STUDENT PERCEPTION OF CRITICAL THINKING IN AN
UNDERGRADUATE BUSINESS CURRICULUM:
THE INFLUENCE OF GENDER AND
ACADEMIC DISCIPLINE

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ABSTRACT

This purpose of this study was to determine how students perceive and experience critical thinking in an undergraduate business curriculum and whether or not those perceptions and experiences are influenced by gender and academic discipline. This was a qualitative study that used focus groups and individual interviews to explore student experiences. There were a total of 22 participants, all of whom participated in a focus group. Of the 22 participants, seven participated in individual interviews. Focus group participants represented 11 majors at the business school and were split almost evenly along binary gender lines. The majority of interview participants were female, management information systems majors. Three major themes emerged from the data: critical thinking is a process, critical thinking is aided by interest in the subject matter, and technology use impacts critical thinking. Findings indicate that critical thinking is influenced by interest in the subject matter more than it is by academic discipline; however, findings linked to the influence of gender are inconclusive. Additional research is needed to more fully examine the influence of gender on student perception of critical thinking and how it intersects with academic discipline. Multiple implications for higher education practice, particularly as related to the Business School, emerged, including examination of pedagogical strategies, real-world applicability of course content, and the inclusion of experiential learning in the curriculum.

For my Nonie. I wish you were here to see this.

For my mom, Jamie. Thanks for being you.

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CHAPTER 1

INTRODUCTION

This dissertation explored student perceptions of, and experiences with, critical thinking in an undergraduate core business curriculum (BBA Core) at a large business school housed within a large, mid-Atlantic research university. For the purposes of this study, the business school will be called the Business School, and the university will be called University of the Midatlantic (UM). Because the Business School is accredited by the Association to Advance Collegiate Schools of Business (AACSB), all undergraduates are required to complete a core curriculum to ensure a consistent student experience, in accordance with AACSB Standard 8 (2018). AACSB provides guidelines for curricular content and skills to provide a consistent quality experience at the undergraduate level; included among the recommended skills is critical thinking (2018).

The Business School has chosen to incorporate critical thinking into the curriculum by including it as one of its BBA program goals: "Apply critical thinking skills to business problems" (Learning Goals and Assurance of Learning, n.d.). Two objectives were written to further define this goal: a) "Use integrated business knowledge to identify problems, generate solutions, and develop reasoned conclusions," and b) "Understand the ethical, legal, and social responsibilities of individuals and organizations" (Learning Goals and Assurance of Learning, n.d.). In 2015, the Business School initiated a redesign of its curriculum to shift the focus from teaching critical

thinking through the lens of business content to teaching business content through the lens of critical thinking. Previously, critical thinking skills were indirectly integrated into the curriculum, taking a secondary role to the importance of business content knowledge. The curriculum redesign sought to flip this model, allowing critical thinking skills to serve as the conduit for learning and applying core business concepts as students move through the curriculum.

The need for this change was supported by evidence from the Business School's assurance of learning data and national surveys of employers and faculty (Association of American Colleges and Universities [AACU], 2013). Weaving critical thinking into the teaching of business content is also consistent with national trends in business education.

Teaching critical thinking in business school settings is a relatively recent phenomenon, beginning with the field of accounting in 1979, and expanding into the fields of management and marketing in the mid-1980s (Desai, Berger, & Higgs, 2016). Porter and McKibbin (1988) looked holistically at business curricula and determined that while business students were adept at analytical problem solving when provided with complete information, students struggled with problem identification. These observations and Porter and McKibbin's (1988) recommendations for increased teaching of critical thinking initiated myriad studies (e.g., Braun, 2004; Bycio & Allen, 2009; Smith, 2003) examining critical thinking in business education, some general and some discipline specific.

Teaching critical thinking through the use of a framework, either based on Bloom's Taxonomy (1956) or self-developed, was studied and proposed as a successful method for integrating critical thinking into the business classroom (Athanassiou, McNett, & Harvey, 2003; Bigelow, 2004; Smith, 2003). Other strategies were grounded in existing business strategies; Ronchetto and Buckles (1994), for example, used total quality management concepts to integrate critical thinking into marketing courses. Other researchers used classroom debates, case analyses, and reflective learning to study the integration of critical thinking into business courses (Desai et al., 2016).

As in many of the studies focused on critical thinking in business education, the Business School's redesign process involved faculty and student input in defining and designing a critical thinking framework. In order to understand how students perceived critical thinking in the BBA Core, students were invited to participate in a design workshop and follow-up interviews. Information from these interviews helped inform the trajectory of this study, which examined the way in which gender and academic discipline shaped perception and influenced student experiences with critical thinking.

Statement of the Problem

Critical thinking is one of the most necessary traits for success in the job market. Despite this, critical thinking skills are severely lacking in college graduates; indeed, results from multiple national surveys of employers and faculty indicate that students do not perform well in courses requiring higher level cognitive tasks (Ahuna, Tinnesz, &

Keiner, 2014; Bascuas, 2013; Brooks, 2013; Desai et al., 2016; Gellin, 2003; Nold, 2017; Shim & Walczak, 2012; Taylor, 2010; U.S. Department of Education, 2006). While it is easy to recognize the problems inherent in a lack of critical thinking skills among recent college graduates, it is far more difficult to identify and implement a solution that will ultimately increase students' critical thinking skills.

Part of this difficulty stems from the nebulous nature of critical thinking. Since the time of the Ancient Greeks, scholars have argued about how to best define critical thinking. Though a variety of critical thinking definitions exist, most suggest that critical thinking is a skill requiring deep analysis and evaluation of ideas to inform higher order understanding. Ennis's (1991, p. 6) definition of critical thinking, "reasonably reflective thinking that is focused on deciding what to believe or do," is not as nuanced as some scholars would prefer, but still manages to capture the essence of critical thinking. Conflicting definitions and specific traits associated with them are explored further in Chapter 2.

Ensuring students have the requisite critical thinking skills to be successful post-graduation is a multi-pronged problem. Studies (e.g., Brookfield, 2005; Brookfield, 2012; Brown & Bielinska-Kwapisz, 2015; Danvers, 2015; Nold 2017; Raikou, 2016) investigating the link between critical thinking skills and post-graduation success offer a variety of solutions for how to integrate critical thinking into curricula in a manner conducive to cultivating post-graduation success. This study focused on two suggestions

for improving critical thinking skills derived from Elder and Paul's (1996) stage theory of critical thinking and Mezirow's (1997) transformative learning theory: (a) use of a critical thinking framework (Elder & Paul, 1996); and (b) pedagogical and assessment techniques (Mezirow, 1997). This study used the intersecting frameworks of these theories to investigate how students perceived their experiences with critical thinking throughout the BBA core.

A significant amount of critical thinking research has used the work of Elder and Paul and Mezirow to frame arguments and findings. Researchers have incorporated additional perspectives (e.g., feminist theory) to explore the ways critical thinking skills are both taught and learned by different groups of people. Chapter 2 provides a detailed review of literature that explores the findings from these studies and looks at the ways they intersect with the theoretical frameworks.

Exploration of the existing body of research grounded in each of these theories was tailored to focus on the importance of gender and academic discipline on student critical thinking skills. Because critical thinking skills are considered crucial to success in the workplace (AACU, 2013), some time is spent reviewing studies specific to this area. Flowing directly from the idea of critical thinking contributing to workplace success is the need for critical thinking in business education. A comprehensive look at each of these areas of research ultimately serves to provide the necessary context for the research questions, which explored how students experienced critical thinking in an undergraduate

business curriculum, and the ways those experiences were shaped by both gender and academic discipline.

Purpose of the Study

Given the increased focus on strong critical thinking skills in the job market (AACU, 2013), students who successfully demonstrate critical thinking skills will be more sought after and more likely to succeed in the workplace. Building these skills is a process that can be approached in stages through the use of a framework (Brookfield, 2005; Brookfield, 2012; Dwyer, Boswell, & Elliott, 2015; Elder & Paul, 1996; Raikou, 2016). Linking critical thinking skills to contexts within a particular discipline also helps deepen understanding. When presented in a context that also accounts for individual experiences and sociocultural influences, students are even more likely to succeed in strengthening their critical thinking skills (Bourdieu, 1985; Brown & Bielinska-Kwapisz, 2015; Danvers, 2015; Mezirow, 1997; Raikou, 2016).

Critical thinking skills are one of the strongest predictors of student success post-graduation (Rode, Arthaud-Day, Mooney, Near, & Baldwin, 2008). While researchers understand how vital critical thinking is to continued student success, further work must be done to understand how external factors impact critical thinking ability. While gender, socioeconomic, and sociocultural differences have been explored in a variety of contexts (Brown & Bielinska-Kwapisz, 2015; Danvers, 2015; Dumais, 2002; Fenwick & Edwards, 2013), few studies have been conducted within the context of specific disciplines, and

even fewer in the area of business education. Some researchers (Nold, 2017; Reid & Anderson, 2012) have studied critical thinking in a particular classroom setting, but the focus has been on assessment measures rather than how the discipline was able to serve as a conduit for increasing critical thinking skills.

In this study, elements of stage theory (Elder & Paul, 1996) and transformative learning theory (Mezirow, 1997) were used to frame the research around critical thinking. Further work must be done to investigate not only the ways in which gender and academic discipline shape the critical thinking experience, but also to examine the relationship between the two theories and their application to critical thinking, particularly in the area of business education.

<div align="center">Research Questions</div>

This study examined the importance of discipline-specificity to critical thinking in business education, and how gender shapes the perception of critical thinking skills. The current body of research is inconclusive in these areas; as a result, the importance of both discipline-specificity and gender to critical thinking skills continue to be studied. Existing studies have examined these variables through quantitative methodologies, looking at how these factors contribute to student performance on critical thinking assessments. Results either reinforce existing teaching methods or present suggestions for how instruction can be altered to increase student performance (Heinrich, Habron, Johnson, & Goralnik, 2015; Nold, 2017; Reid & Anderson, 2012). What is not examined, however, is

how students understand critical thinking as a concept and their perceptions of their experiences in developing critical thinking skills.

Building on the existing body of research, this study explored the following research questions:

1. How do undergraduate business students perceive and experience critical thinking?

2. How do students perceive and experience critical thinking through the lens of gender?

3. How do students perceive and experience critical thinking through the lens of academic discipline?

Through the use of interviews and focus groups, I used an inductive reasoning process to build themes from the bottom up by exploring patterns and broad categories that emerged from the data collection process to demonstrate the ways in which undergraduate business students experience critical thinking in the curriculum.

Assumption and Rationale

In this study, I investigated broad themes which demonstrated the ways in which undergraduate business students experienced critical thinking within the undergraduate core curriculum. Under the broad umbrella of student experience, I further examined the role of both gender and academic discipline in informing the student experience.

Understanding how students experience critical thinking can be used to inform pedagogy. Pedagogical strategies could shift if faculty were able to create a classroom environment conducive to critical thinking development. Some of this work has already progressed, as shown through the ideas of Mezirow (1997) and Elder and Paul (1996). Research using these respective frameworks has concluded that students perform better when they understand the process of thinking and acquiring knowledge (Brookfield, 2005; Brookfield, 2012; Dwyer et al., 2015; Elder & Paul, 1996; Raikou, 2016).

The current body of research is inconclusive in the role of gender and the importance of discipline-specificity in students' understanding of critical thinking; as a result, the importance of discipline-specificity and gender to critical thinking skills continue to be studied. These variables have been explored through quantitative methodologies which link these factors to student performance on critical thinking assessments. What is not examined, however, is how students broadly experience critical thinking and how gender and academic discipline inform that experience. To address this gap, I built on the existing body of research by qualitatively exploring students understanding of, and experiences with, critical thinking in an undergraduate business curriculum.

Definitions and Key Terms

Several phrases, terms, and acronyms are used throughout this dissertation to explore the significance of critical thinking research. Key terms are defined in the following section.

Critical Thinking: Several definitions will be presented in subsequent sections. For clarity, the definition crafted by Business School faculty during the curriculum redesign is, "Critical thinking is self-guided, self-disciplined thinking which attempts to utilize the highest level of reasoning." Faculty further endorsed five characteristics of critical thinking: 1) contextually grounded; 2) supported by evidence; 3) uses appropriate tools/processes/framework; 4) uses reasoned judgment; and 5) justifies goals and conclusions.

Gender: For the purposes of this study, a traditional, dual-gendered approach was taken, and participants were coded as either male or female.

Academic Discipline: This refers to the way areas of study are delineated by major in the Business School. The Business School offers 16 majors: 1) accounting; 2) actuarial science; 3) business management; 4) economics; 5) entrepreneurship and innovation management; 6) finance; 7) financial planning; 8) human resource management; 9) international business administration; 10) legal studies; 11) management information systems; 12) marketing; 13) real estate; 14) risk, insurance, and healthcare management; 15) statistical science and data analytics; and 16) supply chain management.

BBA Core: This refers to the 20 common courses taken by all undergraduate business students in the Business School. A full list of courses is included in Appendix A.

Curriculum redesign: The process undertaken by the Business School to integrate critical thinking skills across the BBA Core in 2015.

AACSB: The Association to Advance Collegiate Schools of Business is the oversight body that accredits the Business School.

CHAPTER 2

REVIEW OF LITERATURE

In 2013, the Association of American Colleges and Universities (AACU) commissioned a survey of 318 employers to discover what skills employers most valued in their new hires. Results overwhelmingly indicated that employers believe critical thinking skills strongly contribute to new employee success. Specifically, 93% of respondents found critical thinking, communication, and problem-solving skills to be more important to success at their respective companies than the content of the undergraduate major. When asked to rank how much emphasis colleges should place on teaching these skills, critical thinking was highest on the list, with 82% of respondents indicating more emphasis should be placed on teaching critical thinking skills (AACU, 2013). Directly related to critical thinking skills is the capacity to continue to learn through professional development. In the same AACU study (2013), 94% of employers noted the value of a new hire's interest in furthering their professional knowledge through continued learning experiences.

The link between critical thinking and lifelong learning is an important area of research as it relates to student success. Deveci and Ayish (2017) looked at this relationship by studying freshmen students in Abu Dhabi using a modified version of the California Critical Thinking Dispositions Inventory and the Lifelong Learning Tendency Scale. The study was designed to understand any possible linkage between critical

thinking skills and affinity for continued learning. Though they found a weak positive relationship between critical thinking skills and lifelong learning, Deveci and Ayish (2017) emphasized that this could be due to the nature of secondary education in the United Arab Emirates, where critical thinking is not taught. Because the scores on the lifelong learning scale were above average despite the critical thinking scores being below average, Deveci and Ayish (2017) further posited that if critical thinking skills were more robustly taught, the lifelong learning scores would also dramatically increase.

Deveci and Ayish's (2017) findings are supported by previous work noting that the ability to thoughtfully and deeply analyze information (i.e., critically think) is an essential component of lifelong learning (Cummings, 2015; Green, 2015). Hager and Holland (2006) concur, suggesting that critical thinking skills not only foster a lifetime of inquiry and learning, but also provide a foundation for success in higher education and beyond. Geertsen (2013) and Candy (1991) caution that the way in which critical thinking is taught matters and suggest that integrating it across a curriculum allows students to practice applying critical thinking skills in a variety of contexts, thus strengthening their skills and setting them up for success in the workplace where they will need to continue learning outside of a formal classroom setting.

Nold's (2017) research also supports the development of critical thinking skills in the classroom to enhance student success in the workforce. He used an action research project in undergraduate business courses to evaluate the types of pedagogical strategies

necessary to foster critical thinking skills in a way that promotes continued learning, and ultimately student success. Using different types of writing assignments, classroom discussions, and debates, Nold (2017) asked students to evaluate themselves on 15 constructs included on the Motivated Strategies for Learning Questionnaire during the first and final weeks of class. By the final week of class, students demonstrated improvements in 14 of the 15 areas, including three areas highly valued by employers: critical thinking, self-efficacy, and goal orientation (Nold, 2017). These findings are consistent with the suggested pedagogical tools used in transformative learning.

Defining Critical Thinking

Critical thinking is a term grounded in philosophy, psychology, and education. Dating back at least to the time of Aristotle and Socrates, the philosophical view of critical thinking is driven by an adhesion to the principles of logic and links the personal and behavioral traits of the thinker to the quality of the thinker. Here, critical thinking was far more theoretical than in other models, often limited by not being rooted in reality (Desai et al., 2016; Lai, 2011). Conversely, the psychological view of critical thinking is firmly rooted in a real-world context. For psychologists, critical thinkers are defined by how their actions and behaviors are presented in actuality, rather than in an idealized context (Desai et al., 2016; Sternberg, 1986). Education combines and enhances the philosophical and psychological approaches, framing critical thinking as a hierarchy. The most common hierarchical order is Bloom's taxonomy, which claims that learning occurs

in several steps from comprehension to evaluation (Bloom, 1956). The three highest levels of taxonomy – analysis, synthesis, and evaluation – are commonly thought to be the levels that encompass critical thinking (Kennedy, Fisher, & Ennis, 1991). Lai (2001) suggested that though each approach is rooted in a slightly different discipline, each view stresses the importance of analysis, decision making, evaluation, and inference in critical thinking.

While commonalities between the different approaches exist, researchers have yet to reach a common definition for critical thinking. Individual disciplines, schools, and colleges have tended to find the definition that most closely correlates with their ultimate educational objectives (Desai et al., 2016). In recent years, Drs. Richard Paul and Linda Elder have emerged as two of the foremost authorities on critical thinking as applied to education. The two created the Critical Thinking Community, which promotes the practice of critical thinking throughout society. The Community's mission is to bring critical thinking to the forefront of the conversation about societal conventions, effectively striving to make critical thinking a "core social value and key organizing concept for all educational reform" (The Critical Thinking Community, 2015, n.p.). To this end, Paul and Elder (2006) created a critical thinking toolkit for use by students and faculty, in an attempt to create a standardized definition of critical thinking and provide the outline of a process to be used to master critical thinking skills.

Paul and Elder's (2006) definition attempts to unite the philosophical, psychological, and educational perspectives on critical thinking by crafting a definition that says, "critical thinking is the art of analyzing and evaluating thinking with a view to improving it" (p. 4). Following this definition, Paul and Elder enumerate the effects of successful critical thinking in society, finishing by combining their proposed definition with the listed traits, resulting in a broad, overarching definition that both explains the meaning of critical thinking and outlines the process for practical engagement in the critical thinking process:

> *Critical thinking is, in short, self-directed, self-disciplined, self-monitored, and self-corrective thinking. It requires rigorous standards of excellence and mindful command of their use. It entails effective communication and problem solving abilities and a commitment to overcome our native egocentrism and sociocentrism. (Paul & Elder, 2006, p. 4)*

This definition flows directly from the tenets of their stage theory of critical thinking.

Stage Theory of Critical Thinking

Like Bloom (1956), Elder and Paul's (1996) critical thinking model was designed to improve higher order thinking skills. Unlike Bloom, however, the stage theory of critical thinking is not unidirectional; instead, it stresses that the intellectual quality of instruction and learning guides students through the critical thinking process, and variations in quality may contribute to a regression in critical thinking development.

The stage theory of critical thinking provides a framework for development of critical thinking skills among students. Elder and Paul (1996) outline six stages of

intellectual development intended for use by educators to foster critical thinking skills development among their students. The model operates on the assumptions that 1) every critical thinker passes through specific stages as their skills develop, 2) movement from one stage to the next is deliberate on the part of the thinker, 3) intellectual quality of learning informs success, and 4) regression is possible.

Elder and Paul (1996) identify key features of each stage, what each means for critical thinking knowledge and skills, and implications for classroom techniques and pedagogy. The six stages are: 1) The Unreflective Thinker; 2) The Challenged Thinker; 3) The Beginning Thinker; 4) The Practicing Thinker; 5) The Advanced Thinker; and 6) the Accomplished Thinker. In moving through each stage, critical thinkers learn to identify *how* they think by recognizing challenges and assumptions to their views. In the later stages of critical thinking, thinkers are acutely aware of the role critical thinking plays in decision making and interaction with others. Much like the levels of Bloom's Taxonomy (1956), stage theory moves thinking skills from basic skills knowledge and simplistic responses through understanding of the role of critical thinking, active application of critical thinking skills, analysis of their own thinking, active evaluation of the role their methods of thinking play in developing responses, and finally creating new insights into situations and developing solutions.

Building on the tenets of this theory, Elder and Paul (2010) explain that critical thinking does not exist in a vacuum, and as such, its principles must be intertwined with

academic content in order to move students from the Unreflective Thinker stage to the

Accomplished Thinker stage, where students are able to internalize higher order thinking

skills and apply them to every aspect of their lives. Elder and Paul (1996) further

acknowledge that regression is possible, and also stress that progression from one stage to

the next is not automatic or subconscious; rather it requires a concentrated effort on the

part of the student.

Stage theory has grounded studies focused on the integration of core curricula and

critical thinking (Grussendorf & Rogol, 2018; Riggs & Hellyer-Riggs, 2014). Riggs and

Hellyer-Riggs (2014) specifically looked at how critical thinking informed motivation

within core courses in both history and psychology curricula. Using the tenets of stage

theory, these authors designed assignments to move their respective students from the

Unreflective Thinker stage to the Challenged Thinker stage. Grussendorf and Rogol

(2018) used similar methods to evaluate increases in critical thinking skills through one

semester in a foreign policy course. Their conclusions varied from Riggs and Hellyer-

Riggs (2014), in that they acknowledged that their methods may have been too linear to

create success.

Using a pre/post model, Grussendorf and Rogol (2018) administered two different

writing assignments at different points in the semester and graded both using the same

rubric. The rubric focused on identifying, critiquing, and reconstructing discipline-

specific arguments relative to the course material. A scaffolding approach was used to

help students develop their critical thinking skills, and results from both the pre and post tests were compared across two sections of the course. While results showed an increase in critical thinking skills, they did not indicate a statistically significant difference.

Acknowledging Elder and Paul's (2010) assertions that regression is possible, and that critical thinking skills development is not necessarily a linear progression, Grussendorf and Rogol (2018) concluded that their assignment design may have been overly focused on the early stages of critical thinking development, thus neglecting those students already operating in a higher stage of thinking. This assumption that all students began in stage one may have caused students in higher stages to regress because their methods of thinking were not being challenged.

Paul and Elder (2006) have continued to use stage theory to inform their critical thinking research. They created a toolkit to develop a standard definition for critical thinking and to further refine stage theory. Like Paul and Elder, Mezirow (1997) supports the use of a framework to guide the thinking process. Mezirow's work, however, is less focused on why it is necessary to use a framework; Mezirow instead focuses on how to facilitate learning to move students through the steps in the process.

<div align="center">Transformative Learning Theory</div>

Mezirow's (1997) transformative learning theory offers a framework for challenging student thinking through the use of disorienting dilemmas to alter one's perceptions and preconceived notions. In developing his theory, Mezirow (1996) noted

"learning is understood as the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience in order to guide future action" (p.162), a statement that echoes the work of Bourdieu (1973). By introducing a situation antithetical to students' existing perception of a problem, the tenets of transformative learning theory push students to critically think about their own underlying assumptions, thus engaging in a process of self-reflection. Mezirow (1991) explained that transformative learning theory was useful to understanding how students interpret and reflect on their experiences which, he posited, is the key to creating meaning to inform learning. Mezirow further identifies two types of learning: instrumental and communicative. The former aligns with the early levels of both stage theory and Bloom's Taxonomy and focuses on task-oriented strategies to facilitate learning, while communicative learning aligns with higher order thinking and explores how feelings and needs are communicated.

Mezirow (1991) theorizes that meaning structures, or predispositions toward a certain perspective based on ingrained psychocultural assumptions, shape general thinking and the overall process of reflection. Reflection, and how it is used to understand the self and learning processes, is the crux of transformative learning theory. The ten phases outlined by Mezirow move students through a: 1) disorienting dilemma; 2) self-examination; 3) critical assessment of internalized assumptions; 4) recognition of the transformation process; 5) exploration of new options; 6) planning a new course of

action; 7) acquiring the knowledge for the change; 8) beta testing of new roles; 9) building competence in the new role; and finally, 10) a reintegration of new roles into a previous perspective. Like stage theory, transformative learning theory relies heavily on the influence of self-reflection to learn and develop skills. Though transformative learning theory is not specific to critical thinking skills, the transformative process is, in itself, an exercise in critical thinking. Stages four, five, and six of Elder and Paul's (1996) theory align with Mezirow's work; throughout these stages, thinkers develop by learning to question their previously held worldviews and being conscious of their underlying sociocentric and egocentric biases.

Incorporating critical reflection as a pedagogical tool to foster transformative learning has been studied in a variety of contexts ranging from medical education and palliative care (Goldie, Schwartz, & Morrison, 2005; MacLeod, Parkin, Pullon, & Robertson, 2003; Mallory, 2003), group learning experiences (Cohen, 2004; Scribner & Donaldson, 2001), online learning (Cragg, Plotnikoff, Hugo, & Casey, 2001; Ziegahn 2001), and faculty professional development (Gravett, 2004; King, 2004; Pohland & Bova, 2000). Each of these studies used critical reflection as part of active learning experiences to deepen the critical thinking skills and transformative learning of participants (Taylor, 2007). MacLeod and colleagues (2003), for example, found that requiring medical students studying palliative care to visit not only hospice centers and funeral homes, but also to meet with patients' families, fostered empathy and a deeper

understanding of the non-clinical components of palliative care. Studies of online learning (Cragg et al., 2001; Ziegahn, 2001) also emphasized the importance of drawing on the student experience and existing cultural capital. Both studies found that using writing as a tool to reflect on asynchronous discussions and educational experiences allowed students to draw on their own experiences and provide deeper reflections on course topics.

More recent studies have continued to champion experiential learning and Socratic discussions as ideal methods for teaching critical thinking (Danker, 2015; DeSimone & Buzza, 2013; Heinrich et al., 2015; Mezirow, 2000; Nold, 2017; Raikou, 2016). Within these styles of teaching, it is important to note that while critical thinking is a generalizable skill, students demonstrate higher levels of critical thinking when asked to apply it in a discipline-specific context (Dwyer et al., 2015). Practitioners should also be aware of the existing critical thinking abilities of their students when designing curricula and assignments. Focusing too much on the foundations of critical thinking has the potential to cause students already engaged in higher level thinking to regress (Grussendorf & Rogol, 2018).

Such differences support the creation and use of a standardized critical thinking framework. Use of a framework is only the first step in effectively teaching critical thinking. Elder and Paul (2010) explicitly note that students cannot progress through the levels of stage theory without a firm understanding of how thinking skills are developed.

They created a toolkit for practitioners outlining strategies for successfully integrating critical thinking in the classroom and providing a concise definition of critical thinking used to ground their framework for critical thinking development (Paul & Elder, 2006). In addition to developing a guiding framework, it is imperative that appropriate pedagogical techniques are used to engage students in critical thinking. Using the principles of transformative learning theory (Mezirow, 1997) to guide the design of curricula and craft teaching strategies can provide a solid foundation for the teaching and learning of critical thinking skills.

Theoretical Intersection

The intersection of stage theory and transformative learning theory occurs in examining how and why students experience critical thinking as they do. Both stage theory and transformative learning theory identify frameworks for exploring *how* students think; Mezirow's work embodies the tenets of the final three steps in stage theory. Transformative learning theory also lends itself to explaining *why* students think the way they do. The early steps in transformative learning theory are structured to provide students with the necessary framework to explore their internalized biases and beliefs, essentially exposing them to Bordieu's (1985) idea of habitus. Habitus is one's inherent beliefs about one's place in society. These internalized beliefs are translated through the types of cultural capital into actions and practices used in the reproduction of existing status structures; in other words, actions are a direct result of capital and habitus within a

given field (Dumais, 2002). Both Mezirow (1991) and Bordieu (1997) contend that these

beliefs can be changed, either through a disorienting dilemma and reflection (Mezirow)

or through social interaction or changes in field (Bordieu). As these beliefs change,

learners pass through the final stages of Elder and Paul's (1996) framework, ultimately

achieving "Accomplished Thinker" status, whereby they are able to deeply reflect on

their own thinking and the factors that influence the way in which they think.

<p align="center">Critical Thinking and Gender</p>

Studies exploring gendered differences in critical thinking have primarily focused

on differences in performance and achievement levels on specific assessment instruments

(Bycio & Allen, 2009; Danvers, 2015; Dwyer et al., 2015; Raikou, 2016). Danvers

(2015) approaches her research from a feminist theory perspective, investigating the

differences between genders in their approach to critical thinking. She posits that the way

critical thinking is taught is perceived differently by students, depending on their gender.

She further notes that positioning critical thinking within an individualized context

"invites interpretations that focus on the interconnections between critical thinkers and

their contexts as well as on the acts of boundary making that constitute practices of

criticality, and *what* and *who* they include/exclude" (Danvers, 2015, p. 283).

Deconstructing critical thinking and viewing it through a gendered lens allows for a

deeper evaluation of the connection between social and environmental inputs,

pedagogical standards, and critical thinking (Danvers, 2015; Fenwick & Edwards, 2013).

<p align="center">24</p>

There is not, however, a consensus among researchers about the effect of gender on critical thinking (Brown & Bielinska-Kwapisz, 2015). Bycio and Allen (2009), for example, found there to be no significant differences between genders in the level of performance on a standardized critical thinking exam. Their exploratory study looked at the relationship between performance on the California Critical Thinking Skills Test (CCTST) and several variables, including gender. Though the CCTST 2000 manual advised that previous versions of the test did not show significant differences in performance by gender (Facione et al., 2002), Bycio and Allen elected to include gender as one of their key variables to be tested in order to confirm this claim. An analysis of variance was used to test this hypothesis, ultimately indicating no significant difference in performance based on gender.

Brown and Bielinska-Kwapisz (2015) also used the CCTST to look at gender differences in critical thinking ability. Using a series of regression analyses on the different sub-sections of the CCTST, Brown and Bielinska-Kwapisz (2015) concluded that male students participating in a specific educational experience gain more in terms of critical thinking development than their female peers. Using the same logic as Danvers (2015), Raikou (2016) contends that it is not just gender that shapes the way students perceive critical thinking. Therefore, a holistic view of a student's sociocultural background, including factors like gender and socioeconomic status, must be considered

when determining how best to teach critical thinking (Bourdieu, 1985; Mezirow, 1997; Raikou, 2016).

Regardless of a researcher's position on accounting for sociocultural differences in teaching critical thinking, most agree that critical thinking is a process, and as such, a framework or detailed model must be provided to students in order to increase critical thinking skills (Brookfield, 2005; Brookfield, 2012; Dwyer et al., 2015; Raikou, 2016). Several studies indicate that students do not understand critical thinking in the same way (Brown & Bielinska-Kwapisz, 2015; Danvers, 2015; Mitchell, Johnston, Myles, & Ford, 2004; Raikou, 2016). Raikou (2016) explored this discrepancy through the way her study was conducted, analyzing student views at various points in the process and comparing them to a control group who had not participated in critical thinking workshops.

Mitchell et al. (2004) note that students' individual learning experiences shape the way they move through the critical thinking process, indicating that while a consistent process or framework may be provided to facilitate critical thinking, students will approach the process differently based on their own experiences. Danvers (2015) built on Mitchell et al.'s (2004) work, noting that while individual experiences impact critical thinking, the way in which students interact with the world around them contributes heavily to how they interpret criticality. Similarly, Brown and Bielinska-Kwapisz (2015) looked specifically at how academic programs impact students' critical thinking ability.

The inconsistencies among faculty regarding the understanding of critical thinking could significantly contribute to the lack of critical learning among students (Desai et al., 2016).

Successful development of a critical thinking model requires input from faculty, administration, and students. Existing models (e.g., stage theory, Bloom's Taxonomy) were designed to provide faculty with a roadmap for teaching critical thinking skills and strategies for accommodating different levels of critical thinking skills in their classrooms. Neither of these models, however, accounted for the way students understand critical thinking. The way in which students understand critical thinking contributes to their overall critical thinking ability (Heinrich et al., 2015) yet this perspective is not integrated into the existing body of critical thinking research.

Though not an exhaustive list, the studies discussed previously are representative of the trend in critical thinking research to use performance-based, quantitative measures to evaluate changes in critical thinking ability through standardized assessments. What they do not address is how students of different genders perceive their own critical thinking abilities, nor do they look at overall student perception of critical thinking. These same studies also fail to look at differences by discipline because the assessment instruments situate critical thinking within a general knowledge discipline. With few exceptions (Bycio & Allen, 2009; Heinrich et al., 2015; Raikou, 2016; Reid & Anderson, 2012), critical thinking studies have not been conducted in discipline-specific classrooms or programs.

Critical Thinking and Business Education

As with studies examining the impact of gender on critical thinking skills, studies examining discipline-based differences are evaluated by student performance on critical thinking assessments, and do not investigate how students in different majors perceive critical thinking.

Bycio and Allen's (2009) previously discussed study also looked at differences in performance on the CCTST by major. Though the CCTST 2000 manual advised that the test did not discriminate among students based on major (Facione et al., 2002), Allen and Bycio's (1997) previous research on standardized testing instruments found significantly higher levels of performance from accounting and finance students. Based on this finding, in their 2009 study, Bycio and Allen posited that differences in major may also impact CCTST performance. An analysis of variance demonstrated that there were no significant differences in performance by major.

Business education is often considered to focus on specialized skill-based education, rather than the application of knowledge in broad contexts (Smith, 2003). As a result, students have high levels of content knowledge, but have difficulty using those skills to solve problems or make decisions. Acknowledging the struggle to impart critical thinking skills among their students, business schools began to develop courses in managerial decision making in an attempt to teach critical thinking (Accounting Education Change Commission, 1990; Porter & McKibbin, 1988; Smith, 2003). These

courses, however, focused on specialized knowledge, rather than application in a broad context. Conversely, Smith argues, business schools that attempt to teach critical thinking directly fail because the concept is not linked to content knowledge. Instead, critical thinking is incorporated as an element of classroom activities and individual assignments (e.g., case studies, writing assignments) designed to encourage student reflection and analysis (Heinrich et al., 2015; Reid & Anderson, 2012; Smith, 2003).

Reynolds (1997, 1999) thought teaching critical thinking through individual assignments was ineffective and was also in direct opposition to the philosophy of Paul and Elder's stage theory of critical thinking (1996) which asserts that students learn critical thinking in stages, and that one must progress through each stage in order to become a successful critical thinker. As a result, Reynolds developed critical management pedagogy (CMP) to help business schools realign their views on critical thinking in order to implement a more holistic approach to imparting critical thinking skills to students. CMP builds on the tenets espoused in stage theory, focusing on shifting students' thinking skills from a granular, individual perspective to a broad organization-level perspective, the ultimate goal being to create improved managerial thinkers (Reynolds, 1997).

Despite Reynolds' efforts, CMP did not inspire huge changes to general business curricula. Instead, business schools continued in their traditional approaches, attempting to teach critical thinking through individual assignments and classroom exercises. Smith

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(2003) posits this regression is because the models proposed by Reynolds (1997) and Paul (1993) do not incorporate the skills needed for students to become effective managers. Their respective models focus on increasing skepticism among students, encouraging them to question every piece of information they encounter, but fail to address the role of discipline-specific skills and traits in informed decision making; there is, however, value to be found in the stepwise approach promoted in these models (Smith, 2003).

Smith (2003) proposed business schools embrace the most effective parts of the traditional approach to critical thinking, i.e., teaching students how to think, and present it through a discipline-specific lens so students are able to understand how problems can be solved within the context of their broader organization. Dwyer et al. (2015) investigated this approach, using a series of non-parametric tests to evaluate whether or not study participants with a formal business education achieved higher levels of performance on a business-related critical thinking assessment than their peers without a business background. Results indicated that those with a business-related education performed significantly better on a business-related critical thinking assessment than those with a non-business education. From these results, Dwyer and colleagues (2015) concluded that students demonstrate higher levels of critical thinking ability when problems are placed in the context of a specific discipline.

Others, however, have found that context is irrelevant to critical thinking performance in business disciplines. Reid and Anderson (2012) incorporated case study analyses and classroom activities into a senior business classroom and then used a pre-post testing design to evaluate student performance on the California Critical Thinking Skills Test (CCTST). Classroom instruction was based on Foshay, Silber, and Stelnicki's (2003) Cognitive Training Model, a framework for critical thinking instructional design based on Halpern's (1998) Teaching for Critical Thinking model, specifically designed to teach critical thinking skills irrespective of academic discipline. While this approach was successful in Reid and Anderson's (2012) study, it does not address the fact that while the study took place in a business classroom, the pedagogical tools and frameworks were designed to improve critical thinking performance on the CCTST, a general knowledge exam. This raises questions about whether or not the results would have differed if the exam had been one rooted in business disciplines. This study concluded that students were able to improve thinking skills when asked to apply the skills taught in a business classroom in a general context, but also acknowledged that the study did not address whether or not the business knowledge had impacted their performance or if student performance was increased because they were business students.

Smith (2003) and Dwyer et al. (2015) asserted the opposite, noting that discipline specificity matters in both the teaching and learning of critical thinking. Heinrich and colleagues (2015) concurred and further broadened the discussion by framing it within

the context of discipline-specific experiential learning. Researchers conducted a document analysis of critical thinking assignments collected across four courses to establish baseline data. These data were used to inform the types of interventions to be made in each course to incorporate an experiential learning component. Data were again collected after the addition of an experiential learning component to each course. The research team concluded that, when paired with experiential learning, the importance of engaging content becomes more pronounced. Creating a scaffolded, iterative process for teaching and learning allows students to apply the discipline-specific skills they have learned in broader contexts (Heinrich et al., 2015).

Researchers present strong cases for using experiential learning to teach critical thinking, though there are limited data available about whether these experiences should be placed in a discipline-specific context, or how they should be adjusted to account for differences in sociocultural background. Dwyer et al. (2015) asserted that critical thinking becomes stronger when it is placed within a specific discipline but failed to address gender or socioeconomic differences. Danvers (2015) focused on gendered differences in critical thinking and began to address why it is important to tailor learning experiences to reflect these differences. Raikou (2016) used the same principles as Danvers but focused on socioeconomic and sociocultural differences rather than gender.

Rationale for the Study

The review of literature has explored two different theories linked to critical thinking skills. Given the increased focus on strong critical thinking skills in the job market (AACU, 2013), students who are able to successfully demonstrate critical thinking skills will be more highly sought after and more likely to succeed in the workplace. Building these skills is a process that can be approached in stages through the use of a framework (Brookfield, 2005; Brookfield, 2012; Dwyer et al., 2015; Elder & Paul, 1996; Raikou, 2016). Linking critical thinking skills to contexts within a particular discipline also helps deepen understanding (Dwyer et al., 2015; Heinrich et al., 2015; Smith, 2003). When presented in a context that also accounts for individual experiences and sociocultural influences, students are even more likely to succeed in strengthening their critical thinking skills (Bourdieu, 1985; Brown & Bielinska-Kwapisz, 2015; Danvers, 2015; Mezirow, 1997; Raikou, 2016).

There is clear evidence that critical thinking skills are one of the strongest predictors of student success (Rode et al., 2008). While researchers understand how vital critical thinking is to continued student success, there is still much research to be done to definitively understand how external factors impact critical thinking ability. While gendered, socioeconomic, and sociocultural differences have been explored in a variety of contexts (Brown & Bielinska-Kwapisz, 2015; Danvers, 2015; Dumais, 2002; Fenwick & Edwards, 2013), few studies have been conducted within the context of specific

disciplines, and even fewer in the area of business education. Some researchers (i.e., Nold, 2017; Reid & Anderson, 2012) have studied critical thinking in a particular classroom setting, but the focus has been on assessment measures rather than how the discipline was able to serve as a conduit for increasing critical thinking skills.

Elements of stage theory and transformative learning theory have been used to frame the research around critical thinking. Further work must be done to investigate not only the ways in which sociocultural factors and experience shape the critical thinking process, but also to examine the relationship between the two theories and their application to critical thinking, particularly in the area of business education.

In this study, I examined the importance of discipline-specificity to critical thinking in business education, whether gender shapes the perception of critical thinking skills, and whether these factors influence students' overall experience with critical thinking in an undergraduate business curriculum. The current body of research is inconclusive in these areas; as a result, the importance of discipline-specificity and gender to critical thinking skills should continue to be studied. Previous studies have examined both academic discipline and gender through quantitative methodologies, looking at how these factors contribute to student performance on critical thinking assessments. Results are then presented in ways that either reinforce existing teaching methods or present suggestions for how instruction can be altered to increase student performance (Heinrich et al., 2015; Nold, 2017; Reid & Anderson, 2012). What is not

examined, however, is how these factors influence the way students understand critical

thinking as a concept and their perceptions of the value of critical thinking skills.

The following research questions were used to guide this study:

1. How do undergraduate business students perceive and experience critical

   thinking?

2. How do students perceive and experience critical thinking through the lens of

   gender?

3. How do students perceive and experience critical thinking through the lens of

   academic discipline?

Understanding of student experience and perception lends itself to a qualitative research

approach (Creswell, 2013). Details of the methodology used in this study are included in

Chapter 3.

CHAPTER 3

METHODOLOGY

The literature informing this study incorporates elements of two theoretical perspectives: stage theory (Elder & Paul, 1996) and transformative learning theory (Mezirow, 1997). Interview and focus group questions were developed to look at experiences with, and understanding of, critical thinking through the collective lens of these theories.

As part of the Business School's efforts to redesign the curriculum, I had previously conducted informal interviews with business students as a way to incorporate student feedback into the redesign. Comments collected in those interviews led to the development of this study as a means for investigating how academic discipline and gender influence the way students absorb critical thinking skills.

Role of the Researcher

Interest in studying the way in which students experience critical thinking was a direct result of my professional role at the Business School. In this context, I co-led the efforts to redesign the undergraduate program to teach critical thinking, communication, and quantitative reasoning through the lens of business content knowledge. My specific interest in critical thinking came directly from witnessing the faculty struggle to define what it meant, both in general and in a business context. This struggle led me to question how students defined critical thinking and if it aligned with the faculty interpretation.

Follow-up interviews with interested students indicated that both students and faculty defined critical thinking in similar fashion, but also raised additional questions about how students of different genders and majors interpreted the importance of critical thinking. The focus groups and interviews used to conduct this study provided insight into student expectations of critical thinking and offered ideas as to how to best incorporate critical thinking into the undergraduate business curriculum to accommodate the needs of faculty, students, and employers.

Study Design

Understanding of student experience and perception lends itself to a qualitative research approach (Creswell, 2013). Denzin and Lincoln (2011) define qualitative research as a methodology that allows researchers to "study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (p. 3). Creswell (2013) expands on this definition, noting that a qualitative research approach is appropriate when the issue in question requires an in-depth, detailed understanding of the shared experience. Because this study was designed to capture the nuance of a shared experience, a quantitative methodology would not have provided the necessary detail to understand why students perceive critical thinking as they do.

A phenomenological approach was employed in this study to determine how student perceptions of critical thinking in an undergraduate business program informed

their experiences. Creswell (2013) suggests that the use of two broad questions provides a foundation needed by the researcher to create a deeper understanding of the phenomenon and participant experiences through the use of additional open-ended questions. In this study, the research questions provided the broad foundation necessary to create an initial, contextual understanding of the problem. Interview and focus group questions were used to develop the deep understanding of the students' shared experience.

The research questions for this study emerged as areas for future research after informal interviews with students in spring 2017. This study was designed to build on the questions raised during those interviews, using similar qualitative research strategies.

Site and Participant Information

Participation in this study was limited to students enrolled in the Business School at Midatlantic University. Business School facilities and available software were used to conduct focus groups and semi-structured interviews with participants. Participants were selected through a purposeful sampling method to ensure all participants met established criteria. Creswell (2013) notes that this type of criterion sampling is particularly useful in a phenomenological study because it guarantees that all participants have experienced the phenomenon being studied. For this study, participants were invited to participate based on their status as undergraduate students at the Business School. Both Creswell (2013) and Moustakas (1994) advise that participants in phenomenological studies should have experienced the phenomenon under investigation in both a significant and meaningful

way; therefore, participation in this study was initially limited to junior level students who entered the Business School as freshmen. The assumption, based on demonstrated differences in previous work during the curricular redesign, is that upperclassmen have a deeper wealth of experience with critical thinking in the BBA Core than underclassmen who have a smaller range of experience. Further, junior level students had participated in the redesigned curriculum, which officially launched during their freshmen year, AY 2017-18. Similarly, transfer students may have a broad context for critical thinking, but their experiences at the Business School had the potential to be influenced by experiences at their previous institutions.

Prospective participants were notified of the opportunity to participate in focus groups through the Business School Leadership Development Program (BSLDP). The BSLDP is a mandatory, co-curricular engagement program which requires students to earn a certain number of points through participation in events and experiences in each year of their undergraduate career. Focus groups were included as an option to earn 40 points between November 2019 and September 2020. Prospective participants completed a short Google form to indicate their gender, major, availability for focus groups, and interest in participating in a follow-up interview, as well as confirming their class standing and transfer status. Students who indicated an interest in participating in a follow-up interview were contacted via email to arrange a date and time for the interview.

Qualitative research lends itself to smaller sample sizes than quantitative research, because qualitative studies seek to create meaning rather than generalizable knowledge (Crouch & McKenzie, 2006). Saturation, or the point when no new data are forthcoming, is frequently used to determine when the qualitative sample size is sufficient (Glaser & Strauss, 1967). It should be noted, however, that achieving saturation is a "matter of degree" (Strauss & Corbin, 1998, p. 136), and researchers should be wary of declaring the saturation point too early in the study. Strauss and Corbin (1998) suggest that saturation has been achieved only when new data no longer add anything to the interpretive framework. Due to the fluid nature of saturation, some qualitative methodologists have tried to offer loose guidelines regarding sample size. Bertaux (1981) suggests no fewer than 15 participants constitute an appropriate sample size regardless of the type of qualitative study; for phenomenological studies, Creswell (1998) suggests between five and 25 participants, while Morse (1994) advocates for a minimum of six participants but does not set an upper limit.

This study followed these guidelines and included 22 participants. An overview of participant information is provided in Table 3.1. Note that participants have been assigned pseudonyms to preserve their anonymity.

Table 3.1 Participant Information						
Name	Major	Gender	Class Standing	Entered Business School as Freshmen	Focus Group Date	Interview Date
David	Entrepreneurship and Innovation Management	Male	Junior	Yes	11/20/19	N/A
Marie	International Business	Female	Junior	Yes	11/20/19	N/A
Andrew	Finance	Male	Junior	Yes	11/20/19	N/A
Daria	International Business	Female	Junior	Yes	2/28/20	N/A
Mark	Statistical Science and Data Analytics	Male	Junior	Yes	2/28/20	N/A
James	Actuarial Science	Male	Junior	Yes	3/26/20	N/A
Sean	Accounting	Male	Junior	Yes	3/26/20	N/A
John	Finance	Male	Junior	Yes	4/14/20	N/A
Carl	Supply Chain Management	Male	Junior	Yes	4/14/20	N/A
Candace	Management Information Systems	Female	Senior	Yes	8/24/20	9/1/20
Christine[a]	Management Information Systems	Female	Senior	Yes	8/27/20	N/A
Charlotte	Management Information Systems	Female	Senior	Yes	8/24/20	9/4/20
Ellen	Human Resource Management	Female	Senior	Yes	8/27/20	N/A
Tanya[b]	Entrepreneurship and Innovation Management	Female	Senior	Yes	9/10/20	9/10/20
Lindsay	Human Resources Management	Female	Senior	Yes	8/27/20	9/8/20

Table 3.1 *(continued)*						
Name	Major	Gender	Class Standing	Entered Business School as Freshmen	Focus Group Date	Interview Date
Michelle[c]	Accounting & Legal Studies	Female	Senior	Yes	8/28/20	9/8/20
Steve	Management Information Systems	Male	Senior	Yes	8/24/20	9/3/20
Alice	Marketing	Female	Senior	Yes	9/10/20	9/19/20
Joan	Marketing & Entrepreneurship	Female	Senior	Yes	9/11/20	N/A
Joseph	Marketing	Male	Senior	Yes	9/10/20	N/A
Julian	International Business & Marketing	Male	Senior	Yes	9/11/20	N/A
Natalie	Marketing	Female	Senior	Yes	9/11/20	N/A

[a]This participant was asked the focus group questions in an individual setting.
[b]This participant completed the focus group and interview questions during the same session.
[c]This participant was asked the focus group questions in an individual setting.

As an incentive to participate, students were awarded BSLDP points, a certain number of which are required in order to graduate from the Business School. To control for differences in experience due to class standing or at other institutions, participation was initially limited to students classified as juniors who entered the Business School as freshmen. However, data collection was interrupted by COVID-19 in March 2020, resulting in some participants being classified as seniors who entered the Business School as freshmen. Those in this category were in the same cohort as students who participated

before COVID-19; in other words, had they been able to participate in Spring 2020, they would have been classified as juniors who entered the Business School as freshmen.

Focus groups began in November 2019; in March 2020, research was interrupted by the emergence of the COVID-19 pandemic. At that time, focus groups and interviews were moved into a virtual format, which impacted the length of time needed to gather the necessary data. As a result, focus groups and interviews were conducted throughout summer and fall of 2020 which necessitated a change in the class level of participants. To maintain consistency with the initial focus group participants, students interviewed after May 2020 were senior level students who entered the Business School as freshmen.

Participants indicated their majors when signing up for the study; majors offered by the Business School include: accounting; actuarial science; business management; economics; entrepreneurship and innovation management; financial planning; finance; human resource management; international business administration; legal studies; management information systems; marketing; real estate; risk, insurance, and healthcare management; statistical science and data analytics; and supply chain management.

Note that while Business School students have the option to major in economics, the program is administered by the College of Liberal Arts, and so is not included in the scope of this study. The Business School also offers a major in business management through the Department of Human Resource Management. This major comprises a large non-traditional student population. Because this study was targeted to traditional, junior-

level students, business management majors have been excluded from the scope of this study. As with transfer students, business management students' critical thinking experiences at the Business School had the potential to be influenced by experiences from outside institutions or the workplace.

Regardless of major, all participants in this study were considered business students. As such, they are required to complete the same core curriculum, which includes courses from each business school major and department. A complete list of core courses is available in Appendix A.

The participant pool resulted in 22 students representing 11 majors; three participants were pursuing a double major, and one identified herself as part of the Business School Honors Program. Nineteen students participated in small focus groups, with two students answering the focus group questions in an individual setting. Of those students, six participated in follow-up individual interviews. In one instance, multiple students signed up for a focus group, but only one participant arrived at the scheduled time. This student had also indicated an interest in a follow-up interview, so the session covered both the general focus group questions and the specific interview questions.

Data Collection and Analysis

This study used a combination of focus groups and semi-structured individual interviews to gather data to explore each research question. This type of interview structure treats each interaction as a "conversation with a purpose" (Dexter, 1970, p.136),

which allowed me to establish and build rapport with each participant in order to fully understand each participant's perspective (Patton, 2015).

Using methods similar to those used by Garrison, Herring, and Hinton (2013) and espoused by Moustakas (1994), individual interview participants were asked about their experience with critical thinking in the curriculum and what factors influenced their experience. Merriam and Tisdell (2015) note that interviewing is a necessary methodology when seeking to understand how participants understand a shared experience. Following the interview techniques used by Garrison et al. (2013), a common set of guiding questions was used in all individual participant interviews. Questions were designed to fall into the six categories defined by Patton (2015): 1) Experience and behavior questions; 2) Opinion and values questions; 3) Feeling questions; 4) Knowledge questions; 5) Sensory questions; and 6) Background/demographic questions. The individual interview protocol is included in Appendix B.

Using focus groups to gather data is a common strategy in both market research and social science research, particularly when the goal is to understand the collective perspective about a topic (Hennink, 2014; Merriam & Tisdell, 2015). In the case of this study, focus groups provided an ideal conduit for examining shared experiences in the undergraduate curriculum with critical thinking. Hennink (2014) notes that focus groups allow data to grow organically because they create an interactive environment where participants' ideas are able to evolve as they process and understand the experiences of

others within the group. In other words, focus groups provide a sort of incubator for a set of collective ideas for participants who have shared characteristics; in this case, undergraduate business students who started at the Business School as freshmen in AY 2017-18.

Two focus groups were conducted prior to March 2020 and were held in conference rooms at the Business School. These two sessions lasted approximately 45 minutes each. Focus groups held between March and September 2020 were conducted virtually via Zoom. These sessions were shorter than the in-person sessions, ranging in length from 20 to 40 minutes. Three broad prompts were used to guide the first two focus groups. During the second focus group, participants initiated a deep conversation exploring the relationship between technology and critical thinking. As a result, an additional prompt about technology was added to the focus group protocol. The final set of focus group prompts are available in Appendix C.

A formal interview protocol served as the foundation of each individual interview, but in accordance with accepted qualitative interview techniques (Glesne & Peshkin, 1992; Merriam & Tisdell, 2015; Seidman, 2013), additional probing and clarifying questions were used to delve further into each participant's experience. Interviews focused on individual experiences of critical thinking within the context of the participant's major. Focus groups took a more collectivist approach, seeking to understand the overall experience of undergraduate students with critical thinking in the

business curriculum. Follow-up individual interviews with select focus group participants were used to more deeply explore each participant's experiences with critical thinking in the business program. Core questions remained constant across populations, though follow-up and probing questions varied, based on each participant's answers.

Focus Group Design

A series of focus groups was used to address the overarching research questions because the goal of this study was to understand the collective experiences of critical thinking among undergraduate business students. While this information could have been collected through individual interviews, part of the value of a focus group comes from the interaction among participants. Such interaction creates an environment where participants are able to more critically reflect on particular parts of their experiences (Morrison, 2001). Information gathered from focus groups served to create a participant-focused framework for analysis, rather than using my own biases as a guide (Morgan & Spanish, 1984).

Composition is crucial to focus group success. In general, some level of homogeneity should be achieved in order to minimize discomfort on the part of the participants. Participants should feel comfortable sharing their ideas and experiences without fear of ridicule or judgment from other members of the group (Greenbaum, 1998). It is, however, important for groups to have some level of heterogeneity so that a full range of perspectives can be explored, and richer data can be collected (Hisrich &

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Peters, 1982; Krueger, 1994). Acocella (2012) suggests that the proper balance can be achieved by constructing groups based on the characteristic(s) most relevant to the research question(s). For this study, group homogeneity was achieved by limiting participation to undergraduate business students who entered the Business School as freshmen in AY 2017-18. Heterogeneity was achieved by having students of different genders and academic disciplines comprise each focus group.

In each focus group, a general prompt – "critical thinking in the Business School curriculum" – was used to initiate discussion. Acocella (2012) suggests that such an approach allows the answer to the question to "generate from the dynamics of opinions expressed in the discussion" (p. 1129). Kitzinger and Barbour (2001) concur, asserting that the value of a focus group lies in the interaction and debate among group participants. This can be achieved through the use of two key elements: 1) not asking questions of each participant; and 2) avoiding questions that focus on individual experiences (Acocella, 2012; Frey & Fontana, 1993). A follow-up series of questions, similar to those used in the individual interviews, was used to ensure focus group discussions progressed smoothly. The focus group question guide is included in Appendix C.

The use of focus groups also presents a challenge to the validity of the data collected. While focus groups are useful for looking at the collective experience of a group of participants, there is always the risk that participants will tailor their answers to

conform with the experiences of their peers. There are ways to combat this, including asking participants to write a brief response to the general prompt and then reading each prompt aloud to facilitate discussion (Acocella, 2012). This keeps responses anonymous and creates a more welcoming environment for the exploration of ideas. It was not necessary to employ this strategy in this study because participants did not hesitate to share their experiences. Participants frequently directed their responses to each other rather than to me. This allowed for a more conversational atmosphere, wherein I interjected follow-up questions or refocused the conversation on an as-needed basis.

Interview Design

Based on the interview techniques used by Garrison et al. (2013), I developed a set of guiding questions to use in all participant interviews. As in this study, Garrison et al. (2013) sought to understand the experiences of a group who had recently experienced a common event, specifically faculty who had participated in the accreditation process. Garrison's team sought to "capture the essence of the accreditation process from the perspectives of those most intimately involved" (p. 9) in order to understand the impact the accreditation process had on faculty members' professional experiences. In this study I sought to mirror this approach in order to understand the experiences of undergraduate business students who have engaged in the BBA Core curriculum.

When viewing the size and diversity of the Business School's undergraduate population through the lens of cultural capital theory, it becomes apparent that simply

asking students about their experiences isn't enough. If, as Bordieu (1985) says, accumulated knowledge is a result of one's learned experience and social field, it stands to reason that different sub-populations of undergraduate business students will experience the BBA Core curriculum differently. Working under this assumption, this study used interviews with sub-populations, namely gender and academic discipline, to create a more nuanced understanding of how students experienced critical thinking within the curriculum. My knowledge of the BBA Core was instrumental in developing appropriate questions situated within the context of the intersecting theoretical base of stage theory and transformative learning theory.

Data Analysis

To ensure the trustworthiness of the data, and as an initial step towards triangulation, participant focus group and individual interviews were audio-recorded and video-recorded and then transcribed. Jottings were used as a second method of recording data during each focus group; these jottings were converted to field notes for further verification of the data. Each session was recorded through Zoom, which also provided a transcript of the recording. Recordings were also transcribed through the Otter.ai platform and compared to the Zoom transcriptions to address any inconsistencies or discrepancies. Transcripts from each focus group and interview were further reviewed during the coding process and compared to the original audio recordings to ensure accuracy.

Transcripts were coded using the process outlined by Saldana (2016). This process involved reading each transcript and looking for patterns in the data. This pattern of open coding followed by axial coding allowed for the development of broad themes used to address each research question. This process aligned with Moustakas' (1994) phenomenological analysis methods, wherein I reviewed transcripts and field notes individually, highlighting key statements or phrases that explained how participants understood their experience with the phenomenon being studied (i.e., critical thinking). These statements were used to create clusters of meaning, which informed the textural description of the participants' experiences. Each of these steps built on the data in the previous step, resulting in a final description of the common experience.

Coding of focus group and interview transcripts was completed over a series of two weeks, rather than throughout the process, in order to maintain the use of consistent codes. The same process was used for both the focus group and interview data. Codes were managed using dedoose software. Dedoose is cloud-based application that provides a central location to manage all materials associated with qualitative and mixed methods studies. Dedoose is a tool to manage qualitative codes and provides a mechanism for assigning descriptive characteristics to interview and focus group transcripts to allow for analysis by descriptor. This platform served as a repository for the coding structure and data excerpts. It further provided basic visualizations which helped identify how

frequently codes were used together and how they were applied based on descriptive characteristics.

Initial review of the focus group and interview data through the open coding process resulted in 505 unique codes, each of which identified a key word or phrase related to the research questions. Review of these codes indicated that 51% were applied once across all interviews and focus groups. Codes were subsequently re-reviewed to determine which of the 51% could be merged with other, more frequently occurring codes. Axial coding continued until direct connections between codes could no longer be made. This process resulted 150 unique codes. Resulting codes were reviewed in the context of the individual focus group or interview and selectively coded into broad themes to establish a baseline view of students' perceptions of critical thinking. Selective codes were influenced by the principles of stage theory and transformative learning theory; commonalities relating to the process of critical thinking, experiences that influenced critical thinking, and skills associated with critical thinking explicitly draw on the intersection of the two theories.

Theoretical Framework

Data analysis was grounded in the tenets of both the stage theory of critical thinking (Elder & Paul, 1996) and transformative learning theory (Mezirow, 1997), with particular emphasis placed on the intersection of these two theories. As discussed in Chapter 2, the intersection of these theories occurs in examining how and why students

experience critical thinking as they do. Focus group and interview protocols were designed specifically to uncover these experiences. Collected data were analyzed through the lens of this theoretical intersection, particularly in later rounds of coding. Notes were made throughout the coding process indicating exchanges between participants that aligned to the ideas espoused in stage theory and/or transformative learning theory.

Elder and Paul's (1996) model articulates the six stages of critical thinking development. At its core, stage theory is hierarchical, providing a framework for intellectual development; it also acknowledges, however, that regression is possible as learners encounter new challenges to their skills development. Each stage is defined by specific features and thinking skills. Elder and Paul (1996) attest that as learners move through each stage, they begin to challenge their own way of thinking and actively understand the role critical thinking plays in the way they digest, analyze, and interpret information. The six stages are shown in Figure 3.1.

The Unreflective Thinker	The Challenged Thinker	The Beginning Thinker	The Practicing Thinker	The Advanced Thinker	The Accomplished Thinker
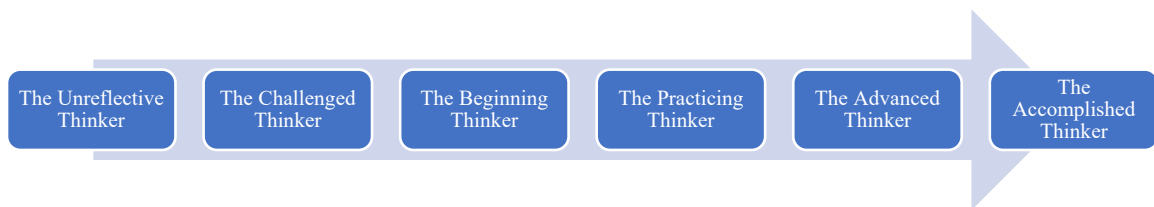
Figure 3.1. <u>Stage Theory of Critical Thinking.</u>

Elder and Paul's (1996) stage theory focuses on the necessity of using a strong framework to help learners develop their critical thinking skills and achieve higher levels of intellectual development. Mezirow (1997) similarly embraced the use of a framework

to guide the development of the critical thinking skills. His work, however, was less about why a framework is necessary and more about how to use a framework to facilitate the development of critical thinking skills.

Mezirow's (1997) transformative learning theory provides a framework for challenging the way learners think through the use of a disorienting dilemma. This approach presents a challenge to the learner's existing worldview, forcing them to engage in deep self-reflection as they move through ten phases of critical thought. The 10 phases of transformative learning theory are shown in Figure 3.2.
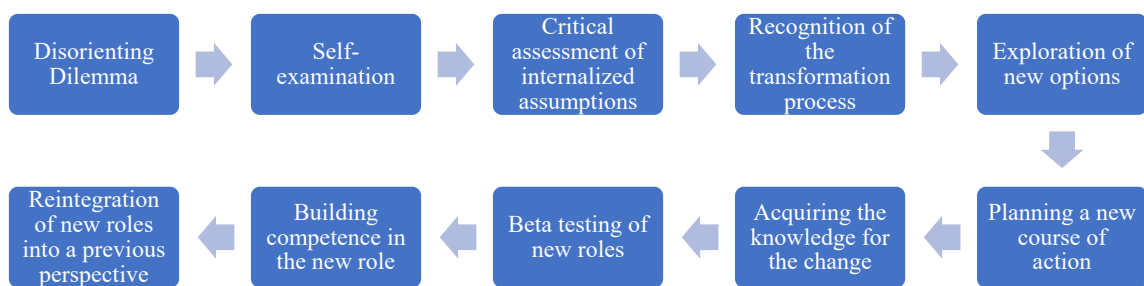
Figure 3.2. Transformative Learning Theory.

Like stage theory, transformative learning theory emphasizes the importance of self-reflection to learning and skill development. The tenets of this theory are deeply intertwined in the later stages of stage theory, where learners question their existing worldviews and experiences and are cognizant of how their underlying biases influence their thinking.

The intersecting components of these theories grounded this study's data analysis. Both offer frameworks for analyzing how students think, while Mezirow's work lends

itself to explaining why students think in a certain way. When combined, the two theories

provide a guided approach to understanding what factors influence and impact the way

students critically think.

CHAPTER 4

FINDINGS

Research questions were nested within the broad context of student perception of critical thinking; therefore, overarching themes related to general student perception of critical thinking follow in the next section. Focus groups were used to establish general perceptions of critical thinking among undergraduate students. Data gathered from individual interviews were used to examine perceptions of critical thinking as related to gender and academic discipline, nested in the context and themes generated from the focus group data.

Focus Group Profiles

Twenty-two students volunteered to participate in a focus group after receiving an email offering the opportunity to earn BSLDP points by engaging with this research. Two students answered the focus group questions in an individual setting. One student completed the focus group and follow-up individual interview concurrently; findings from her session are excluded from this section but included in the discussion of the individual interview themes.

Ten focus groups were conducted between November 2019 and September 2020. Focus groups prior to March 16, 2020 were held in a conference room at the Business School. Broad questions designed to facilitate a conversation about general perceptions of critical thinking in the undergraduate business program were used to prompt participant

responses. Focus groups were audio and video recorded through Zoom, with a secondary

audio recording completed using an iPhone. Focus groups held between March 2020 and

September 2020 were conducted virtually through Zoom. These sessions were audio and

video recorded using the Zoom platform. Focus group recordings were transcribed

through the Otter.ai platform and reviewed by me for accuracy. Transcripts were

uploaded to the dedoose platform to facilitate coding. Coding was completed by hand in

dedoose's interface; initial codes were reviewed multiple times to identify common ideas

and patterns in the data.

Due to scheduling issues and no-shows, two participants answered the focus

group questions in an individual setting; information for these two sessions are included

in Table 4.1. Table 4.2 shows the composition each focus group. Sessions are identified

by a number reflective of the order in which they occurred.

Table 4.1				
Interview Participants Who Answered Focus Group Questions Individually				
Interview Number	Interview Date/Time	Name	Major	Gender
6	8/27/20 2:00 p.m.	Christine	Management Information Systems	Female
8	8/28/20 9:00 a.m.	Michelle	Accounting & Legal Studies	Female

Table 4.2				
Focus Group Participant Overview				
Focus Group Number	Focus Group Date/Time	Name	Major	Gender
1	11/20/19 1:00 p.m.	David	Entrepreneurship and Innovation Management	Male
		Marie	International Business	Female
		Andrew	Finance	Male
2	2/28/20 1:00 p.m.	Daria	International Business	Female
		Mark	Statistical Science and Data Analytics	Male
3	3/26/20 12:00 p.m.	James	Actuarial Science	Male
		Sean	Accounting	Male
4	4/14/20 10:00 a.m.	John	Finance	Male
		Carl	Supply Chain Management	Male
5	8/24/20 3:00 p.m.	Candace	Management Information Systems	Female
		Charlotte	Management Information Systems	Female
		Steve	Management Information Systems	Male
7	8/27/20 9:00 a.m.	Ellen	Human Resource Management	Female
		Lindsay	Human Resources Management	Female
9	9/10/20 3:00 p.m.	Alice	Marketing	Female
		Joseph	Marketing	Male
10	9/11/20 9:00 a.m.	Joan	Marketing & Entrepreneurship	Female
		Julian	International Business & Marketing	Male
		Natalie	Marketing	Female

Descriptions of the two individual sessions and each focus group are included in the next section to provide additional context for each participant and to demonstrate their interactions and attitudes during their session. These contextual factors are needed to provide a richer understanding of the findings presented later in this chapter.

Focus Group #1

David, Marie, and Andrew participated in an in-person focus group on November 20, 2019. The session lasted for 40 minutes. Each student was from a different major:

Finance (Andrew), International Business (Marie), and Entrepreneurship & Innovation Management (David). Marie and Andrew were friends and knew each other prior to attending the focus group; David did not know either of the other participants. The participants congregated together at the end of the table nearest the door. Andrew sat at the head of the table with Marie on his left and Andrew on his right. I was seated near the middle of the conference table, two seats away from Marie. The camera was at the opposite end of the room from Andrew. The iPhone was placed on the table in front of Andrew, between Marie and David.

All three students appeared comfortable and engaged and required minimal prompting to answer questions. They took turns answering questions and frequently built on the others' responses, particularly when discussing core business classes they all had taken (e.g., RMI 2101, BA 2196). Near the end of the session, they shared their respective definitions of critical thinking, again building on each other's responses. Andrew situated his definition in the context of his major (finance) and noted that as an analytic person, he associates critical thinking with identifying and evaluating "different outcomes and options." Marie agreed, noting that when she is interested in a topic or has questions, she wants to find all of the possible information to arrive at the answer. David's definition summed up Marie and Andrew's thoughts: "When you're taking something a step further than fact or information and you're analyzing or giving your opinion or supporting facts with a thesis or assertion" it is critical thinking. The

participants then asked to hear the researcher's definition of critical thinking to see how it aligned with their own. This prompted a discussion about the existing research, which in turn prompted the participants to augment some of their previous responses before concluding the session.

Focus Group #2

Daria and Mark participated in an in-person focus group on February 28, 2020. The session lasted for approximately 40 minutes and was held in a conference room at the Business School. The two students represented two different majors: International Business (Daria), and Statistical Science & Data Analytics (Mark). Daria nor Mark knew each other prior to the session. The two students sat on one side of the table, with one chair between them. The researcher was directly across the table from Mark. The camera was at the opposite end of the room. An iPhone was placed on the table between Daria and Mark.

While both students were engaged in the session, Daria was the more vocal of the two. She frequently took charge, leading the conversation and steering it in unexpected directions. One of these tangents led to an eight-minute discussion of the impact of technology and technology use on critical thinking near the end of the session. Both students were candid about their experiences with technology and how it compares in Business School courses, their major courses, general education courses, and outside of academic pursuits. Both agreed that as Business School students they were better

prepared than their peers in other disciplines to research and analyze information to draw

conclusions. They did, however, also note situations where technology made it easy to

avoid or hinders critical thinking. Mark provided a specific example:

> *I can recall last year in a class marketing class where Quite literally every homework you could find online for free on Quizlet. You just have to look it up. And just, you know, why would you not do that? Yeah. Why would you not? If you know, you'll get 100%? Yeah, like you could try. And that's good for you. But at the end of the day, you're going to want to go and check your answers anyway. Yeah. So, I think that could be actually detrimental to critical thinking, because then you're just using Google as that. Hey, what do you think you're basically just passing it off to someone who knows everything? Yeah. And it's gonna give you almost the answer is not the exact answer. So, I felt that like, those classes are really focused on online homework, and resources where it was almost too easy at some points that I didn't feel like I was getting enough out of it. As opposed to maybe 20 years ago, that class would have been like really hard. And I would have been really challenged and like felt, oh, yeah, I learned this, you know, more satisfied.*

The subsequent discussion of technology in the undergraduate business program

prompted the addition of a technology-centric question in the focus group protocol.

While not the direct focus of this study, the relationship between technology and critical

thinking is an area for future research.

Focus Group #3

James and Sean participated in a focus group on March 26, 2020 at 12:00 p.m.

The session lasted for 35 minutes. This was the first focus group conducted in a virtual

format using Zoom. In the case of this and other virtual focus groups, Zoom's built-in

audio and video recording features were used to capture the data. Sean and James had not

met prior to this session. Each was pursuing a different major: Actuarial Science (James)

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and Accounting (Sean). The virtual format made it more difficult to engage in the same type of conversation as in the previous two focus groups. This session was less conversational in tone and more like a formal interview. There were frequent pauses as the participants navigated how to answer questions without talking over or interrupting each other. Both frequently looked away from the camera when speaking.

Despite this, both participants provided thoughtful answers to questions and were able to, at least minimally, build on each other's responses, particularly when describing their critical thinking experiences in the business core. When asked to provide a specific example of an assignment that required more critical thinking than others, both Sean and James referenced a common project in BA 2196 where students were asked to create a business proposal to address a need at the university, in the city, or in a community organization. For James, the critical thinking on this assignment came from having to develop an idea and integrate research to support it and write in in a business style. He noted, "It's a very different writing style [than academic writing]. So, it's kind of like, um, I had to create like a mixture of formal writing with my own creativity and opinion, backed by like, facts. That was the hardest part for me…" Sean spoke briefly about the different components required for the proposal and the different questions he asked himself while preparing it. Ultimately, he agreed with Sean's assessment stating:

> *I think that [the proposal] was like the biggest assignment in the core*
> *requirements class for business that really set your critical thinking*
> *because like, it's like the first time we've been asked to like, really, like,*
> *write like a full proposal ever that I've ever had to. Yeah, and that's like,*

the only time that I really had to write like five pages in the business school. So, like, it's kind of just like How do I like, figure out what I want to write about and stuff like that?

Focus Group #4

John and Carl participated in a focus group on April 14, 2020 at 10:00 a.m. This session was brief compared to previous focus groups, lasting only 24 minutes. John, a finance major, and Carl, a supply chain management major, had not met prior to this session. This focus group used more of a formal interview style because both participants required prompting before providing information. Both participants gave thoughtful answers but were less engaged with each other than previous participants. When asked about specific skills or traits they associate with critical thinking, both John and Carl framed their responses in terms that emphasized the quantitative nature of their respective majors. John equated critical thinking skills with a well-developed algorithm able to process large quantities of data. Carl agreed and expanded on John's answer:

> *Obviously communication and like being, like forward thinking and motivated is gonna help them but also having good analytical skills and being able to like look at data, analyze it and then you know, make like, decisions based on that is kind of like a lot of what business is like looking at the past and kind of making a good, you know, forecast for the future is um, also a lot of what is behind, you know, critical thinking and good decision making.*

The remainder of the session continued in a similar vein, with both Carl and John using references to quantitative concepts to frame their perspective of critical thinking.

Candace, Charlotte, and Steve participated in a virtual focus group on August 24, 2020 at 3:00 p.m. The session lasted 32 minutes. All three participants were management information systems (MIS) majors and knew each other from their coursework. The existing relationship among the participants contributed to a relaxed atmosphere that leant itself to a conversational style of interviewing. Because all three participants were MIS majors, their responses to the prompts were markedly similar. While Candace, Charlotte, and Steve built on each other's answers, the expansion was done in a way that provided more detail about the existing response rather than taking a separate experience or viewpoint and relating it to the original comment. While this homogeneity of experience did not lend itself to a wide range of examples, it did contribute to a robust and detailed discussion about how the coding and UX design classes in their major foster critical thinking.

> *Charlotte: Definitely the coding classes for me. Hundred percent. Like, before coming here I didn't have like, had like one class in high school that I took that was coding but like it was a whole different language. I know languages are similar. And like you can adjust to them, but I just don't really have the coding mindset. So, it's a struggle on a learning curve for me. I really had to practice at it like it was difficult, but the other ones like, I don't know.*

> *Candace: I feel like all of them apply. Like if you think about it. Because even like the UX design class, you have to think about how you want to make changes to the website. And like, you can't just like go and I mean, I guess you could.*

Charlotte: I feel like you have to think about how the user would use it. It's not just how would you would prefer it, I guess.

Steve: Same for both of those classes. Like, you have to think it's interesting like Candace and Charlotte mentioned the coding one. As I said, coding one, there are multiple solutions to a problem. They know, it's always depends on the person to person, like Charlotte might have a line might have a seven-line solution to it. I might have two lines. It depends from people to people.

Charlotte: Agree.

Steve: And same. And same for UX design as well. Like, you know, Candace, as a user will think differently, you know, our website will be laid out differently, I think of it a different way so it kind of depends from people to people.

Following this exchange, I asked the group if they thought they were required to do more critical thinking in their major than in the business core. Without hesitation, all three participants answered in the affirmative, with Candace further speculating that this could be because she is more interested in her major courses.

Interview Session #6

Christine, an MIS major, participated in an online interview session on August 27, 2020 at 2:00 p.m. The session lasted for 19 minutes. Another student had affirmatively responded that they would be part of this session but did not join at the appointed time. Christine was asked the general prompts included on the focus group protocol; however, the data gathered from her session were limited. Whereas in previous groups, participants were able to engage with their peers and expand on comments made by others, Christine's answers were only augmented by the addition of probing questions I asked.

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Christine seemed nervous and slightly uncomfortable throughout the session, perhaps because she did not view herself as a critical thinker.

> *Christine: I guess cuz when I think of critical thinking, um, I just think that things have to be detailed. And I'm person I don't think I'm like a critical thinker and I think I should be better at thinking critically, I guess. Um, but when I when I think about that, like those three things [self-awareness, attention to detail, deep thinking] kind of come to mind and just I know that there's a lot of thought and process that has to go into anything that involves critical thinking.*
>
> *Researcher: Why don't you think you're a critical thinker?*
>
> *Christine: I don't know. Every time, um, there's like assignments that involve critical thinking or if I read like a job description that says critical thinking, I just, I don't think I qualify just because I'm sometimes - I feel like I don't think things through completely or I'm not too specific or, I don't know, I just think I lack some of those critical thinking assets.*

Focus Group #7

Ellen and Lindsay, both human resources management (HRM) majors, participated in a focus group on August 27, 2020 at 9:00 a.m. The session lasted for 29 minutes. The participants were familiar with each other through their coursework but did not know each other well. As in focus group #5, sharing a major provided deeper answers contextualized through their shared experience than in groups where participants' majors were heterogenous. In the case of Ellen and Lindsay, their HRM backgrounds clearly influenced the way they defined critical thinking. While other groups defined the term very generally, using words and phrases like analytical, evaluating options, and using evidence to support decision-making, Ellen and Lindsay framed their responses about

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critical thinking skills and definitions in terms of leadership, process, and organizational

behavior. When identifying specific skills associated with critical thinking, Ellen

immediately said, "Leader came to my mind. I'm associating, like critical thinking with

high levels in a company, which translates to leader in my brain." Lindsay spoke about

critical thinkers being deep thinkers, but also people are able to think deeply about a

situation quickly. Ellen expanded on this, tying it back to her initial comments about

leadership:

> *I think critical thinking can be achieved to be very fast paced, where I*
> *think on one section you have like fast thinking. Then on the other side,*
> *you have deep thinking. And I think somewhere between that's critical*
> *where you take the deep thinking, and you just make it really fast so it can*
> *come really quick to you. And, you know, in the setting of a meeting when*
> *somebody proposes an idea like this, critical thinkers can really quickly*
> *come up with an answer for it.*

Later in the session, the discussion turned to describing critical thinking as a process that

can be used to facilitate decision-making. Ellen offered the following definition of critical

thinking: "Fast deep thinking that yields results." Lindsay agreed that the ability to

incorporate each step in the process quickly is what differentiates critical thinking from

everyday mental processing.

Interview Session #8

Michelle participated in an online interview on August 28, 2020 at 9:00 a.m. via

Zoom. The session lasted for 19 minutes. As with interview session #6, a second

registered participant did not join the session at the specified time. Michelle's session

proceeded with the established focus group questions. Michelle is a double major in accounting and legal studies. She is also enrolled in the Business School Honors program. Her double major and honors background provided a perspective unique among other participants. This manifested itself during the session in a way that made it seem like there was another participant on the call. Essentially, Michelle spoke about her experiences through two different lenses: one a quantitatively driven accounting major and one a qualitatively focused legal studies major. She made several observations through the course of her session about how her experiences in these two programs complemented each other and helped her develop her critical thinking skills. Michelle was also aware of her own bias when discussing how her accounting and legal studies courses provided the most opportunities for critical thinking.

> *I think I'm a little biased. The first thing that comes to mind are these like accounting. What is it like financial accounting? And I guess I took cost, but like, right, yeah. But, um, and that might be my bias coming into play. But those especially I feel like, you know, there's some core classes where you can just get by on like, memorizing what they tell you and then taking the test. But that is one of the ones that stuck out to me is like, you had to understand it to take what they're telling you and understand what was going on behind it. And kind of know, like, why these things were happening. You can just be like, oh, this is a fact. And I'm going to put this back on a paper next time I have an exam. Okay. I'm trying to think if there are any others, I forget the name of it, but it's like the intro, Legal Studies, one. I felt like had the same sort of thing where it wasn't just like straight memorization.*

Focus Group #9

Alice and Joseph, both marketing majors, participated in a focus group on

September 10, 2020 at 3:00 p.m. The session lasted 20 minutes. Despite their shared

major, Alice and Joseph did not know each other prior to this session. Both participants

provided thoughtful answers, but rarely built on each other's responses. Additionally,

there were large periods of silence in between questions being asked and participants

providing answers. Joseph was more forthcoming with his responses, while Alice

required more prompting to explain her answers. Both participants became more

animated when discussing how different perspectives from their peers contribute to the

development of their critical thinking skills, particularly in general education courses

where different majors comprise the course enrollment.

> *Joseph: From my perspective, at least, since it's not all Business School*
> *students, people approach problems differently, I find whether that's good*
> *or bad, I can't say and then probably really isn't nearly as cut and dry as*
> *that. But the approaches and the thoughts behind them are definitely more*
> *varied than you tend to see in a business class just because, again,*
> *different people, different disciplines. I've seen the most critical thought*
> *outside of the business school in probably. […] It's definitely interesting to*
> *see how people approach things differently because like for me, by and*
> *large, if it's just like something out in the real world, is my first question*
> *tends to be how do they position themselves? How is that like feasible to*
> *make and do and provide? And that's not necessarily the first response of*
> *other majors.*

> *Researcher: Okay, so, do you think your major has influenced your*
> *critical thinking skills?*

> *Joseph: I would say for sure. I mean, I definitely want to hear what Alice*
> *has to say but I think that an approach that a marketing major will be*

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different than an HRM major versus an international business, though there are overlap, and there are overlaps between the disciplines, and even outside of the school, I would argue that advertising majors probably think more like marketing majors than a marketing major thinks like an AI, computer science or HRM major.

Researcher: Alice, what do you think?

Alice: So, for Gen Ed's, I feel that the class sort of flows maybe a little bit more randomly because everyone is a different major and is thinking differently. But that randomness I feel allows for, like an easier conversation and an easier discussion, because in that format, we're not sort of all using the same like, template of thought, like for all of the business classes, there's sort of like a procedural way that you're supposed to go about writing papers or analyzing different questions. There's always a process step 1234. So, in that aspect, I feel like that's what makes it different, like you saying from outside. […] So, it's sort of that expressionism that you're allowed to have with Gen Eds.

Focus Group #10

Joan, Julian, and Natalie participated in a focus group on September 11, 2020 at 9:00 a.m. This was the final focus group held in the course of this research and lasted for 20 minutes. The session was interrupted for about two minutes near the beginning of the session when my power went out and I had to move from my laptop to my phone to finish conducting the focus group. All participants were marketing majors. In addition, Joan and Julian were both pursuing double majors: marketing & entrepreneurship (Joan) and marketing & international business (Julian). The participants knew each other prior to this session but did not have strong existing relationships. This was a very quiet group who required a lot of prompting and probing questions to provide detailed and nuanced responses. The group focused largely on the importance of application of material in

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developing critical thinking skills, offering examples from courses in their respective

majors.

> *Joan: The [class] that I'm in right now for digital marketing, basically, the entire class is oriented around us forming a group. And then that group, you choose a client, and the client has specific business needs, um, that we need to just know how to fulfill so they're trying to increase their, revenue generated from their website or something like that. And then we need to kind of integrate everything that we've learned and everything that we've learned in our internships to try and figure out how to optimize their digital presence or optimize their social presence or, um, you know, integrated SEO techniques that could help generate more traffic and kind of analyze different assets and different, like band placement on the website that might draw attention to call to actions better. Um, and then ultimately, obviously, through analytics, we figure out where people are clicking and then how much money we eventually spend on the website.*

Natalie noted that the process of thinking can be as important as application:

> *Just like thinking it's not necessarily it doesn't ever have to be application but just like thinking the process through as well, like the theory can be helpful as well. But definitely, I think like, acting it out is like very effective as well. [...] For me right now I'm in a class, it's the consumer - consumer behavior class and I feel like that requires a lot of critical thinking because like, it's like thinking in the mindset of the consumer. So, like, trying to think like, why it is the way they act, the way they act and like how, why they do the things that they do.*

Focus Group Findings

Focus group findings were used to answer the three research questions that asked

how undergraduate business students perceive and experience critical thinking, how

students perceive and experience critical thinking through the lens of gender, and how

students perceive and experience critical thinking through the lends of academic

discipline. To understand how gender and major impact students' perceptions and

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experiences of critical thinking, knowledge of how students understand critical thinking in general must be established. Focus group findings were used to provide a broad overview of students' perceptions of critical thinking in the undergraduate business program, including a definition of critical thinking. Three common themes emerged from the review of the focus group data: critical thinking is a process, critical thinking is aided by interest in the subject matter, and technology use impacts critical thinking. Themes were derived from the connections made by participants and the frequency they occurred in the final dataset.

While speaking about their experiences with critical thinking in the BBA core, the major, and in general education, focus group participants were asked what skills or traits they associated with critical thinking. Twenty-three skills and traits emerged, the most common being analyzing and applying information, problem solving, awareness, creativity, communication and listening skills, logical thought, and strategic thinking. When asked to use these traits to craft a definition, participants frequently framed their answers by using examples of coursework, their own experiences, or in terms of what critical thinking is not. Collectively, focus group participants seemed unable to settle on a single, specific critical thinking definition, but all were able to identify it when they saw it. While the goal of this study was not to craft a definition of critical thinking, it is important to understand how students define it in order to situate the focus group and

interview data in context; therefore, the next section discusses how students define critical thinking.

Defining Critical Thinking

In their focus group, Daria and Mark both associated critical thinking with thinking outside of the box and creative thinking. They had the following exchange:

> *Daria: I think critical thinking again is like building up like, like yesterday I said like a sentence then the next day you're saying same - same sentence, but with a few more details. And then the next day you're using the other sentence and you're adding more you just, that's how I see critical thinking you're building up to your ideas, because everybody knows something. But knowing more on top of that, a lot of more factuals and details that makes it more you know, follow bolder, the next time.*
>
> *Mark: I think asking the question, why about something is definitely a critical, maybe that's - that is critical thinking but like, not the definition, but it is when you're doing that is critical thinking because then it's like, you have to start at square one and like really call back on your past experiences, like we were saying, Don't try to like predict the future but use them for a future case. [...]*
>
> *Daria: I mean, asking the question why and asking questions like, based on what you said, but oh, well, what can I do? What can I add to make that better?*
>
> *Mark: And some questions you don't have to ask why. Two plus three just equals five.*
>
> *Daria: And that's not - that's why it's not critical thinking anymore.*

Sean and James also discussed the relationship between creative thinking and critical thinking, emphasizing the idea that creative thinking allows for the development

of multiple solutions, and critical thinking is looking at those solutions to determine

which is the most appropriate for the situation.

> *Sean: I'd say [critical thinking]'s like the ability to come up with a creative solution to figure out a problem.*

> *James: I would say it's the ability to kind of like, think about your problem. Your, like, possible decisions, your possible solutions and the impact those will - could have, like before you even get there.*

The two students continued to discuss methods of critical thinking, using an assignment

from the BA 2196 course to illustrate their point.

> *James: Well, for - for business communication, we had to do a proposal, which is basically we came up with ideas that the university or our city or our home needs, and we like proposed idea to an audience. You know, get like the budget, the benefits, the pros, the cons, that type of stuff. I thought that took a lot of research and things about what we haven't don't have a template and how to effectively and like realistically implement our idea. So, I think that's a lot of that took a lot of thinking for me, personally.*

> *Sean: Yeah. Yeah, like what he said. It's like, you create like your own proposal. So, like for creating a class, and I was just like, how does that class fit into temple? How does it benefit the University of the Midatlantic? What are the like, pros cons? And like, what would it off bring to the University of the Midatlantic that it wouldn't bring to other universities and stuff like that. So, there's like that I think that was like the biggest assignment in the core requirements classes in business that really set your critical thinking because like, it's like the first time we've been asked to like, really, like, write like a full proposal ever that I've ever had to do something. Yeah, and that's like, the only time that I really had to write like five pages in the business school. So, like, it's kind of just like how do I like, figure out what I want to write about and stuff like that?*

Carl and John had a similar exchange, wherein both defined critical thinking in

terms of business decision making and identifying the best solution.

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Carl: I would define it as you know, like, I guess, in terms of business, like thinking of all the possible like outcomes that a specific decision will have in kind of thinking like, like, deeply about, you know, how you're gonna, how you're going to implement the decision that you want to make and what impacts that decision is going to have on like the other areas of the business.

John: I think it's like in thinking and like finding different strategies and like ways to reach your goal and then like choosing the one that you find most efficient and that you can implement the best.

Researcher: Okay, um, how do you decide what solution is the best?

John: It's based on like, you as an individual where you find yourself better at so like, if assignment and you could get data from like talking person a person or you could get it through like the internet, but you're not as like good communicating with people clearly, like, getting through the internet might be a better choice for you.

Even students like Ellen, who was able to immediately articulate a simple

definition of critical thinking, revised and refined their ideas after listening to their peers'

responses. Ellen initially defined critical thinking as "fast, deep thinking that yields

results." Lindsay struggled a bit to provide a formal definition, but eventually settled on

defining critical thinking in terms of process: "seeing a situation, analyzing it then

quickly, like, finding a solution." This prompted Ellen to expand her definition to include

process and examples from her own experience:

I'd like to elaborate on my definition a little bit. It includes acceptance and viewpoints of multiple other viewpoints and ideas, as I'm now thinking about back in the – our like first Englishes, like English 802 and the two mosaics, where you have to look at all these different thought processes from different thought leaders, and the critical thinking aspect is taking those and then creating your own, but it utilizes those other multiple viewpoints.

Researcher: I was actually going to ask because, Ellen, you mentioned yielding results. And Lindsay, you said finding the solution doesn't matter. The solution has to be appropriate for the situation, is that part of the process? Finding the best situation for the terms or is it you know, we need result, so we're doing this regardless of what it is?

Ellen: I think both. Because you can sometimes you go in and you critical think and you come up with a solution. Then other times you go in, you critical think, and you come up with a completely other plan that had nothing to do with the original one, but it's starts bouncing off of a couple other ideas. So, I could see it being both.

Lindsay: Yeah, I agree with her.

As Ellen and Lindsay's session continued, both participants continued to refine their definition and place critical thinking in the context of their own experiences. A brief discussion about being taught to critically think resulted in Ellen admitting that the more she thought about it, the harder it was to identify a single definition for critical thinking:

I think you go through life just like critically thinking, maybe, like you are given a situation. You have to process it like, okay, what do I do and then move forward. And critical thinking almost sounds like a buzzword, the more that we're saying it. more difficulty I have trying to determine the definition even though we already established there are definitions. It's feeling more like a buzzword. Like I'm trying to think of other times where in professors have said, think critically about this assignment, where to me it means get the assignment done.

Michelle defined critical thinking in a unique way that represented the different definitions put forth in other focus groups.

I think to me, at least in my experience with like, critical thinking, it's a very like, almost like mental exercise, if that makes sense. And so, at least I feel like the traits that I picked have like similar things like when you think strategically, you're using those same, like, muscles, so to speak. […] Critical thinking is, you know, it's not just taking information and

being like, okay, this is the information, but it's getting information and using that to create, like a point or data or like turning it into something else. Something useful.

While responses to the question of a critical thinking definition varied among individual participants and among focus groups, most definitions contained one consistent element: Participants recognized that critical thinking is a specific process they engage in when completing coursework and making decisions.

Critical Thinking is a Process

The most common idea about critical thinking that emerged from the focus groups is that critical thinking is a process. In reflecting on their experiences at the Business School, participants consistently used language and terminology associated with process to define critical thinking and to provide examples of critical thinking in their coursework. In describing the process, participants highlighted the idea that the process derives from the thinker's existing knowledge. Successful critical thinkers are able to draw from their experiences, build on previously held knowledge, and incorporate different perspectives and other knowledge sources to help solve problems or make decisions.

Daria and Mark spoke specifically about building on existing knowledge helps facilitate the critical thinking process:

Daria: I think critical thinking again is like building up like – like yesterday I said like a sentence then the next day you're saying the same – same sentence, but with a few more details. And then the next day you're using the other sentence and you're adding more you just, that's how I see

critical thinking you're building up to your ideas, because everybody knows something. But knowing more on top of that, a lot of more factual and details that makes it more you know, follow bolder, the next time.

Mark: Asking the question, why about something is definitely a critical, maybe that's – that is critical thinking but like, not the definition, but it is when you're doing that is critical thinking because then it's like, you have to start at square one and like really call back on your past experiences, like we were saying. Don't try to like predict the future but use them for a future case.

The conversation continued, exploring the critical thinking process using math problems as a concrete example of how the process can be applied. Daria explained that critical thinking involves asking "why" questions and then using the answers to determine how to reach a better solution. Mark noted that some questions do not require critical thinking because they only have one correct answer. He said, "And some questions you don't have to ask why. Two plus three just equals five." After some prompting from me, Mark and Daria confirmed that building on existing knowledge and applying both existing and new knowledge are critical steps in the critical thinking process.

Daria: But math, you can think, critical thinking because like, we studied math for what, 12 years? You know, 12 years, like, and then now in college, so like, 15 years. That's a good – good amount of years. If you show an equation to a first year, like first grader, they'll look at you like, oh, I can really work with that. I've never seen anything like that before, right? But now when we're looking at questions, they look weird. But then like, you can, you can kind of imagine how, how you're going to solve it based on maybe last year, maybe calculus, maybe something in high school, maybe algebra, you're using what you've learned to kind of – I have tried so far, but it's nothing. That I mean, it's definitely harder, but it's not coming out of nowhere. Like it's kind of fielded throughout the years. It's a lot harder now.

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Mark: If you, like, don't understand like a symbol or something, but you see one right next to it. It's like, what could that be doing?

Daria: Right? Exactly. That definitely is multiplication. If they're next to each other. You don't even have to see them anymore. You kind of know it, right? Like it's right. And there's so many things that people that don't really get math at this point of college, right? But, but there's so many things they still get, and they kind of don't really think about that. But I actually don't understand that but don't understand. The other part is kind of – kind of – kind of hard to distinguish what you don't understand anymore. But at least you kind of can start off something. I think that's something about critical thinking when it comes to math.

Daria and Mark also contrasted critical thinking in math with critical thinking in an English class. The participants concluded that both math and English require critical thinking skills, but the approach to critical thinking in each type of course may vary. Daria noted that critical thinking in math requires certain formulas to be used in the proper sequence, and that there are distinct steps that must be taken in order to arrive at the correct solution. The process in an English class, however, is more subjective. Daria said, "I would like if you'd tell me, okay, we're focusing on diversity or sexism or racism, like we're depending on what we're focusing on. Um, you can tell me a lot of history about it. But when it comes to the assignment, tell me what you think like I want like, kind of." She further explained that in her experiences with courses like English, professors frequently used a rubric which helped to guide her through the critical thinking process by outlining specific areas of focus.

James and Sean also discussed how rubrics and templates helped guide the critical thinking process as they completed a common assignment in a business communication

course. To complete the assignment, students needed to write a full business proposal addressing a need or problem faced by an organization they are involved with. Both James and Sean noted that they had never been asked to complete an assignment like this, and that the required research and development of a cohesive plan for implementation enhanced their critical thinking skills. Both students alluded to following a process while designing their proposals, but their answers lacked specificity. When I asked them to walk me through the process each of them used, they had an exchange that highlighted how personal the assignment was and how their own experiences guided their thinking process:

> *James: Um, well, in my class, we had a general, like rubric. Um, but the harder part for me was like, um, it was just kind of more of a more personal assignment in a way because it's like you, you choose your topic. And I think a lot of business or Business School classes, it's kind of like they just give you what to do. So, it really – it took me a while – it was like a week, or two weeks, to really think about what I wanted to propose. And then I had to, after I thought about what I wanted to propose that to, um, research and see if it was like plausible or like doable. And then I had to write it in a business-like format, which is different from like, the – the writing classes we took what they called again in the freshman year. I forget what they're called. But yeah. Yeah, it's a very different writing style. So, it's kind of like, um, I had to create like a mixture of formal writing with my own creativity and opinion, backed by like, facts. That was the hardest part for me rather than the format because we did get a little help with the format.*

> *Sean: Yeah, so, so my class, we had like a template, and then the teachers and had examples for the students it's like, kind of like this is how like these students who got like an A, this is what they kind of did. So, you kind of follow that template. But the thing is, you have to figure out what you want to do. Like you can follow that template, but not no one has the same topic. So, you kind of have to base that template off of your own personal*

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proposal. Yeah, you have two different snips. The – each person may have, they may, some people may have similar like charts and stuff, but they have they use it in a different way than it was like getting information from the outside that University of the Midatlantic had never as like, you know, publicly – well, they've publicly released it, but like they've never really told us that Oh, a gear. So, like it was just like, there was interesting to find out like the different stuff that goes into like, what your proposal it is, and then kind of figure out how that is implemented, how you would implement that in time. And like the process and stuff like that.

James and Sean also discussed how following specific steps helps guide critical thinking. Both associated critical thinking with big picture thinking, with Sean noting that critical thinkers:

just don't think of a solution that's like right in front of them. It's more like, you got to look at the holistic approach of what's going on. So, it's kind of like looking at aftereffects, what would you have to do to like achieve a goal or something like that.

I asked both participants to expand on how critical thinkers reach solutions, and if they thought there was a step-by-step process. They answered that there is, but the process is situational:

James: I think it could depend on the type of problem, I guess. Some work better that way. And some really takes like, creativity or initiative to like, get to where you want to be. So, I think it's like, oh, it could be a good mixture.

Sean: Yeah, I feel the same way. Like there are certain – certain situations where it's like, you kind of don't really go with a creative route, you kind of go with a more, um, what's it called? Are you going to a more step by step approach, then so there are some other situations where you may let's say, it's like a delicate situation, you may have to kind of like not go by the normal approach, but kind of figure out a different route to get to a solution.

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Candace, Charlotte, and Steve agreed that while there is a defined critical thinking process, the way in which it is applied is situational. Steve used different courses he took in the BBA Core to highlight how he applied the process in different contexts:

> *It's [risk management] so broad but at the same time, you don't know what's at risk. But it's very subjective, right? It also involves a, you know, thinking so much like that there's this thing, which is called five why's, you keep on asking yourself, why five times before you reach a conclusion. So, I feel like that really applies to risk management because it requires a lot of thinking, it's very subjective to people like, you know, it might be, I think something might be high, high risk, Charlotte might think it's a low risk, you know, it depends on from person to person. The other course is the statistics statistic courses, the math courses, you know, like they gave us formulas, and we are we are given at the end of the final exams, we were given a big question to solve right, you know, left-hand side equal to our right-hand side. I feel like practicing so much and thinking how I can use a set of instructions given to me and making them equal, that also required a lot of critical thinking on my end.*

Regardless of context, Candace, Charlotte, and Steve agreed that there is a process that supports successful critical thinking. Charlotte suggested that following the process leads to a deeper, more thorough understanding. She said, "to, like, thoroughly understand something, you really have to look at every different piece of it and really break it down to actually understand each part. In the end, understand it all together." Steve followed this with an example from his major coursework:

> *If you think out of the box and you have both of those skills, you know, if you're analytical at the same time you're hard working. I feel like there are some times, for example, coding. Sometimes there is a logic you need, you just need to be curious, right? You have to try and keep testing out as Charlotte's dad [a professor in Steve's major] says, you know, try the code if it runs, perfect. If it doesn't run, it makes you curious why it doesn't run.*

Charlotte echoed this sentiment by expanding on her earlier comment about developing a thorough understanding:

> *You want to understand something. You don't want to just like, be able to do it. Like you want to know how you're doing it, I guess, like, and really thoroughly understand it. I guess you just learn that over time after like, failing at something and then like learning from that and like adjusting.*

Viewing critical thinking as a sort of continuous improvement process lends credence to the idea presented by Daria and Mark that successful critical thinking builds on the thinker's previously held knowledge and expands on it to arrive at the best solution for the situation.

Carl and John embraced this idea, stressing the importance of incorporating varied perspectives into the thinking process. Both framed the discussion in terms of groupwork within their courses. They agreed that when working in a group, critical thinking is best achieved when each individual is able to incorporate the views and perspectives of other group members into their own thoughts. Part of the critical thinking process in a group setting is evaluating whether or not group members are providing accurate information and how that information applies to the problem being solved. John expanded on this, noting that because he does not necessarily know everyone in a group setting, he has to be able to:

> *take their ideas, and then break down their ideas to see like where they're getting it from, and to make sure that they're like giving me a good solution for a topic rather than my own or what I like the path I was on. So, it's really like – it is easier, but it isn't because you don't know if that*

person is very knowledgeable on the subject, if they critically thought through their path or if they just took shortcuts, and to get where they had to be.

John further noted that sorting through information provided by group members is not only a step in the critical thinking process, but also an exercise in critical thinking. Carl echoed John's sentiments, noting:

working in a group will sometimes, you know, allow you to look at a problem in ways that you never would have thought of on your own. Um, I think that's something to consider, like, a lot of – everyone's experiences and what everyone thinks about a problem is going to be different. And people are going to think of things that you never would have thought of, or, you know, potential problems that like you wouldn't have, like foreseen. So, I think that's really important to realize that with all those different people sharing ideas, there's going to be ideas you never would have thought of that are going to make your solution plan or goal that much better.

Consistent with other participants' thoughts, Ellen and Lindsay stressed the importance of building on previously held knowledge to develop critical thinking skills. Lindsay noted that each new experience or new situation helps expand that knowledge base, which ultimately provides a broader base of information to draw on for future situations. She said, "I think you go through life just like critically thinking, maybe, like you are given a situation. You have to process it like, Okay, what do I do and then move forward." She further noted, "when you, like, critically think like in marketing and ethics, it can change over time, or it can just change tomorrow." That change occurs as new knowledge is acquired. Ellen offered a fully articulated critical thinking process that

incorporated her own thoughts and effectively summarized the perspectives put forth

across other focus groups:

> *I think it's a process that needs to be developed to be on the fly. But I think there is a systematical process to it. You – you have to have your ideas; you have to recognize that you have your own biases for your thought. And you have to look at other different viewpoints, recognize what those biases might have, based on, you know, their status and society when looking at philosophers. And then after you have all the different viewpoints, including your own, and you've already like noticed your biases, then you start to develop a new thought process that's hopefully somewhere in the middle. And then after that, you can start to actually solve the solution and combining all the different viewpoints.*

Critical Thinking is Aided by Interest in the Subject Matter

Another theme that emerged as focus group participants examined their

experiences was that interest in a subject enhanced critical thinking. This was common

across participants whether they were discussing experiences in the BBA Core, their

major classes, or general education classes. In some instances, participants spoke about

how interest in a topic drives them to explore more about it, thus acquiring a broader base

of existing knowledge, which, as participants previously noted, is a key component of the

critical thinking process.

In reflecting on her experiences, Michelle compared the level of critical thinking

she needed to employ in some courses in the BBA Core, and in one of her major elective

courses and general education. Michelle spoke at length about how much of a role

memorization plays in some of the BBA Core courses, which, in her view, limits critical

thinking. She provided an example from her Core marketing class, explaining:

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the intro marketing, like 2000 level – I don't know the names of any of these – um, that was definitely a class where I felt like I didn't really have to apply those [critical thinking] skills. [...] I could just like, like, memorize facts and then put them down or like, use common sense or common knowledge.

She continued, describing a similar experience in her public policy class, an elective course in her major,

it was kind of the same thing where I was just like memorizing things to write papers on them. And it wasn't like using those – I learned a lot still, but it wasn't like using those muscles to like analyze things.

Michelle's responses to questions about her experiences in the BBA Core and in the major prompted me to ask her if she thought there was a correlation between interest in a topic and the level of critical thinking employed. She responded:

I think it does. It was like public policy was not something that like, I was, like, thrilled to be taking. I think – I'm like pretty sure it's an elective. I don't think it's a required legal studies course. And like marketing, again, like not something I was like – I have friends that are marketing majors, they're great, but like, it is not for me. So, I feel like if um the interest isn't there, and I can get by in the course without, like, using that, like, big part of my brain and having to, like, put in that energy. And I could save that for a course I'm interested in or something I need, like, I guess – I don't consciously think about it, but I guess that's how that ends up.

Following this exchange, the conversation turned to a discussion of general education courses. Michelle immediately identified two courses that involved a lot of critical thinking, describing them as "super cool." She continued, explaining that she was more interested in those courses than some of the other general education courses she had taken, and that they required more than just memorization:

Those were two classes, especially, where I, like, did and wanted to engage with the material and, like, use these fact patterns and even earlier like, this semester, I saw a video I thought my gender and world society professor would like and like sent it to them. And that's material I'm still like, happy to engage with even afterwards.

The discussion in Joan, Julian, and Natalie's focus group addressed similar themes, particularly with regard to general education classes. Joan began by asserting that courses in the Business School provide a better critical thinking experience than those in general education. She posited that this was because the content was more relevant since they were business majors. She continued, noting that she has had good critical thinking experiences in her general education classes, but mostly in classes where the material was interesting, or the instructor made it so. She confessed to being surprised at learning a lot in one of her general education classes, and at how rewarding she found the experience. This comment prompted me to ask the group if level of interest influences ability and willingness to think critically about the subject. What followed was a robust discussion that provided examples showing that interest, instructor, instructional methods, and real-world applicability contribute to higher levels of critical thinking:

Joan: I mean, if you're just like a curious person, I think it's easy to kind of find something that you're interested in anything and um like, I found when I was a freshman, I thought those IH [Intellectual Heritage] courses were kind of interesting because, you know, they encouraged a lot of debate and so I thought that was fun. Um, but if you're not like a naturally curious person, which there's nothing wrong with not being one, I do think that it's much easier to kind of learn when you're in an environment where you're naturally inclined to be interested about the subject that you're talking about. Um, but I've also been in really boring business classes so I can't – I can't say that as much, but like econ. I hated econ so much, so –

but that also wasn't really a class that presented a lot of critical thinking actually is more just like "this is how it is" and it is very basic level information. So that's just my opinion.

Natalie: I was just gonna say um, with regards to like I think it also depends on like the professor and like what kind of subject matter they choose because I feel like especially like in IH it's up to their discretion what they choose like what material, but in my experience, I actually really did enjoy IH. I feel like it's – like a nice, not necessarily a break because you're still doing a lot of work, but like it's just nice to have your – especially because like the business school is so intense. I feel like it's nice to have like something else to think about and like a lot of times, they would – the text that they would choose would require, like they would be a bit antiquated, so that would require like some level of critical thinking whereas like, if like the when you have to decipher like the language and stuff like that.

Julian: First off, I also hate econ. I hated it so much. But um, yeah, for Gen Ed's, I'd say, my favorite was probably the Inner Workings of the Mind, Exploring the Cosmos, and Race and Diversity in Cinema. I really like their psychology one because I felt like I could use a lot of the material taught in that course, my daily workings as what I'm going to be as businessman. Because obviously, psychology is good thing to know, in the business world. Being able to understand the person you're working with, like, just kind of know what they're thinking, understand where they're coming from, using that to really, I guess, just like, critically think in the sense that you're understanding the other person. And then inner workings of the cosmos – Exploring the Cosmos that occurs. It's just teaching you something being really interesting you can use that as a conversation piece. And kind of just like opens your mind up to a lot of things and like, it makes you – I don't know, I don't know, like it makes it easier to just like, talk about, like, wondrous things. And then a race and diversity because it's just really good to know that kind of stuff. And that's also something that's really applicable in the business world. So, like all these all these things you're going to be using, you're going to be thinking about, maybe not as much as the cosmos thing, but it's just a bit more.

David, Marie, and Andrew also discussed the link between interest and level of

critical thinking. Similar to Joan, Natalie, and Julian, this group also highlighted the role

course instructors play in cultivating interest in a topic, and how emphasizing the real-world applications of a subject helps develop critical thinking skills. David went so far as to suggest revising the BBA Core courses to become more project based. He explained that this change would allow for more interaction with both peers and the instructor, which would provide greater opportunity to apply course concepts so students could get more out of the course. Marie supported this, noting:

> *in things where it's very textbook, and black and white and things like that,*
> *I don't really see the value in it because I don't really care or know how it*
> *applies to me or like anything in general. I think that was, I don't know,*
> *just like shifting it in ways that you understand how it impacts the world*
> *and yourself.*

The group also noted that they struggle to see the relevance of some of the courses they are required to take. As a result, these courses fail to pique their interest, and so they struggle to retain the information, and often just do the bare minimum to get by without damaging their GPAs. David explained:

> *I kind of, like, had this mindset, like I know what I want to do. I know what*
> *I need to learn, like, half the stuff doesn't matter. It's going to go in one*
> *ear out the other. It's not relevant to what I want to do or what I need to*
> *learn for it. So, like there was that. But as I get into my major, I feel like*
> *I'm kind of like picking and choosing what I'm interested in and like,*
> *things I am interested in I pay more attention to but like, like Marie said,*
> *like for the classes I'm not interested in, it's kind of just like getting by like*
> *passing – passing the class, like getting a decent enough grade.*

Joseph and Alice took the discussion a step further, noting that while interest plays a large part in level of critical thinking, motivation also plays an important role. In some cases, interest in a topic provides enough motivation to employ higher level critical

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thinking skills. For Joseph though, critical thinking also has to be self-motivated. Using an example from a project in his BA 3103 course, he explained that crafting an experience that integrated the critical thinking process with motivation helped increase interest in the topic and develop his critical thinking skills:

> *I'm doing a simulation in Integrated Business [BA 3103] right now, and it's one of the most engaging projects I've had. And I think what's crucial, because I've done simulations through the Business School before, and what I find works better is if like, for this time around, they've given us a lot of reading material on it, so we get to prepare ahead of time, so we know what to expect, and then we get practice rounds. So it is, in this case, repetition again, trial by error, or not necessarily by error, but you know, it's a learning process where we're allowed to fail a little bit, and then learn from that and work through it. I've had other classes where they say, oh, we've got a simulation. No practice rounds, we're just going right into it, no reading material. And you spend the first half as a group trying to figure out what the heck's going on, and then the other half just kind of eking by if you get lucky. So, it's I think just setting people up for success involves the ability to allow people to prepare on their own because I think a lot of critical thinking has to be self-motivated.*

Technology Use Impacts Critical Thinking

Technology use and its relationship to critical thinking emerged as another major theme of the focus groups. Though not originally included as part of the focus group protocol, a question about technology was added following Mark and Daria's focus group. In their session, a discussion of technology naturally flowed from a conversation about how part of the critical thinking experience involves learning from their peers and that the classroom environment and instructor contribute to the development of critical

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thinking skills. For Mark, technology limited the need for critical thinking in some of his

BBA Core classes:

> *I can recall last year in a class – marketing class where quite literally*
> *every homework you could find online for free on Quizlet. You just have to*
> *look it up. And just, you know, why would you not do that? Why would you*
> *not, if you know, you'll get 100%? Like you could try, and that's good for*
> *you. But at the end of the day, you're going to want to go and check your*
> *answers anyway. So, I think that could be actually detrimental to critical*
> *thinking, because then you're just using Google as that, "hey, what do you*
> *think?" You're basically just passing it off to someone who knows*
> *everything, and it's going to give you almost the answer, if not the exact*
> *answer. So, I felt that like, those classes are really focused on online*
> *homework, and resources where it was almost too easy at some points that*
> *I didn't feel like I was getting enough out of it. As opposed to maybe 20*
> *years ago, that class would have been like really hard. And I would have*
> *been really challenged and like felt, oh, yeah, I learned this.*

Daria and Mark continued to discuss the implications of technology use in critical

thinking, particularly in courses that did not interest them. They spoke about how

common it is to take the "easy way out" to ensure GPAs are maintained at a level that

will allow them to get a job after graduation.

At the same time, Mark and Daria made a point to note that technology is not

always a hindrance to critical thinking. When used appropriately as a tool for critical

thinking, it can further knowledge development. Mark noted technology:

> *could be helpful in some cases. You could be researching things related to*
> *whatever the topic is, and you stumble across helpful information, then*
> *that is building that experience for you to use in critical thinking later*
> *down the road.*

Mark and Daria also used current events to highlight the need for critical use of

technology. Mark explained that when he encounters information on social media or

other websites, he uses technology to help him critically analyze the information, which helps build his critical thinking skills. Daria agreed, noting that as business majors, they seemed to have higher critical thinking skills than some of their peers in other majors because they are taught throughout their coursework how to evaluate their sources and analyze the information using technology.

Sean and James echoed Mark and Daria's comments, noting that the value of technology in relation to critical thinking depends on its use. When used properly, technology can be a resource to aid critical thinking, but when technology is relied upon to do the thinking, it limits the possibilities for critical thought.

> Sean: I think it's kind of like a double-edged sword. Like sometimes it can help, sometimes it can't. So, like, like, a lot of people are like, kind of like my, like, my parents are like, "you guys are so attached to technology, you guys can think for yourselves," kind of like that. But like, another thing is like, it also helps us think, until like, and also helps us back up what we talked about. So, it's like, we can kind of look into things quicker and stuff like that and find a different solution to something that could have been done differently in the past. So, there's like different ways that it works. Like yes, it could hinder us by not thinking for ourselves, but it also makes it a better solution in the end for certain things.

> James: I agree with it. It could be like, you know, some people use technology too much and like, they forget, like you, for example, like you know, like having a calculator like some people like they forget how to do basic multiplication or division because they always have a calculator. But some people like they'll have their technology, and it would like open up a new way for them to think. They could find another problem to solve or figure out with the help of technology and like their own brain.

Steve, Candace, and Charlotte also pointed out the value in using technology as a tool for learning. They noted that several BBA Core classes rely on third-party

technology platforms (e.g., Pearson, McGraw-Hill Connect) to facilitate homework and

exams. Like Mark and Daria, Candace explained that in courses where those platforms

are used heavily, it is tempting to search for the answers on the internet because they are

all available, particularly for multiple choice questions. She explained that while there is

a lot of repetition and examples provided for homework completed in Pearson that are

designed to help her learn, they fall short of that goal. She and Charlotte shared similar

how Pearson can aid learning, but also can hinder critical thinking:

> *Candace: you're kind of, like following the example and like, that's how you learn how to do it. Like I personally think that's hell. I don't know, I feel like that helps me learn, but I could see how that could be like, it's kind of just like repetition. Like, that's how you learn, but you're not really understanding how to do it.*

> *Charlotte: That's exactly what I was gonna say like, I like using Pearson for homework. Like I like going to the class, learning it, and then doing it online myself. But as Candace said, like, there's like a little button that says, like, show me an example. And it's the exact same example just different numbers. So, if you can understand it and dissect it, you just switch the numbers and you know what to do. So that helps when you're like, wait, I have no idea how to even start this problem. But also like, I know sometimes I've looked at it for every single step and just follow this when I could get 100 so that I do better on the – in the class, but so yeah, it can help but it also can hinder at the same time.*

John and Carl both believed that technology use benefits critical thinking as long

as it is used as a resource, and that the information found is not considered to be the limit

of knowledge. John noted the benefits of using the internet to research new idea and

quickly find information to aid forecasting and decision making. Carl agreed:

It's kind of like a lot easier to like get ideas to like, there's a lot more information about, like, what your competitors are doing. And like John said, like, how they're – your sales are going and kind of like, what they're planning, so you can, you know, work on ways to do things similar to them. Or, you know, think of like innovative ideas that would be that would take away some of the market share from them.

John agreed but was also quick to point out that the volume of information available can impact critical thinking. He explained that part of knowing how to use technology appropriately to identify sources and supporting information is also an exercise in critical thinking:

It's easier because you can get like this, like fluctuation of information. So, like a lot of different, like sources and stuff, but it's also harder because you got to pick out which ones are the ones that are accurate and which ones aren't. Like, if you choose like a wrong website, like so many times, I've heard like don't use Wikipedia, things like that. So, like if you were to get your information from somewhere not knowing it was wrong. And then you have like this whole project set up. And like it took time because it doesn't just happen overnight. And then just to realize, like the information that you wrote, it all was wrong. It's just like, it also helps at the same time because you can fix your mistakes quicker knowing like, stuff like that.

Like the other participants, Michelle emphasized that the way technology is used impacts critical thinking. She also added that technology use, including a virtual classroom environment, can limit the engagement within a course because it changes the dynamic between the instructor and students. She said:

I feel like there's a big part of, like, using technology in this way that can enhance critical thinking and – and then there's, I think, like, a smaller part of it that can just absolutely, like ruin it. And that, like having all this information at our fingertips and having tools, like these additional tools available to us and additional material, I feel like promotes critical thinking. And then should you be thinking critically, you have all, like so

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many resources to use. But then, you know, on the flip side, it's if there's a class on Zoom, or I've had classes that are like entirely on Pearson, and like you said, I feel like it's not as required, like you can just kind of skirt through, um, or it's not – not even, it's not as easy to engage and like, think critically as if you were face to face.

Alice and Joseph offered a slightly different perspective than other participants on the use of third-party platforms for exams. Alice thought the use of McGraw-Hill Connect in her international business course aided her critical thinking because the exam questions "give you randomized like scenarios about different cultures and different situations, and you have to come up with what would be best appropriate." Joseph agreed:

some Pearson / McGraw-Hill work, I think is very worthwhile, like in the international business. I'm in it right now. It does randomize scenarios and it does take from a larger question pool. So, there's more variance. It's – not all these answers can be googled, which means you do have to know the stuff which means people do have to learn it.

Joseph also emphasized that how the technology is used and positioned in a class is what impacts critical thinking. He spoke about his experiences with classes that used Pearson where the answers to all homework and exam questions could be found on the internet, which did not contribute to learning.

Joan, Julian, and Natalie discussed the importance of knowing how to use technology appropriately to aid critical thinking, particularly because technology is not going to disappear. Like other groups, they stressed the importance of using technology as a tool to find and enhance knowledge.

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Joan: I would think it for sure helps with critical thinking. Um, I just, I think that it's also kind of important to teach people how to think critically with technology too, even if like, they're not good at it at first or if they find it distracting just because we do live in a very technological heavy world, or that's kind of – it's not going to go away. Um, if anything, it's going to become more complex. So, it's interesting for me to learn how to like use tools like that to kind of leverage my insights or dig deeper into like information I already have. So, I prefer using technology.

Natalie: I mean, I agree as well, but I think as long as it's used as like a resource and not like the crux of your knowledge, I think it can be helpful in most situations.

Researcher: So, it sounds like we're back to using it to help apply knowledge you already have. And that helps deepen your thinking.

Natalie: I think yeah, I think I would agree with that. Unless you're, you can use it as a tool to seek out things as well. But like, if there's something that you already have, like predisposed in your mind, but you want to go deeper and like, I feel like technology is a way to like, do that.

Individual Interview Profiles

Six students volunteered to participate in a follow-up individual interview after participating in a focus group or individual session where focus group questions were asked. One student completed the focus group and follow-up individual interview concurrently. Participants received additional BSLDP points for participating in a follow-up interview.

Interviews were conducted between in August and September 2020. All interviews were conducted virtually through Zoom. These sessions were audio and video recorded using the Zoom platform. Interview recordings were transcribed through the Otter.ai platform and reviewed by me for accuracy. Transcripts were uploaded to the

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dedoose platform to facilitate coding. Coding was completed by hand in dedoose's interface; initial codes were reviewed multiple times to identify common ideas and patterns in the data. Interview transcripts were coded at the same time as focus group transcripts to ensure consistency of the codes.

Table 4.3 shows the characteristics of each interview participant; participant descriptions are included after the table to provide additional context for the subsequent discussion of interview findings.

Table 4.3 *Individual Interview Participant Overview*		
Name	**Major**	**Gender**
Candace	Management Information Systems	Female
Charlotte	Management Information Systems	Female
Steve	Management Information Systems	Male
Lindsay	Human Resources Management	Female
Michelle	Accounting & Legal Studies	Female
Alice	Marketing	Female
Tanya	Entrepreneurship & Innovation Management	Female

Alice

Alice is a female marketing student. At the time of her interview, she was beginning the first semester of her senior year. Alice is an out-of-state student who did not intend to attend the Business School. She planned to attend college closer to home but ended up at the Business School because she was not accepted to her initial choice of school. Alice felt supported in her schooling during her elementary school years, but as she progressed through the education system, she felt less supported. As a result, she

started to fall behind and was not expected to pursue higher education. She initially planned to pursue a career in social work because of her interest in psychology and human behavior, but ultimately chose to be a marketing major because of the links between marketing and human behavior. Alice plans to transition into the workforce immediately following graduation.

<p align="center">Candace</p>

Candace is a female management information systems (MIS) major. At the time of her interview, she was beginning the first semester of her senior year. Candace grew up close to the Business School. She chose the Business School because of its proximity to home and its cost. She decided to pursue an MIS major after taking a general education course about data science and technology. Candace generally felt supported in her education but noted that when she transitioned from a small Catholic school to a public high school she felt behind her classmates, and so needed to work harder to succeed. Candace feels that the Business School helped her develop the critical thinking skills and experiences she needs to be successful in her future career.

<p align="center">Charlotte</p>

Charlotte is a female MIS major. At the time of her interview, she was beginning the first semester of her senior year. Charlotte grew up close to the Business School and felt supported throughout her educational career. Her family members are all involved in technology related fields, and her father is an MIS professor at the Business School. Her

family background heavily influenced her decision to pursue an MIS major at the Business School. Following graduation, Charlotte plans to pursue a career in cybersecurity or IT project management.

Lindsay

Lindsay is a female Human Resources Management (HRM) major. At the time of her interview, she was beginning the first semester of her senior year. Lindsay attended school on a military base outside of the United States before enrolling at the Business School. She has always felt supported in her educational pursuits. She decided to attend the Business School because she has family in the area and felt that would make the transition from an international education to the Business School easier. Lindsay chose to pursue an HRM degree because she thought she wanted to be an HR manager. She has a significant interest in the laws and policies related to the field. Lindsay plans to enroll in graduate school eventually and pursue a social work degree.

Michelle

Michelle is a female student pursing a double major in accounting and legal studies. She is also enrolled in the Business School Honors Program. At the time of her interview, she was beginning the first semester of her senior year. Michelle grew up close to the Business School and felt supported in all of her educational pursuits. She decided to attend the Business School because of its proximity to home and its cost. She also appreciated the reputation of the school and general "vibe" she got from the Business

School after attending open houses and shadowing classes in the honors program. Michelle knew she wanted to earn an accounting degree. She also had an interest in the law and thought legal studies would be a good complement to her accounting degree. Michelle intends to pursue a career in forensic accounting, where she will be able to leverage the knowledge and experiences gained from her dual majors.

Steve

Steve is a male MIS major. At the time of his interview, he was beginning the first semester of his senior year. Steve is an international student whose parents wanted him to pursue an engineering degree in his home country. Steve knew that engineering was not the best field for him, and his parents supported his decision to attend the Business School. He initially planned to be a business management major, but quickly realized that he wanted something more specialized and technology focused. Steve's decision to attend the Business School was heavily influenced by his desire to attend graduate school. He initially planned to pursue an MBA, but after declaring his MIS major, he learned about the Business School's 4+1 program in IT Audit and Cybersecurity (ITACS), which will allow him to graduate with an undergraduate MIS degree and a Master of Science in ITACS. It is important to Steve that his eventual employer be a company who values its employees and will push him to grow his skills.

Tanya

Tanya is a female entrepreneurship and innovation management (EIM) major. At the time of her interview, she was beginning the first semester of her senior year. Tanya is an out-of-state student who has always felt supported in her educational career. She decided to attend the Business School because of its location and because she wanted to pursue a career in business. She chose to major in EIM because she owns an event planning business and wants to pursue a career in corporate event planning. Due to a scheduling conflict, Tanya was the only participant who arrived for her focus group. Because she had indicated her interest in participating in a follow-up interview, both were conducted at the same time. She was asked the focus group questions and then asked the interview questions immediately following.

Individual Interview Findings

Individual interview findings were used to address and supplement the data gathered through the focus groups, specifically focused on student perceptions of critical thinking by gender and by academic discipline. Because all students engaging in an individual interview also participated in the focus groups, findings were situated within the common themes derived from the focus groups and discussed in the previous section, with one exception. Questions relating to technology were not asked during the interviews, though the topic occasionally arose during conversation. Because the impact of technology use on critical thinking was rarely mentioned during the interviews, it is

not included in this section. The identified major themes were critical thinking is a process and critical thinking is aided by interest in the subject matter.

Critical Thinking is a Process

In discussing her experiences with critical thinking, Candace was blunt: "Critical thinking is hard." She continued, referring back to the discussions had in her focus group, explaining that she had spent some time reflecting on the content of that discussion, particularly about the courses that she and her group members had identified as examples of classes where critical thinking occurred. She reinforced the idea that those classes were difficult, but they were also places where she was forced to develop and use her critical thinking skills:

> *I guess critical thinking, well, you, you obviously have to think about it. But you have to ask – I feel like you're constantly asking questions, and you sort of question your own thoughts. So, it's like, you might think of something but then you sit there and you're like, Wait, am I thinking about it the right way? What are the other ways you can think about it? What do other people think about it? Am I right? I feel like I get into the pattern of like, kind of like, questioning my own thoughts. Like in the beginning, like, I'll say something and I'm like, Oh yeah, that's right. And then like, I start thinking about it more and then I'm just like, I don't know. Am I right?*

Though loosely defined as such, Candace viewed critical thinking as a process, and in some cases, a continuous improvement loop. She explained that, to her, critical thinking meant:

> *repeatedly asking questions until you get closer to finding an answer, I guess like the closest answer possible. But I feel like then it can lead to like there being multiple answers. You might not always get the exact answer.*

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She continued, noting that there are specific steps that can be taken to facilitate critical

thinking, but the steps vary depending on the context:

> *I think there can be [a process] depending on the type of question, if that
> makes sense. Like, I remember I brought this up last week, but um, I feel
> like there's like certain, I guess, what are they called, frameworks you can
> use to answer a question, or at least help you and guide you to answer a
> question. I can't think of like, something on the top of my head. I'll think of
> something. I'll bring it up. But um, yeah, I feel like there's certain - at least
> in like, like, I'm thinking back on my, um, I had a UX design class a couple
> semesters back for my major. And I know we, um, one of the things we I
> feel like when we were like designing the website, it was just like, we had a
> list of questions that we could use to like, figure out the problems with the
> website. And like, that's kind of what I used to figure out what was wrong.
> Like a guide to my thinking, I guess. Yeah, I did. There's like a lot. I feel
> like a lot of the Business School classes you can use, like certain
> frameworks to come up with an answer.*

Situating her experiences in the context of the BBA Core, Candace further explained

what she believes are the necessary steps in the critical thinking process, highlighting

understanding, interpretation, and analysis:

> *Now I'm in the integrated business applications class. And I was reading
> for – we have, like, a textbook and I mean, I just started the class, but I
> feel like it's going to be a lot of critical thinking just based on – I was
> reading the textbook and I was like, had to read it like three times – the
> chapter, then like, I had no idea what was going on. And then I was trying
> to like think about, like, how I guess I can interpret it since I didn't
> understand what was going on. So I feel like that required me to like,
> actually analyze the text and make sure I understood it.*

Candace further explained that in her integrated business applications class, she has also

needed to draw on knowledge she previously acquired in her other BBA Core courses,

including finance and accounting.

Despite acknowledging that there was a process to critical thinking and that it helped her develop a deeper understanding of her coursework, Candace was not enthusiastic about having to follow the process:

I don't like it personally. And you would think, no, because you would think, because it's like your own thoughts and everything, but I feel like it's the hardest for me to like, come up, not with my own ideas necessarily, but just come up with my own, I guess, understanding of something. Like, I like when things are – I don't want to say just given to me, but I like being able to just like, memorize terms and like stuff like that. Like I hate when you have like actually analyzing.

Still, Candace acknowledged that, while hard, critical thinking is valuable and, that through repetition and building on previous knowledge, "you get better with time."

Like Candace, Michelle was intimidated by critical thinking. She acknowledged that she had learned how to critically think, but she did not view it as one of her strongest skills:

to be honest, it makes me like a little nervous. Like, if I hear it in class, or like, you know, in professional settings, like it's something like we talked about, I've definitely learned but I wouldn't say it's one of like, my strongest skills. I think I'm more like an attention to detail person. So, my first reaction is definitely a little, just a little bit of nervousness.

She did, however, point out that despite her uneasiness with critical thinking, it is made easier because there is a sort of process associated with it. She noted that critical thinking requires an "openness to new ideas," further explaining that new ideas could be created as a result of the critical thinking process:

I would say it's like the ability to take information especially like seemingly unrelated information and like turn it into an idea or like a, I

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don't wanna say like a process, like a concept, like, take raw facts and be like, okay, this is what these mean.

Michelle continued by identifying specific steps in the critical thinking process, similar to those Candace identified, noting, "that's kind of what critical thinking leans towards is like coming up with a new idea, of analytical skills, and I do think like attention to detail would be important as well." Michelle further identified components of the critical thinking process including understanding, analyzing, applying, and interpreting information.

Michelle also drew a comparison between developing critical thinking skills and developing muscles. She explained that a key part of the critical thinking process is the ability to build on and learn from previous experiences, and to use previously accumulated knowledge to help navigate a situation. Michelle noted that while at the time, she could not see how she was doing this in her coursework, in retrospect, she was able to see how her coursework and internship experience helped her flex her critical thinking muscles. In speaking about her experiences, Michelle said:

At the time [during her internship], I was, like, very, very, like, scared almost. Because it felt it was difficult and then it felt like there were, like, consequences. Not that there aren't consequences to like failing a test or something, but like real world consequences. So, like, I was scared, and I was also kind of, like, the nervousness we mentioned earlier, because those aren't muscles I necessarily flex all the time. But again, looking back, I'm like, wow, that was a great experience that I talked about a lot and, like, draw from still. […] I always felt like I look back and I'm like, wow, like if I could retake intermediate II now like, I'd get an A. So being able to like, look back on those classes and be like, okay, here's not just, like, things I memorized but, like, thought processes I learned and

developed and those, like, critical thinking muscles, I flexed. Here's how that all worked. And here, I feel like I'm not like starting from scratch in new stuff. I have like a base or like a pattern I can follow and experiences I can draw on. Even if it's just a little, I feel like it's helpful.

Unlike Candace and Michelle, Alice did not have any particular feelings about critical thinking, instead just viewing it as something that had to be done. She felt that having a set process helped facilitate critical thinking, noting that when trying to work through a problem, "you have to kind of look at whatever you're looking at, again, revise it, and sort of ask yourself questions about it, to help you determine an answer." Later, Alice spoke about the inherent risk associated with critical thinking, explaining that "not being afraid to fail" is a key critical thinking skill. In her explanation, she indirectly alluded to critical thinking as a continuous improvement process. She said:

I feel like people who successfully critically think are not really afraid to do sort of the option that might seem risky. Especially for something like a like a case study or report. I would just, I would usually probably just go though, the way that's in the book, because it worked in the book and it worked in the videos, but really, I think critically thinking is sitting there with it and trying even though it might fail.

When asked what to do if the solution fails, Alice confirmed the idea of critical thinking as continuous improvement. She said, "You can try again, if there's another option."

Charlotte offered a perspective different to the other participants to describe how critical thinking made her feel. At first, she spoke about how critical thinking requires "working through things and thinking of all the details," but then she added that it makes her feel "studious" and "educational." She also equated critical thinking to persistence

and repetition, noting that using the critical thinking process helps develop understanding even when it takes more than one attempt. She said, "even if like you don't understand something right away, like maybe like, get away from it for a bit and come back and like, understand it more."

Understanding that persistence is part of critical thinking helped Charlotte in some of her BBA Core courses that focused on topics with which she was unfamiliar, like risk management and operations. She said:

> *I felt like I was thrown into the deep end, without anything to help me, to be honest. So, I needed to find some resources to help me out. So, I, like leaned on some friends who were also taking the class trying to learn work together to understand like, the path we're supposed to go in. And just like Googled a lot of things to be honest, tried to read the textbook. Like I don't know. But then once I like got used to the process of it and I understood like what they wanted out of like each question and each like topic like, and I had a better gist of it. I know I'm still not very good at it, but I did my best and I definitely worked hard through it.*

Charlotte also stressed that the process of critical thinking relies heavily on building on prior skills and knowledge to inform how new experiences are approached and navigated. She said:

> *If you're not exposed to it, like, you're like, what am I doing? I gotta figure this out myself. I gotta find people to help me, like, things like that. So, you really got to work through it yourself, and find resources like that. But like, again, like the math courses, like, yeah, I probably thought more critically, like, when I first started math, like harder math not like addition, or what – well, I probably did that too, way back in the day, I guess. But, um, like, once you're just like exposed to it and constantly exposed to it, it's not like as hard like, you're like building upon it. But like a new experience, you're just like thrown in, and you got to figure it out.*

Lindsay spoke about how the critical thinking process involves pulling in information from multiple sources to arrive at a viable solution. She thought critical thinking was a "quicker way to find a solution." However, to do so, she also noted that the process involved:

taking into account every variable in a timely manner, kind of. Like when I think critical thinking I think like, there's like a bunch of issues like in one scenario and you have to like figure it out, like in a timely manner, like in a, especially in like a business setting. I feel like you're just doing like problems and problems, and you have to use critical thinking to try to solve it.

She continued, explaining that problem solving and analytical skills are traits associated with good critical thinkers. Like other interview participants, Lindsay noted that repetition and following a process helped facilitate critical thinking. Having a set process to follow helped her know when and where to rely on information she had already learned. She used her experiences in her risk management course to illustrate her point:

A lot of the problems are just kind of the same after a while, um, you just kind of like, oh, okay, now I know what to do. But risk a lot. There's a lot of, like, scenario questions and then you have to like insert using, sometimes using math and then sometimes using like, certain vocabulary terms, that was really hard, but accounting is the same way too. And MSOM. And they're all like, like a mix of, like, math and words. And that's very hard.

Tanya also discussed the ways in which she has developed her critical thinking skills, emphasizing that her skills have come from her experiences. She tries to build on those experiences and incorporate other perspectives to evaluate a problem. For Tanya, groupwork is a way to adjust her thinking based on outside perspectives. In her

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experience, groupwork helps facilitate the analysis and interpretation of information needed to find a solution. She echoed other participants' sentiments about critical thinking as a tool for continuous improvement, noting that she tries to "figure out, like, what we have and how we can make it better."

Steve's immediate reaction to critical thinking was to define it as a process that helps him understand the specific. He said:

> *if I need to work on a solution, it's like understanding the whole thing, what goes on in it, thinking how stuff can be improved on it. When I think I said the word curious, because, you know, if I, if I wanted to, you know, develop a solution for something when I do critical thinking, I certainly want to be curious, you know, to looking at things to different lenses. And, yeah, that – that's what pops up into my mind. Like, that's what the – that's the first thing that I do when I think of critical thinking. And I'm curious, and at the same time, it's also a tentative, focused detail. Yet precise, sometimes, you know, you want to be precise while thinking because you don't want to go off track in in thought.*

Steve also emphasized that the process must be focused, noting that he does not associate multitasking with critical thinking. He said:

> *I never multitask when it's, you know, when – if I have a critical paper due or critical post to write, I usually focus on there. I cannot listen to any type of music. I really want to isolate my thoughts because my other – other things going around me can, you know, affect me on my thought process. And sometimes, you know, in meetings when I was doing my internship, there were people who were multitasking on, you know, on the things and when they were asked randomly for a first solution, they weren't able to give anything on the spot.*

To aid the critical thinking process, Steve highlighted the importance of taking good notes. For him, good notes help identify the key details, and he can refer back to them while working on a project, which helps him build his skills.

In describing his experiences in the BBA Core, Steve pointed to four courses that required a high degree of critical thinking: RMI 2101, BA 2196, MSOM 3101, and MIS 2101. For each course, Steve described how following a process helped facilitate his critical thinking:

> *In the core business classes, as I said, you know, risk management, business communications, they're like, really good additions to the critical thinking, like, when I first took risk management, I feel like the only class that required a little bit of critical thinking would have been the stat class just because I didn't have a calculator with me. I had to think oh, should I apply this equation into getting the solution? Or I might use other methods to derive the same solution, right? But I feel like since business course – the business courses don't emphasize on mathematics that much, unless you are a different type of major, like actuarial science or finance, it doesn't apply to everyone. But risk management certainly was a very interesting path that I took. Because it's very – risk is very subjective. But at the same time, you have to think critically like how it will impact a business. And risk management was certainly the first course I'll say that, you know, I took that required a lot of critical thinking. The courses – the other class being business, business communications, the proposal, I think, as Candace mentioned last time, when we were in the group. I, I spent almost a week deciding what – what thing I want to propose and also, you know, the good thing with the proposal being it should have a better purpose. I feel like that also plays an aspect of critical thinking like, suddenly I do want to think, but at the same time, I want my thinking and my ideas to be impactful. Some of the other classes I feel like that come to my mind might be MSOM. Like, MSOM wasn't that critical thinking but at the same time, I do want to see, you know, if I'm doing the bottleneck analysis, I do want to think how a B can affect a process – Process A and how it can affect Process C. The other Gen Ed courses I feel like MIS might be – the intro MIS class was a very interesting class for me because,*

you know, it made me think on the exams, because we do the Entity Relationship Diagrams on it. And it's also very subjective but at the same time, you know, the process of elimination and I'm thinking more to describe which entity would fit best with the process goes a long way.

Steve noted that he had to apply and analyze information in order to reach a solution. In the case of BA 2196, he noted that he also had to think about the impact his business proposal would have on the organization. In MSOM 3101 and MIS 2101, Steve had to evaluate how different decisions about a process affect other processes, and the impact the final decision has on the process. For Steve, critical thinking is an integrated process that requires analysis of every available piece of information, application of the information to the situation, and evaluation of the final outcome.

Early in her interview, Lindsay spoke about how scenario-based problems and word problems evoke critical thinking for her. She said:

usually in a book there's like critical thinking and like a scenario, but like maybe in depth, like very detailed like nothing. Like some questions are like boom, boom, answered. Critical thinking you have to like kind of dive into it. And think about it very, like, think about to get to the right answer. Sometimes there is no right answer.

When asked about the traits or skills she thought she needed to be a successful problem solver, Lindsay emphasized analytical and problem-solving skills. She added that intelligence and "humanity skills" are also important, but the problem-solving skills are the most important because they help guide "the process of finding a solution." Lindsay speculated that some people are born with these skills, but that it is possible to develop

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them through repetition. She said, "If you're given a bunch of problems and solve them, eventually you'll get better at it."

In Lindsay's case, she was able to develop her critical thinking skills during her time at the Business School. As she progressed through her BBA Core coursework, Lindsay learned that she could not rely on rote memorization to get through her classes, particularly those like RMI 2101, MSOM 3101, and MIS 2101 where she had to answer multiple scenario-based questions on her exams. Speaking about her experiences, Lindsay said:

> *I learned to not just like memorize formulas and then expect to know the answer to everything. Now I, like, have to, like, really read into this situation and I'm like, okay, I have to break it down and then use formulas or anything given to me and then answer the question. Because before I used to be like, I just need to remember formulas, and I'll be fine.*

Lindsay found that the same held true in her major classes, but rather than applying the correct formula to a given situation, she needed to choose the correct policy to use. She said:

> *They'll give you a scenario and then you'll have to use like what policy an employee might use to like, you know, set their case or to give their case. And sometimes like a lot of the policies are – just sound similar or have like similar aspects that you kind of have to like, really think about like, which – like which policy or law would like really fit with the scenario given to you.*

Despite similar experiences with scenario-based questions in both the BBA Core and her major, Lindsay found that she had a more intense critical thinking experience in the BBA Core. She noted that professors in her major tended to be more lenient in their grading,

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awarding points for trying even if the answer was not totally correct. She did note, however, that her overall experience at the Business School helped her develop her critical thinking skills. She asserted that her courses were "very critical thinking heavy, and noted, "You know, you learn more through experience. So, the Business School definitely put me through that."

Tanya defined critical thinking as "forming a plan to do something." She noted that through her coursework at the Business School she had been able to develop her critical thinking skills, stating that she was able to build on the experiences she had in each course to help her be successful in the next. She said:

> *While I enjoyed most of the classes, um, you know, after the fact, but during the class I thought it was a lot of work so it's overwhelming to actually understand what's going on. But now that I look back at it, like I enjoyed the classes they were, they were interesting. I think it helped me develop my critical thinking skills because I can – I used them going forward in college. I used them going forward with my other courses. So, when I went to a new course, it wasn't like new learning. It was something that already was taught.*

Tanya thought that her experiences in her major really helped her to develop her critical thinking skills. She attributed this to the large amount of groupwork in her major courses that exposed her to different viewpoints and different approaches to problem solving. She noted:

> *My major classes definitely helped me develop my critical thinking skills because a lot of my courses, I work in groups. So, the groups can be from five to eight people, and we all just decided to come up with something on our own. And it wasn't, it wasn't a – more so feeding off of someone else's*

idea, but more so like putting ideas together and just finding out, you know, ways to make a difference.

She continued, noting that in a group setting, she was able to gain experience in multiple roles, which further helped to develop her critical thinking skills.

Ultimately, Tanya felt that her experiences at the Business School helped to develop her critical thinking skills. She found that she was able to communicate her ideas more quickly and on a deeper level and was also able to break down project objectives. Tanya was able to translate these experiences and skills into success at her internships. She said, "The knowledge that I gained from the courses, I applied it to my internships and that way I was able to, you know, be independent, and it also helped with – also helped with forming new ways, again, for my internships, to, you know, tackle different tasks."

Like Tanya, Alice found that groupwork helped facilitate the critical thinking process. She provided an example from her digital marketing class:

we have a group project, and we have to help a business. We have to come up with specific campaigns to run for them. It has to be all really specific; it can't be like a generalization. So, we really have to think about what their customers would want. And we don't really have that much room for errors and do it again because it's like a real company.

Alice continued, noting that her group followed a process to determine how to develop their campaign. She found value in the way her group approached the project because it allowed everyone to see and hear outside perspectives. She said:

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We usually just brainstorm what we're going to do first, and everyone sort of puts their ideas out, and then we sort of determine which one we're actually going to use. So, it does help it [critical thinking] because you're getting to see more perspectives.

Michelle found that her two majors complemented each other. In accounting, she noted the importance of attention to detail, while legal studies requires more of an analytical mindset in order to understand, analyze, and interpret the law. While not formally stating that critical thinking in her majors followed a process, Michelle detailed how important it is to have "the ability to take information, especially seemingly unrelated information, and like, turn it into an idea." She found that she had to do this in both of her majors in different ways. Michelle said:

I wouldn't necessarily say, like, totally different critical thinking skills. But I think Legal Studies requires, like more depth, if that makes sense? Like Legal Studies, requires – requires it more I guess, and more often and more thoroughly than accounting. Whereas, like, in accounting, you can just memorize some processes if you want. You don't have to ask like why or there's not – not all are required to do that critical thinking. But in legal studies, the whole point of the major is to be able to, like, apply these things. So, I feel like it's kind of the same skill but more intense.

Michelle continued, noting that when accounting and legal studies converge, it scares her a little because the required critical thinking becomes more intense. She said:

I get a little scared. And I feel like at that point, it gets like even more in depth than it would be just by itself on either side. Because the ability to take like, two, not completely unrelated but like very different fields, and then very unrelated information and like bring that together would require deeper critical thinking than just doing one on its own.

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Michelle used an example from one of her accounting major courses to illustrate how it helped develop her critical thinking skills. In Intermediate Accounting I, she had to complete a project evaluating a firm's financial activity. She explained:

> At the time, it seemed so hard, but looking back, I'm like, I would kill to do this project instead of what's going on now. There's like this big project that involves like, reading through like a company's activity for a few – for like a month. And then just like going through and making the journal entries and creating financial statements and stuff. And again, looking back, it's like, oh, that was easy, probably because it was in the past. But at the time, it was we'd never had to get like that raw information, just like paragraphs of what happened and turn that into like the statements and the products that we've been looking at for however many years at that point. And I think that was the first, like, time in my major that they really, like, threw us in the deep end, and were like, okay. Do it. It's time.

Michelle was able to use her experience with that project to guide her during her accounting internship when an issue arose with the firm's invoice processing system. She followed the same kind of analytical process as in her Intermediate Accounting I class, recognizing that she needed to understand the data that were causing the problem and then determine a solution based on the information she had. She described the experience:

> That was, I think the first, like, real life application of things we've learned because the issue was that the system was feeding off of strings of numbers, which signified names of accounts, and each, like, section of the string was an attribute of the account. And it was the first time I had to be like, okay, well, we learned about these accounts and how they acted, and these attributes, but I can't just be like, this is a memorized name I have; This is what it does. It has to be information that's applicable, and I have to, like, actually apply it to fix a problem that, like, doesn't necessarily have a set answer because it's not on the test.

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Charlotte thought that experience helps build critical thinking skills. For her, there

is a definite process that begins with establishing a solid understanding of concepts and

information before being able to move into the application and analysis phases. She said:

> *I've had math like before college and then I got here and I had like,*
> *accounting and finance which like, I understand what they like want me to*
> *do, I just need to learn the new formula. So, I felt like wasn't like super*
> *critical because I like knew what I had to do. But like classes, like – like*
> *MSOM, and like, risk I was never exposed to, so I was like, I have no idea*
> *what I'm doing, I really need to like, know what I'm doing to be successful*
> *here. So, like, those are like just the classes I wasn't exposed to, like you*
> *have to critically think at first to really get it. And then once you're like – I*
> *don't know, like, with the math courses like I've always had math like*
> *every year basically in accounting, finance and then it's like routine at*
> *that point, but the new classes you're exposed to, you really gotta*
> *understand it at first to be successful in the future.*

Like Alice and Tanya, Charlotte thought that groupwork helped develop her critical

thinking skills because it exposed her to different perspectives and forced her to apply the

critical thinking process in a real-world context. She gave two examples from coursework

in her major:

> *I feel like, a lot of the MIS classes, you have to critically think because –*
> *I'm thinking like, I had the project management class last semester, and*
> *we had to work in a group and we had to really work through how to, like*
> *successfully – create successful deliverables each week. And like, we had*
> *to create a website for our client, like we had an actual client that we had*
> *to work for. I guess like really understanding their needs and what they*
> *needed in their website and everything like really made you think through*
> *everything, and I think all the details. I also – like in – I don't know what*
> *number the class is – it was like 3506 or something. I forget. But we had to*
> *like also create like a prototype website basically. Again, with like, the*
> *needs of a client – a pretty similar class but yes, pretty similar – but really*
> *had to like, it wasn't like just a paper that you – like I had to write, it was*
> *like thinking of other people and what they need. And like, a lot more*

critical thinking when it's someone else that you're making something for. I guess, I don't know. Like, I feel like I've critically thought a lot of my major classes.

Within the MIS major, Candace found that different levels of thinking were required. She noted that her data analytics class required critical thinking, but it was a very straightforward process to look at the data, understand it, analyze it, and then interpret it to arrive at a solution. In her UX design class, however, the process also included accounting for the needs and preferences of the client. She explained:

> *In the data analytics class, we would have to, like analyze data sets to figure out um, I guess like, what the data means, so I feel like that requires a lot of thinking, just like off the bat because you're trying to figure out an answer and like solve a problem. I feel like in all MIS classes you're trying to develop a solution, so you have to think about it either way. But um, and then I guess like the UX design class, as I mentioned, we, um, at least when I took the class, I know it's a little bit different now. You had to like find problems with a website and then come up with solutions to make it a better website. So, I feel like a lot of the time I like sat there and just thought about it to myself. What are ways that I can improve this based on like, my experience with all their websites? And then like, you have to not be biased too because like, something you like, differs from like, what other people like, and like – just like – like I was saying, just because you like something doesn't mean it's going to, like, satisfy the user I guess. And then the coding classes you just have to think about every time you run into a problem. It's like what am I doing wrong? Should I start from the beginning?*

For Candace, experiences where she had to move beyond basic understanding to analyzing information were difficult. Even with a process in place, she finds it difficult to create her own understanding of a topic. Despite those feelings, Candace recognized how valuable those skills were, stating that she has been able to apply them in her coursework and in her internship. She said she would have benefitted from having a formal critical

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thinking class which would help cement the process and help her feel secure in using it. She suggested that the Business School create a "major specific critical thinking class for each major." Candace thought that this would help alleviate some of the stress involved with critical thinking and help it be incorporated in more courses in the Business School. She said:

> *You could do like a major specific, critical thinking class for like each major. I don't know. I mean, it's good to – because I feel like the classes that I remember the most were the ones where I had to critically think, but they also brought me the most stress. So, I feel like if all of my classes were like that, I would go crazy. So that's the only reason why I feel like I would be hesitant towards like incorporating it in every – obviously it doesn't have to be on all the material like in the class, like you don't have to incorporate it into everything, but I just – like if, if I had like – because I remember I had risk and biz comm the same semester, and I think I had a coding class, so I was just like, oh, no. So, like, if my other two [classes that semester] were like that, too, like if I had all five like that, I think – yeah. So, it depends. There's like pros and – because I feel like if you did incorporate it more into the other classes, they would be more memorable.*

Steve valued his critical thinking experiences in his MIS major because they took him beyond simple memorization. In MIS 2101, there were some components of memorization, but the course also involved a look at case studies, which required a set process, and also drew Steve to the major. He said:

> *When it came to this case studies, it wasn't memorization, it was thinking, processing, eliminating, and making, you know, making sure that it fits the scenario. And I feel like that was one of the reasons I was like, oh, if I'm able to get my brain working so much [I will become an MIS major].*

Like Charlotte and Candace, Steve highlighted the importance of accounting for the needs and perspectives of the audience when completing coursework and co-

curricular presentations within his major. He explained that in those situations, a key

component of the critical thinking process is deciding how data is interpreted. Using an

example from his coursework in data analytics and his participation in the Data Analytics

Challenge, Steve said:

> *In data analytics, I found, you know, what data should I present goes a long way. We also had the Data Analytics Challenge, which was – which really helps with the whole course, because we have large sets of data, and we need to think, you know – like, people, like, seeing charts, but at the same time, it's very easy to manipulate those charts and convincing people to go the wrong side. I feel like a lot of thinking went into those – those classes, you know, which data set will be useful for us, which data set will be useful for the audience who's going to see it, you know, and the way to present them, we do – we don't want to, you know, goof up the numbers and present the data. I was surprised here that people still do it. Like, during elections, like, people, like there's a 2% difference. But you know, charts can show, you know, like one party at this much and the other one at this much. But there's only a 2% difference, which doesn't make sense. But I feel like, you know, in that aspect, data analytics course really helped me, you know, decide how it's very critical and thinking – thinking mostly, you know, thinking how to apply data as well in the current lives. Everything is in information.*

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Critical Thinking is Aided by Interest in the Subject Matter

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Candace identified curiosity as a necessary trait for successful critical thinking.

She expressed her opinion that curiosity, and therefore critical thinking, is fueled by an

interest in the topic. She said:

> *you have to be like, curious. I feel like you have to care about the topic. Like if you don't care about it, you wouldn't be – I feel like when you're like, when you actually care about a topic, you're more interested and then that triggers more questions that come up. Whereas like when you're not interested in something or like you don't have any – I guess like, I feel like when I'm passionate about a topic, I have a bunch of questions whereas*

> *like, when I don't really care about it, or like the classes I'm not as*
> *interested in, it's kind of just more of like, okay, let's just get it done.*

Later, Candace spoke about how ability can also impact interest in a topic. She provided

an example from general education, noting that the only general education course that has

stuck with her is one that focused on technology because that is what she is interested in.

Her other general education courses required more reading and writing which she finds

are skills that do not come naturally to her, and that she does not particularly enjoy doing.

She explained:

> *That [data science course] was like the only gen ed though that I feel like I*
> *still remember, and I took that freshman year so that says a lot. But other*
> *than that, I feel like because I'm interested in like the tech stuff, that's why*
> *it appealed to me so much, whereas the other ones feel like a lot of the gen*
> *eds like require you to read and like, it's just like, reading and writing*
> *essays, and that's not really something – like I have to force myself to sit*
> *down and read something. And I feel like when I read it, I don't*
> *understand the material right away. So that's like something I'm not that*
> *good at. And I should, like, try and improve it, but like, you know. So, I*
> *think that's why like the other gen eds don't resonate with me as much. Not*
> *because of the material, because I've definitely taken some interesting gen*
> *eds, it's just more of like, I guess the stuff that you had to do wasn't*
> *something that I really enjoy doing.*

Michelle expanded on Candace's thoughts, noting that not only is there a

relationship between critical thinking and interest in a topic, but there is also a link

between self-motivation and interest. Michelle further explained that critical thinking is a

self-motivated process. She said:

> *I feel like in any class, there's like, at least to an extent, you're only getting*
> *out what you put into it. And so, like, if you're just there to pass and to*
> *like, you know, memorize stuff, pass the exams, like get your grade and*

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leave, then you're not going to get as much out of it as someone who's there to actually like, learn the material on who like, likes to learn these things.

Michelle also noted that instructors can use student interest in a topic to create opportunities for critical thinking. Using an example from one of her general education classes, Michelle explained that for one assignment, students had to submit chosen topics for a debate. Once the topics were submitted, students had to defend the opposite viewpoint to the one they had initially chosen. Michelle said:

In my language and society class, he [the instructor] had us do a debate. And we'd, like, of course submitted what topics we wanted and what side we wanted. And then he gave us the opposite of what we asked for. So, we had to argue points we didn't necessarily believe in. And I feel like that exercise in particular, really, like stretched those critical thinking, like, skills because I had to take, like, facts and information and evidence and then try to prove a point that I didn't believe in. And so, like the point wouldn't naturally come to me like it would if it was something that, you know, I thought on my own.

Alice also spoke about her interest with general education, echoing Michelle's thoughts about an instructor helping students to cultivate an interest in the topic. Alice said:

Especially for like discussions and stuff, that's really when there's the most critical thinking in those [general education] courses. Because most of the time you learn whatever you're going to learn after – well, from what I've seen, you learn what you're going to learn after and before the instructor is asking you all these questions, which eventually help you develop your stance on whatever she or he or she is going to teach.

Alice continued, noting that she tried to pick her general education courses based on her interests, but was not always successful. She acknowledged that she thought she got more

out of the courses she was interested in than those she took because they fit in her

schedule. In her opinion, the same held true for courses in the Business School. She said:

> *When I'm interested in something I'm actually applying or trying to apply*
> *it or using it every day if I see it. I'll be like, oh, yeah, that's something I*
> *learned, and I can talk about it. If it's something I'm not really interested*
> *in, I'm just trying to do it.*

Charlotte agreed with Alice and explained that she was the most interested in her

major classes, and that is where she experienced the most critical thinking. I asked her

why she thought that was, and she said:

> *I'm more interested in MIS stuff that I'm like, and I want to go into*
> *obviously something in my major that I like, I need to know this like, and I*
> *want to know why this is happening anyways, but like, like finance, I'm*
> *like, okay, the answers 10 like, it's correct. That's all I care about. Like it,*
> *to be honest. Like, I don't know. So, I guess it really changes when you're*
> *actually super interested in something.*

Steve identified curiosity as a trait that he associates with critical thinking. For

himself, he finds that he uses his critical thinking skills more when he is curious about a

topic. He provided an example from his internship experience, noting:

> *when I was doing my internships, there were times when I didn't have a*
> *fun project to work on, you know, I have, I had some free time with me.*
> *And, you know, instead of watching Instagram or you know, playing on my*
> *phone, I read articles, I got certifications, like, you know, I definitely put*
> *in that time into, you know, I feel like curiosity. Curiosity is the only word*
> *that I can associate with because that's what I practice.*

Steve continued, discussing the impact his general education courses had on his critical

thinking skills. He noted that he chose his general education courses because they

sounded interesting. He found that most of his general education courses were interesting

because they were able to make him curious about the topics. Steve was certain those

courses required critical thinking while he was taking them, but he was also quick to

point out that those courses also had a lasting impact on how he views things in everyday

life. He said:

> *for example, I took a human – I took a race and diversity Gen Ed which
> was discussing on you know, the bilingual communities. That was very
> interesting to know, you know, like being bilingual myself. And I feel like
> being the only person from my family to be here are getting to learn more
> about others experiences really, you know, puts an effort – has a hold in
> my brain like, you know, I definitely will think twice before, you know,
> learning about people who are from different communities. It's, it might be
> – it's very interesting to see how the hardships that they have faced. That
> was a very interesting thing because it made me think writing the paper
> certainly did make me, make me think. But at the same time, you know,
> seeing how humans are treated differently just because they're two or
> three miles away from a specific line is very interesting. Science and gen
> ed classes as I said, like whenever I light a bulb, look, you know, a light
> bulb. Suddenly two physics classes come in mind, like, you know, how
> electricity is conducted, how it passes through, how are switches working.*

Steve continued, emphasizing that the knowledge he gained in his general education

classes is applicable in a broad context, and that the topics of his courses increased his

curiosity, which in turn helped develop his critical thinking skills:

> *The environment classes that I took, like, you know, it really makes me
> think what will happen to the world if we keep on moving at the same
> pace. Like I stopped using plastic straws anymore, I use a metal straw –
> save the turtles. Those really make – I feel like they didn't help. I mean,
> they don't help in my work, but at the same time as a human, they really
> helped me think more. You know, right now I'm taking a class called IH,
> mosaics, making me really think about the human psyche, right? I read
> Don Quixote. The stuff that Cervantes wrote in the book 500 years ago
> still holds true. People – you know, it's very interesting to, you know,
> think, like the discussion post that I write, I have to think a lot, you know,*

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putting myself in the mindset of the people back then, and putting mindset here, but yeah, as I said, you know, it doesn't affect my career. You know, these courses helped me grow more as a human. It makes me think more, but at the same time, I feel like you know, the more the information that I do get, the more thinking that I do really helps me grow instead of, you know, benefiting my career, but you know, yeah, I really enjoyed these courses.

Lindsay equated her hardest courses with the courses where she used the most critical thinking. Courses that involved problems with "a mix of math and words," like RMI 2101, MSOM 3101, and MIS 2101 were the most difficult. Lindsay speculated that someone who had stronger quantitative skills would likely have an easier time in those courses, but she also admitted that it may have been harder for her because she did not put a lot of time into those courses. Regardless, Lindsay acknowledged that she learned a lot from those courses, including how to problem solve. She was quick to point out that her major courses are critical thinking heavy, particularly when looking at scenarios where she had to address employee concerns.

When evaluating her undergraduate experience as a whole, Lindsay mentioned that she sometimes did not work as hard in classes that did not hold her interest, opting instead to focus on the courses that would help her in her field of study. She noted that she had a better critical thinking experience in the courses that interested her, and that those skills are transferrable. She was grateful for the experience she had at the Business School noting, "Because now like in the workforce, you just have to just have to use critical thinking all the time. There's situations and you don't even know what's going to

happen. You have to solve them." She continued, stating that her coursework has prepared for that transition.

Alice felt strongly that her interest in her general education courses gave her a strong experience with critical thinking. She also noted that while she felt she got the most critical thinking of her undergraduate program in the RMI 2101 course, she hated it. She continued, noting that she thought she learned the most in that course and that it helped her use her critical thinking skills in other classes. While she appreciated the experience in her risk course and the way it prepared her for critical thinking in her other courses, she was more open to developing and fostering her skills in areas that interest her. She said:

> Yeah, when I'm interested in something I'm actually applying or trying to apply it or using it every day I see it. I'll be like, oh, yeah, that's something I learned, and I can talk about it. If it's something I'm not really interested in, I'm just trying to do it.

Michelle contrasted her experiences at the Business School with her experiences in general education, noting that while she thought both experiences helped her develop her critical thinking skills, the Business School courses helped more. She noted that she had to work harder in her Business School courses, but because she was more interested in those topics, she did not find it to be a hardship. Michelle also spoke about how she thought that critical thinking is tied to a degree of self-motivation, explaining that it is easier to sustain motivation when interested in a topic. She said that in coursework:

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you're only getting out what you put into it. And so like, if you're just there to pass and to like, you know, memorize stuff, pass the exams, like get your grade and leave, then you're not going to get as much out of it as someone who's there to actually, like, learn the material and who like, likes to learn these things.

As previously noted, Steve thought curiosity is intrinsically linked to critical

thinking. Throughout his interview, he gave examples from courses that he found to be

both challenging and helpful in developing his critical thinking skills. These also were

courses that piqued his interest. As a senior, Steve was able to see how all of his courses

built on each other and was able to integrate that knowledge into his upper-level major

courses. He explained:

The data analytics course, the programming class, then I took another class, which is the IT architecture, basically, cloud computing, that is also very interesting, but it didn't require that much critical thinking, but at the same time, you know, it also helped, like, you know, we started to learn more about how these systems help an organization. So, it wasn't critical thinking in the data aspect, but you know, more of a holistic approach like, you know, how am I implementing virtual machines for the benefit my, you know, company? How can an attacker jump in? It was, like, I told my professor, it was very easy to upload a virus, because all – because of all stuff that we were doing. And he told me that I was right. But at the same time, you know, that's where the cyber security classes come in. Like, I feel like I was able to think more with those classes. So, the other then – I will say the senior level major classes were more, you know, like I did thinking. I did more critical thinking, but not in the course, but more in general topic, like, you know, how information systems is beneficial. And I feel like, you know, I did the same things, you know. I started now, I never – I never expected to, you know, part, be a part of, you know, multiple, what do you say, the security information clubs. I have, I have joined so many newsletters, I every day, try to read some of the technology articles and the risk management articles as well. And those definitely go more into my critical thinking as well.

Steve continued with an example from his internship, highlighting his curiosity about his field and how he uses that in combination with his academic experiences to increase his critical thinking skills. He explained that sometimes during his internship, he did not have projects to work on. Instead of scrolling through his phone, Steve, "read articles. I got certifications, like, you know. I definitely put that time into, you know, I feel like, true curiosity. Curiosity is the only word that I can associate with it because that's what I practice."

Candace echoed Steve's sentiments about curiosity, noting curiosity and interest in a topic lead to critical thinking. She added that critical thinking can also be cultivated through unintended exploration. She offered an example of a time when she had to look up the meaning of a term and that caused her to dig deeper until she fully understood it. She said:

> *When I'm in a class and I don't understand something that's going on or like, I know, I've had some classes where my professors use like terms, and I'm like, I have no idea what you're talking about. So, I'll either write it down and then go back and look it up. Or I know like, when I was in class, I would like sometimes just like, say, like, catch up, because I would feel like what is going on? I would look up what they're saying, just so you can get back into the moment, though. Yeah, I can say I've definitely done that. And it's sometimes I guess, if I've heard a word, I've never used before, and then I look at all I'll end up saying it, if that makes sense. Like use it more often.*

Candace also noted that critical thinking skills can be helpful in navigating a new experience, especially in an area of interest. She spoke about her internship, which focused on data analytics. Prior to completing her internship, Candace had planned to go

into a career focused on data analytics, but after her internship felt unsure about

continuing. She said:

> *I liked working at [internship company]. I really loved the company. But the data analytics aspects, I feel like they kind of just threw me into it. Like that job, I really had to critically think which is good. Like, I really think it is a valuable thing to, like you get better with time. But I feel like they kind of just threw me into it rather than like – I didn't necessarily learn anything, it was more – anything I learned was on my own, which is good. But it was focused on like Tableau and data analytics, and I feel like I didn't get enough exposure. So right now, like, I went into it, like, oh, I want to do data analytics when I graduate, like something like that. But after that internship, I'm kinda – I feel like I'm not prepared enough, I guess, to do a career in that. But like, how do I like, explain this? Like, I'm interested in it, but I feel like if someone were to give me like something to do, I would be like, totally lost. So, like, that's why I kind of don't know what I want to do yet. Like I have interest, but like, not like 100% certainty that, like, I can do it.*

From Candace's point of view, interest in a topic can enhance critical thinking, but at the

same time, too much forced critical thinking can diminish interest.

For Charlotte, the critical thinking experience changes depending on interest. She

referenced her general education classes, noting that in those courses she tended to "just

walk through the motions" since they were required and not necessarily of interest.

Charlotte explained that the experiences she has had in her major and in her

internship are really what helped her develop her critical thinking skills. She noted that

her internship helped set her up with the skills she needed to be successful in her final

year of coursework, and that it is helping her understand concepts more deeply. She said:

> *We're doing – oh my gosh, why can I not think of the word? Oh, penetration tests – we're doing. And like, I didn't do one like hands on or anything last – like in the summer, but I was in like multiple meetings*

about them talking through how to do them and stuff, so I was exposed to just hearing them talk about it. So, I feel like when I see it and like, I start doing it myself this semester, like, I'll be like, oh, this is what they mean. Like this is probably what they meant. Like this is so cool now. Like, so I think it'll definitely be helping me.

Evaluating the Research Questions

This study examined three research questions which focused on general perceptions and experiences with critical thinking, how gender shapes perceptions and experiences of critical thinking, and how academic discipline shapes perceptions and experiences of critical thinking. The findings presented throughout this chapter can be used to answer each question.

The first research question was broad and asked how undergraduate business students perceive and experience critical thinking. In examining the general perception and experience with critical thinking, the most common theme that emerged was that critical thinking was a process. While few students came out and directly stated it was a process, they defined critical thinking in terms that mirrored the steps found in stage theory, though most started at the application and analysis stages rather than with the basic levels of understanding. The process was also defined by the use of examples from course assignments. In these instances, participants explained the assignment prompt and then walked me through the different steps they took to complete the assignment. Participants also spoke about the need for reflection and the reevaluation of their work to make sure they were presenting the best possible solution. The reflective element and the

idea of critical thinking as continuous improvement is consistent with both stage theory and transformative learning theory.

The second research questions asked how students perceive and experience critical thinking through the lens of gender. When looking at the influence of gender on critical thinking, the results of my study were consistent with the existing literature, in that they are inconclusive. Critical thinking as a process was consistent across participants regardless of gender. Differences that appeared tended to be situated within the context of the participant's major. The examples frequently varied by major, but rarely between students of different genders who were pursuing the same major.

The final research question asked how students perceive and experience critical thinking through the lens of academic discipline. While academic discipline itself did not appear to greatly influence perception of critical thinking, interest in the subject matter was a theme that emerged from the data. Participants noted that when they were interested in a topic, they were inclined to put forth more effort, which they equated with critical thinking. This held true when speaking about general education courses as well. Students generally felt that they got the most critical thinking in their majors where they were naturally interested in the topics. It was also important to the students that they be able to understand how the coursework could be applied in a real-world context. For the students, the real-world applicability helps to increase interest, which leads them to put forth more effort, and in turn leads to a deeper understanding of the material.

CHAPTER 5

DISCUSSION

Research regarding critical thinking frequently focuses on critical thinking assessments and how students perform on critical thinking assessments. There is little research about student perception of critical thinking, and even less when perception is examined by gender or by academic discipline. This study sought to understand how undergraduate business students perceive and experience critical thinking within the business curriculum. This chapter discusses and summarizes the findings of this study as outlined in Chapter 4.

Discussion of the Findings

This study used focus groups to first look at how undergraduate business student perceive and experience critical thinking. Follow up individual interviews were used to address how perceptions and experiences were shaped by gender and by academic discipline.

Several topics of interest emerged from the focus groups, but three themes were most prominent: critical thinking is a process, interest aids critical thinking, and technology use impacts critical thinking. Individual interview participants rarely, if at all, spoke about the impact of technology on critical thinking; therefore, the key themes from the interviews only included critical thinking is a process and interest aids critical thinking.

The most frequently recurring theme in the focus group and interview data is that critical thinking is a process. Participants were able to clearly articulate the steps in what they perceived to be the critical thinking process. In some instances, this came in the form of identifying skills or traits they associated with critical thinking.

Focus group and interview participants identified steps in the critical thinking process nearly identical to those enumerated in stage theory, though most skipped past the initial knowledge and understanding levels and focused on the application and analysis stages. When asked to define critical thinking in her individual interview, Michelle outlined the beginning of the critical thinking process:

> *I feel like I would say it's like the ability to take information especially like seemingly unrelated information and like turn it into an idea or like a, I don't want to say like a process, like a concept, like, take raw facts and be like, okay, this is what these mean.*

Despite her hesitation to define critical thinking as a process, when asked about skills she associated with critical thinking later in our interview, Michelle's response echoed her earlier ideas about process. She identified "openness to new ideas" as a key trait for critical thinking, explaining that "I feel like that's kind of what critical thinking lends toward, is like coming up with a new idea of analytical skills."

Michelle's responses were consistent with responses from participants across focus groups and interviews. Participants frequently identified analyzing and applying information, problem solving, awareness, creativity, communication and listening skills, logical thought, and strategic thinking as traits associated with critical thinking. When

focus group participants tried to define critical thinking, they often defined it in terms of coursework or assignments, walking me through the process they used to complete the assignment. In this way, they effectively defined critical thinking as a process.

Perceptions of the process were consistent across participants regardless of gender. General steps remained consistent across majors; however, the way in which the steps were outlined were sometimes framed differently depending on a student's major. For example, Lindsay, an HRM major, outlined the process in terms of leadership and how she, as a future human resource professional, would go about addressing a problem related to employee needs. Conversely, Charlotte, Candace, and Steve, all MIS majors, used examples that were more technically oriented. All three of them used examples from their experiences in their coding class, where they would have to create a code by analyzing and applying information, and then constantly evaluate and reevaluate their work whenever they encountered a problem. Both Charlotte and Steve noted that this sort of repetition and trying something, failing, and trying again are key parts of the critical thinking process.

Another prominent theme that emerged from the data was the idea that interest in a topic aids critical thinking. This was common throughout the focus groups, with several participants using examples from their general education classes to highlight that they learned more in a course that they had chosen based on interest rather than because it was what fit into their schedule. The same held true for courses taken in the BBA core that

were required, but not necessarily of interest or of perceived relevance to the student's major. However, multiple students noted that general curiosity can help find something interesting even in a seemingly uninteresting topic. In her focus group, Joan spoke about her experiences with a general education course that she had not expected to enjoy. She found that because of the way the instructor taught the course she was able to take information from the class and apply it in a way that helped her stay interested in the subject. At the same time, she highlighted a BBA Core course where the only expectation for students was to memorize the material and maybe gain a cursory understanding of the topic. She explained that in that particular course it was difficult to muster any enthusiasm for the topic because of a lack of interest and the basic taxonomic level of the course.

For Marie, real-world applicability is what helps pique her interest and helps her develop her critical thinking skills. She found that it was difficult to see the value in courses that were "very textbook" because she neither cared about the topic nor could see how it applied to her own situation. This view was shared by participants, irrespective of gender or major. Everyone admitted to being more invested in courses that interested them or where they understood how the information was applicable in a broader context.

A final theme that emerged solely from the focus groups was that technology use impacts critical thinking. There were differences in opinion about whether or not technology limits or enhances critical thinking; most participants indicated that it could

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do both, but it depended on the situation. Participants were very open about how easy technology makes it to avoid thinking critically, especially in courses that might not be of interest. Mark spoke about the ability to use the internet to find answers to homework and exams, which both he and Daria thought was done frequently when students were not interested in a class and just wanted to make it through while keeping their GPAs up.

On the other hand, participants like Joseph and Alice gave examples of how technology has actually forced them to use more critical thinking because exam questions are pooled or scenario based, and so the answers cannot be found on the internet. Participants also noted that, when used properly, technology can be a tool to aid critical thinking. For example, Charlotte mentioned how she used the internet to help her understand topics that she did not understand. For her, using technology was a way to supplement her learning and help her develop a better understanding of unfamiliar topics.

Conceptual Framework

As previously outlined in Chapter 2, this study used the stage theory of critical thinking (Elder & Paul, 1996) and Mezirow's transformative learning theory (1997) to explore student perceptions of critical thinking in an undergraduate business curriculum. Based on results from interviews conducted in 2017 during the Business School's curriculum redesign, I expected that participants' experiences would be influenced by their gender and by their academic major.

Critical Thinking Processes

Results from this study indicate students perceive critical thinking to be a process, similar to that outlined by Elder and Paul (1996) in their stage theory of critical thinking. Further, participants spoke frequently about the need to draw on prior knowledge in order to critically think. This is consistent with Mezirow's (1996) work, wherein he explained that "learning is understood as the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience in order to guide future action" (p.162).

When asked what skills or traits they identified with critical thinking, participants generally responded with skills clearly represented in Bloom's Taxonomy (1956). Bloom's work is reflected in Elder and Paul's (1996) stage theory of critical thinking which posits that critical thinkers develop their skills as they move from basic skills knowledge through understanding of the role of critical thinking, application of critical thinking skills, analysis of their own thinking, evaluation of the role of critical thinking in developing responses, and creation of new insights development of solutions. Participants outlined steps that align to those put forth by Elder and Paul (1996), though they were not as clearly articulated. Participants focused primarily on the application, analysis, evaluation, and solution development phases of stage theory, while also failing to acknowledge that basic understanding must come before application. In speaking about the critical thinking process, several participants used language that indicated they

viewed critical thinking as a sort of continuous improvement cycle, where reflection and reevaluation of their work was necessary to present the best possible solution. This view closely aligns to both stage theory and transformative learning theory, which both emphasize the importance of self-reflection and re-evaluation as part of their processes.

Critical Thinking and Academic Discipline

Chapter 2 discusses a number of studies that explore differences in critical thinking ability based on academic major. In the context of business education, Dwyer and colleagues (2015) found that while critical thinking is generalizable skill, but students exhibit higher levels of critical thinking when applying it in the context of a specific discipline. Smith (2003) concurred, finding that when students are taught how to critically think in the context of their discipline, they are able to apply those skills in a broader context. Heinrich and colleagues (2015) found that course content and experiences that engage students increase critical thinking.

Findings from this study are consistent with the existing literature. Study participants consistently expressed that critical thinking is easier when they are interested in the subject matter. Steve and Joan both associated curiosity with critical thinking, explaining that being interested in a topic leads them to want to explore it more deeply.

When reviewing interview responses by major, it becomes clear that academic discipline influences how students perceive and experience critical thinking. In her interview, Michelle, an accounting and legal studies major, specifically spoke about how

little she got out of her marketing class and how little effort she put into it because she was not interested. However, Alice, a marketing major, was most animated when she spoke about examples from her major coursework where she had to use her critical thinking skills and how those assignments helped her develop her critical thinking skills.

To some extent, the same holds true when discussing general education. While not courses in the major or even necessarily courses related to business, participants shared that they used the most critical thinking in general education courses that had real-world business applications. Finally, when interview participants were asked where they had the most critical thinking, the BBA core, the major, or general education, each of them indicated that their major gave them the most opportunity for critical thinking.

Critical Thinking and Gender

Chapter 2 highlights several studies that examined the impact of gender on critical thinking performance. Collectively, the results of these studies are inconclusive. While Danvers (2015) and Raikou (2016) contend that students of different genders approach critical thinking in different ways, Bycio and Allen (2009) and Brown and Bielinska-Kwapisz (2015) found conflicting results when using the CCTST to examine differences in critical thinking performance by gender. Despite the inconsistent findings of these researchers, the self-reflective nature of both Elder and Paul's (1996) and Mezirow's (1997) models would suggest that gender does influence critical thinking. Both require

students to examine their own biases and assumptions and to challenge their established worldviews in order to progress to higher levels of thinking.

Findings from this study are consistent with the existing literature, in that they are inconclusive. In focus groups with a mixed gender composition, participants tended to build on the answers given by their peers. For example, Joan, Julian, and Natalie were able to use their individual experiences to create a shared understanding of critical thinking in their undergraduate experience. They agreed on the benefits of certain general education classes, with all three students indicating that real-world applicability in those courses helped develop their critical thinking skills. Further, they commiserated about the lack of critical thinking required in an economics course and how little they each got out of that experience.

Both male and female students across multiple focus groups and interviews highlighted the importance of drawing on previously acquired knowledge and using multiple viewpoints to increase critical thinking skills. In their focus group, Carl and John spoke about the ways in which groupwork provides a mechanism to access additional viewpoints, a sentiment that was echoed by Tanya, Charlotte, and Alice during their individual interviews.

When differing experiences between genders emerged, they were situated more in the context of the academic discipline. For example, Daria and Mark spent time discussing the differences between how critical thinking is taught and applied in the

context of an English course in comparison to a math course. A similar sort of discussion occurred among Andrew, David, and Marie, each of whom situated their examples of critical thinking within the context of their specific majors. Conversely, when Charlotte, Candace, and Steve, all MIS majors, spoke about their experiences with critical thinking in the undergraduate program, there was little variation in their responses. They all spoke at length about their experiences with critical thinking in their coding class, and while they all may not have enjoyed the content, they all recognized the course as a prime example of critical thinking.

Limitations

This study was designed to look at student perceptions of critical thinking because there is a significant lack of research in this area. Previous studies (e.g., Bycio & Allen, 2009; Danvers, 2015; Dwyer et al., 2015; Raikou, 2016) have examined student performance on critical thinking assessments and the impact of using a framework or scaffolding to teach critical thinking (Brookfield, 2005; Brookfield, 2012; Dwyer, Boswell, & Elliott, 2015; Raikou, 2016), but none of these studies account for what students understand critical thinking to be. This study sought to address this but was not without its own set of limitations.

As with the research that does not account for student perception, this study also operated within a slight vacuum. The methodology did not account for variations in perceptions due to previous experiences with critical thinking assessments. For example,

if a participant had performed badly on such an assessment, that experience could have potentially skewed that student's perception of critical thinking in general.

While qualitative studies lend themselves to deeply exploring a topic, the small sample size makes it difficult to generalize results. In this study, the focus group composition was diverse, with participants representing 11 majors within the Business School and with an almost even split between genders (52% female, 48% male). This broad sample provided a solid baseline for understanding how students perceive critical thinking in the undergraduate business program. However, the sample used for the individual interviews was much smaller and did not reflect the same diversity of experience found in the focus groups. Interview participants were overwhelmingly female (85.7%), and the majority were MIS majors (57.1%). The binary assumption of gender also limited perspective, as it failed to account for those who identify elsewhere along the spectrum of gender identity.

As with all qualitative studies, there was also the potential for bias on my part. Because of my work with the curriculum redesign and the previous informal study, I entered this study with some preconceived ideas about the expected findings. In future studies, this could be addressed by the use of a team of researchers, particularly with regard to the consistent application of established codes.

Recommendations for Future Research

It would be beneficial to expand the size and scope of this study in order to obtain a more diverse understanding of student perceptions of critical thinking. Data from the individual interviews, in particular, would be enhanced by the addition of more male participants and a more representative sample of majors offered by the Business School. In this way, direct comparison between students of different genders but sharing a common major could be explored. Additionally, qualitative data, while valuable in probing students' experiences and deeply understanding them, are not generalizable. Future studies into this topic would benefit from a mixed methods approach. One key assumption of this study was that students had experienced critical thinking within the Business School. Collection of survey data would verify the accuracy of this assumption and provide a means for directly comparing the experiences of different genders, different majors, and their intersection.

As noted in Chapter 4, a discussion of how technology impacts critical thinking arose during the second focus group. The conversation around this topic was so robust, that I chose to add it to the focus group protocol and explore it in subsequent focus groups. Based on participants' responses to prompts about technology, the relationship between technology and critical thinking is an area that should be explored in more depth in future research. Because it was outside of the scope of this study's research questions, technology's impact on critical thinking was not explored during the individual

interviews. However, the limited data about this topic collected through the focus groups indicate that technology has played a large role in shaping how students' experience and perceived critical thinking, not only in the Business School, but also in general education and the world at large.

Experiences with critical thinking in general education would also be an area for future research. As with technology, probing general education too deeply was outside of the scope of this study; however, responses about participants' experiences with critical thinking in general education were used in both the focus groups and individual interviews as a point of contrast to experiences in the Business School. Discussion about general education also helped support the idea that interest in a topic aids in critical thinking, which was one of the common themes found in the data.

It would also be beneficial to include exploration of experiential learning and co-curricular experiences in relation to critical thinking. This topic arose in a few interviews and focus groups, but not frequently enough for it to be included in the key findings of this study. Those who mentioned co-curricular experiences noted that those experiences contributed to their critical thinking skills development. Through participation in volunteer activities or student professional organizations, participants were frequently exposed to situations that required them to draw on their knowledge of the critical thinking process to navigate unfamiliar situations and achieve the desired outcome. Charlotte used an example from her time as a board member in her student professional

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organization, noting that she frequently drew on her problem-solving skills to move the organization forward and that the experience also helped her develop her leadership skills.

Based on themes found in the data, undergraduate business students recognize the importance of critical thinking in their coursework and acknowledge that it is a skill they need as they transition into the workforce. They have strong ideas about how it should be integrated into the curriculum; Candace even went so far as to suggest that the Business School create a required course within each major to teach students how to critically think. Students also have a very clear idea of what critical thinking is not, identifying courses that require more memorization than application as lacking in critical thinking. They were also clear that courses that rely primarily on third-party platforms (i.e., Pearson) and multiple-choice exams rarely contribute to the development of their critical thinking skills. Charlotte clarified that courses that use Pearson as a tool for reinforcement of material rather than as the primary method of teaching and learning have helped her advance her critical thinking skills.

<center>Implications for Practice</center>

Data from this study offer several suggestions for higher education practice, particularly when redesigning curriculum and examining students' critical thinking skills. Results indicate that interest in the subject matter influences critical thinking, with students further commenting that they think they get the most critical thinking in their

major courses and that there are a number of courses in the BBA Core that are lacking in critical thinking. These findings would suggest that as the Business School explores a second iteration of the BBA redesign, it should evaluate the number of courses included in the major and the number of courses included in the BBA Core. Benchmarking previously conducted by the Business School shows that its core curriculum is substantially larger than most peer and aspirant schools; benchmarking data and the findings of this study indicate that streamlining the BBA Core to focus on topics applicable to all students regardless of major and increasing the number of courses in the major would provide an opportunity to increase the focus on critical thinking skills development.

Students also commented that they are more engaged with the material when they understand how it can be applied in a real-world context. Additionally, when providing examples of critical thinking focused on their internship and co-curricular experiences rather than their academic experiences, further supporting the importance of real-world applicability in developing critical thinking skills. Putting these findings into practice necessitates a deep review of the topics discussed in courses to ensure that topics remain relevant to current trends in business and that topics are aligned to student interests. In the Business School, relevant topics may include corporate social responsibility and sustainability. In the same way that the initial BBA redesign sought to incorporate critical thinking throughout the BBA Core, these topics can also be incorporated and examined in

the context of each discipline in order to pique student interest and facilitate critical thinking. When paired with experiential learning and/or co-curricular opportunities, the potential to infuse critical thinking throughout the BBA Core grows. This could be achieved through the creation of critical thinking specific badges awarded through the BSLDP, where students would be required to participate in a set number of designated critical thinking activities in order to earn the badge.

The results of this study also have implications for the Business School's pedagogical strategies. The idea that technology impacts critical thinking emerged from the focus group data and provided insight into the participants' experiences with technology-based learning tools. It became apparent that students thought classes where third-party platforms are used as anything more than a tool for reinforcement were lacking in critical thinking. Similarly, they felt that multiple choice exams lacked the level of critical thinking required for papers, projects, and presentations. These concerns are directly related to the students' preference for real-world applicability in their coursework.

Conclusion

My interest in conducting this research study came from my previous work on the Business School's curriculum redesign. In the course of that work, I saw firsthand how the Business School faculty viewed critical thinking in the undergraduate program and the different ways in which they thought critical thinking was incorporated into courses

and assignments. At the same time, I spoke to students to gauge how closely aligned their views were with that of the faculty. While there were several similarities between the students and the faculty, particularly with regard to defining critical thinking and identifying skills and traits associated with critical thinking, there were marked differences in how students thought critical thinking was incorporated into their coursework. Further, there appeared to be some differences in the way students thought about critical thinking based on their majors. I suspected there were also differences by gender because of the way students of different genders spoke about their experiences.

In the time since the redesign, I have continued working in the field of curriculum management and assessment. When I attend curriculum meetings or speak to individual faculty, I hear many of the same views that were held during the redesign. Realizing that some of the concerns raised by the students during the redesign were never addressed, I chose to model this study after the work I had previously done because it appeared as though the student needs were not being met, nor were their concerns being heard. As the Business School begins to undergo a more extensive redesign, my hope is that the results from this study will be used to provide information on what the students need to be successful critical thinkers.

The results of this study show that students perceive critical thinking as a process that they can apply regardless of subject matter. Data also revealed that there are several courses throughout the undergraduate curriculum where critical thinking is not a priority.

In these instances, students described tools that were used in the classroom that basically allowed them to skate through the course but did not help with their knowledge retention or learning. Tangentially, some students stated that the method of instruction and the classroom environment also impacted critical thinking. This also indirectly relates to the findings of this study that showed that interest in a topic helps facilitate critical thinking. Even participants who took a course they did not expect to be interested in found that they were more engaged and used more critical thinking when the instructor used methods and techniques designed to rouse their curiosity.

Despite the small sample size, the results of this study can still be useful, not only for a new curriculum redesign, but also at the individual program and faculty levels. In my professional role, I work with Business School programs, courses, and faculty to help design assessments and also to consult on best practices in curriculum development. Moving forward, I will be able to incorporate the results of this study into my work with faculty to help them design courses and assessments that help engage students, that aid in critical thinking development, and that recognize and account for the disparities in how faculty and students perceive critical thinking. My ultimate goal in conducting this study was to find a way to incorporate the results into a new, redesigned, student-centric curriculum that focuses on how the overall Business School experience benefits the students.

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APPENDIX A: BBA CORE COURSES

Business School students are not required to take core courses in a specific order; however, it is recommended that courses are taken in the following sequence:

BBA Core Curriculum	
Year 1	
Semester 1	Semester 2
ECON 1101: Macroeconomics	ECON 1102: Microeconomics
HRM 1101: Leadership and Organizational Management	LGLS 1101: Legal Environment of Business
STAT 1001: Quantitative Methods for Business I	STAT 1102: Quantitative Methods for Business II
Year 2	
Semester 3	Semester 4
ACCT 2101: Financial Accounting	ACCT 2102: Managerial Accounting
MIS 2101: Information Systems in Organizations	BA 2101: Professional Development Strategies
STAT 2103: Statistical Business Analytics	BA 2196: Business Communication
	Marketing 2101: Marketing Management
	RMI 2101: Introduction to Risk Management
Year 3	
Semester 5	Semester 6
BA 3102: Business, Society, and Ethics	BA 3103: Integrated Business Applications
FIN 3101: Financial Management	IB 3101: International Business
MSOM 3101: Operations Management	
Year 4	
Semester 7	
BA 4101: Global Business Policies	

Students also take 10 general education courses, five major-specific courses, a major-specific capstone course, and five elective courses. These are not included in the list of core courses because they are not common to all students.

APPENDIX B: INDIVIDUAL INTERVIEW PROTOCOL

1. Tell me a little bit about yourself. Can you tell me about where you grew up and where you went to school? Did you feel supported at school and in pursuing your studies? Please explain.

2. Now you are at the University of the Midatlantic. Can you tell me why you chose to attend The Business School and major in [insert major here]? What skills you do you think you need to be successful in your major? Please explain.

In 2016, the Business School revised the BBA curriculum to incorporate more critical thinking. During the revision period, we got the input from several students about their understanding of critical thinking. We did the same in the focus group you participated in. I'd like to ask you a similar set of questions to understand how your individual experiences with critical thinking fit within the larger experience shared with the group.

3. What is your immediate reaction when you hear the term "critical thinking?" (feelings, thoughts, meaning, etc.)

4. What does critical thinking mean to you? How would you define it?

5. What kind of traits or skills do you associate with critical thinking?

6. Can you give me some examples of experiences you've had with critical thinking at The Business School in your core classes? Have you used your critical thinking skills in your core classes? (list of core classes will be available for reference)

   a. How do you feel about those experiences?

      b. Did those experiences help develop your critical thinking skills?

7. Can you give me some examples of experiences you've had with critical thinking at The Business School in your major classes? How have you used your critical thinking skills in your major classes?

      a. How do you feel about those experiences?

      b. Did those experiences help develop your critical thinking skills?

8. Overall, have your Business School courses over the past two years helped you improve your critical thinking skills? Please explain.

9. Is there anything else that I didn't ask about that you'd like to share about your experiences with critical thinking in the Business School?

APPENDIX C: FOCUS GROUP PROTOCOL

General prompt: Critical thinking in the business school curriculum.

1. What kind of traits or skills do you associate with critical thinking?

2. What Business School course(s) comes to mind when thinking about critical thinking? Please explain.

3. In thinking about your experiences with critical thinking at the University of the Midatlantic, how do your experiences at the Business School differ from those you've had in the general education curriculum?

4. Do you think technology impacts critical thinking ability? Please explain.