Justice lies in the

eye of the beholder. Equality is a complicated idea because it has different

meanings to different groups. Equality is the idea of giving all equal

opportunities to live a good and productive life. Equality is about living

your best life. Unfortunately, this is not the case for all.

This student may not have mastered conceptual understanding yet was able to

appreciate the complexity of different concepts.

Interview data confirmed this trend. For example, the social studies

teachers both commented about students' challenge with some of the abstract

concepts, specifically mentioning justice. One teacher noted how students

sometimes could not differentiate between content and concepts in their analysis.

Despite students' struggle to understand concepts and to apply content or skills

to specific concepts, in the reflections, they had no problem using the concepts to

connect their learning to their own lives and the world around them.

Content

The disciplinary content of each course was also a key ingredient in

developing students' critical consciousness. Unlike the broader concepts in the

prior section, content seemed less important for students' seeing themselves in

the learning. However, among student reflections that mentioned or exhibited

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empathy as well as questioning and criticality, course content was the most salient factor (Table 4.3).

I expected students to reflect on seeing themselves in the content, so the relative lack of evidence surprised me. The few exceptions appeared in students' analysis of speeches that helped them better understand their world or in their personal identification with stories they read in English. Human experiences featured in short stories, nonfiction, and poetry were especially resonant. One student connected a character who "had the courage to stand up for himself" to an assignment: "My narrative talks about how I got rid of my toxic friend because I had the courage to lose her." Another student applied choices in a story to their own choices, reflecting, "Reading that story made me think more about how the choices I make affect others." Another student described the impact of studying poems: "All of this inspires me to become the best version of myself and keep on being resilient no matter what the obstacle."

Offering confirming evidence of this theme, the English teachers echoed these sentiments in their interviews by commenting on students' personal connections to an event or passage as a means of understanding and engaging with the learning. Kozak asserted, "You can relate to a passage, no matter how old it is, no matter what it's referencing to, whether you're a reader or you're not a reader," and went on to mention students' ability to relate to some of the themes of the poetry. Harper added that the reflections helped with making those connections and especially reinforced the value of asking the right questions. When an assignment asked students to put themselves in another's position and

take a different perspective, their answers were powerful. Harper explained, "Some of the responses I got on that were just, like, brilliant. I mean . . . it was almost hard to take off points from those because they were so good." Harper added that those powerful responses come from strong prompts; "I think when we come up with really strong, really wonderful questions like that, . . . it makes it interesting for them."

In social studies, Faust credited certain assignments for allowing students to share their own experiences: "The assignments gave them freedom to talk about different issues, and the issues that they could choose from a lot of times were very personal to them." She mentioned the justice system and individual rights as examples that resonated "if someone had someone that had been arrested." Summing up, Faust explained, "It was easier in Civics for them to see themselves through those issues that they care about . . . most of them could do a pretty good job on those questions." However, the important elements of those assignments, "applying it to themselves, . . . an issue they cared about, or had knowledge about," also appear in assignments in other courses and often led to the same strong student responses and engagement.

Content appeared to be very powerful in helping students develop empathy, given the frequency of codes (Table 4.3). Poems and short stories were especially instrumental in illuminating the experiences of others in English class. Throughout the reflections, students expressed their discomfort with poetry, yet students also recognized poetry's capacity to help them feel the experiences of others. As perhaps the best example, one student wrote,

Poetry taught me about different experiences by connecting me to the

person I was reading about. It tied a string between us and through the

description, I was able to feel that character and everything they were

going through. Reading is all about perspectives so reading something

that might go against previous assumptions can do nothing but expand

your way of thinking. When you can't relate to anything a character is

going through to your own life, a good writer will instead put you into the

character's life and feel it from themselves.

This student did not cite a specific poem, but nevertheless demonstrated how

analysis helps them empathize. Other students were more explicit. One

mentioned "Mother to Son" by Langston Hughes as a means "to learn and read

about someone who was very different from [the student] and what their

struggles were." Referencing the same work, another student shared, "The poem

shows me how lots of people across the world had to live a hard life, and it helps

me to try to put myself in their shoes and see the world in their eyes."

Empathy was common in discussions of poetry and fiction. One student

shared, "I took advantages of the perspectives that were used in the stories such

as first person. It also increased my skills with empathy because of the way the

stories were described in such emotional ways." However, students also tied

empathy to nonfiction, which one student argued "creates deeper connections

between the reader and the author." The student elaborated,

The fact that what you read is something true that really happened can be

inspiring for a lot of people and it can bring awareness to very serious and

real issues that circulate in our world. It can make people feel less alone to

know somebody else has experienced something similar to what they

have and now, because of the story they wrote they can connect with

even more people who share the same similarities.

As this reflection illustrates, students also associated or even conflated empathy

with understanding their world.

In social studies, echoing students' remarks on the use of nonfiction in

English, students also cited the importance of primary documents for developing

empathy. As one student expressed, "reading primary documents helped me

better understand American identity because it was coming from an actual

person and their reasoning." Another credited primary sources for providing "a

direct view into how the Americans viewed people's rights and how they were

going to form their new government."

Students most often discussed learning about the experiences of different

groups, especially the challenges they faced, as catalysts for developing

empathy. Valuing primary sources, students were able to build empathy when

they had access to those accounts. One student explained, "Analyzing

documents that were primarily focused on the viewpoints and beliefs of minority

groups during [a particular] time period has also helped me recognize the lives

and experiences of others." Moving from empathy to criticality, that same student

continued, "Empathy and understanding came through information I gained about

natives, slaves, and women over this time in America. It made me come to

conclusion such as hypocrisy within the ideal freedom of Americans." Another

student questioned previous narratives they heard in school, specifically "information [they] feel got heavily left out . . . about the Revolution." Hearing all accounts, or in the student's words, "with the information now being a little less censored," the student felt "such empathy for those Native Americans as the land we gained is just stolen and we had to dehumanize other races of people in the process to gain such freedoms." Echoing this demonstration of empathy and criticality, other reflections readily displayed criticality in relation to content.

Likewise, teachers observed students' critical stances toward research topics and works of nonfiction, specifically about marginalized communities. Kozak discussed how a student selected a research topic "about Native Americans and their struggles," adding, "There was obviously discussion about, like, oppression and racism." She also mentioned students' interest in new and evolving technology, both how it influenced their own lives and especially influential figures like Elon Musk. They talked about "how negative technology has impacted us and it's scary with the influences that it's going to continue to have in the world."

As compared to finding evidence of criticality and questioning in relation to concepts or disciplinary skills, there was ample evidence of students' approaching topics with criticality and posing critical questions in their discussions of specific content (Table 4.3). Moreover, I saw more of the evidence coming from students' social studies classes in Civics and American History. Even in the English classes, students' questions often surrounded topics and ideas of historical consequence. One student recognized, "it is important to ask

questions and stay curious about any subject," while conceding, "in history it is fun because sometimes things are just simply a mystery." Beyond the interest in understanding the mystery, students questioned people's treatment and stories that challenged the historical narratives of freedom, justice, and equality.

The treatment of Native Americans, African Americans, and women throughout the history of United States prompted several students' questions. Regarding the Declaration of Independence, a student wrote, "If it was really all men why not slaves or the Natives? Shouldn't they have the same rights? Just seems to me like slaves and Natives were probably seen as less than human at the time." Another student simply asked, "why even after all these years of civil rights movements their [*sic*] are still extreme racists that do not care to even acknowledge that other races are equal to them, seeing them as lesser or nothing." A similar reflection referenced a specific primary source:

> We read a speech from Frederick Douglass and . . . he basically talked about the hypocrisy of America when it comes to ideals such as liberty and equality and got me thinking about how at this time Americans were hypocrites they were talking about how people deserved to be free and to be treated equally yet that had slaves they treated as less than.

One student extended this race-centered critique to social class and the economic system: "We are slaving away to capitalism. And although our pain isn't physical like it was for slaves, it is mental pain. We're stressed, overworking ourselves, every day to try and live." Such responses demonstrated a willingness

to question, especially when presented with primary sources that challenged previous narratives.

Some students looked at specific topics with a critical eye. For example, a Herbert Hoover speech prompted a student to reflect, "Expecting poor people during this time to just be able to fix the problem pretty much all themselves was just unrealistic." Another student saw progress in the treatment of Black people; "with the 13th, 14th, and 15th amendment," as opposed to "be[ing] viewed as 3/5th of a person in the constitution," while critiquing "the continuation of colonizing and destroying other people's land and claiming it as their own," manifest in "the Annexation of Texas."

Students also used content to ask questions about their world today. Reflecting on speeches from the 20th century, an English student remarked, "president Bush's speech about peace for islam and all of the muslims people of the world ended up not changing much of how people view muslims because of how much predjudice there still is against muslims." A Civics student questioned current issues when studying justice and law enforcement: "The justice system can minimize the number of innocent lives lost at the hands of law enforcement and police by hiring well-qualified and professional offices, providing advanced training and education and enforcing and ensuring correct policing." Across subject areas, providing relevant content and resources enabled students to ask critical questions.

Expanding my perspective on this theme, teachers mentioned that students had no problem being critical toward relevant topics, including political

issues and even local issues like a rash of bomb threats that impacted their school. Hicks noted students were better at discussing relevant issues and topics in their lives than even their own personal experiences. As far as students' capacity to pose their own questions, teachers' assessments were mixed. The course design invites students to post and later reflect on or answer their own questions. Hicks described many of their questions as surface-level, even in an honors class where students were demonstrating high levels of critical thinking in other respects.

Similarly, Faust and Harwood commented how students asked the best questions about topics and content of interest. Faust commented, "like with anything, the material they were interested in" yielded the best results. For example, "Some of them asked really good questions about the criminal justice system." Harwood found U.S. history students tended to have better questions about topics aligned with their background knowledge and familiarity. He also stated the tasks that asked them to pose their own questions "were low-stakes assignments" and thus more accessible to students. He explained, "There's not really any right or wrong. Just ask a question. Try to answer if you can or not." Harper agreed, "I love that one. It was a quick, three-point assignment," yet she observed it caused students to think about the topic in a different way. She demonstrated, "'What am I going to ask about informal writing?' and then they would come up with something. Even when they were simplistic, I knew the students were starting to think about it."

The survey data also indicated that overall, students were able to relate their learning to real-world problems and events. As Figure 4.6 shows, 61% of respondents (*n* = 129) agreed with the statement, "I was able to better understand real world problems and current events from the learning in this course." The coded reflection data suggest this result is largely attributable to the intentional incorporation of relevant course content (Table 4.3).
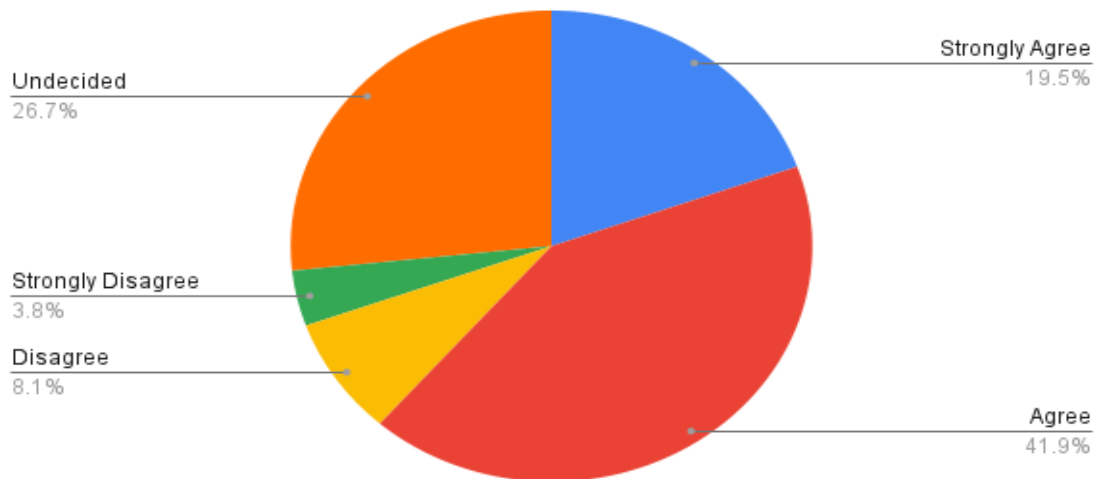
Figure 4.6 *Students' Understanding of Real-World Problems and Current Events*

Disciplinary Skills

When identifying disciplinary skills within student reflections, I looked for specific critical thinking skills that are integral to the discipline, part of the curriculum and the course, but not all disciplinary skills. For instance, in both social studies and English, I focused more on the skills of analysis, evidence-based argumentation, and assessment of sources or rhetorical situations, as opposed to disciplinary skills that are not critical thinking skills like citing an author, writing an introduction, or grammar and presentation skills. Filtering the reflections in this manner, I found that references to disciplinary skills coincided

most often with students' seeing themselves in their course (Table 4.3), especially for writing. Students often discussed such skills together with conceptual understandings or content, reflecting the integration of the instructional design components.

From the English classes, I saw ample evidence of students' discussing how writing their own narratives not only allowed them to see themselves in the learning but offered powerful opportunities to reflect. One student connected the concept of choices, sharing, "Before when I used to make choices i would take a long time because I didnt know what I wanted. But after we had to write out narritives it made me realize that I didnt know myself." Another student demonstrated personal introspection just from the process of writing: "when I was writing . . . I was rethinking my actions from a few months ago and it made me realize things I have done wrong in my past. And I've made changes in my life because of it." Similarly, the following reflection suggests the student appreciated how the course uncovered new self-awareness:

This unit helped me to better understand my own life by making me realize what has truly shaped my identity. Initially, I never thought about just how much music has impacted my life, but after doing assignments from this unit, I started to realize how much music has helped me. In addition to figuring out parts of my identity, I was able to be open and honest with myself about how past experiences influenced the person I am today.

Both English I and English II started with students' writing their own narratives, and that work yielded very rich and appreciative reflections.

My analysis of the teachers' perspectives deepened my understanding of this link between the instructional approach and students' use of disciplinary skills. In her interview, Hicks emphasized how narrative writing and the course design encourage students to reflect on their work, revise, and improve their submission. Harper also commented how often students demonstrated personal connections in the reflection at the end of the module. Likewise, Kozak shared that making personal connections was one of the most successful things students did:

> A lot of them came out and said, 'I was able to make these connections personally. I could connect what . . . an event that a character was going through in a passage to something within my own life,' so those personal connections were definitely made.

Referencing Pat Morita's character in *The Karate Kid*, she added that sometimes students did not even recognize their thinking: "It was like a Miyagi thing. 'You guys don't realize you're analyzing but you are analyzing.'"

As for how questioning and criticality relate to disciplinary skills, I found a moderate amount of evidence during the coding process (Table 4.3). In these instances, some students referenced English and social studies in general. For example, a Civics student commented, "Civics and Citizenship constantly require people to think critically and be opened minded [*sic*] to make changes in the community. An intelligent person is always learning." Similarly, an English student said, "Look everywhere to find what you're looking for. Never stop searching and make sure you read the information carefully."

While the narrative writing in English led to students' seeing themselves in their course, informational and argumentative writing along with analyzing nonfiction seemed more likely to help students develop criticality. One student summed up the importance of nonfiction analysis by saying, "It is important to analyze nonfiction because of how our whole world is nonfiction and you have to understand it to live a good and healthy life." Although students often talked about finding deeper meaning in fiction and poetry, one student had a different take: "nonfiction has secrets that you have to uncover and read between the lines, unlike poetry and fiction." They went on to say, "The most important thing I learned this unit is things aren't as they seem." One student put it simply: "I learned that everything you read isn't always true and this helped me become a better writer because I know not to believe everything I read."

Disciplinary skills also contributed to building empathy, as evident in the frequency of codes (Table 4.3). Specifically, I noticed students' reflections on analyzing the experiences and perspectives of different groups in social studies, and especially analyzing fictional characters in English class. Multiple students connected the idea of civics and citizenship to empathy, as when a student wrote, "Empathy is important because it allows individuals to consider the perspectives and experiences of others when making decisions or engaging in civic actions." Although none of the codes corresponding with disciplinary skills yielded frequencies on par with those of the other instructional design components, such skills clearly played a role in students' critical thinking and

awareness thereof. However, coding the reflections for evidence of agency and action resulted in scant evidence of any of the components.

Agency and Action

The final and crucial stage of critical consciousness is taking action (Freire, 2000). Truthfully, I did not expect to see evidence of students' taking action as a result of their learning. In my experience, students expect learning to live in their classrooms and notebooks, especially for academic courses like English and social studies. Although I designed the courses to evoke and develop critical thinking, I did not attempt to move students to action. Consequently, instead of analyzing their reflections for evidence of taking action, I sought evidence of students' being ready or willing to act, but even that was difficult to find. Although students provided some evidence of inspiration, I did not see the same recurring ingredients of conceptual understanding, content, and disciplinary skills when looking for agency and action, unlike with the other three codes (Table 4.3).

When examining students' reflections in search of agency and action, I had a difficult time identifying clear evidence. In a module centered on community, one student wrote, "I can apply this in the real world and my community by using the results from choices the characters make to reconsider mine and try to use the writers' perspectives to consider other perspectives in the world." This reflection falls short of critical consciousness because the student did not even suggest how they would actively apply that learning. Another student's statement looked like better evidence: "I can put my learning in action

by paying more attention to the political things around me and educate others."
Although vague, the student at least suggested a specific application. A different student offered pretty clear evidence:

> I learned about reading that power is something that a lot of the time is unintentionally influencing things. I learned that power is something that is given and taken away by the people around them and nobody is completely powerless. I learned that in my writing I can give my own voice power to persuade others.

Despite the promise in these examples, all were latent or hypothetical. Even in interviews with teachers, I struggled to frame the question. Asking whether students' learning in the course had led them to take action for themselves or others seemed too idealist and unrealistic. When I tried asking about students' moving beyond just the academic understanding and applying their learning outside of the course, Faust responded that students had developed the criticality through the concepts, a "first step" to action. She viewed opening students' eyes to the content as important, noting, "A lot of them were writing in their reflections about 'I didn't know that not everything was equal for everybody' and 'I didn't know that it took this long.'" Harwood echoed this laying of the groundwork and how students saw and appreciated the content, but cautioned, "It's either going to really upset you and it's going to, you know, push you to action or not." Hicks suggested the most important ingredient for students' taking action was finding that connection with the learning.

Although I did not see much evidence of students' agency, I did see evidence of their being inspired to act—a possible indicator of future action. Predictably, many examples came from the Civics class, yet English students also suggested they were inspired to act. Reading essays from other teenagers made one student aware of an author's "strong, persuasive words and solid evidence to convey her point," which the student tied to the realization "that power can have such a huge impact on people. Even if the action is small, the impact can be immense." Another student suggested empowerment and agency by claiming, "My opinion can be heard and . . . I'm not just an ant that the government looks down on." Some students were clearly motivated by learning about oppression and inequality. One declared, "The fight for justice and equality for some groups never stop. It's gut-wrenching some of the things people faced in the land of the free. Fight on!" Although rousing, the statement does not suggest what—if any—action the student will take. In contrast, one student was very specific, crediting a unit for inspiring them to be "a more informed and more active citizen by volunteering, supporting local organizations, joining a protest, attending a rally, educating [them]self, spreading the word, listening more and embracing diversity and change."

Like critical thinking, developing critical consciousness in students requires strategic instructional design. When courses interwove relevant concepts, disciplinary skills, and rich disciplinary content, the various factors of critical consciousness flourished. Students saw themselves in their learning,

demonstrated empathy, were willing to question, and began developing the agency to take action.

Summary

Drawing primarily on student reflection data, this action research study demonstrated students' confidence toward critical thinking when it is an integral part of course design and how they readily reflect on it when asked. Students demonstrated this confidence in their surveys and in the reflections they did, where they were also able to reflect on their own thinking and growth, demonstrating metacognition. As my findings show, although students face challenges with critical thinking, they often recognize those challenges as opportunities to grow and demonstrate a willingness to continue developing their skills. Although teachers' perspective on students growth complicated the picture of students' confidence, they too saw positive gains, albeit with more recognition of students' struggles. The evidence also pointed to students' critical consciousness as connected to conceptual understandings, course content, and disciplinary skills. In the next chapter I reflect on what this evidence suggests for my practice and how others might gain insight into course design and students' learning from my study.

CHAPTER 5

IMPLICATIONS

Teaching students to think critically is one of the most important goals of education. Understanding how to teach critical thinking requires understanding students' experiences with instruction. My study applied a course design with strategic use of disciplinary inquiry and reflection to develop students' critical thinking skills and spark critical consciousness. The purpose of the study was to improve my ability to design such courses through better understanding how students experienced the instruction. This chapter concludes my study by discussing the findings in relation to existing literature, identifying recommendations for practice, and articulating how I will implement those recommendations. I also reflect on my research design and process along with offering recommendations for further research.

Reflection on Existing Literature

Developing students' critical thinking skills requires deliberate and strategic learning design (Heijltjes et al., 2014; McLaughlin & McGill, 2017; Miri et al., 2007; Nilson, 2021; van Gelder, 2005). My findings reflected this principle. Student reflection and teacher interview data attributed students' successful development of critical thinking skills to instructional tasks: how they scaffolded more complex assignments and thinking, how they were sequenced, and how the skills were reinforced over and over again through the modules.

A second tenet of teaching critical thinking skills established in previous research is the need to ground instruction in the context of a discipline (Bermudez, 2015; McLaughlin & McGill, 2017; Paul, 2005; Willingham, 2009). As my data show, critical thinking and critical consciousness existed when disciplinary critical thinking skills, disciplinary content, and conceptual understandings came together (Table 4.3). This outcome was especially evident in the English courses when students applied those disciplinary skills to their own writing, when the skills became authentic, and students wrote their own story or did their own research on personally relevant topics.

Like critical thinking skills, metacognitive skills like the habits of mind and reflection require explicit instruction and practice (Halpern, 1998). In my study, I saw how successful students were at reflecting on their learning and witnessed their ability to apply different habits of mind to their own learning (Table 4.2). The course design intentionally promoted reflection and metacognitive techniques, regularly inviting students to apply the learning to themselves, reflect on different parts of their experience, and specifically apply the habits of mind as each module ended. In the interviews, teachers commented on the reflections and the practice of giving students the habits of mind to reference each time as instrumental in developing their skills.

Beyond teaching critical thinking, questioning, and criticality, developing critical consciousness requires providing students with rich disciplinary resources to apply those skills and introducing them to new perspectives and information that challenge what they already know (El-Amin et al., 2017). Compelling

concepts like equality can spark critical thinking about the past and present. Students clearly demonstrated how engaging relevant concepts can be in their reflections, both in social studies and English. Whether engaging with primary sources and nonfiction accounts or fictional stories and poems, students commented on their new understanding and demonstrated growth in criticality when learning of experiences and oppression they had not heard before. Considering concepts like equality and justice also resulted in especially critically conscious reflections from students.

Recommendations for Practice

Given the connections between my findings and existing scholarship, my study reinforces the importance of designing instruction with the stated purpose of developing students' critical thinking. This aim requires careful design and sequencing of instruction toward explicit goals of critical thinking and developing students' deeper understanding and ability to transfer their learning. Instruction should also include regular opportunities for students to reflect on their own thinking and apply metacognitive strategies.

Responses from students and teachers emphasized how challenging developing critical thinking skills can be, underscoring the need for explicit instruction and scaffolding. To the students, assignments' steps and repetitiveness helped them find deeper meaning in the content, and teachers also emphasized the consistency and practice as key to students' development. For students to demonstrate strategic and extended thinking (Webb, 1999) in

their performance tasks or unit projects, those skills and understandings require strategic and careful development throughout the module.

To develop critical consciousness, instructional designers and teachers should develop instruction around the critical trifecta: relevant concepts, disciplinary skills, and engaging content. Instruction should combine relevant conceptual understandings that help students connect personally with the learning with appropriate disciplinary critical thinking skills and rich disciplinary content that challenges students' prior understandings. Conceptual understandings not only foster personal connections, but also guide deeper understanding of content. Critically applying concepts like equality, justice, power, and citizenship is especially effective in developing students' criticality. By applying disciplinary critical thinking skills, students can grow in that academic discipline and as thinkers. Using discipline-specific skills, like historical thinking in social studies or literary analysis in English, along with posing questions and evidence-based arguments that apply to any discipline, students can connect conceptual understandings to disciplinary content. That disciplinary content is especially integral in engaging students, eliciting questions and criticality, and building empathy. As my study illustrates, these three elements help students see themselves in their learning, develop empathy for others, ask questions, and develop agency to act.

Practitioners should include regular opportunities for students to reflect on their learning and support students by providing prompts and metacognitive skills to apply in their reflections. Student responses demonstrated that when given the

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opportunity, students can apply metacognitive thinking to their learning and reflect confidently and honestly about their successes and challenges. To achieve this aim, students need not only the space and opportunity, but also prompts that connect the tasks they completed to their experiences. Along those lines, my study also demonstrated the value of providing students a consistent metacognitive lens. Asking students to apply the habits of mind (Costa, 2001) to their learning multiple times throughout the course enabled them to demonstrate those metacognitive skills in the reflections.

Implementation Plan

The most significant application of my research is being able to share the comfort and confidence students can demonstrate toward thinking critically and applying metacognitive strategies to their own learning. Despite the challenge of critical thinking, my study demonstrates that students do not have to be intimidated by it and can approach it with a great deal of confidence when it is an integral part of their learning. Based on what I learned, I will continue to design courses across disciplines that strategically develop those thinking skills.

I found that conceptual understanding was a key element for developing critical consciousness, especially students' seeing themselves in their learning and demonstrating criticality (Table 4.3). Therefore, as I design new courses, I will continue to emphasize relevant concepts. Building from this study, I already designed an English IV course around four strategic concepts: (a) goals and dreams, (b) influencing society, (c) self-transformation, and (d) leaving a legacy.

In classes I design in the future, I will continue to prioritize conceptual understanding in all disciplines, including math and science.

I will also capitalize on the effectiveness of the authentic tasks I saw, especially in the English courses. Narrative writing tasks and, to a lesser degree, informational writing tasks enabled students to apply their learning from the module to their own story, yielding some of the most insightful and rich reflections. I want to make more of students' culminating performance tasks authentic and personalized to produce the same caliber of connections.

Another element of course design to further develop is interaction among students and between students and their teacher. An important element of educating for critical consciousness is dialogic instruction: student and teacher learning together on equal footing (Freire, 2000). Online instruction facilitates quick, personalized interaction between teachers and students, but it also has its challenges. In my study, I saw hierarchical interaction, emphasizing students' complying with teachers' directions and trying to meet teachers' expectations. Trying to reach the Freirean ideal may take some adaptation of course design, but it will also require adapting the training of online teachers.

By systemically looking at students' reflections, I also saw which of the habits of mind were most recurring in students' work (Table 4.2). I can specifically develop and support those most recurring habits in the coursework, while looking for opportunities for students to apply some of the less common habits, such as responding with wonderment and awe, taking responsible risks, or finding humor. Recognizing how important persistence was for students'

critical thinking, I can also use that insight to train and prepare online teachers. One of the online teacher's role is to recognize the importance of and support students' persistence in the coursework and their learning.

Lastly, although finding evidence of students' being inspired to act in an academic high school online course may be challenging, further developing students' agency and willingness to act is necessary for critical consciousness to flourish. Evidence pointed to criticality, personal relevance, and students' being awakened to a new understanding as key ingredients to set the stage for action. Nevertheless, more work is needed to create opportunity for actual action, such as assigning authentic experiential learning tasks or at least cultivating more inspiration for action in students' academic work.

Reflection on Methodology

I had to adapt much of my initial research design to align with my new role as instructional designer. My original plan included students' journaling on their critical thinking, and I also intended to interview students on their experiences. Such methods likely would have yielded important insights from students, yet I was able to tap into very rich data from a wider scope of students from my new vantage. Pulling from students' reflections—part of their regular coursework— also adhered to the values of action research (Merriam & Tisdell, 2016). Data emerged naturally from the design of the courses, and each subsequent course will produce similar data that the online teachers and I can evaluate to gain understanding and insight into students' critical thinking. To include reflections across multiple modules, courses and disciplines, I only selected the first 20

reflections submitted each time. For some of the smaller courses this would not have impacted the data however for the larger courses, only analyzing the submissions from the first 20 students may not have included data from all types of students.

The teacher interviews were not part of my original design but provided an important perspective, especially in my role as instructional designer. I no longer facilitate instruction, or teach the online classes, so those interviews provided crucial insight into students' experiences, as well as illuminating teachers' experiences. My original intent of student interviews could have provided additional insight into students' experiences and perhaps uncovered something I did not see in the reflections or may have simply repeated what I found in the reflections.

When I first began to plan my study, I thought I would rely primarily on quantitative data through surveys and other statistical evaluations of students' growth in critical thinking. As I developed the proposal and gained a greater appreciation of the richness and power of qualitative evidence, I shifted the design accordingly. When multiple survey submissions corrupted my pre-intervention data, I could easily focus on students' own words in the reflections, only using the more reliable post survey data to provide context. I continue to use the pre and post survey data to evaluate my courses and intend to use a platform in the future more conducive to collecting accurate quantitative data on students' changing beliefs toward critical thinking. As the next section describes, I also see other opportunities for further investigation.

Recommendations for Future Research

One topic for additional research I identified early on in my process was the connection between students' confidence in their critical thinking and the quality of their actual demonstrations of critical thinking. I had not expected to see such confidence in their critical thinking and evidence-based argument skills. However, I did not evaluate whether students' analysis, argumentation, and module demonstrations of learning matched the confidence students expressed when reflecting on their thinking. For comparison, I could assess their summative performance tasks at the end of the module, using a standardized rubric to quantify critical thinking skills such as criticality or evidence-based argumentation. Alternatively, I could use a standardized critical thinking assessment as a pre and posttest to compare to students' reflections.

Another question to pursue is the extent to which students' reflection on and application of metacognitive strategies changes their behavior. In training and education, evaluating participants' initial reactions through surveys and whether they met learning objectives using tests and other assessments is common (Kirkpatrick & Kirkpatrick, 2010). Determining whether the learning experience changed participants' behavior and led to long-term changes is less common—and much more difficult. Using the four stages of the Kirkpatrick evaluation model (Kirkpatrick & Kirkpatrick, 2016) would be valuable to assess whether teaching students to think critically, developing their critical consciousness, and reinforcing metacognitive strategies leads to a change in their behavior by the end of the course or ultimately helps them internalize critical

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thinking skills for application in their future classes and lives. For instance, student reflections provided strong evidence that students had learned the metacognitive skills, but my study did not gauge whether that learning changed their behavior. A follow-up study could assess whether students were more reflective after the course ended, or even follow students after the course ended to evaluate whether they applied those metacognitive skills in other classes or situations that do not explicitly address or assess those skills.

Finally, although my study provided rich evidence to inform my own practice and offer insight to other practitioners, as action research does, my findings are not generalizable to other classrooms and settings. A quantitative study might be more generalizable or support causal claims like focusing on specific strategies or elements of the intervention that are most effective in developing students' critical thinking skills or critical consciousness. As an instructional designer, I support multiple classes, giving me access to a large participant pool that could provide reliable quantitative data.

Final Thoughts

Developing students' critical thinking is hard but possible. My study illustrates key instructional design components for achieving this aim. Making critical thinking an integral part of how students learn on a daily basis, being explicit about what and why students are learning, and having students reflect on their learning instills metacognitive awareness and confidence in their ability to do this hard work.

However, developing students' critical thinking is not enough. Critical consciousness must be a simultaneous goal. As with critical thinking, intentional instruction is necessary to foster its key components, helping students see themselves in their learning, develop empathy for others, pose questions, approach topics with criticality, and be inspired to take action.

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APPENDIX A

STUDENT REFLECTION PROMPTS

American History

Module 2

- From the assignments you completed, how did you learn from your peers and other students in the class?

- In this class, we will explore topics that help us reflect on our own experiences and perspectives, but we also want to better understand the perspectives and experiences of others. How did your learning this unit help you recognize the lives, experiences, culture, or perspective of others?

- What most surprised you from your learning this unit? What did you discover that you didn't expect?

- How did reading primary documents of the time help you better understand American identity? What was challenging about them?

- What questions do you still have about American identity and the time period of the American Revolution? Explain.

Module 4

- What connections between understanding American ideals and unity in the early 1800s can you make to the United States today?

- Why is recognizing the contribution of individuals to American ideals and unity important? Explain using specific examples from the module.

- What are two Habits of Mind you used this unit? Explain.

- From this module, what lesson or topic most changed your understanding of U.S. history or the concepts we were studying? Explain using specific examples.

Module 5

- Do you think history has more continuities and things that stayed the same or changes? Use your learning from this unit to respond.

- Did government create more unity or more division during this time? Use a couple of examples from this module to respond.

- Historical thinking is about analyzing history for deeper meanings, using evidence to make historical arguments, being able to work with primary documents and apply them to historical questions. What are your strengths as a historical thinker? What areas do you still want to develop?

- From this module what do you still have questions about? What do you not quite understand yet or want to learn more about? Explain using examples.

Module 7

- What most surprised you from your learning in this unit and the way the United States expanded in the 20th century? Explain using specific historical details and learning from this module.

- How did your learning better help you understand America today? Explain referencing lessons or concepts from the module.

- What topics, analysis, or skills do you still have questions about? Explain.

- Why is understanding the different perspectives of historical sources important? What did you learn considering the historical source in this unit?

Civic Literacy

Module 2

- During this Civics course, we want to develop our Habits of Mind. Explain:

  o a habit of mind you used this unit and how you applied it.

  o the habit of mind most important for Civics and citizenship and why.

- From the assignments that you completed, how did you learn from your peers and other students in the class?

- In this class, we will explore topics that help us reflect on our own experiences and perspectives, but we also want to better understand the perspectives and experiences of others. How did your learning this unit help you recognize the lives, experiences, culture, or perspective of others?

- What most surprised you from your learning this unit? What did you discover that you didn't expect?

- Look back at the questions you asked in 2 – Asking questions in Civics.

  o Which question can you answer the best now? What do you think the answer is?

  o What question would you still have a difficult time answering? Why?

Module 3

- From what you learned about principles values and identity in American History, what was the most significant thing you learned, and how did your understanding of American identity change?

- Over the last few units, which questions of yours were answered? What questions do you still have? Explain using specific examples in learning we did over the last unit or two.

- How did what we studied this unit better help you understand your place in America as a citizen?

- What did you learn more from in the unit: the history we studied or the actions of government today? Explain.

- What was most challenging about your work this module?

Module 4

- What was the most significant new understanding you developed about the U.S. government? What was the most significant thing you learned that you didn't know before? Explain using specific evidence and details from your learning.

- During this Civics course, we want to develop our Habits of Mind. Explain:
  - a habit of mind you used this unit and how you applied it.
  - the habit of mind most important for Civics and citizenship and why.

- Look back at 4 – Asking questions in Civics. What question can you now answer? Go in and answer at least one question, and in this assignment, explain what question you answered and how you answered it.

- Look at 4 – Asking questions in Civics again. What questions are still unanswered? Review your classmates questions; are there any that you did not learn the answer to that are good questions to answer? Post at least one question that has not been answered from the learning this unit.

- How did what you learned this unit help you become a better citizen? How could you put your learning in action?

English I

Module 1

- What was the most important lesson you learned about being a writer this unit? How did you become a better writer?

- How did you use feedback and interaction with your teacher?

- During this course, we want to develop our Habits of Mind. Explain:

    o a habit of mind you used this unit and how you applied it.

    o the habit of mind most important for English and why.

- How were you able to relate this unit to your own life, experiences, or culture?

Module 2

- How did the work we did this unit analyzing poetry change or develop your ability to read and understand poetry? What more would you like to learn or get better at doing?

- What were the most important lessons you learned about being a story-teller this unit?

- Which Habits of Mind did you use this unit? Explain.

- In the poetry we read, how were you able to use the literature to recognize the lives, experiences, culture, and perspective of others?

Module 3

- How did your understanding of choices and consequences grow this unit? How do you look at choices and consequences differently, and how did it

better help you understand yourself and people around you? Explain using specific examples from the assignments we did.

- How is reading and analyzing nonfiction different than poetry or fiction? What was the most important thing you learned about reading and analyzing nonfiction this unit?

- These last three units we've been writing and rewriting our own story. How did writing your story, revising it, adding to it, and annotating your own story help you as a writer?

- Why is reading and analyzing nonfiction important in our society today and for you in the world? How can you apply what you learned in your world and community?

Module 4

- Which of your research questions have you found the most information for? Which of your research questions have you found the least information for?

- Which research question(s) do you think you should focus on? Why?

- How will you be able to make your topic relevant to other people? Why will or should other people want to know about your topic? Explain.

- Which habit of mind is most important to be a good researcher? Identify that habit and explain why it's important in the research or informational writing process, and how you can specifically apply it to your project.

Module 6

- How can you apply what you learned about success and failure in this module, and over the last three modules, to your own life?

- How would you evaluate your research skills? What were you good at? What would you like to improve on and get better at?

- What did you learn about reading and analyzing nonfiction in this module? How did it help you become a better research writer?

- How did you use feedback from your teacher, along with the submissions and comments from your other classmates to help you learn this module?

Module 7

- How did your analysis and learning this unit cause you to look at power differently? Explain using specific examples and readings you completed.

- How would you evaluate your argumentative writing skills? What were you good at? What would you like to improve on and get better at?

- What did you learn about reading and analyzing nonfiction in this module? How did it help you become a better argumentative writer?

- What are two Habits of Mind you used this unit? Explain.

- How did analyzing power and reading speeches from past presidents help you better understand your world today and current events?

<div align="center">

English II

</div>

Module 1

- How did you use and apply feedback from your teacher this unit? Explain using specific examples.

- During this course we want to develop our Habits of Mind. Explain a habit of mind you used this unit and how you applied it or the habit of mind most important for English and why.

- How did this unit help you better understand your own life, experiences, culture, or perspective? Explain with examples.

- How did this unit help you better understand or recognize the lives, experiences, culture, and perspective of others? Explain with examples.

Module 3

- How did your understanding of culture grow this unit? How did it better help you understand yourself and people around you? Explain using specific examples from the assignments we did on culture.

- What was the most important thing you learned about reading and analyzing poetry? What did you enjoy or what did you struggle with from the work we did with poetry?

- These last three units we've been writing and rewriting our own story. How did writing your story, revising it, adding to it, and annotating your own story help you as a writer?

- What is the strongest part of your writing? What would you like to get better at? Consider the lessons over the past three modules in your answer, and explain using specific experiences from your class.

Module 4

- What was the most important thing you learned about community this unit? What more do you want to understand about the idea of community?

- Evaluate your research skills. What are you confident in? What do you still need help to do?

- How did our reading on different communities or your research on your

  community topic better help you understand yourself and your own

  community you're a part of?

- How is research or informational writing different than other writing styles?

  How is it different to write that way? How is it different to read that kind of

  writing?

APPENDIX B

TEACHER INTERVIEW QUESTIONS

1. What were students most successful with this semester? What were you most

    impressed with that students were able to do?

2. In what ways did students express themselves and their identity?

    a. Where did you get to know students?

    b. What personal or relevant things did you most often hear from

        students?

3. How did students respond or react to your communication and

    announcements?

4. What were your observations of students' being able to:

    - Make evidence-based arguments?

    - Apply the learning to themselves and their personal experiences?

    - Solve problems?

    - Apply learning to today and real-world issues?

5. How much were you able to get to know your students?

    a. What did you learn about your students?

    b. Where did you learn those things?

6. How did students' interaction with other students affect their critical thinking

    and development? Were they able to learn from other students?

7. How good were students at posing their own questions?

a. Did they interact with each other?

b. What kinds of questions did they ask?

8. What were your observations of students' metacognition? Their understanding and awareness of their own learning and thinking?

9. What were students' challenges completing assignments that required critical thinking? What was most difficult for students?

10. How did students react to your feedback?

11. Did students understand the value of critical thinking?

12. What would it take for students to be inspired to action in their learning, outside of the "classroom"?

APPENDIX C

POST-COURSE STUDENT SURVEY

1. **Select your course and section** *

   Mark only one oval.

2. **Are you a** *

   Mark only one oval.

   ◯ a full time   student?

   ◯ a student at another (

3. **How many online courses have you taken before this one?** *

   Mark only one oval.

   ◯ this is my first!

   ◯ 2-3

   ◯ 4 or more

4. **After this course, how likely would you be to take another online** *
   course?

   Mark only one oval.

   ◯ Very likely

   ◯ Likely

   ◯ Not likely

5. **Did you know the important goals of the course?** *

   Mark only one oval.

   ⬭ Yes

   ⬭ No

6. **Was all the course work (assessments, assignments, lessons) aligned** *
   with the course goals?

   Mark only one oval.

   ⬭ Yes

   ⬭ No

7. **How would you rate yourself as an independent learner?** *

   Mark only one oval.

   ⬭ Excellent

   ⬭ Above average

   ⬭ Average

   ⬭ Below average

   ⬭ Poor

8. **How often were you able to relate learning in this course to your own** *
   life, experiences, culture and perspective?

   Mark only one oval.

   ⬭ Always

   ⬭ Very Often

   ⬭ Sometimes

   ⬭ Rarely

   ⬭ Never

9. **Did the instructional materials and resources for this course help you** *
   learn?

   Mark only one oval.

   ⬭ Almost always

   ⬭ Frequently

   ⬭ Sometimes

   ⬭ Rarely

   ⬭ Never

10. **How do you feel about this statement?** *

The course developed my ability to read and think critically.

Mark only one oval.

- ⬭ Strongly Agree
- ⬭ Agree
- ⬭ Undecided
- ⬭ Disagree
- ⬭ Strongly Disagree

11. **How would you rate your ability to make an evidenced based argument?** *

Mark only one oval.

- ⬭ Excellent
- ⬭ Above average
- ⬭ Average
- ⬭ Below average
- ⬭ Poor

12. **Select all that applied to your weekly announcements in this course** *

Check all that apply.

- ☐ Weekly announcements helped me understand the tasks and learning for the week
- ☐ Weekly announcements kept me on pace with my work
- ☐ Weekly announcements helped me feel connected to my teacher and the class
- ☐ None of the above

13. **How often did you resubmit or redo assignments in this class?** *

Mark only one oval.

- ⬭ Always
- ⬭ Very Often
- ⬭ Sometimes
- ⬭ Rarely
- ⬭ Never

14. **Select all that applied to the feedback you received on your work in this course** *

Check all that apply.

- ☐ The teacher provided feedback on my work in a timely fashion.
- ☐ The teacher provided feedback that helped me understand my strengths
- ☐ The teacher provided feedback that helped me understand my areas of growth
- ☐ The teacher showed an interest in helping me learn.
- ☐ None of the above

15. **How important is being able to work at your own pace?** *

Mark only one oval.

- ⬭ Very Important
- ⬭ Important
- ⬭ Neither Important or Unimportant
- ⬭ Unimportant
- ⬭ Very unimportant

16. **How do you feel about this statement?** *

I felt comfortable interacting with other students in class.

Mark only one oval.

- ◯ Strongly Agree
- ◯ Agree
- ◯ Undecided
- ◯ Disagree
- ◯ Strongly Disagree

17. **How often did you learn from other students in this course?** *

Mark only one oval.

- ◯ Almost always
- ◯ Frequently
- ◯ Sometimes
- ◯ Rarely
- ◯ Never

18. **How do you feel about this statement?** *

Problems and questions posed in the course increased my interest in the course and learning.

Mark only one oval.

- ◯ Strongly Agree
- ◯ Agree
- ◯ Undecided
- ◯ Disagree
- ◯ Strongly Disagree

19. **How well did you get to know other classmates in this course?** *

Mark only one oval.

- ◯ Excellent
- ◯ Above average
- ◯ Average
- ◯ Below average
- ◯ Poor

20. **How often do you reflect on your learning, thinking or skills?** *

Mark only one oval.

- ◯ Almost always
- ◯ Frequently
- ◯ Sometimes
- ◯ Rarely
- ◯ Never

21. **How much were you able to share things about yourself connected to** *
    the learning in this course?

    Mark only one oval.

    ◯ Almost always
    ◯ Frequently
    ◯ Sometimes
    ◯ Rarely
    ◯ Never

22. **How would you rate your ability to think critically overall?** *

    Mark only one oval.

    ◯ Excellent
    ◯ Above average
    ◯ Average
    ◯ Below average
    ◯ Poor

23. **How would you rate your ability to think critically in the discipline** *
    (science, social studies, English, math) of this course?

    Mark only one oval.

    ◯ Excellent
    ◯ Above average
    ◯ Average
    ◯ Below average
    ◯ Poor

24. **How would you rate the sense of community in this course?** *

    Mark only one oval.

    ◯ Excellent
    ◯ Above average
    ◯ Average
    ◯ Below average
    ◯ Poor

25. **How do you feel about this statement?** *

    I was able to better understand real world problems and current
    events from the learning in this course.

    Mark only one oval.

    ◯ Strongly Agree
    ◯ Agree
    ◯ Undecided
    ◯ Disagree
    ◯ Strongly Disagree

26. **Which of the following apply to your experiences in this course?** *

    Check all that apply.

    ☐ The course gave me the confidence to do more advanced work in the subject or
    discipline
    ☐ This course made me think.
    ☐ I can apply the knowledge created in this course to my work or other non-class related
    activities.
    ☐ None of the above

27. **Online learning is an effective way of learning.** *

Mark only one oval.

( ) Agree

( ) Undecided

( ) Disagree