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## Exploring Female Perceptions of Metacognitive Development in Online Learning

Heather Richards

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Heather Richards

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Concordia University–Portland

College of Education

Doctorate of Education Program

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Exploring Female Perceptions of Metacognitive Development in Online Learning

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Concordia University–Portland

College of Education

Dissertation submitted to the Faculty of the College of Education

in partial fulfillment of the requirements for the degree of

Doctor of Education in

Higher Education

Brianna Parsons, Ed.D. Faculty Chair Dissertation Committee

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Concordia University–Portland

2019

## **Abstract**

With increased access to higher education through online delivery mediums, it is necessary to evaluate the impact of the learning environment on disadvantaged populations such as female students. As the online learning classroom challenges through distance, isolation, and communication, these factors can influence a positive perception of the learning environment and interfere with deep learning. This qualitative study explored female perceptions of metacognitive development within the online learning environment, as metacognition is a core element of academic success in higher education. Through the design of the conceptual framework and with the support of the literature review, a methodology was selected to holistically explore the female experience in light of deep learning achievement and their use of metacognitive practices. Participants were recruited according to selective criteria and engaged in the study through semistructured interviews, personal journal entries, and the presentation of an artifact. A meticulous coding process was used to analyze the data, which revealed four primary themes and nine subthemes. The analysis supports the importance of metacognitive development as influential in course completion, yet offered insight into factors affecting a positive perception of the learning environment. Key themes of identity, community, self-efficacy, and surface learning prompted a critical look at implications for future practice and policy within the online learning context. A response to these implications that will generate a more targeted metacognitive focus should include a stronger teacher presence within the online classroom, diversified instructional methods, and an increased endorsement of the value of the online classroom community.

*Keywords:* metacognition, deep learning, self-regulation, self-efficacy, identity, community of inquiry, online learning

## **Dedication**

Before taking another step, I must stop and wave to three very special little people from the top of Education Mountain. Brayden, Ryley, and Carson, your mommy made it. You crawled, walked, slept, played, cried, giggled, cheered, annoyed, and loved me all the way to the top. This journey was for you as much as it was for me. I hope you join me one day because I know you can do it.

Earl, I apologize for the emotional roller coaster you rode these past few years. We have finally run out of track and are on to the next adventure. Thank you for your patience with late night ramblings, your shoulder for random bursts of tears, making those spontaneous snack runs, eating cereal for dinner night after night, and above all, believing that I could do this. You laid the foundation for my climb. This is for us and whatever lies ahead.

For the ladies who allowed me to peek into their lives and uncover their journey, this final product is dedicated to you. May you continue in your education and never fear the road ahead. I heard your challenges, your frustrations, your successes, and your hopes, and I encourage each of you to keep taking that next step. You are an amazing group of women, and I was blessed to hear to your stories.

## **Acknowledgements**

The initial attraction for my choice of a faculty chair came from a geographical connection to my childhood, but these past two years have shown that my choice was no accident. Dr. Parsons, thank you for pushing me beyond my comfort zone and demanding excellence. Thank you for a road less traveled and a final product that I can hold with pride. Without your insight and the expectations of quality, this journey would have been very different. Dr. Boozang and Dr. Rabas, I held my breath whenever I opened an edit email. Thank you for providing a balance of affirmations and alterations. Without your efforts, this moment would have never come.

Family is everything, and I would not have made it without mine. Dad, Mom, Cecil, Tiff, Val and Shelley, you all came through for me time and again in your own ways. Your steady presence reminded me where my true worth was found. I don't know what I would have done without your Facetimes, random vacations, group texts, warm hugs, and fervent prayers. Granny, Daa, Chris, and Olivia, you stepped up and adopted my chaos. I love you for it. Shirley, if you could do it on your own, I knew I could do it with help. Sabrina, you might as well be family. Thank you for letting me vent, sharing discouraging memes, and deciding to pursue your own education. You kept me laughing these past few years. Thank you for my sanity.

Lastly, I have a word for the Guidepost editor who mistakenly and ignorantly correlated my simple "mom" status to a lack of notable success. Let me remind you of the words of the great Henry Ward Beecher: "We should not judge people by their peak of excellence; but by the distance they have traveled from the point where they started." I took a road less traveled, and I was courageous enough to see it through to the end without a promise of recognition and success. Thank you for fueling my journey.

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## **Chapter 1: Introduction**

Access to education continues to be a cry for establishing equality between gender-defined classes and minority populations (Tate, Fallon, Casquarelli, & Marks, 2014). Marginalized populations, which traditionally includes females, often enjoy increased earning potential, greater career opportunities and higher socioeconomic status as benefits of a successful pursuit of higher education (Javed & Tariq, 2016; Tate et al., 2014). Statistics reveal significant female interest in college enrollment during the immediate years post-high school graduation (Leary, 2014; Tate et al., 2014). In 2017, nearly 50% of women between the ages of 18–24 declared some college experience or an associate’s degree when polled during the national census (United States Census Bureau, 2017). Past the age of 24, this number dropped to about 30% of the female population.

As females engage in the academic environment, they struggle with gender bias, feelings of isolation, inadequacy, anxiety, and lower expectations of career success (Archer & Yates, 2017; Monteiro & Almeida, 2016; Tate et al., 2014). In spite of these challenges, research continually reveals the exceptional and steady performance of female learners in areas of engagement, goal achievement, increased self-efficacy, and matriculation (Abdellah, 2015; Kizilcec et al., 2017; Sawhney & Bansal, 2015). The concerns of female learners and their corresponding responses are reviewed in greater detail throughout Chapter 2.

Metacognitive strategies, such as self-regulation, are consistently linked to the academic performance of female learners (Cho & Shen, 2013; Kizilcec et al., 2017). When an individual employs these strategies, deep learning occurs (Lake & Boyd, 2015; Rubin et al., 2018). Deep learning is consistent with positive perceptions of task value, positive social identity, and recognition of learning utility (Biggs & Tang, 2007; Rubin et al., 2018). Favorable encounters with these elements propel student growth, as their intrinsic motivations and external desires come to fruition within the academic environment (Biggs & Tang, 2007; Gutierrez de Blume, Wells, Davis,



& Parker, 2017; Razzak, 2016). Female students desire collaborative exchanges, a strong sense of identity, and academic success as they move through their online courses (Al-Nuami, 2017; Guiterrez de blume et al., 2017; Richardson et al., 2017). As the online learning experience contains components which have the potential to interfere with deep learning needs (lack of social presence, perceived usefulness, learner identity, and perceived quality of feedback), understanding the female experience in the online environment offers greater insight into the specific areas needed to encourage metacognitive development (Al-Nuami, 2017; Biggs & Tang, 2007; Garrison & Akyol, 2015; Rubin et al., 2018).

This study sought to explore the unique female perspective concerning online learning components and how these components impact metacognitive development. With a conceptual framework combining both the personal and environmental needs of social learning and the perception-based influence of deep learning, the goal of this study is to identify how metacognitive strategies are either employed, encouraged, or deterred when viewed from the lens of the female experience. This chapter begins with the problem statement, the nature of the study, and introduces the research questions. It will identify the purpose of the study and the conceptual framework grounding this study. It will reveal the attributes of the study, as well as the assumptions, limitations, scope and significance of the study.

### **Statement of the Problem**

As statistical data from the United States Census Bureau (2017) indicates, the most opportune time to capitalize on female collegiate interest is between the ages of 18–24. However, there are numerous demands on female attention during this time period, and female learners encounter unique situations in the online learning environment which could further impede the success of their academic endeavors. Negative feelings associated with stress, anxiety, loneliness, and gender bias often impede the psychological stamina of female learners (Du, Zhou, Xu, & Lei,

2016; Lourens, 2014; Song, Restivo, van de Rijt, Tonjes, & Orlov, 2015), while the online learning environment creates a natural physical distance between students, their peer, and their professors, and makes direct and productive communication more difficult (Ekwunife-Orakwue & Teng, 2014; Garrison & Akyol, 2015). Offsetting these deterrents to both course engagement and degree completion is the responsibility of higher education administration, staff, and educators. The problem lies in identifying the elements of online learning which significantly impact the female learner and her metacognitive development.

### **Purpose of the Study**

The purpose of this study is to explore how female students between the ages of 18–24 perceive their metacognitive development in light of their online learning experience. Employing metacognitive skills, such as self-regulation (which includes aspects of planning, monitoring and evaluation), allows a female to independently remain engaged and committed to the completion of her studies. While a sense of community and identity are considered vital to encouraging female participation (Al-Nuami, 2017; Garrison & Akyol, 2015), perhaps more essential for promoting female retention are course elements with intentional constructs of metacognition (Dudek & Heiser, 2017; Henderson, Selwyn, & Aston, 2015). A marriage between favorable perceptions of belonging and favorable perceptions of task utility creates an autonomous desire to succeed within the learning environment, regardless of perceived challenges (Khodabandelou, Jalil, Ali, & Daud, 2015; Lee, 2013; Richardson, Maeda, & Caskurlu, 2017).

### **Research Questions**

The research questions for this study are:

RQ1: How do female students perceive their metacognitive development when engaged in the online learning environment?

RQ<sub>2</sub>: How are the interpersonal relationships established in the online learning environment perceived as useful by female students for metacognitive development?

RQ<sub>3</sub>: What online course components are perceived as most influential for their metacognitive development by female students?

### **Nature of the Study**

In order to gain the most holistic exposure to the online learning experience of females, this study employs a case study approach. Rich and descriptive details provided by interviews exploring personal experience will bring clarity to the online learning process. In general, there are fewer qualitative studies revealing female perceptions of their online learning experience, but even fewer incorporate the development of metacognition. The design of the study is fully revealed in Chapter 3, but the intent of incorporating interviews, documents and artifacts as means of gathering data speaks to the importance of unabridged access to the individual experience in relation to this phenomenon. Triangulation—the inclusion of multiple forms of evidence—adds an additional layer of validation to the research study (Yin, 2018). Different sources of individual data may corroborate primary findings and lend credibility to the study (Bloomberg & Volpe, 2016). The path of metacognitive development is an individual experience and revealed through actions and understandings unique to each female student. While there may be some areas of overlap with regard to perception and experience, isolating the experience to each student allows for a broad but well-defined understanding of the online learning experience.

### **Conceptual Framework**

The design of this research study seeks to more fully expose the ideas proposed by the conceptual framework from which the study originates. A focus on the social learning theory made popular by Bandura (1977) and the student approaches to learning theory as argued by Biggs

(1987) form the foundation of this study. While there is mention of the theory of transactional distance and the community of inquiry, these theories are in support of elements laid forth by the foundational theories to be discussed (Garrison & Akyol, 2015; Moore, 1997).

Social learning theory promotes student success as relational to a favorable perception of the learning environment (Bandura, 1977). In his work, Bandura (1977) recognized the importance of connecting advanced cognitive processes in social, behavioral, and experiential stimuli as a means of self-regulating learning and motivating individuals toward collaborative engagement and learning. In support of this progression, Garrison (2007) argues that a community of inquiry model (CoI) of education will establish the social and cognitive presences necessary to develop favorable perceptions of the learning environment. In this context, a CoI is regarded as a group of students collaboratively and purposefully engaging in critical discussions and reflections to create individual meaning while confirming a joint understanding of a topic (Garrison, 2007; Garrison & Akyol, 2015).

As individual meaning is accomplished, categories develop to indicate the depth of understanding. This coincides with the student approaches to learning theory as published by Biggs (1987). Specifically, the deep learning element of this theory places significant value on a student's treatment of subject matter and the cognitive activity employed to establish multiple layers of meaning (Biggs, 1987). Individual interest, perception-led engagement, and collaborative exchanges form the basis all environmental perceptions, and if found favorable, these perceptions lead to the development of critical thinking skills and intellectual stimulation (Biggs, 1987; Gutierrez de Blume et al., 2017). Elements of influence include the perception of individual identity with the learning environment, sense of community support, and usefulness of tasks (Al-Nuami, 2017; Pellas, 2014). These pair well with the fundamental social needs found in Bandura's theory.

The theory of transactional distance offers clarification to the challenges experienced by female students during their online coursework. The physical distance separating course participants—whether peer or professor—influences how interpersonal relationships and connections are established (Moore, 1997). Dysfunctional communication is fraught with unease, anxiety, limited expressions of self-efficacy, and misunderstanding (Dockter, 2016; Moore, 1997; Sullivan, 2002). As these social interactions unravel, students disengage from learning environment. However, when metacognitive skills are developed and employed, it becomes the conduit for academic success in spite of environmental opposition.

### **Definition of Terms**

The following list of definitions for this study are provided to assist with intent and meaning:

*Cognition:* The individual mental processes that include learning, reasoning, memory, problem-solving, attention, and decision-making to pursue deep and surface learning (Coertjens, 2018).

*Learner identity:* A context-specific process for establishing a community or environment-driven persona that remains compatible personal experiences, perspective, and physical location (Dudek & Heiser, 2017).

*Metacognition:* A reference to the knowledge or beliefs regarding one's own cognitive process or learning relevant properties which ultimately guide the direction of abilities (Coertjens, 2018).

*Self-regulation:* The ability to plan, manage, and control cognitive processes to develop academic abilities (Kizilcec et al., 2017).

*Social presence*: The ability of individuals to identity with the learning community, purposely engage in a trusting environment, and develop interpersonal relationships through the projection of their own individual personalities (Garrison & Akyol, 2015).

### **Assumptions, Limitations, and Delimitations**

According to Bloomberg and Volpe (2016), each researcher formulates opinions concerning potential findings of a study prior to commencing the research. These are generally based on a variety of premises that may ultimately be confirmed or denied. For this study, it is assumed that female students employ metacognitive skills during their online work regardless of whether or not they understand these skills. This is founded on the basis of consistency of performance at the collegiate level. Secondly, it is assumed female students encounter similar challenges when establishing identity and acceptance by their academic community regardless of age or course completion success. Thirdly, it is assumed that the personal experiences of a marginalized population play a significant role in understanding how to adapt the online classroom to encourage metacognitive development and explore greater academic potential.

Limitations are present in this study, with the most significant being sample size. The sample size is not reflective of the selected demographic, nor does the individual experience of each participant consistently reflect similar lifestyles, goals, or activities within the selected demographic. Faulty data may be present, if participants were not truthful or accurate in their statements, offering instead exaggeration or inconsistency (Creswell & Poth, 2018; Merriam & Tisdell, 2016). Data analysis provides another limitation, as the research design, execution, and discovery of themes holds the possibility of human error. While limitations cannot always be contained, noting and planning accordingly assists with keeping the validity of the study and results (Creswell & Poth, 2018).

In addition to the limitations present, the study contains several delimitations. Whereas limitations occur more organically in the context of the research project, delimitations are parameters imposed by the researcher (Bloomberg & Volpe, 2016). These restrictive sampling elements include selecting a case study approach, as well as maintaining restrictions with gender, age, educational experience, and location. Through carefully designed boundaries, the research study seeks to establish a sample size with direct experience related the scope of study (Bloomberg & Volpe, 2016). These delimitations include checking applicants according to gender, age, type of academic exposure, and study design. Restricting selection to a single community college and narrowing participants according to grades earned during course attendance established additional delimitations.

### **Significance of the Study**

A case study approach that includes interviews and documents brings female experiences of metacognitive development within the online learning environment to the forefront of the discussion on assisting disadvantaged populations. Rather than being spoken for, this process offers a voice to those who need to be heard. An early view of female education is best revealed through the 1873 opinion of Harvard professor Edwin Clarke. He confidently announced higher education as being detrimental to female health and believed the “identical education of the two sexes is a crime before God and humanity, that physiology protests against, and that experience weeps over” (as cited in Tsang, 2015, p. 141). Although the current view of female opportunity is removed from such an openly biased perspective, socioeconomic conditions, cultural bias, antiquated practices, and lack of awareness continue to perpetuate gender inequality and accessibility in education (Beddoes & Schimpf, 2018; Lourens, 2014; Song et al., 2015; Tsang, 2015). Statistics reveal females edging out males in graduation persistence over six years of college attendance, yet the higher education industry as a whole has not capitalized on their

presence or performance (National Center for Education Statistics, 2017; Tate et al., 2014). With female learners established as a marginalized population, giving attention to their specific needs and adapting the education process to work in their favor fosters long-term success for both student and institution (Tate et al., 2014).

As higher education institutions seek to improve the learning experience of their students, this study may expose areas of strength and weakness in curriculum development. Metacognitive skills are not innately employed by all learners, but research shows many learners increase their academic potential when they are used (Al Awdah et al., 2017). If areas of influence are identified, course elements could be designed to proactively foster metacognitive awareness and self-regulatory skills in female learners. By allowing females to discuss the particulars of their online experience, it brings awareness to specific activities, instructional methods, and objectives that either compliment or complicate their pursuit of metacognition.

By understanding the impact of identity and community on favorable perceptions of the online learning environment, course administrators or professors can better engage students in productive dialogue and constructive interpersonal relationships. In addition to feedback on both individual and collaborative efforts, professors can address those disconnected or detached from the online community in a way that compels attention and triggers insertion into the discussion. Creating environments where open and judgement-free discourse is encouraged and rewarded will establish opportunities for deep learning and metacognitive development (Du et al., 2016; Dudek & Heiser, 2017).

A more subtle argument for significance rests with the impact metacognitive development could have on a population known to experience significant disadvantages in both positional and financial standings in a corporate environment (Archer & Yates, 2017; Tate et al., 2014). Although the academic environment reveals females consistently display self-regulation, demonstrate



competence, and more actively engage with peers and tasks, studies reveal transition periods between college activity and career pursuits are filled with anxiety, lower perceptions of competency, and lower expectations of success (Al-Nuami, 2017; Javed & Tariq, 2016; Pellas, 2014). It appears that a lack cognitive awareness exists concerning the connection between the metacognitive skills used within the classroom and the skills required for personal or career-oriented goals. Those who fail to draw on a bank of skills which develop self-efficacy, self-regulation, peer interaction, and deep learning could potentially find their aspirations for gender equality jeopardized (Alonso-Galicia, Fernandez-Perez, Rodriguez-Ariza, & del Mar Fuentes, 2015; Javed & Tariq, 2016). Females may see the correlation between the skills required for academic success and the application of these skill in career pursuits, further driving the need for online learning elements to influence career preparation.

### **Summary**

Research supports the importance of metacognition for academic success, yet closer attention to the development of these skills within the online learning context would benefit a variety of adult learners (Al Awdah, Jasmeen, & Alexander, 2017; Broadbent & Poon, 2015; Dang, Zhang, Ravindran, & Osmonbekov, 2016; Dudek & Heiser, 2017). This study will focus on the perceptions of female students concerning the online learning environment, in an effort to understand the distinctive elements most influential in developing metacognitive skills. The research looks to the personal experiences of females to provide detailed insight into a phenomenon that consistently reveals strong academic performance in spite of potentially unfavorable conditions (Lourens, 2014; Javed & Tariq, 2016; Razzak, 2016). While it is apparent that females as a collective gender employ metacognition at some level throughout their academic journey, this research will allow the individuals to highlight the areas of online learning which significantly impact their metacognitive growth (Abdellah, 2015; Burns, 2013; Garrison & Akyol,

2015). The use of interviews, personal documents, and artifacts as multiple sources of data brings holistic meaning to the individual experience and establishes supporting details in emergent themes (Creswell & Poth, 2018; Merriam & Tisdell, 2016). Metacognitive development and application is a personal experience, highlighting the need for individual expression of exposure and relevance (Flavell, 1979).

The following chapters reveal greater details of the literature support for this study, as well as the organization, execution, results, and analysis of the research. Chapter 2 will present an in-depth literature review of metacognition and self-regulation, along with the impact of these traits when employed in the online classroom. Traits to be explored are perceptions of self-efficacy, satisfaction and learning. Chapter 2 will also reveal how literature addresses the elements of social learning and student identity, as it applies to females within the online learning environment and their development of deep learning. Following the comprehensive look at literature, Chapter 3 will introduce the methodology for this study. The relevance of a case study approach will be presented, and the chapter will unfold the components to be included for data support. Chapter 3 details the protocols established for data collection, analysis, safety, and validation, and concludes with an overview of the relevance of the research topic. Chapter 4 will present the data analysis and results of the study, while Chapter 5 will present a conclusion to the study with a review of the findings in relation to the literature and conceptual framework.

## **Chapter 2: Literature Review**

The ever-increasing enrollment numbers of females in higher education necessitates an understanding of what affects gender-specific academic achievement (Hussar & Bailey, 2017). Research continues to maintain the consistency of female performance in academia through self-efficacy reporting, academic goal achievement, high engagement levels, and matriculation, but an understanding of their experiences is often left undocumented (Broadbent & Poon, 2015; Dang et al., 2016; Du et al., 2016; Kizilcec et al., 2017). This qualitative study is designed to discover the female perception of metacognitive development throughout their undergraduate online education experiences. The use of metacognition as a pathway toward academic success has influenced more than course grades and degree completion (Abdellah, 2015; Broadbent & Poon, 2015). Personal characteristics of self-esteem, self-efficacy, and intrinsic motivation are developed and employed within a wide range of academic and professional environments (Archer & Yates, 2017; Javed & Tariq, 2016; Sawhney & Bansal, 2015).

### **Topic and Context**

Within the academic environment, females often display high levels of self-regulation and self-efficacy (Broadbent & Poon, 2015; Pellas, 2014). Furthermore, females demonstrate competence and pursue engagement with course materials, team projects, and time management more consistently than their male counterparts (Al-Nuami, 2017; Pellas, 2014; Razzak, 2016). As they transition from academia to follow career pursuits, studies find female graduates with more anxiety, lower expectations of success, and lower perceptions of competency when considering labor market transitions and career development than their male peers (Archer & Yates, 2017; Javed & Tariq, 2016; Monteiro & Almeida, 2016). It would seem the metacognitive skills employed by females throughout their academic pursuits are less apparent when pursuing professional goals (Lourens, 2014). Females who fail to utilize the critical cognitive skills

attributed to an increase self-confidence, a developed sense of motivation, and a regulation of learning, can potentially jeopardize goal achievement for a gender-based population struggling for equality and recognition (Alonso-Galicia, Fernandez-Perez, Rodriguez-Ariza, & del Mar Fuentes, 2015; Javed & Tariq, 2016; Tate, Fallon, Casquarelli, & Marks, 2014).

## **Significance**

A crucial construct within higher education is the development of metacognitive awareness; one cannot evaluate what is known without understanding how or why it is known (Flavell, 1979). For female students, the components of metacognitive development and their application throughout career pursuits might offer a solution to bridging the gender gap which exists both positionally and financially within career status (Archer & Yates, 2017). Relying on their community college experiences as a developmental foundation, females may find correlations between the metacognitive skills beneficial to academic success and the skill set needed to confidently transition between environments. Therefore, studying female perceptions of metacognition offers insight into curricular changes, learning styles, and uses for career preparation (Archer & Yates, 2017; Lourens, 2014).

## **Organization**

This chapter will next examine the conceptual framework that defines this study, and it will introduce theoretical constructs for metacognitive influences on female education. It will move into a literature review initially examining the components of metacognition and its effects on academic performance. A specific look at self-regulation strategies will be conducted, followed by an examination of female performance in online environments when self-regulation strategies exists. The review will shift into parallel experiences of self-regulation within the context of deep learning strategies with female perceptions of satisfaction, learning, identity, and self-efficacy. Continued examination of metacognition will occur as a review of favorable learning

environments for females is conducted, culminating in an exploration between female's transitional academic and professional experiences. A comparison of community college experiences, relative to the previously discussed trends of female academic experience will conclude the review of the literature. An analysis of methodological issues will be provided as well as a final synthesis and summary.

### **Conceptual Framework**

The monumental task of completing a research study relies on a strong foundation of theoretical reference and synthesis of empirical data. The framework establishes theoretical parameters for the dissertation process and enables a doctoral candidate to focus on the literature specific to the research question (Berman & Smyth, 2015). A conceptual framework informs the student, doctoral committee, and reader of those parameters (Berman & Smyth, 2015). It visually presents the connections between existing data, personal assumption, and theorized conclusions, demonstrating a deep learning that occurs during the candidacy process. Throughout the argument, it provides a standard of accountability and validity (Berman & Smyth, 2015). This conceptual framework presents an overview of the researcher's personal interest in metacognition and the learning theories which support its development throughout the online learning environment. It is the foundation by which to explore the female perspective of metacognitive development as it occurs in the online classroom, and it will define potential gaps and challenges with supporting literature.

### **Personal Interest**

As a female student who pursued much of her higher education achievements online, understanding personal experiences in relation to fellow female colleagues has always been of interest. Research informs the academic community with generalized best practices for understanding the female experience (Lake & Boyd, 2015; Rubin, et al., 2018), yet the researcher's

personal encounter with online education has developed a skepticism for purely survey-based results. In spite of substantial sample sizes with varying demographics, innumerable variables, complex analyses, and multiple research methods, disappointing personal experiences and negative critiques shared by colleagues obscure the overarching themes of success and achievement related to female engagement in higher education pursued online (Dang et al., 2016; Henderson et al., 2015).

While data confirms the existence of challenges for females in online higher education, the consistency of female achievement in higher education mirrors the researcher's own unique journey (Dang et al., 2016; Henderson et al., 2015). Similar to the experiences of many other female students, online delivery methods provided flexibility, availability, and an assumption of anonymity (Hamid, Waycott, Kurnia, & Chang, 2015; Song, et al., 2015; Sullivan, 2002). Even still, challenges of anxiety associated with time-intensive modules, frustration with feedback practices, struggles adapting to digital technology, and growing negative emotions also plague the female learner (Dang et al., 2016; Henderson et al., 2015). These conflicting elements would seem detrimental to their educational goals, yet female students consistently demonstrate strong performances when measured for academic achievement and self-efficacy (Dang et al., 2016; Lee, 2013). A personal and sympathetic understanding of the strategies employed to balance positive and negative perceptions of online learning fuels the desire to research metacognition and its impact on academic achievement in females.

### **Understanding Metacognition**

Metacognition can be expressed as a personal understanding of an individual's cognitive processes and how to coordinate this understanding into applications for practice (Abdellah, 2015; Flavell, 1979). As an important academic practice for its ability to link old information with new, draw inferences, perform analysis, conceptualize information, and regulate learning strategies,

metacognition encourages meaningful learning and motivates performance beyond perfunctory expectations (Al-Hilawani, 2016; Garrison & Akyol, 2015). Through multifaceted cognitive exploration, metacognitive skills create a path to reach both extrinsic and intrinsic goals (Wang, Shannon, & Ross, 2013). Achievements in learning, career destinations, course grades, and the development of social networks are possible reflections of extrinsic goals, while student satisfaction, internal drive, and institutional prestige reflect commonly held intrinsic desires (Rubin et al., 2018). The identification of these goals, the steps necessary to achieve them, and the regulatory strategies which evaluate progress are all metacognitive components (Rubin et al., 2018; Wang et al., 2013)

Academic performance in females is consistently linked to metacognition, but more directly with self-regulation strategies (Hamid et al., 2015; Cho & Shen, 2013; Kizilcec et al., 2017; Virtanen & Nevgi, 2010). As a single component of metacognition, self-regulation establishes specific skills of planning, monitoring, and evaluation (Flavell, 1979). As a greater whole, metacognition pairs several strategies to ensure a successful transition between theoretical constructs and application beyond the realm of academia. While many theorize that self-regulation can stand alone as an academic concept of female performance, cultivating the deep learning necessary for metacognitive skills development is a complex process which varies by individual and must move beyond one theoretical model (Broadbent & Poon, 2015; Lake & Boyd, 2015). Self-regulatory learning strategies, while important to online learning for female students, are simply the means to an end. The initial perception of the environment dictates the female responses of strategy, engagement, and ultimately achievement.

### **Metacognition and Academic Success**

Success within the learning environment is predicated upon learning patterns and strategies, with academic achievement, GPA, and career orientation often defining academic

success (Gomez, 2013; Vermunt & Donche, 2017; Wang et al., 2013). The interrelation of patterns and strategies are identified through student motivations and goals, yet female students rely on perception-based understanding before engaging with the learning process (Burns, 2013; Du et al., 2016; Lee, 2013). The sensitivities to the academic environment, as demonstrated by research, implies a complex framework by which to decipher the female experience.

In academia, numerous theories support the existence and necessity of metacognitive development for successful learning (Alliprandini, Pavesi, Vicentini, & Sekitani, 2015). Understanding the influence of female perception throughout the process can be achieved through a two-fold perspective which includes the social learning theory and student approaches to learning (Bandura, 1977; Biggs, 1987). These two theoretical frameworks will be discussed.

### **Social Learning Theory**

Social learning theory, as first made popular by Bandura (1977), reveals the components necessary to create a favorable learning environment for females (Garrison & Akyol, 2015). He initially introduced a three-fold approach to learning, advocating that the reciprocal interactions between an individual, the surrounding environment, and the individual's behavior work to achieve a desired goal (Bandura, 1977). The perceived outcomes, according to the individual's sociocultural environment, become a motivating element of learning (Bandura, 1977; Garrison & Akyol, 2015).

Bandura's (1977) studies revealed an intricate connection between cognitive processes and social, behavioral, and experiential stimuli to support regulation in learning. For female students seeking higher education opportunities online, research indicates favorable perceptions are created when there are strong academic opportunities and supportive peer relationships (Al-Nuami, 2017). This has influenced the development of the community of inquiry (CoI) environment (Al-Nuami, 2017; Garrison, 2007). The premise of the CoI advocates that students rely heavily on the



interaction between social and cognitive presences to develop perceptions of the learning environment, and in accordance with their comfort, adapt their persona and practices to integrate and complete tasks successfully (Bandura, 1977; Garrison, 2007). While a true CoI also places additional significance on instructor presence and more recent claims of a learner presence, much of the data arguing this perspective is from quantitative studies and still evolving. Theorists who espouse the presence of transactional distance are among those who often find contradicting reports of closeness and identifiable connections with instructors, as online courses increase the distance between student and teacher, ultimately encouraging a lack of confidence and assurance in student assessments of instructor presence (Dockter, 2016).

Contrarily, qualitative arguments highlight the social and cognitive presences as key factors of enjoyment and utility, although CoI components as a whole contribute to metacognitive skill development (Du et al., 2016; Garrison & Akyol, 2015; Hayes, Shea, & Sith, 2015). Within the social cognitive components of a CoI, metacognitive skills previously attributed to self-regulation strategies—planning, monitoring, and evaluation—begin to emerge. It is here students are intrinsically motivated to engage in a manner which achieves a personally desired goal while collectively supported (Garrison & Akyol, 2015). Social presence constructs create environments favorable for establishing identities that encourage inquiry and quality collaboration with meaningful academic goals, while cognitive presence assists the student with constructing and verifying meaning within the community (Al-Nuami, 2017; Garrison, 2007).

In part, a basic understanding of transactional distance and its place in social connections for successfully engaging students in the learning process is advisable for those who wish to understand student associations within the online community (Moore, 1997). This is particularly true concerning the connectivity of student and teacher. The physical proximity of the teacher and learner relationship will either identify or establish special characteristics and behaviors which can

potentially impact how effectively a student engages in the learning environment and commits to the pursuit of academics (Moore, 1997). Fundamentally, communication challenges are more pronounced when there is greater distance between the parties (Moore, 1997). Successful communication establishes both functional and favorably perceived interpersonal relationships, further strengthening a dynamic social context for academic interactions (Garrison & Akyol, 2015; Moore, 1997).

Intentions, expectations, affirmation, and feedback are more difficult to interpret in a distance learning environment where little connection is established between student and instructor. As indicated by the social learning and community of inquiry theories, interpersonal relationships and meaningful, rewarding interactions are intrinsic motivators which keep many students engaged with the learning process (Bandura, 1977; Garrison, 2007). Within the online learning environment, an instructional response to transactional distance may include intentional dialogue, creatively structured course design, and development of learner autonomy (Moore, 1997). These responses direct each element of the online experience toward creating a socially but academically favorable and meaningful environment for female learners.

Many female students regulate their interactions, engagement, and motivations as they perceive the community and environment unfolding around them. This is indicative of the social learning theory as presented by Bandura (1977). For the female student, online interaction minimizes the perceptions of judgement or bias resulting from socially established norms, and female students perceive a freedom to interact with peers, professors, or staff more deliberately than in face-to-face classrooms (Al-Nuami, 2017; Sullivan, 2002). These adjustments and the resulting effects are indicative of metacognitive skill development (Garrison & Akyol, 2015).

Although perceived outcomes and the academic environment are motivating elements within the social learning theory, the nature of the learning taking place must be categorized. Such

a characterization can be achieved through the student approaches to learning theory as introduced by Biggs (1987). With the increased development in metacognitive skills displayed through social learning regulation, a deep learning approach emerges as a perspective on female experiences (Rubin et al., 2018).

### **Student Approaches to Learning**

The deep learning strategy, an element of the student approaches to learning theory proposed Biggs (1987), is student-centric and allows for the organic nature of females' perception-influenced perspectives (Biggs & Tang, 2007; Rubin et al., 2018). With deep learning, female students engage with the learning environment upon evaluation of tasks, social identity, and the perceived usefulness of the learning (Razzak, 2016; Rubin et al., 2018). The motivations and the desires of the learner will provide the framework by which these educational components are analyzed (Biggs & Tang, 2007). In a deep learning approach, value is placed on the flexible nature of perception-led engagement as the potential for growth in multiple areas exists.

When subject matter is treated meaningfully, by way of student interest, higher cognitive activity ensues as the student attempts to focus on multiple layers of meaning (Biggs, 1987). As critical thinking skills develop, students find intellectual stimulation. This fosters a desire for female students to engage in collaborative exchanges of information, and in doing so, their perceptions of self-efficacy increase (Gutierrez de Blume et al., 2017). Research suggests females desire a strong sense of identity and community within the online environment before establishing a favorable perception of the academic pursuit (Al-Nuami, 2017; Pellas, 2014; Richardson, Maeda, Lv, & Caskurlu, 2017). The need for identity and community fits well with the underpinnings of Bandura's social learning theory.

## **Conclusion**

The development of metacognitive skills in female students is a multifarious process extending beyond definition of theory or assumptions constructed in experience. Through the unique perspective of female learning strategies and influences on metacognitive development, a theoretical framework is established that values deep learning—where a student is personally invested and committed to the process—and the social cognitive approach of community of inquiry, where the female is free to create the best version of herself and identify with a community supportive of her endeavors. Metacognition is a compulsory skill significantly related to academic achievement, yet it has far reaching effects into the personal and professional life of the female student. In online delivery opportunities of higher education, deep approaches to learning in female students promote metacognitive skill development when the online environment maintains a social-cognitive focus of community of inquiry. Beyond the theoretical issues associated with this study are the pedagogical implications for higher education design, facilitation, and direction. Educators who are able to reconcile these theories with female student perspectives will develop a more conducive online learning environment.

## **Review of the Literature**

In order to inform the research study, a thorough review of relevant literature was conducted. The focus was placed on metacognitive development in higher education, with a focus directed towards online learning. The following information was discovered through critical analysis of the literature.

### **Metacognition in Higher Education**

Through research, metacognition is revealed as a critical skill for both academic and professional goals (Al Awdah et al., 2017; Gutierrez de Blume et al., 2017; Oz, 2016). It has been studied from both quantitative and qualitative perspectives. This review of the literature will

discuss the components of metacognition and its implications on the academic journey for the higher education learner.

As higher education is continually enhanced with technology and internet-based opportunities, studies concerning metacognitive development in online learners is essential. Shen and Lui (2011) used a pretest-posttest quasi-experimental design to assess metacognitive skills development in university students. Prior to the experiment, a Metacognitive Skills Evaluation Questionnaire (MSEQ) was administered, with Likert scale items pursuing metacognitive strategies revealed during a metacognition training of the experimental group (Shen & Lui, 2011). Implications of this study reveal direct metacognition instruction techniques (visualizing strategies) could aid with development of metacognitive skills in online learning environment.

The development of metacognitive skills in online learning is identified as a component of course design, yet the individual responsibility of metacognition is achieved through personal awareness. Research confirms the academic link between personal awareness of metacognition and achievement. Sawhney and Bansal (2015) found no significant difference concerning regulation of cognition (the planning phase, data management, monitoring comprehension, problem solving strategies, and evaluation) between genders, yet academic achievement scoring revealed higher course grades for female students who reported a sense of metacognitive awareness (Sawhney & Bansal, 2015). Academic performance was also positively connected to a student's metacognitive awareness (Sawhney & Bansal, 2015).

### **Metacognition in Female Students**

The correlations between the academic achievement of female students and metacognitive awareness was also studied by Abdellah (2015). Grounded in prior studies which argued in favor of a positive relationship between academic achievement and metacognitive awareness, the primary aim of Abdellah (2015) was to assess the gender specific context in an Arab country

preserving distinctive educational and cultural qualities. Through the use of the MAI and a Teaching Performance Checklist, 75 preservice female teaching students engaged in a quantitative study identifying the relationships between metacognitive awareness and grade point averages (GPA), knowledge and regulation of cognition with GPA, and metacognitive awareness and teaching performance (Abdellah, 2015). A positive relationship between regulation strategies and overall MAI group scores occurred with academic achievement (Abdellah, 2015). While metacognitive knowledge did not significantly correlate with teaching performance or total average of GPA, teaching performance was positively related to metacognitive regulation and high MAI scores (Abdellah, 2015). The revelations of the study continue to support the positive correlations between awareness of metacognition and learning achievements, with specific notation to the influence of metacognitive regulation strategies on academic achievement.

The gender and culture-specific context of the Abdellah's (2015) study does not impede the idea of a direct connection between metacognitive awareness and academic achievement. Further studies have examined additional influencing factors on metacognitive awareness. Oz (2016) pursued an understanding of the influence of personality traits (extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience) on metacognitive awareness in a quantitative study of 102 preservice English teachers in Turkey (Oz, 2016).

Given the gender specific nature of this research project, the female scores on awareness were of interest for review purposes. The results specified 67% of female respondents had a *Very High* awareness score knowledge of cognition, while 62% indicated a *Very High* awareness for regulation of cognition (Oz, 2016). Personality traits were shown to have significant relationships with metacognitive awareness, with openness to experience being the strongest predictor between the two metacognitive components and extraversion coming in second. Neuroticism had a negative affective on metacognitive awareness (Oz, 2016). While the results are not gender specific, the

dominant female composition of the sample (75% of respondents) brings suppositions concerning the relationship of metacognitive awareness and female personality traits.

Further strengthening an argument of implications and influences concerning female awareness of metacognition is the study of Al Awdah, Jasmeen, and Alexander (2017). Through an all-female study of 190 undergraduate business students in Saudi Arabia, these researchers looked to examine a gap in constructing learning applications when transitioning to professional careers such as business administration (Al Awdah et al., 2017). This study revealed eight elements of metacognition were significantly correlated to the participants' GPAs (Al Awdah et al., 2017). These elements were identified as open knowledge, task oriented knowledge, conditional knowledge, preparation, managing information, observation, assessment, and self-correcting behaviors (Al Awdah et al., 2017). Knowledge and regulation components of metacognition maintained a significant positive correlation with student GPA's, supporting the relational assumptions of academic performance and metacognitive awareness as presented by Sawhney and Bansal (2015) concerning female students (Al Awdah et al., 2017). Furthermore, the lack of correlation between metacognitive awareness by grade and student learning styles indicates an individual responsibility to utilize metacognitive strategies for academic performance.

The individual component of awareness is supported by the research of Gutierrez de Blume, Wells, Davis, and Parker (2017), who qualitatively studied calibration (sense of knowing). A sense of knowing is a perceptive awareness associated with the metacognitive process of calibration; a process guiding the student to self-monitor comprehension (Gutierrez de Blume et al., 2017). Individuals who demonstrated proficiency with self-awareness and who responded directly to questions regarding academic performance and self-calibration techniques were considered proficient calibrators. Those who required additional prompting and questioning before

understanding their cognition and articulating feelings of knowing were regarded as low calibrators or being less self-aware (Gutierrez de Blume et al., 2017).

Four themes of effort/preparation, strategies, planning, and evaluation emerged as components of a created feeling of knowing (Gutierrez de Blume et al., 2017). Proficient calibrators are able to pinpoint strengths and weaknesses in their knowledge of the effort needed to be successful with the material; they are able to verbalize strategies used to engage with the material; they regularly employ planning techniques concerning class attendance and consistent ownership of the material; and they monitor their understanding and progress, changing approaches or engagement as reflection indicates necessity (Gutierrez de Blume, et al., 2016). Heightened feelings of knowing, or self-confidence associated with effort, accompanies learners employing these metacognitive strategies, which arguably improves emotional engagement, academic performance, and increased effort in development of additional skills (Gutierrez de Blume et al., 2017).

### **Self-Regulation in Online Higher Education**

As a comprehensive construct, metacognition often reveals a positive correlation to academic achievement in academia. A more narrow perspective evaluates the implications of the self-regulation component in the collegiate online learning environment and associated emotions (Broadbent & Poon, 2015). Self-regulation for students learning online involves the regulation of cognition in an environment without rigid parameters of structured time engagements, dependent student/facilitator relationships, and organized learning scaffolds (Artino & Jones, 2012).

Results revealed unique relationships between student achievement and self-regulation strategies; boredom and frustration were statistically but negatively linked to metacognitive strategies of elaboration and control strategies (Artino & Jones, 2012). Course enjoyment showed positive significant relationships to both elaboration and metacognitive control strategies, although



course enjoyment was the greatest individual influence on elaboration, and task value understanding was the most influential variable related to metacognition (Artino & Jones, 2012). Consideration of the data reveals that students who experience boredom in online courses are less likely to pursue strategies indicative of metacognitive development. Perceived task value increased the deployment of self-regulating strategies, and overall enjoyment encouraged individual efforts with elaboration strategies such as paraphrasing or summarizing (Artino & Jones, 2012).

Similar to the premise researched by Artino and Jones (2012), the role of academic emotions and the relationship between perceptions of control and self-regulation strategies were of interest to You and Kang (2014). The research studied enjoyment, boredom, and anxiety as the primary academic emotions, with varying degrees of boredom and anxiety creating an impact on student assumptions of academic control and self-regulation (You & Kang, 2014). Perceived academic control was found to positively predict enjoyment and self-regulated learning, as well as enjoyment positively predicting self-regulated learning. Enjoyment was assumed to be the most influential mediator of assumed academic control and self-regulation (You & Kang, 2014). A perception of academic control is also regarded as a necessity for self-regulated learning, since a significant relationship between emotions and learning strategies was established in the findings. Research finds that minimizing adverse sentiments is a necessity for promoting self-regulation strategies (You & Kang, 2014).

To further analyze the relationship between emotional, behavioral, and cognitive factors and self-regulation, Pellas (2014) theorized that personal factors developed through the use of a virtual world would translate into increased engagement, enjoyment, and self-efficacy. Positive relationships between metacognitive self-regulation, self-efficacy, and student engagement developed positive relationships between self-esteem, cognitive, behavioral, and emotional engagement. Self-efficacy was shown to be the only significant influence of overall engagement.

Whereas Pellas (2014) looked into a three dimensional relationship with engagement and self-regulation strategies, Lehmann, Hahnlein, and Ifenthaler (2014) pursued a curriculum approach to influencing the skills of self-regulation. Recognizing the connections between cognitive, metacognitive, and motivational elements for effective self-regulation, their study valued the effectiveness of course-directed preflective and reflective prompts for skill development (Lehmann et al., 2014). Preflective prompts were in the form of written instructions or activities prior to the presentation of coursework, while reflective prompts were instructions given with assignments to spur metacognitive functions (Lehmann et al., 2014). Within this study, motivation was also considered an influential variable in successful self-regulation.

Results of the study indicate domain-specific knowledge gains when course curriculums provide presentation and prompting influences which develop metacognitive awareness. Domain-specific knowledge positively predicted self-regulated learning outcomes, creating a higher quality in student work and overall course (Lehmann et al., 2014). Students who receive direct instruction for self-regulation strategies—such as “make a list”, “review the following”, or “reflect on this information before attempting the assignment” —were able to more clearly understand the course materials and articulate an application when engaged in writing assignments (Lehmann et al., 2014). The largest gains were seen when preflective prompting was used, as metacognitive strategies were employed throughout the entire coursework process, and not simply with the task and assignment submission (Lehmann et al., 2014).

Self-regulation strategies are studied for gender specifics, as an accurate understanding of gender dynamics will influence curriculum design and instruction. Alliprandini, Pavesi, Vicentini, and Sekitani (2015) sought to determine potential differences between age and gender with learning strategies. Using the Assessment Scale of Learning Strategies, cognitive, metacognitive, and dysfunctional strategies were assessed for participants and analyzed according to three age

groups and between genders (Alliprandini et al., 2015). The results revealed higher levels of cognitive and metacognitive strategizing on the part of females, yet there was no significant gender difference for dysfunctional strategies such as listening to music while studying, eating while working, or studying while watching television (Alliprandini et al., 2015). Additional correlations were run to determine variance by age with these strategies. Results indicate no significant differences between metacognitive and dysfunctional strategies by age, yet the youngest age group showed significantly reduced usage of cognitive strategies and overall had higher average scores in dysfunctional strategies (Alliprandini et al., 2015).

By building on the research indicating necessity of self-regulation in higher education, Kizilcec, Sanagustin, and Maldono (2017) explored the direct effect of self-regulation when students participated in Massive Open Online Courses (MOOCs). Attrition studies in MOOC learning have revealed a critical need for metacognitive strategies if learners are to be successful; these studies have also taken into account affective learner behaviors and differences (Kizilcec et al., 2017). This study directed attention to the relationships between self-reported learning strategies and objective behavior measures, as was the individual difference in self-regulated learning.

Through the use of the Online Learning Enrollment Intentions Scale, results indicate self-evaluation and elaboration as the most pronounced self-regulated strategies employed, with the least commonly employed being help seeking (Kizilcec et al., 2017). Correlations between goal setting and strategic planning, strategic planning with task strategies, and task strategies with elaboration were revealed, with goal setting and strategic planning being strong indicators of goal attainment (Kizilcec et al., 2017). There were lower reported levels of strategic planning, elaboration, and self-evaluation on the part of female respondents, yet the self-reported scores of

help seeking, task strategies, and goal setting were higher in females over males (Kizilcec et al., 2017).

This study highlighted the lack of consistency with individual engagement and self-regulated learning with a large sample size and unique demographic. Metacognitive strategies continually support goal achievement, yet learner behaviors and strategies are not comprehensively predictive of self-regulation. The unique experiences and demographics of student learners have significant impact. Female students pursuing higher education in social or family cultures that predominately favor male leadership and have stronger traditional male roles could influence the need for help seeking and peer support (Lourens, 2014). Additionally, female students distracted with life experiences, career frustrations, parenthood, or negative academic emotions might be less inclined to engage in surface and time-consuming online relationships, opting for a streamlined online engagement serving their personal needs most efficiently (Henderson et al., 2015; Kizilcec et al., 2017; Lee, 2013). These individual preferences of engagement could affect consistency with survey reporting.

### **Affective Online Experiences**

Student experiences affect learning outcomes, as experiences and derived perceptions mediate metacognitive and self-regulation strategies (Hayes, Shea, & Sith, 2015, 2015; Lee, 2013; Lee & Choi, 2017). The development of metacognitive strategies—as influenced by experiential perceptions—is a product of deep approaches to learning (Pearson & Harvey, 2013). Successful use of metacognitive strategies within these deep approaches is produced through more integrative learning. These online learning experiences allow students to retain information and understand application which will reach beyond the immediate classroom environment (Pearson & Harvey, 2013).

Reflective learning activities include personal strength and weakness analysis, working to better understand another's views through a change in perspective, and learning in a way that changes one's prior understanding of a concept (Pearson & Harvey, 2013). Engagement and connection were linked to personal life connections, followed by co-curricular connections and developed higher-order learning and reflection (Pearson & Harvey, 2013). There is an indication that higher order thinking creates a cyclical pattern of metacognitive development, which has a direct link self-efficacy and achievement (Lake & Boyd, 2015; Rubin et al., 2018). Feelings of accomplishment encourage stronger feelings of confidence, which has a positive impact on student engagement; positive perceptions of the environment combined with the individual efforts yields deeper learning, and the cycle starts again (Lee & Choi, 2017; Pearson & Harvey, 2013; Sawhney & Bansal, 2015)

Improving a student's higher-order thinking skills is a necessity of academic success, but these techniques also extend into workplace environments. Online learning environments have a responsibility to prepare students for this transition (Lee & Choi, 2017). For their study, Lee and Choi (2017) directed the attention at learners' justifiable beliefs and attitudes toward technology as positive influences of both higher-order thinking and deep learning. Higher-order thinking is explicitly linked to deep learning approaches, with variables of strategy and attitude significantly impacting higher-order thinking (Lee & Choi, 2017). Epistemological beliefs and attitudes obliquely affect higher-order thinking, yet were stronger predictors of deep learning approaches. Given the range of implications from the facets of the study, meaningful learning experiences may facilitate the development of favorable perceptions within the academic environment and encourage positive beliefs, emotions, purposes, and strategies toward goal achievement.

## **Online Education Environments**

To create a favorable perception of quality within the education environment often takes into account learner factors such as personality, learning style, and motivations, as well as faculty involvement, curriculum design, and peer interactions (Burns, 2013; Dicker, Garcia, Kelly, & Mulrooney, 2018). In her study on graduate perceptions of online courses, Burns (2013) found 54% of respondents taking online classes for the first time due to time constraints within their lifestyle. Of interest was their responses indicating the course lived up to high expectations and reporting they would choose online course in the future (Burns, 2013). Flexibility is a significant motivator for joining the online environment, regardless of age, discipline, or higher education experience. Although the research of Burns (2013) did not study which specific course activities and resources created appeal, King (2014) examined the use of online course tools to foster and support student engagement.

King (2014) devised a questionnaire to evaluate dimensions of student engagement including peer interaction, class performance, time management skills, and metacognitive development behaviors in graduate students studying administration. Of the 26 respondents, 73% were female. Course features relating to information were ranked as very important, as well as communication between peers, handout and lecture options, and faculty feedback (King, 2014). Over 90% ranked email communication with an instructors as fundamentally necessary to participation, performance, and relevance (King, 2014). Almost 100% of respondents indicated student discussions as the largest primary influence of participation (King, 2014). Lundberg and Sheridan (2015) further supported these findings with their random sample survey of 812 online students located across the United States; 529 respondents were female.

By looking into three learning domains of gains in general education—gains in practical competence and gains in personal and social development—Lundberg and Sheridan (2015)

discovered engagement with diverse others was the stronger contributor to gains in all three areas followed closely by a supportive campus environment. The frequency of student and faculty interaction was also reported as a contributing factor to gains in personal development, but did not predict gains in the other domains (Lundberg & Sheridan, 2015). Details concerning a supportive campus were not revealed during this study, but the work of Henderson et al. (2015) offers insight into required components.

In a study of 1,658 undergraduate students, 11 primary digital technologies were identified and coded from 4,594 nominated examples as being essential to the useful incorporation of technology in higher education (Henderson et al., 2015). The two foremost requirements for useful and engagement-driven components are the use of electronic access systems to provide resources and information, and flexibility with place and location for course completion (Henderson et al., 2015). Digital platforms were highly regarded as the most effective way to achieve university requirements, followed by an ability to access their course regardless of location, time, or device. The ability to multitask while completing both coursework and achieving their overall academic goals also reported as a strong motivation for choosing the incorporation of digital tools in their education (Henderson et al., 2015). Coursework that included digital influence, such as social media platforms for lectures, resources support, and student-to-student interaction, was also highly ranked but when used as a stimulant for deep learning (Henderson et al., 2015).

With several focus groups comprised of undergraduate students, the use of social networking as tools for both teaching and learning was further studied by Hamid et al. (2015). After careful review and data analysis by all authors to mitigate subjectivity bias, key themes of improved interaction between students and professors as well as improved mastery of course content occurred when social networking technology was included with course design (Hamid et al., 2015). While peer interaction was a required rubric component, student comments revealed

increased development with critical thinking skills as peer interaction provided opportunity to give and receive positive, yet meaningful feedback and careful thought went into each entry (Hamid et al., 2015). The relaxed approach of social networking also influenced a perception of casual, less-assuming interaction which added to reported enjoyment with the course.

### **Perceived Satisfaction**

By identifying the individual perspective of student communication with either peers or instructors in an online learning environment, higher education discovers how to address student needs (Symeonides & Child, 2015). Criticism abounds that the online learning environment does not provide enough personal interaction to sustain student satisfaction and engagement (Diep, Zhu, Struyven, & Blicek, 2017; Lundberg & Sheridan, 2015; Symeonides & Child, 2015). The personal communication needs of a student aid in understanding identity development. The collaborative learning demands in online learning—construction, sharing, and understanding of knowledge (Garrison & Akyol, 2015; Vermunt & Donche, 2017), rely on successful interpersonal connections (Symeonides & Child, 2015). Through use of interpretative phenomenological analysis and data gleaned from interviews with six mature online students, Symeonides and Child (2015) explored individual perspectives on the use of written communication to establish connection in the online environment. A concurrent theme between students was the inability to genuinely connect through discussion forums, despite personal adjustments and efforts to remove uncertainty and ambiguity (Symeonides & Child, 2015).

Frustrations amongst participants focused on the lack of transparency that was perceived throughout discussion engagements (Symeonides & Child, 2015). The static nature of written communication in discussion forums did not provide a sense of sincerity or deep connection amongst students, and responses revealed students turning to more personal and direct contact through social networking, email, or telephone communication to feel connected and satisfied with



the learning experience (Symeonides & Child, 2015). Additionally, the self-disclosures revealed by peers in online forums provided a foundation for personal assessment, providing reassurance within the learning process and a sense of satisfaction with their own achievements (Symeonides & Child, 2015).

When student satisfaction increases, the likelihood of student retention increases, accomplishing both student and university goals (Page & Kulick, 2016). Research has determined institutional presence and practice as influencing elements of student engagement, and sustainable online learning environments will focus on student satisfaction as a path toward retention (Page & Kulick, 2016; Rubin et al., 2018; Vermunt & Donche, 2017). Although studying satisfaction and retention in for-profit colleges and universities was the focus of the study, Page and Kulick (2016) sought to find what correlations existed between student retention and items contained on the priorities survey for online learners (PSOL). The survey looked at institutional perceptions, academic services, instructional services, enrollment services, and student services (Page & Kulick, 2016). A total of 2,729 students responded to the survey.

A year following the survey, three statistically significant items predictive of student retention emerged from the original list of PSOL items: program requirements are clear and reasonable, student-to-student collaboration is valuable, and student and instructor interaction occurs with adequate frequency (Page & Kulick, 2016). No statistically significant correlations to any specific variable were found, suggesting students perceive satisfactory or dissatisfactory experiences within an institution uniformly; one area of dissatisfaction predisposes a dissatisfaction in all areas (Page & Kulick, 2016). To maintain student engagement, it is crucial a university capitalize on elements closely related to student satisfaction within the online environment, even if the scope of satisfaction extends beyond the immediate course elements Page & Kulick, 2016).

Satisfaction is often regarded as an ultimate test of effectiveness and quality with regard to learning, yet the nature of evaluating satisfaction is purely subjective (Diep et al., 2017). The learning conditions alone cannot be regarded as influential in student satisfaction, as personality traits and prior experience often account for a foundation of expectation (Diep et al., 2017). Instructor expertise and curriculum interaction, as well as both a student's perceived self-efficacy and social ability potentially impact a student's satisfaction with the learning experience (Diep et al., 2017). Diep et al. (2017) investigated the effects of these variable on learner satisfaction in a blended learning environment. Females comprised 52% of the 92 respondents to the questionnaire covering technical support, self-efficacy, instructor availability/expertise, as well as the operating software, comfort level with communication, perceived task value, and satisfaction (Diep et al., 2017).

Variance based structural equation modeling was used to interpret the data, looking for mediating or moderating effects by the data (Diep et al., 2017). The findings of their study indicate a student's perceived task value is the most influential contributing factor to satisfaction, followed closely by instructor expertise and perceived achievement goals (Diep et al., 2017). Additional results between student-related factors revealed a strong correlation between self-efficacy and perceived task value; this implies an indirect effect on student satisfaction (Diep et al., 2017). Interestingly, social ability and comfort with communication were correlated to achievement goals but not to satisfaction. Their findings revealed student interaction with instructors and learning management software did not have a direct impact on student satisfaction; student's relied more heavily on factors they could control—peer interactions, self-efficacy, and perceptions of task value (Diep et al., 2017).

Age and gender are also influential with student perceptions of satisfaction, more specifically when considered in a deep approaches to learning context (Rubin et al., 2018). Deep

approaches to learning allow for flexibility and adjustments to contextual elements as well as personal goals and encounters (Biggs, 1987). Situational perceptions vary according to age and gender, yet predictions of older women maintaining more positive perceptions of satisfaction and deep learning were the foundation of a study by Rubin et al. (2018).

Gender and age were negative predictors of surface learning, and although age significantly and positively predicted deep learning, gender did not meaningfully impact deep learning (Rubin et al., 2018). Females had higher predictions of deep learning, with older females displaying deeper learning activities than younger women (Rubin et al., 2018). While a substantial relationship between age, gender and satisfaction was not identified, the two variables of age and gender predicted greater degree satisfaction in older female students. It is possible deep learning strategies influence positive perceptions of degree experiences for female students, given the mediating nature of these two variables (Rubin et al., 2018).

### **Perceived Learning**

A perception of learning is influential in student engagement, as learning drives academic success (Lee & Choi, 2017). Student pursuits in environments of perceived learning reinforce metacognitive skills and strategies necessary for goal achievement, as students engage more fully with materials and assignment they assess as valuable to their overall goals (Lee, 2013; Lehmann et al., 2014). Elements of online learning environments involving discussion forums, team projects, and feedback and evaluation can foster deep learning approaches driven by intrinsic motivation (Lee, 2013). To view discussion elements of online learning as a way to improve one's sense of understanding adopts of healthy approach to deep learning and creates favorable perceptions of the learning environment (Lee, 2013). A positive correlation exists between most of the perception-oriented elements of discussion and the number of elaborated responses participants provided (Lee, 2013). The more engagement with online discussions, the greater the perception of helpfulness

toward learning, positive participatory emotions, perceived gains in critical thinking skills, and perceived satisfaction with individual and peer performance (Lee, 2013). Students who adopt deep learning strategies seem more willing to engage in additional course elements for the value of the learning experience itself (Lee, 2013).

Blended learning environments also show the importance of perceive learning to student engagement, as indicated through the study of Khodabandelou, Jalil, Ali, and Daud (2015). Blended learning environments often account for the varying needs present amongst institutional, individual or discipline requirements, and diverse approaches encourage student autonomy within a collaborative context (Khodabandelou et al., 2015). Measuring learning can occur through grades, course completion, or skill building, yet measuring perceptions of learning offers more holistic insight into student learning strategies and achievement. Perceived learning in blended environments increases with the frequency of face-to-face encounters; physical connection has a direct impact on perceptions of learning (Khodabandelou et al., 2015). Amplified teacher and learner activities, as well as student-to-student interactions also increase the perceptions of both learning and social presence in a blended learning format. Blended learning environments offer a solution to higher education access challenges, yet provide new insight into the necessity of social presence to define favorable perceptions of learning (Khodabandelou et al., 2015).

In addition to social presence as a variable effecting perceptions of the learning environment, research identifies faculty involvement as an influencing factor. Razzak (2016) suggests that increased faculty engagement with students in an online context will promote higher-order thinking skills and deep learning strategies. Razzak (2016) relied on social presence functions of the faculty (offering feedback, scaffolding learning, enhancing the formation of online community, generating participation, and organizing activities) to encourage student connections to course materials and actively participate in learning. Faculty involvement can alter lower-level

cognitive skills focus in favor of more emotional or social skills necessary for success; faculty involvement can educate concerning analyzing, predicting, drawing inferences, and evaluating (Razzak, 2016). Deep learning activities in online students are established through consistent engagement with socially-accepted behaviors, faculty involvement, and observation of desired behaviors; these are more effective when engagement occurs to social presence (Razzak, 2016).

### **Perceived Self-Efficacy**

Throughout the academic journey, the acquisition of new knowledge is displayed through engagement and grade achievements; two markers of student success (Wang et al., 2013). Within the online environment, success is measured more fully when students are both satisfied and confident with their learning experiences (Artino & Jones, 2012; Wang et al., 2013). Measuring confidence in the learning experience is done through self-efficacy evaluations, with the results demonstrating the learner's self-regulatory efforts (Bandura, 1977).

Using 256 responses from a blended questionnaire covering course satisfaction and motivation strategies for learning, Wang et al. (2013) found that student motivation influenced both the level of course satisfaction and self-efficacy with online course components. Learning strategies played a mediating role in previous experience and motivation, revealing greater exposure to online courses increased the likelihood of employing learning strategies consistent with metacognitive development (Wang et al., 2013). While female respondents reported lower levels of self-efficacy than males, self-regulatory strategy responses and usage were higher than males.

After realizing the need for increased self-efficacy in females, Lourens (2014) sought to uncover interventions capable of strengthening positive outcomes for female performance and confidence levels. Through a South African leadership program designed specifically for women, Lourens (2014) researched mastery experiences, social persuasion, vicarious experiences, and

physiological states as four tenets of self-efficacy. Findings from questionnaires employing a phenomenological approach revealed co-curricular workshops and self-leadership workshops effective at increasing self-efficacy in mastery experiences (Lourens, 2014). Presentation skill workshops, mentorships, publications, and panel discussions increased development in all four areas of self-efficacy. Field specific workshops, technical projects, and examination preparation workshops increased self-efficacy beliefs in mastery experiences and physiological states (Lourens, 2014). Increased self-efficacy improved students' outlook on career potential and transition (Lourens, 2014).

Research trends exploring needs among students in both private and public institutions further reveal opportunities to develop a female's awareness of self-efficacy with regard to career-decisions. Javed and Tariq (2016) found that gender and type of institution had no significant effect on self-esteem, yet female students reported less self-efficacy than their male counterparts. The study also revealed females had more difficulty in making career decisions; there was a negative parallel between self-esteem and career-making decision (Javed & Tariq, 2016). Additional research in the area of female self-efficacy and career transitions was conducted by Monteiro and Almeida (2016).

Monteiro and Almeida (2016) used Likert-scale items to elicit a student's perception of competency and expectation of success with career transitions, after recognizing the discrepancies between scholastic achievement and labor market transitions of equal scale. Of the 411 students who completed the survey, 51% were female. While reports indicated little difference between gender and work experiences as influential on developing perceptions about the labor market during higher education, female responses clearly revealed a decline in perception of preparedness until they had spent two years employed in their field. Notably, the individual student's expectations concerning employability and field competencies strongly influenced the perception

of preparedness (Monteiro & Almeida, 2016). These expectations and perceptions of preparedness are synonymous with self-efficacy and student satisfaction components.

### **Perceived Identity**

As female students navigate academic and career environments, themes of identity and presence become strong components in perception-based assessments of their experiences (Du et al., 2016; Song et al., 2015; Sullivan, 2002). Whereas self-efficacy maintains significant relationships with self-esteem, identity is a foundational influence to accurate and enduring demonstrations of self-esteem in female students (Hayes et al., 2015; Sullivan, 2002). A positive sense of sense and belonging within the online community bolsters self-esteem, forming the foundation of increased confidence to pursuit academic or professional goals (Archer & Yates, 2017; Pellas, 2014). When themes of identity in the online learning environment are uncovered, it is easier to understand the dynamics of female engagement, perceived satisfaction, and overall metacognitive development (Dudek & Heiser, 2017; Hayes et al., 2015; Song et al., 2015).

Although dated, the qualitative research of Sullivan (2002) introduces female perceptions of online experiences, and creates a need for further study into these experiences. With twenty-one females participating in discussions concerning online learning experiences, Sullivan (2002) was able to expose consistent themes of individual personality, learning style, and familial and professional time constraints as mediating factors of perception. Such variables are of interest, but the foremost discovery was the female perception of freedom and openness in an online environment (Sullivan, 2002). Data revealed 42% of students felt perceptions of gender-based stereotypes and performance anxiety experienced in traditional classrooms were alleviated through the anonymity found in online coursework. Although removed from face-to-face interactions, a majority of respondents found a social advantage in online courses, engaging in discussion with less hesitancy and with more honesty (Sullivan, 2002).

The small sample size of Sullivan's (2002) research needed further corroboration, and the data presented by Song et al. (2015) provided additional support for the activities and perspectives of female students. Where Sullivan (2002) identified female engagement liberties based on verbal responses in an interview, Song et al. (2015) evaluated student participation in team exercises and discussion tasks in an online environment where gender and names were undisclosed. The greater the number of females included on a team, the higher the performance levels (Song et al., 2015). Female communication and engagement was individually stronger than male participants, and a combined effect of engagement across several female teammates increased team productivity and quality of the results. A gender neutral environment seemed to have the greatest positive affect on female students, indicating social environments are important online learning dynamics.

A study conducted by Du et al. (2016) continues support for female identity concerns as influential to their perception of the online education environment. Through interviews with a group of nine African-American women both during and after their enrollment in an instructional design course, Du et al. (2016) discovered three themes of "peer support as a give-and-take process with a sense of fairness, group member role as a formation of identity, and frustration as a common response to differing levels of peer participation and interaction" (p. 951). Female students desired equality with effort and feedback in discussion engagement and quality, regarding their own personal efforts as a measure of judgment for their peer interactions. These expectations corresponded with their identity as a group member, valuing group decisions under a pretense that every member must play a role (Du et al., 2016).

Trust and flexibility with roles and tasks were concurrent themes within group member identity comments. Disappointment and frustration became most admitted responses when the online learning environment did not support their prior expectations for equality in participation, group member interaction, and project results (Du et al., 2016). Even still, overall responses



indicate a satisfaction with the online learning environment when fairness, affirming identity, and positive emotions exist (Du et al., 2016).

Creating an online environment supportive of female identity needs was an indirect area of exploration for Dudek and Heiser (2017). Identity is defined as a convergence of both who a student is and what a student does, and the tools utilized in online learning aids in the development or support of a created identity (Dudek & Heiser, 2017). Using a case study design and comprehensive literature analysis, five components for an identity-centered curriculum design were uncovered: visibility, agency, community, competencies, and narrative. Through an online design inclusive of these elements, identity needs are supported through phases of defining, signifying, affirming, and enforcing roles (Dudek & Heiser, 2017). Allowing students to articulate their understanding with faculty, colleagues, and student peers, offer reflections on learning, rely on community interaction to regulate decision-making, construct narratives from a metacognitive perspective of meaning, and identify elements specific to areas of comprehension will more fully develop and solidify the formation of an academic and professional identity (Dudek & Heiser, 2017).

### **Perceived Community**

Elements of student identity are displayed and even forged through the perception of community experienced within the learning environment (Al-Nuami, 2017; Dudek & Heiser, 2017). For female students, a more complex relationship of identity and community presence has been revealed, as gender bias and social constructs influence female perceptions (Al-Nuami, 2017). By theorizing a threefold tier of social, cognitive, and teacher presence (termed a Community of Inquiry (CoI) as essential components to online learning, Garrison and Akyol (2011) present the influence of a well-structured community on higher education. Going so far as to claim a CoI is both necessary and influential in metacognitive development with online courses,

Garrison and Akyol (2011) evaluated text-based discussion boards for 16 undergraduate students to study the effects of social, cognitive, and teacher presence on metacognition.

The number of responses, the initiation of contact, and the substance of responses were coded with respect to the knowledge, monitoring, and regulation of cognition. As their study revealed, the use of terms such as *I am curious; I noticed; I appreciate; I understood; I remember* indicated movement through knowledge and monitoring of cognition. (Garrison & Akyol, 2015). Feedback which included terms such as *Your thoughts? Would you explain? I am wondering?* or *Why do you think?* revealed regulation of cognition. Course facilitators have an opportunity to identify students lacking critical thinking engagement by reviewing student discussions for these key indicators of metacognitive development; this assists with assuring effective teaching and learning strategies (Vermunt & Donche, 2017). The interaction between students and their processes for building upon topic foundations through feedback was a catalyst for metacognitive development, yet it also influenced student perceptions of the online environment as friendly, open, supportive, and comfortable (Garrison & Akyol, 2015). The establishment of inclusive and relational connections afforded the confidence to engage fully in the course.

In 2015, Garrison and Akyol further studied metacognition in a CoI environment. A North American study of 192 students examined factors of self-regulation and co-regulation in a collaborative online environment (Garrison & Akyol, 2015). Survey questions covered both individual behaviors associated with the learning process, and subsequent behaviors and responses elicited within a group context. The findings revealed females displayed higher levels of self and co-regulation over males (Garrison & Akyol, 2015). Prior studies had found females displaying higher collaborative tendencies, offering a possible explanation to increased reporting of co-regulation over males (Garrison & Akyol, 2015; Kizilcec et al., 2017). However, the environments

where female engagement was stronger than males included strong social presence and higher levels of perceived control (Du et al., 2016; Song et al., 2015; Sullivan, 2002).

For females, social presence is a desired component of online learning; the ability to perceive others as present for support and collaboration despite physical separation can increase motivation, engagement, satisfaction, and retention (Richardson et al., 2017). More significantly, social presence strongly influences academic performance (Richardson et al., 2017). With a mixed-methods study, Chen, deNoyelles, Patton, and Zydney (2017) studied the components of a Community of Inquiry which most strongly influence social presence. Open-ended survey analysis and discussion post analysis were used to determine relationships.

Much of the student feedback on the use of group discussions and assignments revealed a positive perception of the tool as instrumental in formulating personal connections between students (Chen et al., 2017). Clear and directed expectations for discussion engagement improved performance, as students appreciated the access to multiple perspectives, peer examples, and diverse feedback. The collaboration created strong feelings of community, giving students a feeling of belonging and confidence (Chen et al., 2017). Feedback from discussion forum responses revealed students supported the tool to develop online community and higher senses of teaching presence, social presence, and cognitive presence (Chen et al., 2017; Garrison, 2007). However, the cursory nature of the study—in that evaluating the number of responses, timeliness of response, and depth of response—creates some skepticism with regard to accuracy of the findings. Discussion engagement often regulated by rubric-requirements, creating a forced participation in order to achieve high scores (Lundberg & Sheridan, 2015; Hamid et al., 2015; King, 2014). This potentially weakens the findings of such an analysis.

Although the study of Chen et al., (2017) did not take into account gender specifics and developing community, Al-Nuami (2017) researched the Community of Inquiry as an influential

component in female e-learning. Al-Nuami (2017) explored online gaming as a comprehensive tool for instruction and positive impact in social and cognitive presence, through a focus on learning, teacher, and social presence as motivating factors for e-learning engagement. With 80 undergraduate females participating in an online virtual reality game and submitting a survey at the conclusion of the course, Al-Nuami (2017) discovered a noteworthy correlation between social presence, cognitive presence, and e-learning usage.

When evaluated individually, social presence did not reveal a statistically significant relationship with e-learning, but the relationship did show a positive impact on e-learning. Al-Nuami (2017) theorized the lack of impact by social presence was tied to an inconsistency with the use of online gaming for e-learning objectives. The use of online gaming increased perceptions of cognitive presence, as the design of online games were academically influenced, yet the overall exposure to an incorporation of gaming in higher education is still relatively new to many disciplines (Al-Nuami, 2017). The findings of Al-Nuami (2017) are inconsistent with prior studies concerning the singular importance of social presence, but does support the idea of a strong combination between social and cognitive presence to develop an engaging female learning environment (Garrison & Akyol, 2015; Richardson et al., 2017).

### **Deep Learning Experiences**

Learning theories often differentiate between deep and surface learning, offering surface learning as an approach to meet course requirements whereas deep learning is an intrinsically motivated quest for depth and meaning with content extending beyond the academic environment (Biggs, 1987; Biggs & Tang, 2007; Lake & Boyd, 2015). Deep learning is associated with positive engagement and learning satisfaction, generating increased academic performance, and achievement (Howie & Bagnal, 2013). These characteristics coincide with results from increased

metacognitive development and practice, drawing upon similarities in student behaviors and perceptions (Abdellah, 2015; Sawhney & Bansal, 2015; Wang et al., 2013),

In deep and surface learning approaches, gender and age are frequently considered indicators of student tendencies (Lake & Boyd, 2015). Deep learning is theorized as a mature approach to learning with age commonly held as a primary influence (Lake & Boyd, 2015). Using survey results of 504 students in undergraduate studies at the Southern Cross University, Lake and Boyd (2015) studied the relationship between age and gender on learning approaches. Although 70% of respondents self-identified as a mature age, the division for a mature ranking was any student over the age of 23. Of specific interest to this review was the number of female participants; females comprised 74% of the respondents (Lake & Boyd, 2015).

Results revealed age to be a significant predictor of deep learning approaches, with mature-age students ranking statistically higher in deep approach scores over usual-age respondents, who revealed stronger surface-learning approaches through their responses (Lake & Boyd, 2015). While gender did not reveal a strong relationship to either deep or surface learning approaches, within the gender-specific domains of male and female, differences between learning approaches were discovered by age divisions. Mature-age females had higher deep learning scores over usual-age females, associated with deep motivation and deep strategy (Lake & Boyd, 2015). Motivation and strategy sub-scores for mature-age females were also higher than mature and usual-age male responses. The addition of personal and professional demands on older, female students over the age of 35 pursuing academic goals increases the need for a focused and committed approach, possibly impacting deep and surface approach to learning (Lake & Boyd, 2015).

The combination of age and approaches to learning is theorized to be a factor with student achievement (Cetin, 2016). Deep learning behaviors presume an expectation of success, as

increased engagement, maturity, and satisfaction are often associated with academic achievement (Alliprandini et al., 2015; Broadbent & Poon, 2015). Academic achievement is linked to student grade point averages (GPA), and the study of Cetin (2016) looked at age and approaches to learning as impacting variables. The students completed a revised version of Biggs' (1987) questionnaire, which also included a self-report GPA component. The data revealed no significant relationship between students' age and GPA, nor was there a correlation between students' GPA and deep and surface learning approaches (Cetin, 2016). Deep learning scores increased as student age increased; surface learning approaches decreased as a student's GPA increased. (Cetin, 2016). The dominant female composition of respondents (158 females to eight males) indicates support for the findings of Lake and Boyd (2015).

Age and gender are also influential with student perceptions of satisfaction, more specifically when considered in a deep approaches to learning context (Rubin et al., 2018). The deep approaches to learning theory encourages environmental factors to affect perception, and these are integrated with personal traits and motivations for a comprehensive assessment of the experience (Biggs, 1987). Variables of age and gender expose an individual to experiences differing in both type and frequency, creating unique opportunities of perspective (Rubin et al., 2018). This creates a question of correlation between gender-based physical and emotional maturity with deep learning. Rubin et al. (2018) found age significantly and positively predicted deep learning, but overall, gender was not statistically connected with deep learning (Rubin et al., 2018). The more physically and mentally mature an individual, the stronger the tendency to engage in deep learning. Females had higher predictions of deep learning, with older females displaying deeper learning activities than younger women (Rubin et al., 2018). While no strong correlations between age, gender and satisfaction were found, the two variables of age and gender predicted greater degree satisfaction in older female students. It is possible deep learning strategies influence

positive perceptions of degree experiences for female students, given the mediating nature of these two variables (Rubin et al., 2018).

### **Community College Experiences**

As displayed in the review thus far, literature supports fundamental traits and patterns in online learning experiences as well as metacognitive tendencies and skills in higher education. Although these experiences are general in nature, much of the arguments rely on data retrieved from 4-year institutions or for-profit universities with sizable enrollment numbers. However, in spite of the noted cultural, financial, geographic, and economic challenges associated with community college operations, female experiences are similar when it involves engagement, community and self-efficacy (Hlinka, 2017; Peaslee, 2018).

As with any institution, the issue of student retention draws considerable attention by administrative personnel and researchers alike. For the community college, strong criticism of dismally low graduation rates continue to plague questions of institutional effectiveness (Yu, 2017). In his search for an understanding of factors associated with student achievement in community colleges, Yu (2017) found a lower expectation and aspiration for certificate or degree attainment in community college students when compared to their 4-year university counterparts. Those who achieved a credential completion within three years were associated with higher high school GPA's and full-time attendance. Conversely, long working hours, higher minority enrollment numbers, and institutional size were negatively associated with three year completion rates (Yu, 2017). Although not notable to a three year completion timeline, female students attending full-time have a higher probability of completing their credentials within six years and are more likely to achieve these credentials than their male counterparts (Yu, 2017).

In conjunction with previously discussed literature concerning female obligations and educational priorities as affecting engagement, community college students as a whole are

fundamentally plagued by barriers—such as socioeconomic status, race, family obligations, employment commitments, and career prospects (Hlinka, 2017). Successfully understanding the student perspective is essential identifying these issues affecting retention, and in Hlinka's interviews with 13 students, three predominate themes emerged. First, the essential push to enroll and finish college is found in family and community values. Students felt family and social pressures through demands to create a better living for themselves. This was found true with the seven females interviewed (Hlinka, 2017). However, the second theme was the lack of cultural capital that allowed students to overcome the pull of family obligations. This conflict of priorities—family needs (emotional and physical) versus personal needs (intrinsic and extrinsic) affects consistency (Hlinka, 2017). Lastly, academic preparation and integration affect engagement and overall retention. Eight out of the 13 students were required to take at least one developmental course, but beyond that, there was extreme difficulty in transitioning to critical analysis and abstract orders of cognitive development (Hlinka, 2017). These core themes further support the challenges faced by females undertaking online learning at a community college in their formative college years, and remind educators of the importance of developing strong metacognitive skills early on in the academic journey.

As the conceptual framework for this research study takes into account the relationships between student and academic community (whether peer-oriented or instructor-based), the study on community college student feelings of self-efficacy in relation to instructor presence is relative to the discussion (Peaslee, 2018). As community college enrollees typically display and acknowledge low self-efficacy upon enrollment, classroom interaction becomes an opportunity encourage and motivate students towards continued engagement (Peaslee, 2018). The results of classroom responses to the Self-Efficacy for Learning and Performance Scale in conjunction with the Perceived Teacher Confirmation Scale revealed that females perceived increased self-efficacy



when instructors established eye contact, felt their instructors were interest in whether the student was learning, and given oral or written praise on their work (Peaslee, 2018). The community college setting, despite its diversity from traditional 4-year campus offerings and student composition, consistently mirrors the expectations, challenges, and performance of female learners who are pursuing their education.

### **Review of Methodological Issues**

After completing a review of literature, it is imperative to scrutinize subject matter results from a perspective of methodological inquiry. Although literature studies reveal current trends in a discipline and identify essential topical data, they also inform the researcher on appropriate methodological avenues to sustain comprehensive results in their personal research direction (Machi & McEvoy, 2016). Metacognition is studied through both quantitative and qualitative research, and both methods also inform studies on its subcomponents of female self-regulation, engagement, academic achievement, and related emotions in female students (Artino & Jones, 2012; Broadbent & Poon, 2015; Du et al., 2016; Pellas, 2014; Rubin et al., 2018). The limitations associated with respondent demographics, instrument developments, and differences between quantitative and qualitative methods support the necessity of a comprehensive methodological review (Boote & Beile, 2005).

While both avenues yield data important to an academic understanding of metacognitive development and its resulting impact in females, quantitative studies rely on relationships between variables and a numerical measurement and analysis of the studied relationships (Creswell & Poth, 2018). Qualitative research provides understanding to social or human problems through more holistic, inductive avenues involving open-ended questioning, case studies, and direct inclusion of environmental and situational factors (Creswell & Poth, 2018). The fluid and individualized nature of female metacognition is more suited to qualitative study, yet the definitions of relationships as

presented by quantitative studies offer direction, comparison, and generalizations for a synoptic understanding. The individual perceptions of environment, experiences of satisfaction, academic achievement, and engagement are clearly evident in interviews, focus groups, or observations, but trends within a demographic are more comprehensively revealed through quantitative methods (Creswell & Poth, 2018). Both perspectives are key to informing the whole. A synthesis of the strengths and weaknesses of each methodological approach provides an informed perspective to researcher's own study on metacognitive development in females, and the results of this synthesis will be presented in defense of the choice of methodology.

### **Quantitative Research**

The study of female metacognition is largely influenced by quantitative research methods. The relationships between female learning and metacognitive development cannot be isolated to a single variable, advocating for the multifaceted analysis of both dependent and independent variables relative to female learning experiences. Age, maturity, self-efficacy, achievement, self-esteem, self-regulation, and learning environment are several of the variables often included in a study on metacognition (Al-Nuami, 2017; Javed & Tariq, 2016; Lake & Boyd, 2015; Lee, 2013; Rubin et al., 2018). While the overarching theme of metacognition is of significant importance to learning trends, credibility within a study requires a more refined direction for inquiry, specifically when dealing with a unique demographic (Machi & McEvoy, 2016). Several correlational and descriptive studies offered insight into a broad understanding of female metacognition (Abdellah, 2015; Sawhney & Bansal, 2015), but the literature review was largely regulated to specific analysis with restricted variables of self-regulation (Kizilcec et al., 2017; Lehmann et al., 2014), self-efficacy (Pellas, 2014; Wang et al., 2013), and engagement (King, 2014; Lundberg & Sheridan, 2015).

**Self-Regulation.** Self-regulation studies were often conducted through online mediums, petitioning course enrollees to complete course satisfaction questionnaires or rating surveys with Likert-scale questioning concerning their experiences (Artino & Jones, 2012; Kizilcec et al., 2017; Wang et al., 2013). These instruments requested demographic information and contained subscales of questioning designed to isolate variable specific results. Questionnaires replicating prior studies were foundational to instrument design, yet research-specific subscales were included to tailor results to the nature of the study (Kizilcec et al., 2017; Wang et al., 2013). Subscales were included to examine relationships between task value, boredom, elaboration strategies or control strategies; student responses would allow for a more direct analysis using descriptive statistics (Artino & Jones, 2012; Cho & Shen, 2013; Rubin et al., 2018). Self-regulation studies looked to provide correlations between academic achievement and self-efficacy development, yet many of the questionnaires required additional responses for motivation, engagement, emotions, and effort (Cho & Shen, 2013; De Smul, Heirwig, Van Keer, Devos, & Vandeveld, 2018; Rubin et al., 2018; Wang et al., 2013).

Descriptive studies included the variables of achievement, emotions, and engagement, and were largely influenced by use of similar survey methods such as the *Internet self-efficacy scale*, *metacognitive self-regulation scale*, and *achievement emotions scale* (Pellas, 2014; You & Kang, 2014; Pellas, 2014). Findings from studies incorporating self-regulation and subscale variables revealed reciprocal relationship patterns concerning higher scoring responses and achievement when self-regulation efforts increased (Kizilcec et al., 2017; Pellas, 2014; You & Kang, 2014). As variables of boredom or frustration decreased, student engagement scores increased; increased engagement scores influences achievement responses (You & Kang, 2014). Strategies of self-regulation, including goal setting, strategic planning, or help seeking contributed to positive

relationships with engagement despite the presence of variables associated with negative emotions (De Smul et al., 2018; Kizilcec et al., 2017; Wang et al., 2013).

**Self-Efficacy.** Self-efficacy studies were conducted with several national and international populations, spanning populations of Europe, Australia, the Middle East, South Africa to the United States, several of which contained frameworks developed on Bandura's (1997) theories concerning student performance (Gutiérrez-Braojos, 2015; Javed & Tariq, 2016; Lourens, 2014; Pellas, 2014). Diversity in sample size was present, with gendered response rates varying yet indicative of the composition of the university population (Pellas, 2014; Wang et al., 2013). Responses ranged between 100 respondents to upwards of 600 participants (Dang et al., 2016; Javed & Tariq, 2016; Lourens, 2014). In spite of sample size, female respondents comprised the majority of responses and the specific components used for survey direction revealed similar results between studies. Metacognitive strategies directly and positively influence self-efficacy beliefs, and span age, gender, and grade-level student factors (Gutiérrez-Braojos, 2015; Javed & Tariq, 2016). Increased self-efficacy was measured against goal achievement, career orientations and learning environment engagement, consistently revealing positive relationships regardless of gender with females tending to self-report higher levels of connection with each variable (Monteiro & Almeida, 2016; Oz, 2016; Rubin et al., 2018). Several studies revealed connections to social presence factors as mediators between self-efficacy and engagement, yet small sample sizes and limited expression revealed through survey responses were not able to sustain solid relationships as an isolated variable (Garrison & Akyol, 2015; Lee & Choi, 2017; Richardson et al., 2017).

**Engagement.** Of critical importance to research in metacognition is participant awareness of the subject itself (Al-Hilawani, 2016). Metacognition is by definition, a cognitive understanding of one's knowledge, and the ability to monitor and evaluate one's progress with metacognitive

development requires intentional effort (Al Awdah et al., 2017; Flavell, 1979; Oz, 2016).

Conversely, as one intentionally engages with metacognitive development, purposeful effort into course and material engagement should ensue; these are tenets of deep learning (Biggs, 1987; Flavell, 1979; Lee, 2013; Lee & Choi, 2017). While other studies rely on a basic structure of metacognition and its impact on academic behaviors (Pearson & Harvey, 2013; Sawhney & Bansal, 2015), tailoring the study to one's awareness of metacognition throughout their education provides contextual clues for personal, curricular, or delivery deficiencies or strengths in light of engagement (Abdellah, 2015; Shen & Lui, 2011).

Using derivatives of perception, such as satisfaction, perspective, and attitude, engagement was studied across a wide range of disciplines but within an online or hybrid learning environment. Age and gender were not always restricted, yet results consistently revealed higher and more favorable engagement rates associated with female respondents (Dang et al., 2016; Lehmann et al., 2014; Lundberg & Sheridan, 2015). Again, responses were taken from Likert response surveys submitted online and often issued to a specific university or course. Mediating variables such as faculty input, online design, and instructional tools and methods were also evaluated against engagement (King, 2014; Koohang, Paliszkievicz, Goluchowski, & Nord, 2016). Overarching themes of metacognitive awareness were uncovered through terms such as self-regulation, monitoring, and evaluation, and direct inclusion of metacognitive skill usage during course engagement was generally included within survey instruments (Burns, 2013; Oz, 2016; Sawhney & Bansal, 2015). Knowledge of cognition elements covered critical thinking skills, procedural knowledge included elements concerning the completion of a process or procedure, and conditional knowledge elements evaluated the conditions or circumstances specific to the transfer of knowledge or skill (Al Awdah et al., 2017; Oz, 2016; Sawhney & Bansal, 2015). Scores

between awareness and achievement were also examined for predictive relationships (Abdellah, 2015; Sawhney & Bansal, 2015).

**Limitations.** Although the quantitative responses provided noteworthy observations, several studies reported low response rates, self-report concerns, and demographic or university-specific respondents (Gutiérrez-Braojos, 2015; Javed & Tariq, 2016; Wang et al., 2013). Many studies were not restricted to grade-level achievement, although they were often course specific. This lead to concerns of reliability with responses, as several studies indicated age as a mediating factor of self-regulation development and grade-level achievement as a mediator with self-efficacy (De Smul et al., 2018; Pellas, 2014; Rubin et al., 2018). In addition to course, discipline and university-specific design concerns founded in limited exposure perspectives, there is room for researcher bias in designing questionnaires.

A researcher works to eliminate bias by guarding the development of the study and analysis of results from overexposure to familiar and comfortable perspectives and input (Creswell & Poth, 2018; Machi & McEvoy, 2016). While unintentional bias does present limitations, results from studies in self-regulation, self-efficacy, and engagement corroborated prior works associated with metacognitive research, and indicated generalized female patterns of positive performance when metacognitive development was employed (De Smul et al., 2018; Kizilcec et al., 2017). Studies with larger sample sizes had predominately female respondent composition, adding strength to the generalizations each study offered (De Smul et al., 2018; Kizilcec et al., 2017; Rubin et al., 2018).

### **Qualitative Research**

Prior to the literature review, personal bias had to be taken into consideration. With the intent of understanding a more personal journey through metacognition, search restrictions leaned heavily in the direction of qualitative research. However, rather than relying on the revelations of existing research to inform, personal assumptions guided searches for studies more inclusive of the

desired result (Creswell, 2018). Discovering qualitative studies on female metacognition was difficult; the additional restrictions of online education yielded few current results. Expanding on specific and gender-specific characteristics such as emotions, engagement, self-regulation, and self-efficacy yielded several studies which delved more deeply into the female online experience. The majority of qualitative research efforts were identified as case studies.

Each of the case studies were well designed with nondirectional language guiding their interviews and dialogue (Archer & Yates, 2017; Gutierrez de Blume et al., 2017; Sullivan, 2002). Participant numbers varied by study, yet there were never fewer than five participants for interview or focus-group designs (Du et al., 2016; Henderson, Selwyn, & Aston, 2015; Lourens, 2014). Interview experiences lasted between 45 and 90 minutes, and several studies relied on essay answers to emailed questionnaires containing open-ended questions (Du et al., 2016; Henderson et al., 2015; Razzak, 2016). More direct analysis of student engagement with metacognitive functions occurred through narrative exploration, online communication analysis, and identity-guided inquiries into function and behaviors (Dudek & Heiser, 2017; Garrison & Akyol, 2015; Rijswijk et al., 2016).

Many of the quantitative studies were grounded in learning theories and research instrumentation from the late 1900s, primarily the works of Biggs (1987), Flavell (1979) and Bandura (1977). The influencing research of case study designs relied on similar but more current quantitative data results of studies in metacognition and student learning (Dudek & Heiser, 2017; Garrison & Akyol, 2015; Henderson et al., 2015). Qualitative research provides a flexibility to pursue current perspectives and bridge the uniformity gap within student experiences both past and present (Creswell & Poth, 2018). Although the nature of metacognition in higher education remains unchanged throughout the years, the possibilities for delivery, instruction, and application have been transformed by the online learning experience (Broadbent & Poon, 2015). These

subjective experiences can be accounted for through qualitative research; older theories are merged with present day experiences to specifically address a traditionally marginalized population such as females (Creswell & Poth, 2018; Tate et al., 2014). Stronger qualitative arguments rely on current studies, which were primary used to inform this study in female metacognition. Data results across the studies indicated females enjoy the online learning experience yet also grapple with challenges of identity, perceived satisfaction, peer interaction, and managing self-efficacy (Dudek & Heiser, 2017; Garrison & Akyol, 2015; Hamid et al., 2015; Hlinka, 2017; Lourens, 2014).

**Limitations.** Despite the significant insight into the personal journey of the female online learning experience, there are several limitations associated with qualitative studies. Several of these limitations were evident in the literature review. Sample size is a noticeable limitation in qualitative studies (Malterud, Siersma, & Guassora, 2015). Prior research often informs researchers of adequate sample sizes for credible results, yet the scope of a study also guides how many participants is necessary (Malterud et al., 2015). Within the literature review, samples sizes for qualitative studies ranged between eight participants to 30 for direct contact studies (Gutierrez de Blume et al., 2017; Hamid, 2015; Hlinka, 2017; Razzak, 2016 ) while electronic contact yielded upwards to 300 respondents ( Dicker et al., 2018; Pearson & Harvey, 2013). Areas specific to metacognition and online experiences revealed samples sizes that fell within an eight to 100 respondents range, which is adequate for the singularity of the experience concerning female perspective (Du et al., 2016; Lourens, 2014; Malterud et al., 2015; Razzak, 2016)

Coding the data from a study presents a challenge if not specific and complete to a narrow theme (Creswell & Poth, 2018; Machi & McEvoy, 2016). Research analysis in a qualitative study is predicated upon a researcher's reflexivity, with conflicts of interest, epistemological beliefs, and bias potentially impacting an interpretation of the data (Teherani, Martimianakis, Stenfors-Hayes, Wadhwa, & Varpio, 2015). Many of the qualitative studies relied on the input of several



researchers during the coding process, a process that has the potential to bring either a strength or weakness to the study. The potential for disagreement concerning data saturation and key themes is always present, yet a consensus amongst research professional adds to the credibility of the data analysis (Creswell & Poth, 2018). Multiple perspectives can increase the likelihood of unintentional bias.

Additionally, should the researcher rely on previously conducted studies to inform a line of questioning can influence researcher bias since it manipulates the line of questioning toward a desired result, rather than allowing the data to provide the answers (Creswell & Poth, 2018). The contextual specifics of the study must inform the instrumentation; qualitative data is individualized as are the elements driving a qualitative study (Noyesa, 2018). Heavy dependence on previous work distorts an objective view of the current experience and environment in which the study is completed as nuances of language, situational factors, and previous knowledge have the potential to marginalize the maturity of the research topic (Teherani et al., 2015). The use of online mediums for submissions of questionnaires or reliance on electronic means to conduct an interview has the potential to disrupt the natural setting of a more personal, face-to-face interviews. Answers must be given the benefit of the doubt since body language, uninhibited responses, external pressures, and peer-assisted completion cannot be monitored (Creswell & Poth, 2018).

### **Advocacy**

It is impossible to rely solely on another's work to direct this research study in metacognition, yet it is possible to extract the strengths and weaknesses of other methods to encourage the research direction. Quantitative methods ensure a more specific look at relational components of metacognitive developments in female students, yet the consistency amongst current study results inclusive of diversity with age, gender, experience, and achievement do not satisfy a deeper interest in the experience itself. Metacognition is comprised of interrelated

components, which are demonstrated individually to achieve generalized results (Flavell, 1987). Within an academic environment, generalized results include increased critical thinking, multi-layered application, increased self-efficacy, and goal achievement (Al-Hilawani, 2016; Gutiérrez-Braojos, 2015; Javed & Tariq, 2016). However, specificity concerning these accomplishments cannot be quantified; the results are personal in nature.

The use of a qualitative method to uncover female perceptions of metacognition will allow for a more personal and organic exploration of the topic (Creswell & Poth, 2018). Open-ended questions may provide contextual clues and detail-oriented perspectives on the learning experience as a whole. Metacognition is a theoretical learning premise of an entire experience rather than a single event, necessitating a research method maintaining flexibility as one of its greatest strengths (Creswell & Poth, 2018; Flavell, 1987). The personal nature of metacognition and holistic perspective on the entire experience of education warrants a case study approach for this research design.

Few case studies have achieved an in-depth look at the perception of metacognitive development in female students within online learning, creating a need for a design of this type. The disclosure of personal bias further influenced a case study decision, as self-reflection is key component of strong qualitative research (Creswell & Poth, 2018). The researcher's personal experiences have the potential to influence the interpretation of findings, yet the personal connection also fuels the interest in providing an in-depth examination into the female experience (Creswell & Poth, 2018; Teherani et al., 2015). Sample size as noted with each design, will prove to be a limitation, but the relevance of responses in light of a narrowly-tailored focus and nondirectional language will offer credible particularity to the study (Creswell & Poth, 2018; Malterud et al., 2015). The significance of the data does not depend on the number of participants, but the coding and application of content with regard to respondents (Malterud et al., 2015).

Detailed experiences, limited bias, and nondirectional questioning will provide data most closely associated with the research topic, in spite of how many participants are included (Creswell & Poth, 2018).

## **Summary**

The literature review provides an impartial presentation of research study, design, and demographic variables when considering metacognitive development in females. While a researcher is free to pursue any number of design options, an informed decision leads to a selection providing topical and demographic elements both specific and manageable to a concise study topic (Creswell & Poth, 2018; Machi & McEvoy, 2016). Accurate analysis is dependent upon thorough research and relevant findings.

A careful examination of quantitative and qualitative research methods identifies concerns with sample size, potential bias, self-reporting credibility, and scope of study (Archer & Yates, 2017; Du et al., 2016; Lake & Boyd, 2015; Malterud et al., 2015; Teherani et al., 2015). Quantitative research provides general insights on a demographic, such as the female student population targeted in these studies, and qualitative research offers direct insight into the individual experience (Machi & McEvoy, 2016). Both research options were carefully considered to account for the numerous influencing factors present within such a study, but as the intent is to pursue the perception of metacognitive development in female students within the online environment, the decision to pursue qualitative research was made.

## **Synthesis of Research Findings**

The discussion of metacognition at the beginning of the chapter includes a conceptual framework blending theories of deep learning and social learning (Biggs, 1987; Bandura, 1977; Flavell, 1979). Deep learning theories promote a dependence upon experience, motivation, and perceived value as guides for learning strategies, and research studies examined age and gender as

predictors of deep approaches (Abdellah, 2015; Razzak, 2016; Rubin et al., 2018; Wang et al., 2013). Social learning theory presents identity, community, and application as driving forces behind academic engagement and learning strategies (Al-Nuami, 2017; Bandura, 1977; Garrison & Akyol, 2015). Choosing to research female engagement within higher education through both theoretical frameworks offered support for metacognitive development within either learning approach (Lee & Choi, 2017; Oz, 2016; Pearson & Harvey, 2013; Shen & Lui, 2011).

Knowledge and regulation of cognition are the fundamental constructs of metacognition, and research supports self-regulation, self-efficacy, satisfaction, and engagement as positive variables associated with metacognitive development in higher education, (Broadbent & Poon, 2015; Richardson et al., 2017; Vermunt & Donche, 2017). More specifically, the female experience in online higher education revealed metacognitive awareness and practices increase academic achievement (Garrison & Akyol, 2015; Sawhney & Bansal, 2015). Academic achievement is measured through GPA, course completion, and career placement, with studies consistently supporting strong female performances (Vermunt & Donche, 2017; Wang et al., 2013).

Within these pursuits, self-regulation strategies are advocated as being the most influential (Hamid et al., 2015; Kizilcec et al., 2017; You & Kang, 2014). Directly linked to increased engagement, self-regulation strategies also provide mediating effects on engagement and efficacy (Lehmann et al., 2014; Pellas, 2014). In self-efficacy studies, the responses given by females were stronger than their male counterparts with regard to their ability to employ metacognitive strategies (Alliprandini et al., 2015; Kizilcec et al., 2017). The use of self-regulation strategies revealed performance standards and engagement levels similar to students employing deep approaches to learning (Howie & Bagnal, 2013; Lake & Boyd, 2015; Lee & Choi, 2017).

Deep approaches to learning are associated with greater productivity and increased academic success, yet deep approaches are also specific to an individual desire to move past routine exercises and academic expectations to explore depth in application, connections to relevance and challenge personal assumptions (Lee, 2013; Pearson & Harvey, 2013; Vermunt & Donche, 2017). Deep learning is heavily dependent upon favorable perceptions of the academic environment, and research studies support social identity, self-efficacy, and perceived value as influential components for female perception (Al-Nuami, 2017; Pellas, 2014; Richardson, et al., 2017).

The online learning environment presents challenges to deep learning needs, in that the lack of personal interaction with both peers and faculty can hinder development of identity and self-efficacy, altering the perceived value in tasks and outcomes (Burns, 2013; King, 2014; Lundberg & Sheridan, 2015; Wang et al., 2013). Female-focused research studies demonstrate a strength in academic performance in spite of environmental challenges, a possible indication of the intrinsic commitment to the learning process (Du et al., 2016; Rubin et al., 2018; Song et al., 2015). Intrinsic motivation is a fundamental tenet of deep learning approaches (Lake & Boyd, 2015; Pearson & Harvey, 2013).

Also fundamental to each learning approach are the components of identity and community; both of which are shown to be influential in female engagement (Dudek & Heiser, 2017; Garrison & Akyol, 2015; Richardson et al., 2017). The strong need for identity and community is a frustrating component of online education, yet female interviews reveal a liberty and openness within the environment that allows expression and discussion free from gender bias (Du et al., 2016; Lee, 2013; Sullivan, 2002). Within the search for identity is the female response to the peer-related elements of online learning, such as discussion forums or team projects, which

develops a sense of satisfaction and perceived learning (King, 2014; Lee, 2013). Course developers have the ability to construct these elements to capitalize on female learning needs.

As females experience a level of comfort within the learning environment, they engage in planning, monitoring, and evaluating their learning and experiences both individually and collectively with the online community (Garrison & Akyol, 2015; King, 2014). Social presence, a tenet of social learning, establishes a favorable setting with which a female student participates in the learning experience, as feedback, collaboration, meaning, and motivations are positive outcomes of academic community interaction (Al-Nuami, 2017; Bandura, 1977; Khodabandelou et al., 2015; Koohang et al., 2016). Qualitative data revealed female students appreciate the opportunities to interact in a collaborative setting, finding peer support, feedback, and motivation in their interpersonal connection (Hamid et al., 2015; Lee, 2013; Lundberg & Sheridan, 2015). However, their concerns also highlighted skepticism at the sincerity and depth of those same relationships (Du et al., 2016; Garrison & Akyol, 2015; Sullivan, 2002).

By approaching online education from both social learning and deep learning theories, females are guided toward metacognitive development. Regulation, collaboration, and evaluation are components of metacognition achieved during the individual and collective context of online learning (Hayes et al., 2015; Richardson et al., 2017). Through a strong sense of identity and distinct role in the online community, female students rely on critical thinking skills, self-assessment, and continuous monitoring of the changes in roles, curriculum, and academic performance to achieve both intrinsic and extrinsic goals (Garrison & Akyol, 2015; Lourens, 2014; Razzak, 2016; Sawhney & Bansal, 2015).

### **Critique of Previous Research**

A concerted research effort reveals metacognition as an important component of higher education (Abdellah, 2014; Flavell, 1979; Sawhney & Bansal, 2015). Studies reveal the

importance of self-regulation to formulate and execute plans in order to achieve academic success (Al Awdah et al., 2017; Hamid et al., 2015) while also providing foundational skills for developing self-efficacy, attaining personal and professional goals, and cultivating deep learning (Broadbent & Poon, 2015; Kizilcec et al., 2017). Research has focused on the unique academic outcomes associated with strong metacognitive engagement, such as increased self-efficacy, greater perceived satisfaction, and high achievement scores, and quantitative data has revealed trends of female consistency in these areas (Dicker et al., 2018; Rubin et al., 2018; Wang et al., 2013).

However, understanding the cognitive processes of learning is an undertaking which requires careful attention to the individual perspective. The use of qualitative studies to explore female experiences in online education provided insight into emotions, performance, and sense of identity, but a specific focus on metacognitive influence was largely absent (Du et al., 2016; Richardson et al., 2017; Sullivan, 2002). Hidden within the responses of interviews and focus group discussion are allusions to metacognitive influence, as students employ self-regulation strategies as help seeking, self-assessment, time management, and peer-influence evaluation to direct their learning process (Broadbent & Poon, 2015; Dicker et al., 2018; Hamid et al., 2015). Using qualitative methods to reveal perceptions of metacognitive development in online higher education is an avenue that could further support the development of the online experience for the benefit of female students.

### **Summary**

The combined perspectives of deep learning and social learning inform the study of female metacognition as developed within an online learning environment (Al Awdah et al., 2017; Howie & Bagnal, 2013; Lee & Choi, 2017). The learning environment, with regard to self-efficacy (Lourens, 2014), perceived satisfaction (Dang et al., 2016), and perceived learning (Khodabandelou et al., 2016), is revealed as influential in the formation of female identity and

belonging within the online community (Du et al., 2016; Garrison & Akyol, 2015). The affirmation arising from a positive experience increases student engagement, resulting in more successful efforts in the pursuit of academic achievement (Broadbent & Poon, 2015; King, 2014; Pellas, 2014). The interrelation of these factors propels an assumption that a positive experience in the education environment encourages and sustains metacognitive development in females (Abdellah, 2015; Henderson et al., 2015; Richardson et al., 2017).

Throughout these experiences, research reveals the development and use of metacognitive functions to support the female learning experience (Wang et al., 2013; Rubin et al., 2018). Specifically, self-regulation strategies such as monitoring progress, engaging in self-assessments, evaluating alternative views, and giving and receiving feedback are of importance to addressing challenges of frustration and boredom within the classroom (Kizilcec et al., 2017; You & Kang, 2014). The potential for dismissive behaviors and peer withdrawal in a disengaging online environment is high, yet females consistently demonstrate adaptability and increased engagement through the use of self-regulation strategies (Alliprandini et al., 2015; Kizilcec et al., 2017; Lee & Choi, 2017). For female students who employ metacognitive skills, the likelihood of desired academic achievement increases, and enhances the potential for attaining personal and professional aspirations post-matriculation (Archer & Yates, 2017; De Smul et al., 2018; Javed & Turiq, 2016).



### **Chapter 3: Methodology**

The unique and personal nature of metacognitive development is best supported by the individual and specific attention of descriptive qualitative research conducted through a case study (Creswell & Poth, 2018). Metacognitive development in online learning is an individual process, influenced by experience, knowledge and community support (Broadbent & Poon, 2015; Dang et al., 2016; Du et al., 2016). More specifically, female metacognition is displayed through peer interaction, self-regulation strategies, and persistent engagement in higher education when enrolled online (Oz, 2016; Song et al., 2015; Wang et al., 2013). If consistently employed, metacognitive skills produce self-efficacy, increased satisfaction, and academic achievement in online students (Diep et al., 2017; Lourens, 2014; Pellas, 2014). The aim of this case study was to (a) explore the perceptions of metacognitive development in undergraduate female students pursuing online learning, (b) identify the resources employed in online coursework perceived as most favorable to developing metacognition, and (c) examine the perceived value of interpersonal relationships established online for metacognitive development.

Expanding the focus from one individual to a larger yet specific entity of female students completing online undergraduate coursework provides a more comprehensive illustration of perceptions of metacognitive development (Creswell & Poth, 2018). The online learning environment presents disruptions to the natural learning process, as the medium of delivery inevitably impacts the communication process for all involved (Ekwunife-Orakwue & Teng, 2014). In particular, the “psychological and communications space created by the separation of learners and instructors potentially impacts the performance of students” (Moore, 1997, p. 22). This theory of transactional distance acknowledges the potential for confusion, tension or disengagement with the learning process, as students and instructors alike must work to overcome the barriers preventing synergistic relationships (Ekwunife-Orakwue & Teng, 2014). One of these

barriers is an inability to truly feel comfortable within the online domain, as identifying their roles, interacting with peers and working to understand expectations takes more intentional and less-assuming effort than a traditional classroom (Dockter, 2016).

While learning experiences vary, prior research affirms female performance trends in online education (Kizilcec et al., 2017; Pellas, 2014). In spite of the challenges presented by isolation, reduced instructor feedback, high pressure deadlines, and personal affairs interfering with online learning concerns (Lourens, 2014; Richardson et al., 2017; Symeonides & Child, 2015); female students maintain higher academic performance scores than their male counterparts, enjoy a higher sense of academic control, and experience increased satisfaction when employing metacognitive strategies such as self-regulation, self-assessment, and reliance on peer evaluation and feedback (Lundberg & Sheridan, 2015; Page & Kulick, 2016; Rubin et al., 2018; Song et al., 2015). The crossover application of these skills in professional and personal pursuits warrants an in depth understanding of their development at the academic level.

Research recognizes the importance of deep learning theory to fuel metacognitive development, yet the crucial components of environment within this theory allow for a more expansive theoretical framework incorporating identity and community as additional necessary elements (Garrison & Akyol, 2015; Hayes et al., 2015; Howie & Bagnal, 2013; Khodabandelou et al., 2015). Research reveals student age as an influencing factor in developing deep learning, but age had little effect on identity and community collaboration (Alliprandini et al., 2015; Du et al., 2016; Lake & Boyd, 2015). Gender, however, is revealed as an influencing factor in both deep learning and identity relevance, driving the focus of this case study toward female learners between the ages of 18–24 (Lake & Boyd, 2015; Lee & Choi, 2017).

Creswell and Poth (2018) advocated the use of a case study to “empower individuals to share their stories” (p. 45), and by narrowing the focus to female students pursuing online

coursework, this study offers direct insight into a disadvantaged population known for having its voice silenced (Creswell & Poth, 2018; Lourens, 2014; Sullivan, 2002). This chapter will outline the methodology for the design of the study and include the decisions for sampling, instrumentation, data collection, and analysis. Limitations and validations will be revealed, in addition to an overview of the ethical issues pertaining to this study. This chapter will reveal a process which not only aligns with the research questions but is confidently defended through documentation and logical design.

### **Research Questions**

Under a conceptual framework advocating for a combined deep learning approach with a significant reliance on identity and community to fully engage female students and their metacognitive potential, this study focused on online learning components influencing female perceptions of metacognitive development. Although this study was guided by a primary question, two additional questions provided opportunity for an embedded approach to discovery of emergent themes related to metacognitive development within the online learning environment.

Three research questions guided the focus of this study.

RQ<sub>1</sub>: How do female students perceive their metacognitive development when engaged in the online learning environment?

RQ<sub>2</sub>: How are the interpersonal relationships established in the online learning environment perceived as useful by female students for metacognitive development?

RQ<sub>3</sub>: What online course components are perceived as most influential for their metacognitive development by female students?

## **Purpose of the Research Study**

The complex nature of metacognitive development in an online learning environment was of great interest in this study, with an explicit purpose to help the researcher understand the female perception of this process. This study also sought to identify which course components females perceive as most influential for their metacognitive development. Research maintains metacognitive awareness is influential in creating personal strategies to navigate the academic environment, and directing attention to these personal experiences exposes either the success or failure of online learning environments to develop metacognition in female students (Creswell & Poth, 2018; Hayes et al., 2015; Oz, 2016). This study showcases multiple perspectives of the online learning experience, but also frames it within the context of metacognitive strategies which research identifies as common amongst female learners.

## **Learning Components**

Online learning requires discipline and commitment, and metacognition utilizes self-regulation to achieve satisfactory student engagement in spite of adverse situations (Kizilcec et al., 2017; Pellas, 2014). Through numerous research studies, female students are shown to maintain high levels of course and peer engagement when self-regulatory strategies assist them in navigating challenges of limited feedback, social stereotypes, and assignment strain (Cho & Shen, 2013; Sawhney & Bansal, 2015; You & Kang, 2014). This study provided insight into the specific elements of online learning that require the use of self-regulatory strategies, and the overall reception of female students to these elements.

## Learning Identity

The use of metacognitive strategies such as self-regulation mirrors the behaviors and results of students employing deep learning theories, but beyond the scope of higher order critical thinking skills is the necessity of a favorable learning environment to sustain deep learning (Biggs, 1987; Howie & Bagnal, 2013; Lee & Choi, 2017). For the female learner, online elements of identity and community have the potential to impact student perception of a favorable learning environment (Bandura, 1977; Du et al., 2016; Garrison & Akyol, 2015). A favorable perception of the learning environment increases the likelihood of student engagement and use of metacognition, which promotes the potential for positive outcomes (Pellas, 2014; Richardson et al., 2017). Favorable outcomes increase motivation to further engage with the academic process, extending the favorable perception of the learning environment (Richardson et al., 2017). This process is displayed in Figure 1. This study sought to account for the interpersonal relationships encountered in the online learning environment and the resulting impact on metacognitive development in female students.

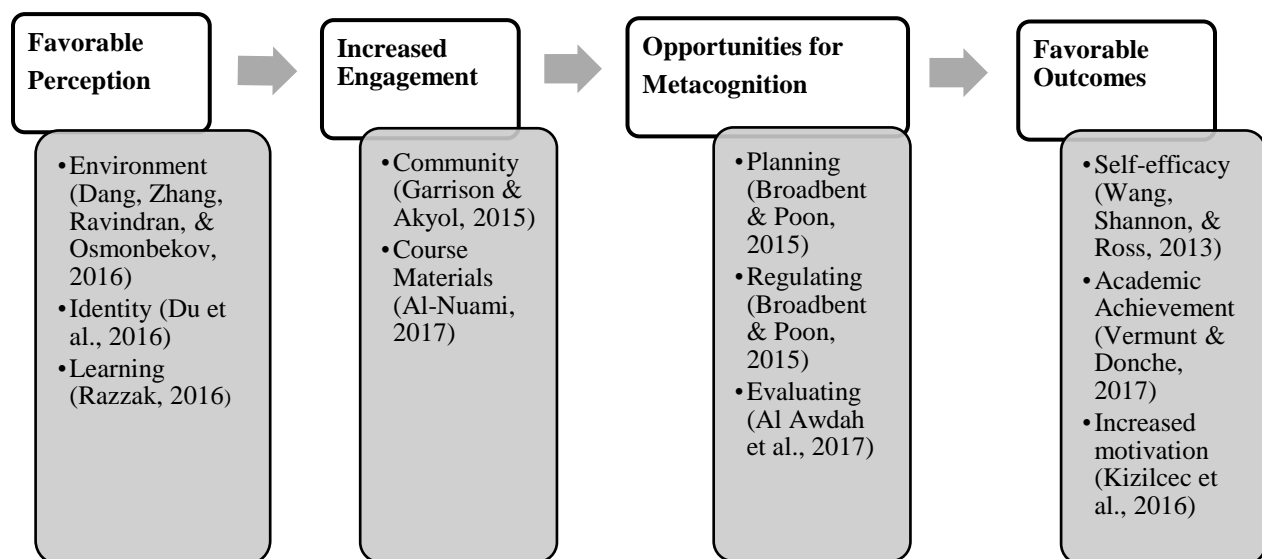


Figure 1. Influence of perception.

## **Design of the Research Study**

A collective case study research approach provided a focus on the dynamics guiding female student experiences in online learning while peering through the lens of contemporary events (Yin, 2018). Qualitative research is most revealing when elements of individual experience and their environment collide to formulate a foundational perspective on a particular phenomenon (Yin, 2018). Creswell (2018) authenticates the individual experiences within a social environment as a construct of meaning. Case study research is an extensive review of a phenomenon within a real-life context, using how and why questioning to direct focused attention on an individual's constructs for exploration and explanation within their environment (Yin, 2018). Using more than one case to further understanding, as was the design of this research study, was an attempt to reveal generalizable findings which more fully inform the academic community on metacognitive development in female students taking courses online (Yin, 2018).

Formal research in female learning experiences online often pursues answers to the impact of metacognition on education or how female learners implement metacognitive strategies (Abdellah, 2015; Kizilcec et al., 2017; Pellas, 2014). Very little data are available concerning the female perception of metacognition as an academic lifeline throughout their online journey. Yin (2018) advocates for an agenda-free exploration of the research topic, with no pre-established expectation concerning outcomes. The case study process must flow organically, providing the clearest real-world perspective possible (Yin, 2018). While the study of female learners in online coursework is not new, choosing to narrow the focus, as well as establish parameters for potential participants, presented a unique sample and the possibility of illuminating aspects of metacognitive development not previously exposed (Creswell & Poth, 2018). This did not present an agenda for the research study, but a more tailored approach to revealing emergent themes.

Qualitative research designs assume that rich data are best captured through the exchanges that take place between researcher and participant in a natural and real-world context (Bloomberg & Volpe, 2016). With understanding as a primary objective of data collection, the researcher must provide a variety of supporting evidence to establish the broad scope of experience but with details specific to an individual participant (Bloomberg & Volpe, 2016). While the guidelines for types of data inclusion are not rigid, the strength of research findings are quite often hinged upon the types of data collected and the manner in which it was done (Bloomberg & Volpe, 2016; Creswell & Poth, 2018). Questions of validity can be laid to rest with adequate consideration and practice for triangulation (Merriam & Tisdell, 2016). Multiple methods of data collection is a strategy for cross-checking data and confirming or comparing findings between all the elements (Merriam & Tisdell, 2016). Such a strategy strengthens the credibility of the research study (Bloomberg & Volpe, 2016; Merriam & Tisdell, 2016).

### **Site Description, Research Population, and Sampling Method**

The research site and population inform the data with regard to participant selection. Each aspect was carefully chosen in response the literature review. In this section, the sampling method will be revealed, in addition to the elements of the research site that make it an ideal location for the study.

#### **Site Description**

The population used for recruitment was taken from a community college located in rural Georgia. For the duration of the study, pseudonyms were used for site identity, collegiate association, and student participants. The Haysville campus location for Greener Valley Technical College (GVTC) is a part of a larger technical college system within the state that advocates for seamless transitions between both community colleges and 4-year institutions belonging to the college system. GVTC educates approximately 16,000 students in an academic year, with over half

of the student population being female. The ethnicity of the student body is divided into approximately 75% White, 13% Hispanic, 8% Black, 2% Multi-Racial, and less than 1% American Indian, Asian, and Hawaiian (TCSG, 2018). The age division of students in the GVTC system reveals approximately 18% of the students are under 19, about 26% are between 19–24, close to 45% are 25–44, and almost 11% are over the age of 45 (TCSG, 2018).

Approximately 2,500 of these students attend the Haysville campus, and an average of 4,600 students within the entire GVTC system took a course online during the 2017 academic year (TCGS, 2018). In an effort to fulfill their mission of seamless transitions and accessibility for its rural residents, GVTC has a thriving distance learning program. Courses offered online encompass diploma and associate degree programs and span several academic disciplines in business and computer information, health technologies, nursing, industrial technologies, and public service technologies (TCSG, 2018). Statistics indicate 70% of attendees are enrolled on a part-time schedule (TCSG, 2018).

### **Research Population**

This case study relied on a research population of female students who successfully completed at least two, but no more than five, online courses at a 2-year college with a minimum grade of a “D.” The parameters of the study allowed for a minimum passing grade of a completed course (such as a “D”) to present the opportunity for engaging with participants more holistically in their consideration of metacognition. The metacognitive process involves self-reflection and assessment and incorporates strategic and concerted efforts for application or alteration in future pursuits (Cho & Shen, 2013; Lehmann et al., 2014; Sawhney & Bansal, 2015). The choice to include a young demographic and course grades which left room for improvement firmly supported the research interest in the use of online learning to develop metacognitive skills. While the participants fell within an age bracket of 18–24, the participants held varying levels of



employment experience and did not all share the same degree program. Online coursework offered the flexibility the participants of a rural community needed in order to complete their degree.

### **Sampling Method**

Prior findings from the literature review informed the decision for sampling in this case study. Metacognitive awareness and strategy implementation was often more noticeable with older female students, as data supports theories of maturity and collegiate experience as explanations for metacognitive success (Alliprandini et al., 2015; Dang et al., 2016; Lake & Boyd, 2015). Additionally, the greater the number of online courses taken, the higher the perception of self-efficacy according to self-reporting female students (Javed & Tariq, 2016; Pellas, 2014; Rubin et al., 2018). Research data were less available for students still early on in their academic years and under the age of 30. The qualitative gap in literature aided in establishing the boundaries for this case study (Creswell & Poth, 2018).

Relying on homogenous purposive sampling allowed the researcher to deeply engage with the area of focus, while also ensuring participants had guaranteed experience with the topic (Creswell & Poth, 2018; Yin, 2018). With this sampling, participants were chosen due to their shared characteristics which coincide with the area of research interest (Bloomberg & Volpe, 2016; Creswell & Poth, 2018). Trends in age and experience developed the interest in sampling female community college students between the ages of 18 and 24 who had a minimum exposure of two online courses in undergraduate work successfully completed but no more than five courses completed.

Given the age division for the study, the limitation for courses completed included perspectives from students who were early on in their college experience. It also eliminated those who may have fallen into research patterns that predict continued enrollment (Hung, 2016). Students with higher levels of motivation, either through prior successful online course completion

or the demands of core program requirements, are more apt to complete subsequent online coursework (Hung, 2016; Wang et al., 2013).

The study sought to recruit between eight and 15 participants, in order to have sufficient opportunity to classify case themes and perform cross-case theme analysis (Creswell & Poth, 2018). A total of 11 participants were recruited, creating a scenario that considered saturation, replication and an expectation of reasonable exposure of the phenomenon (Creswell & Poth, 2018; Merriam & Tisdell, 2016; Yin, 2018). Through a strategy of maximum variation, the study provided significant range of application, as the diversity of experiences validated emergent patterns (Merriam & Tisdell, 2016). While the selection criteria established boundaries, varying factors of age, course of study, academic achievement, experience, program major and time of experience contributed to a wider range of characteristics that influenced participant experience (Bloomberg & Volpe, 2016; Creswell & Poth, 2018).

Prior to conducting any research at the GVTC site, the school's administrative body requested a meeting with the researcher to understand the purpose of the study and means of recruitment and research. Initial requests for permission had petitioned for access to student advisors and instructors for registration records to assist with narrowing down potential recruits, but this was denied by the hosting institution. The administration did grant access to the use of their online student networking sites, as well as the freedom to make individual contact in public areas on the Haysville campus. Participants were recruited through personal contact, announcements issued on the school's social network sites and printed handouts. The marketing team for GVCT was instrumental in distributing the recruiting announcement and follow-up information over their various student networking sites. Numerous campus visits were scheduled and personal contact with the student body was established in campus common areas such as the library, student centers, cafeteria and hallways. For those who responded with interest, contact

information was exchanged. For all inquiries conducted through the social networking sites, the researcher initiated email contact to address the potential participant.

Participants were fully informed concerning the research study, and in conjunction with the purposeful sampling process conducted, asked to provide written consent prior to the start of the study as well as validate their eligibility (Creswell & Poth, 2018). Ethical considerations for participants included a concern for participant well-being and conducting the study in way that minimized potential harm to those who participated, but also regarded accuracy of the data received by authenticating participants (Bloomberg & Volpe, 2016; Yin, 2018). Students were assured of the confidentiality of their responses, as students were assigned a pseudonym to be used in the findings (Bloomberg & Volpe, 2016; Merriam & Tisdell, 2016). Participants were informed that their experiences would be shared without compromising their identity, as well as the voluntary nature of their participation (Creswell & Poth, 2018). Prior to beginning the study, participants were given reassurance that there would be no negative repercussions should they choose to remove themselves from the study (Bloomberg & Volpe, 2016; Creswell & Poth, 2018; Yin, 2018).

Two months after recruiting efforts were underway, it became necessary to re-evaluate the effectiveness of the recruiting process. While potential respondents indicated excitement and willingness, there was a significant lack of follow-through for the majority of respondents. Many offered excuses as to continued interest, yet many others simply refused to return contact whether through phone or email. The school administration had warned of a decrease in campus foot-traffic over the summer months, and after careful consideration, it was decided that an incentive may assist with motivating potential participants to complete all aspects of the research study in a timely manner. A self-imposed deadline was established, and permission was granted by the IRB to offer a \$20 Amazon eGift card to eligible participants who completed all portions of the study

before the outlined deadline. Prior to the incentive, eight participants had completed the process. The use of the incentive brought in three additional participants, but all who completed the study were issued the eGift card.

### **Instrumentation and Data Collection**

An essential characteristic of qualitative research is extensive engagement with the elements of setting, participants and data (Bloomberg & Volpe, 2016). To fully experience participants in their social world requires instrumentation that accounts for these elements without inadvertently informing the data through the researcher's own suppositions (Bloomberg & Volpe, 2016). True reflexivity is required, as researchers must be aware of how their preconceptions may compromise the data collection process from location to structure or line of questioning (Bloomberg & Volpe, 2016). As such, the instrumentation was substantiated by the conceptual framework guiding the study and explicitly designed to allow the data to inform the study rather than confirm the assumptions of the researcher (Bloomberg & Volpe, 2016; Creswell & Poth, 2018).

Three types of instrumentation were used in this research study, as multiple sources of data allowed for triangulation to corroborate the findings (Yin, 2018). The use of interviews, documents and artifacts as data sources was an intentional strategy to illuminate different aspects of the complex phenomenon of metacognitive development in online learning (Bloomberg & Volpe, 2016). Using more than one source of data showed consideration for the complexity and entirety of a participant's perspective and experience (Bloomberg & Volpe, 2016). The inclusion of various sources of evidence strengthen this case study design, as multiple sources of relevant data develop an in-depth look at a metacognition within a real-world context (Yin, 2018).

### **Pilot Study**

Prior to conducting research at the host site and while waiting on final IRB approval, a pilot study was conducted. Pilot studies are often used to refine the process and procedure for data

collection, creating an opportunity for a more seamless and effective case study (Bloomberg & Volpe, 2016; Yin, 2018). The intentions of the pilot study were not to duplicate experiences or outcomes of the intended research study, but to serve as a formative procedure for constructing and evaluating relevant interview questions and protocol. Although the interview process was a semistructured format, forming follow-up questions and probing for additional information could only be effectively accomplished through prior preparation (Rubin & Rubin, 2012). In addition, the opportunity to probe pilot study transcripts for areas of missed opportunities in areas of follow-up, contradiction or further clarification became an instructive means of preparation for the actual research study (Merriam & Tisdell, 2016). The pilot study was used to advise on the order of questioning, wording and areas of focus that detracted from the research topic (Merriam & Tisdell, 2016).

The participants of the pilot study included three females who had taken at least three online courses and ranged in age from 27 to 36. The pilot study was an informal opportunity to not only assess the interviewing skills of the researcher but also provide insight into the clarity of the scripted questions. The pilot study interviews were also recorded, testing the quality of the recording devices for transcription purposes. The audio files were re-played through the researcher's computer, but only one interview was transcribed. This interview was subsequently used for coding practice. In addition to their interview answers, the participants offered insight and critiques concerning the researcher's abilities and areas that need improvement. Self-assessment also occurred, as the researcher took notes and evaluated strengths and weaknesses throughout each pilot interview.

## **Interviews**

Interviews are a foundational research method within case study work, and through them, the researcher is able to explore a variety of perspectives from a diverse group of participants

within the boundaries of the research topic (Bartlett & Vavrus, 2017; Creswell & Poth, 2018). It is these participant expressions of personal thought and experience which offer rich descriptive data to the study (Creswell & Poth, 2018). Most commonly, the interview is a person-to-person encounter, where a conversation occurs but with a specified purpose: to gather information that cannot be easily observed (Merriam & Tisdell, 2016). This information encompasses feelings, perceptions, intentions and an individual's methods of compartmentalizing an experience or environment (Merriam & Tisdell, 2016). The interview became a primary means of collecting data to more fully explore female perceptions of metacognition within the online learning environment.

The data desired from the interview informed how to structure the interview itself. For this study, a semistructured interview process was utilized. A semistructured interview confined the information to a set of predetermined questions yet offered flexibility with open-ended questions and optional in-depth exploration of the participant's overall experience (Bartlett & Vavrus, 2017; Yin, 2018). The desire to uncover specific information guided a more structured set of questioning within the interview, but additional inquiries offered liberty to explore areas of interest that may have arisen from the responses (Merriam & Tisdell, 2016). The semistructured approach of questioning provided a more organic response to the emerging perceptions of the participants and fostered a more comprehensive accumulation of data (Bartlett & Vavrus, 2017; Merriam & Tisdell, 2016).

Students who responded to the requests for participation were contacted to provide an overview of the study and to initiate the request for an interview. Options to complete the interview included an in-person meeting at a time and location of their choosing, or through a real-time web-based system at their convenience. The use of a synchronous interview allowed the researcher and participant to develop rapport and capitalize on verbal cues present during the exchange (Merriam & Tisdell, 2016). Providing the participants with two options for completing

the interview also took into account challenges of time, distance, convenience and student ease during the interview process (Merriam & Tisdell, 2016; Rubin & Rubin, 2012).

Potential participants were free to communicate with the researcher through phone calls, texts, or emails, but an email address was required in order to provide the informative handout out, copy of the consent form and journal entry instructions. Interviews opportunities were scheduled by the participant, with all but one opting to complete the interview via Facetime. The other participant scheduled a face-to-face interview, which was conducted outdoors at a local coffee shop. This location was of their choosing.

The interview began with the collection of descriptive demographics. Participants were asked to provide information such age, gender, number of online courses taken, academic major, etc. The interviews then moved into the scripted line of questioning concerning their online learning experience and metacognitive development process. The semistructured format allowed participants to clarify, expand and delve deeper into areas of response, while also permitting the researcher to adapt to new areas of exploration with additional or rephrased questions (see Appendix B).

After the first two interviews were conducted, it was clear the participants were unable to grasp the definition of metacognition. The participants required clarification for the term, and a concise, written definition was provided during the initial email contact and then reviewed during the interview process (see Appendix C). Being able to offer these details at the beginning of the process and then subsequently during the interview offered a more manageable approach to a difficult topic (Rubin & Rubin, 2012). Without such a foundation of understanding, the step-by-step line of questioning seemed too broadly defined for individuals unfamiliar with the complex process of metacognition. It was necessary to work through these concerns and ensure the reliability of the methodology (Merriam & Tisdell, 2016).

Permission to record the interview was obtained prior to conducting the interview but confirmed during the opening remarks of the interview. The participants were also advised of their freedom to discontinue the process at any time or not answer any questions they did not wish to. As a fail-safe, each interview was recorded by two digital MP3 recorders that converted recordings into an audio file played back through the researcher's computer. These files were used for transcription, which was completed by the researcher.

### **Member Checking**

The use of member checking is one component of internal validity, as it authenticates the information or emergent themes uncovered by the researcher (Merriam & Tisdell, 2016; Bloomberg & Volpe, 2016). Within 48 hours of their interview, participants received an electronic copy of the transcript with a request that they review the contents for accuracy and offer clarifying responses if they felt any were needed. One participant corrected her grammatical errors, but no other changes were requested from any of the participants.

### **Personal Documents**

To support the research study, personal documents were gathered to more fully address the data exposed through the interview process (Merriam & Tisdell, 2016). Submitted either through a physical or online medium, these documents provided a convenient method for researchers to gather data, as it allowed for both specific and broad support of the research question (Yin, 2018). This research study sought to utilize personal journal entries supporting perceptions of course element value and student engagement. Text-based documents, in the form of three entries discussing their positive experiences, negative encounters and overall perception of their research involvement, were requested from the participants.



## **Artifacts**

Physical artifacts can offer compelling support for participant behavior or perspective (Merriam & Tisdell, 2016; Yin, 2018). With documents offering a subjective personal perspective, the use of artifacts adds a component of observation to reveal habitual patterns of engagement or behaviors (Bloomberg & Volpe, 2016). Participants received a list of suggested artifacts to bring to their interview in the informative handout that was emailed, but the final choice was left to the discretion of the participant. Suggestions for items included printed materials such as course syllabi, study guides, notes, awards, report cards, supplemental resources, or student/peer/instructor communication. These options could provide a first-hand account of the experience, but participants were given the liberty to explore and present additional artifacts they deemed relevant to the research topic and experience (Bloomberg & Volpe, 2016; Merriam & Tisdell, 2016). For the participants who chose to conduct the interview over Facetime, it was requested they share a photo of their artifact by email or text to the researcher or have the item in hand during that portion of the interview.

## **Data Security**

A foremost consideration of the researcher was the protection of the research participants and study data throughout the research process (Creswell & Poth, 2018; Yin, 2018). In order to protect confidentiality of the data and study respondents prior to the interview and during the time following, several security measures were established.

- No identifying information was recorded. A pseudonym was used on all data documents.
- Physical copies of study data received and recorded were stored in a locked safe at the residence of the researcher. The numeric key code was only known by the researcher, and access to these documents was restricted to the researcher alone.

- Electronic data—such as the transcriptions, notes, or scanned materials—was be stored on the personal laptop of the researcher, which was protected with a strong password. A backup copy of the data was stored on a flash drive and housed in the locked safe.
- The audio recordings of the interview were immediately deleted from the MP3 recorders immediately after conversion and transfer to the researcher’s computer.
- All audio recordings were destroyed immediately after the interview transcription had been approved by the participant through the member checking process. Three years after the completion of the study, all remaining data and documents will be deleted, shredded, or properly destroyed.

### **Identification of Attributes**

This study focused on female students between the ages of 18–24 and key aspects of their metacognitive development throughout the online learning experience. In keeping with empirical findings concerning female student engagement and academic performance, attributes of self-regulation, self-efficacy, perception of the environment and identity were explored to more fully identify aspects of the learning environment which support or detract from metacognitive development (Hamid et al., 2015; Kizilcec et al., 2017; Rubin et al., 2018). These areas of focus, combined with the sampling criteria, established a case study unique in its exploration of metacognition and the online learning experience in college females.

### **Data Analysis**

The process of data analysis began by carefully establishing a plan of action to make sense of the data accumulated during the collection stage (Bloomberg & Volpe, 2016). This undertaking of progressing information and experience into meaningful interpretation originated with dividing the data into workable and relevant categories (Bloomberg & Volpe, 2016). It involved more than constructing assumptions about the meaning of the data; it was a thorough search for promising

concepts, patterns and insight (Merriam & Tisdell, 2016; Yin, 2018). The boundaries established within the contextual framework established the initial foundation for extracting relevant information, and the coding process worked to unearth themes relevant to the framework's application in personal experience (Bloomberg & Volpe, 2016). Through multiple transcript readings and review of the evidence derived from artifacts and journal entries, a familiarity with the data led to an exhaustive coding experience (Saldaña, 2016).

### **A Priori Coding**

During the interview process, several shared themes became evident amongst participants. While not exhaustive in nature, these initial themes were demonstrations of metacognitive strategies and expressions that had been revealed during the literature review and incorporated into the conceptual framework. With the semistructured interview questions designed to elicit such responses, it was determined that several of the key attributed of metacognitive development could be used a starting point for the coding process (Merriam & Tisdell, 2016). A first cycle coding methods using a priori codes was established, grounded in supporting literature and compatible with the conceptual framework devised to guide the stud (Saldaña, 2016). A line by line analysis was conducted, and data were distributed amongst the 10 a priori codes established. These codes were not comprehensive, and portions of the data were assigned to relative categories. Contextual influence was not considered during this initial coding cycle, as these codes were to undergo several additional coding cycles before including contextual elements for emergent themes.

### **Inductive Coding**

The nature of the a priori codes and the division of data led to descriptive coding patterns for the first few attempts at making sense of the data. Similar key words and phrases were initially used to continue sorting the data into relevant categories, but it became evident that these themes failed to expose the deeper truths behind the participant experiences. The recurrence of key words

or similar experiences led the researcher to look more inductively at the data, as defined by context and situational elements. This led to new codes that would form frames for analysis and present a more holistic understanding of the emerging themes (Saldaña, 2016). After multiple coding cycles, the data were reduced to themes that spoke to nature of participant experience in light of the conceptual framework. Each participant and form of data underwent this coding process, and the results were then compared against each other and coded for a more targeted understanding of the phenomenon (Merriam & Tisdell, 2016; Yin, 2018). The concluding themes and subthemes became statements of metacognitive development as viewed through the experiences of the participants.

**Saturation.** The analysis process was not complete until a point of saturation was determined. In this stage, no new information, understandings or insights are gained (Merriam & Tisdell, 2016; Saldaña, 2016). Meticulous documentation, through spreadsheets and notes, as well as repeated in-depth review of the data enabled an accurate assessment of saturation (Saldaña, 2016). Constant comparison between sections of text and notations of similarities and differences assisted with reaching the point of saturation (Bloomberg & Volpe, 2016).

### **Delimitations and Limitations of the Research Design**

A research study is limited by certain elements that are both designed by the researcher and inherent to the research parameters. This section will identify the restrictions imposed by the researcher and those that were characteristic of a qualitative study. These restrictions are presented as the delimitations and limitations.

#### **Delimitations**

By initially choosing to restrict certain design elements at the outset of the research study, delimitations were established to clearly define boundaries and reveal the narrow scope of the study (Bloomberg & Volpe, 2016). The interest in obtaining female perceptions of a personal

experience with metacognitive development during online education provided initial exclusionary choices with regard to gender, type of educational experience, and study design. A case study was selected to holistically explore the experiences and perceptions of female students (Yin, 2018). The literature review revealed age to be an influential factor in both metacognitive development and academic performance (Alliprandini et al., 2015; Lake & Boyd, 2015), yet a noticeable gap in studies specifically examining college females ages 18–30 provided the foundation for establishing an age range of 18–24 for potential participants. In an effort to capitalize on the formative college years of younger females and explore foundational metacognitive development, the study limited participants to females who had completed a minimum of two courses to a maximum of five courses completed with a grade of “D” or higher (Hung, 2016; Oz, 2016; Rubin et al., 2018). In addition, the study was also limited to one community college campus. These delimitating choices reinforce the conception boundaries established for the research study (Bloomberg & Volpe, 2016).

## **Limitations**

Even with the best of intentions and the most scrupulous attention to detail, research studies are exposed to characteristics which may weaken the validity of the study. These are noted as limitations (Bloomberg & Volpe, 2016; Creswell & Poth, 2013). By acknowledging primary limitations, a researcher can more reliably ensure critical thought towards the research question, identify areas of weakness and potential bias, expose potential areas for further study, and confirm the appropriateness of the methodology selected (Bloomberge & Volpe, 2016; Merriam & Tisdell, 2016, Yin, 2018).

Notable limitations for this study were incurred through sample size. While a favorable response was received, the use of an incentive to attract participants may have presented undue influence upon student participations, and the resulting participants may not wholly represent the

selected study demographic. Additionally, case study design elements may reflect subjective elements consistent only with the participants' individual experience or lack of it. Truthfulness and consistency are necessary for accurate data analysis (Creswell & Poth, 2018; Merriam & Tisdell, 2016). Participant expressions of exaggeration or misunderstanding throughout the process may present faulty data (Merriam & Tisdell, 2016).

Limitations were also present in data analysis. Data analysis and coding could have been inaccurate or incomplete themes were left unresolved through researcher error with question design, interview experience, coding techniques or analytic strategy (Yin, 2018). Personal bias, predispositions, assumptions, and experiences on the account of the researcher were taken into account and preventative steps taken to limit entrance in the study process and resulting analysis (Bloomberg & Volpe, 2016; Creswell & Poth, 2018). The use of a priori coding worked to eliminate an initial analysis conducted through researcher bias (Saldaña, 2016).

Carefully crafting interview questions, recording and accurately transcribing participant responses, allowing for member checking, and relying on experienced instruction from resources and professors are all steps that were taken to address the limitations presented concerning accuracy of the data. The pilot study attempted to address the inexperience of the researcher with regard to interviewing, and the adjustment made concerning the interview process reflect transparency and a willingness to confront potential concerns. Acknowledging the limitations presented by sample size, replication, and transferability concerning the findings provide the researcher with knowledge of potential areas of weakness concerning the study, but by doing so, create a stronger need for additional research studies to corroborate potential findings (Bloomberg & Volpe, 2016).

## **Validation**

The qualitative research process strives for understanding human experiences through an investigation of personal accounts and events, and those wishing to trust the results of potentially subjective data and individual assumptions of reality must have confidence in the probability of successful application (Creswell & Poth, 2018; Merriam & Tisdell, 2016). Validation becomes a process for accepting the accuracy of the phenomenon being described; these are the elements supporting the trustworthiness and reliability of the entire process and results (Bloomberg & Volpe, 2016; Creswell & Poth, 2018).

## **Member Checking**

Solo coders often rely on the process of member checking to validate findings throughout the data collection and analysis phase of a research study (Saldaña, 2016). As a critical component for establishing credibility, the emergent themes and codes are presented to the participants for validation and authentication (Creswell & Poth, 2018). This process originated with the confirmation of transcript accuracy following their interviews and continued with the involvement of participants in an examination of the data. Participants received a copy of the findings and interpretations and were asked to provide feedback concerning how well the analysis reflected their experience (Creswell & Poth, 2018). Participants were informed of the liberty to add, alter or clarify themes or findings they felt misrepresented their situation, thoughts or experiences (Creswell & Poth, 2018; Merriam & Tisdell, 2016). All participants responded favorably to the findings and declined to edit or alter results. Through these phases of member checking, credibility for the interpretation and findings of the data was established (Bloomberg & Volpe, 2016).

## **Triangulation**

The use of multiple sources of evidence added strength to the findings of a case study (Yin, 2018). Having multiple sources enables a researcher to conduct an in-depth review within a more

holistic real-world context (Yin, 2018). As analysis is conducted, an opportunity to develop “converging lines of inquiry” occurs (p. 128). Evidence from differing sources may corroborate primary case study findings, creating data triangulation (Bloomberg & Volpe, 2016; Yin, 2018). The use of interviews, documents and artifacts were the three type of data used for triangulation in this case study, and these sources strengthened the credibility and validity of the case findings “by countering the concern that a study’s findings are simply an artifact of a single method” (Patton, 2015, as cited in Merriam & Tisdell, 2016, p. 245).

### **Trustworthiness**

To maintain the validity and reliability of the research study and its findings, careful thought towards trustworthiness considers credibility, dependability and transferability (Bloomberg & Volpe, 2016; Merriam & Tisdell, 2016). This research study looked to establish trustworthiness through methodical and organized data collection and relaying the findings through accurate and descriptive reporting (Bloomberg & Volpe, 2016; Creswell & Poth, 2018). The use of member checking and triangulation established credibility, in addition to the providing transparency with potential researcher bias, acknowledging limitations and presenting any negative findings (Creswell & Poth, 2018). Dependability was achieved by attentively following study procedures, methodically documenting and detailing the research process, and thoroughly presenting the findings (Bloomberg & Volpe, 2016). Transferability does not indicate the ability of this study to be replicated, but the potential fit of a similar process in a different context (Bloomberg & Volpe, 2016).

### **Dependability**

By delivering a concise and well-documented account of the research process, a researcher can build confidence in the method of research selected and the overall results (Merriam & Tisdell, 2016). Carefully maintaining an “audit trail” with data collection and analysis is a fundamental



step in establishing dependability (Bloomberg & Volpe, 2016; Merriam & Tisdell, 2016). Record keeping occurred through both hard copy and digital formats, providing an opportunity for cross-checking notes or data findings. This became a valuable tool for the researcher, but it also provides other researchers an opportunity to review the data as well (Bloomberg & Volpe, 2016). The use of triangulation served as a primary constraint for dependability (Merriam & Tisdell, 2016).

### **Transferability**

By disclosing significant and rich details about the study, readers are presented with the most realistic picture of the phenomenon and best informed on potential application elsewhere (Merriam & Tisdell, 2016). It is through the descriptive account presented that readers are able to assess the similarities or differences between other settings and potentially transfer the findings if shared characteristics are determined (Creswell & Poth, 2018). Consideration for contextual elements throughout the data collection and analysis process provides insight into areas of physical, environmental or activity descriptors, further supporting a degree of shared experience (Bloomberg & Volpe, 2016; Creswell & Poth, 2018).

### **Expected Findings**

This study sought to understand female perceptions of their online experiences, with regard to how metacognitive skills are developed. Patterns of engagement and achievement with females in higher education reveal a consistency of performance when metacognitive skills are employed (Abdellah, 2015; Broadbent & Poon, 2015). Most notably, self-regulatory activities such as planning, monitoring, feedback and evaluation create the greatest impact (Hayes et al., 2015; Kizilcec et al., 2017; Pellas, 2014). Furthermore, students who perceive the learning environment as favorable agree on components of identity, community and perceived learning as necessary factors for sustaining engagement and motivation (Garrison & Akyol, 2015; You & Kang, 2014). As female students intertwine their perceptions, needs and metacognitive skills within the

academic environment, the desired result increases scholastic success through GPA's, course completion and matriculation (Lourens, 2014; Rubin et al., 2018; Wang et al., 2013).

In light of these patterns, the researcher expected to receive a deeper understanding of the female experience with online education. From the diversity present within their academic encounters, there was an expectation of insight into the metacognitive impact or relevance of course development, assignment resources and sense of community established through communication and identity with their peers. It was expected that the data would reveal the degree of metacognitive focus female students display within their early college years, as well as their motivations or struggles for continued engagement. It was anticipated that the data would generate an awareness of the strengths and weaknesses online education presents for females and their metacognitive development.

### **Ethical Considerations**

In order to comply with moral obligations, it was imperative that this study fully adhere to ethical standards to minimize any potential harm to participants (Bloomberg & Volpe, 2016; Creswell & Poth, 2018). For the protection of those involved in this study, reflections on ethical considerations identified areas of sensitivity or concern (Creswell & Poth, 2018, Yin, 2018). The approval of the institutional review board established accountability for the protective measures taken within the research process (Yin, 2018). General guidance from the professional and experienced insight of my dissertation chair and committee informed my actions, attentively following the research plan and supporting all decision-making with extensive documentation maintained the accountability to ethical considerations (Bloomberg & Volpe, 2016; Yin, 2018).

### **Researcher's Position**

Within any study, the threat of researcher bias must be addressed to prevent distortion of the phenomenon and the accuracy of research results (Creswell & Poth, 2018; Yin, 2018). While

there will be some sense of the values and ethics maintained as important to the researcher inferred from the procedures established, researcher bias can be detected through mishandling participant data or misconstrued data analysis (Merriam & Tisdell, 2016). The audit trail was designed to expose and prevent such a scenario, as was the use of a priori codes to initiate the coding process. The nature of exploring experience through personal interviews, documents and artifacts also suppressed the insertion of researcher bias, as triangulation was used to reveal prevalent themes from the multiple forms of data (Merriam & Tisdell, 2016). Furthermore, there was no direct connection to the participants or their school experiences. The researcher did have prior exposure to the online learning environment at the institution hosting the research study, but multiple years had elapsed since experiencing a course through the campus.

### **Ethical Procedures**

Rigorous methods of procedure and analysis alone do not qualify this study as credible (Merriam & Tisdell, 2016). The entire case study process was designed according to rigorous thinking concerning all elements, from the initial design and the final implementation of ethical procedures (Merriam & Tisdell, 2016). Throughout the discourse on methodology, ethical considerations and proactive countermeasures were revealed. Elements of risks, benefits, informed consent forms and confidentiality are addressed. Participants were fully informed of their voluntary participation, ability to withdraw at any time, options to decline answering questions and freedom to review or alter resulting analysis. All data collected was secured through password protected devices in the sole possession of the researcher and destroyed after an acceptable timeline for study use. The approval of the IRB and leadership staff from the institution hosting the research study, as well as the IRB at Concordia University, further supports the comprehensive nature of procedural steps employed to present an ethically sound case study (Merriam & Tisdell, 2016; Yin, 2018).

## **Summary**

This chapter presented a well-researched process for conducting a case study exploring the perceptions of metacognitive development in female students with online learning experience. The use of semistructured interviews, personal documents and artifacts provided descriptive insight and important details of the individual experience. Methods of coding and the use of triangulation revealed a systematic approach to achieving results with minimal room for researcher bias. Ethical concerns for participant well-being, data security and validity of the study were addressed through careful design and an outline for conduct and procedures recommended by empirical research (Merriam & Tisdell, 2016; Yin. 2018). Each component of the methodology strongly supports the design of the case study and provides foundational answers to the research questions that were explored.

## **Chapter 4: Data Analysis and Results**

This chapter presents a summary of the research sample and the data analysis process. It reviews the methodology used, as well as the literature support for the coding process. It presents a summary of the findings, and it is supported by experiences taken from the participant interviews.

### **Introduction**

Data generated by the United States Census Bureau reveals females between the ages of 18–24 to be the most interested in pursuing higher education, as survey results reveal almost 50% of the 15 million responding females within the age bracket had completed some college or earned an associates' degree (United States Census Bureau, 2017). Past that age, minimal collegiate experience dropped to around 30% of the 111 million females over the age of 25 responding to the census survey, and only 9% of them reporting having earned an associate's degree (United States Census Bureau, 2017). With the prevalence of online courses and colleges, higher education is considerably more accessible to populations traditionally considered marginalized, which include low-income demographics, minority citizens, persons with disabilities and women (Tate et al., 2014). Even with this opportunity, females must still address the challenges of family priorities, employment commitments, location concerns and scheduling when considering their educational prospects (Tate et al., 2014). For females who pursue academic goals, research reveals strong performance and engagement, superior levels of self-efficacy and higher matriculation statistics than their male counterparts (Abdellah, 2015; Sawhney & Bansal, 2015).

Through the use of quantitative data, researchers have theorized a relationship between metacognition and a female's academic success, yet the specific impact of the online environment affecting this relationship has left much to be researched from a quantitative perspective (Al-Nuami, 2017; Archer & Yates, 2017; Dudek & Heiser, 2017; Gutierrez de Blume et al., 2017; Javed & Tariq, 2016; Rubin et al., 2018). Metacognitive skills are not naturally found in all

learners, but increased exposure and awareness amplifies academic engagement and overall potential (Al Awdah et al., 2017). As higher education becomes dependent on the online learning environment for contributing to accessibility, an understanding of the student experience in light of metacognitive development may be key to understanding long-term academic success in populations facing adversity (Dumford & Miller, 2015; Garrison & Akyol, 2015; Rubin et al., 2018).

The guiding research questions of this study sought to understand the female experiences and perspectives concerning metacognitive development within the online learning environment, the methodology was designed to support that aim (Creswell & Poth, 2018). This method of research also addressed a gap in qualitative literature about metacognition in female students. The deeply personal and unique nature of metacognition is best viewed through a research design focused on capturing the detailed sequences of an individual (Yin, 2018). The case study approach was deemed the most accurate for presenting a holistic perspective of the online learning experience and its metacognitive influences (Yin, 2018). The following research questions sought explore the nature of metacognitive development in female engaged with online learning.

RQ<sub>1</sub>: How do female students perceive their metacognitive development when engaged in the online learning environment?

RQ<sub>2</sub>: How are the interpersonal relationships established in the online learning environment perceived as useful by female students for metacognitive development?

RQ<sub>3</sub>: What online course components are perceived as most influential for their metacognitive development by female students?

The aim of a qualitative study is to study a social phenomenon through an exploration of lived experiences (Bloomberg & Volpe, 2016). The more specific use of a case study provides a

bounded and concentrated analysis of descriptive data yielded through personal interaction with research participants (Bloomberg & Volpe, 2016). Multiple methods of data collection increase the breadth of information collected, adding rigor and corroboration to the triangulation process. The validation of data through differing sources and methods offers reliability and trustworthiness (Bloomberg & Volpe, 2016). This chapter defines the sample, reviews the procedures used in methodology and analysis, and presents the findings and analyzed data.

### **Description of the Sample**

A rural community college in Georgia was the study site for the case, with a localized recruiting campaign on a single campus. With approximately 16,000 students enrolled in the entire institution and one-fourth of those enrolled completing at least one online course during the 2017 academic year, the probability of finding enough females qualified to participate in the study seemed high. Approximately 34% of the population fell within the age range of 18–24, and the local campus reported a female population of around 4,800 students. The researcher sought a sample of females between the ages of 18–24 who had completed between 2–5 online courses and earned a grade of “D” or higher.

The use of purposive sampling maintained a focus on the research questions while also ensuring participant experience within the desired context (Yin, 2018). By relying on trends uncovered through the literature review, each requirement was carefully selected to fully address the research purpose while still allowing for diversity with demographic factors, online learning exposure and academic experience (Bloomberg & Volpe, 2016). Recruiting efforts were orchestrated to address these accordingly.

**Recruiting.** The researcher sought to recruit between eight to 15 participants for this study. The hosting institution denied access to faculty contacts and student records for assistance with recruiting efforts, yet allowed for personal contact through student centers, libraries, and common

areas. The institution granted the use of their social media platforms for dissemination of the recruiting announcement, creating an efficient way to target the school's population and attract student attention. Campus visits were also conducted, relying on timeframes when student traffic appeared to be busiest. This included alternating between daytime and evening hours. Access to the campus course schedule helped plan these interactions, as did campus activities like a career fair, food truck day, and registration week. Interested participants were contacted either phone or email, although each potential participant received a copy of all paperwork sent to their email. Students who submitted inquiries through social media platforms received a response encouraging the use of phone or email for communication since documents needed to be exchanged in order to move forward with the process. Protecting a student's identity was of utmost importance throughout the research study, and it began with recruiting methods (Creswell & Poth, 2018).

The recruiting process was arduous, as many of those who declared interest and reported eligibility failed to continue with the research process after receiving the informative handout and copy of the consent form. Initial responses to the school's social media announcement were overwhelmingly positive, yet they had a very low commitment rate. Recruits who portrayed a lasting interest were referrals to the project by a friend or those with whom I had initial face-to-face contact. Snowball sampling became a key feature of the recruiting efforts (Creswell & Poth, 2018).

Time constraints also became a significant factor in evaluating recruiting methods, as school administration cautioned of a significant reduction in student traffic over the summer months. In order to generate additional interest before the summer break, the decision was made to offer a small incentive for qualifying participants. After IRB approval was received, a new recruiting announcement was released offering a \$20 Amazon gift card to those participants who qualified for the study and completed all portions of the research process. Prior to this



announcement, eight participants had completed the study. The use of an incentive brought in three additional participants before the self-imposed recruiting deadline. In spite of the timeline for collecting data, the detailed nature of the 11 experiences led to data saturation, as the final two interviews did not reveal any new information concerning the phenomenon and no new insight was gained (Creswell & Poth, 2018; Merriam & Tisdell, 2016). As each of the participants who enrolled in the study completed all three portions, there was no attrition associated with this study.

**Participants.** There were a total of 11 participants who completed the research study. The demographics of the responding participants are included in Table 1 and are listed in alphabetical order according to pseudonym. A brief introduction to each of the participants is also presented.

Table 1

*Demographics*

Pseudonym	Ethnicity	Age	Student Status	Major
April	Caucasian	21	Semester Break	Early Childhood
Katie	Caucasian	19	Part-time	Early Childhood
Daisy	Caucasian	23	Full-Time	Accounting
Ginny	Caucasian	22	Full-Time	Business
Hope	Caucasian	19	Full-Time	Web Design
Kim	Caucasian	18	Dual-Enrollment High School	<i>Not Applicable</i>
Lilly	Lebanese American	20	Full-Time	Engineering
Luna	Caucasian	23	Dropped Out	Early Childhood
Molly	Caucasian	23	Part-Time	Criminal Justice
Rita	Caucasian	24	Full-Time	Early Childhood
Thalia	Caucasian	22	Full-time	Computer Science

**April.** The importance of priorities was evident from the moment April made contact to schedule her interview. Her work schedule provided limited openings, and when the live chat started, the sight of her cradling her son revealed that her commitment to family was equally strong. As the mother of a toddler and with another on the way, April had to leave traditional campus courses soon after her marriage in order to find employment that could support their

growing family. She stated, “When I moved out and got married I needed to work full-time so we could like eat. You know? So that was really the only option I have so I could work full-time.” Although she was taking a semester off at the time of the interview for the coming birth of her baby, she planned to continue in her major of early childhood education once things had settled down her family. Her current employment at a childcare facility motivated her choice of major, as it would be financially beneficial to her employment status.

**Katie.** As one of the younger participants in the survey, the business-like and forthright approach to her interview was rather surprising. As a part-time retail employee with a year of academics in early childhood education behind her, her concise answers diplomatically addressed her perceived challenges and set the record for her own pursuits. The flexibility of attendance led her to pursue online learning, as it would not interfere with her work schedule, yet this too was regarded as a practical decision and means to an end. When asked about over her overall perception, she replied “It’s not very generic. Not personable, but I get my stuff done.” Her systematic responses to the interview questions were indicative of her approach to the online learning environment.

**Daisy.** Although virtual communication generally leaves a lot to be desired in revelations of emotion and personality, the first contact with Daisy proved an exception to the rule. Her energy and enthusiasm for participation was evidenced by a sense of humor and use of emojis. She is drawn to a life that embraces all things challenging and adventurous, as she states, “So. I really like to overachieve just so I can have bragging rights. I really do! Just so I can toot my own horn.” She was more than willing to reveal her experiences as a full-time accounting and finance major nearing the end of her academic journey, and spoke with passion about her job and upcoming opportunities. She entered the accounting field due to her employment circumstances and will

receive a promotion into a CFO position for a local company after the completion of her education and mentor training.

**Ginny.** Working full-time kept Ginny from taking the classes she needed to stay on track with her major in business management. As a receptionist for a local service company, her eight to five schedule only gave her the option to attend school at night, but with traffic and family concerns, she opted for online courses to minimize the stress. Her ideas were creative and meaningful, demonstrating her concern for a quality education but the overall influence it would have on her job prospects. As she said,

I know lots of people decide they want to do a business degree. It's probably the fastest degree to get and still be able to get a good job with it. I just hope it's actually teaching me what the business is going to want.

While she still has quite a ways to go before graduation, Ginny knows that education is the only hope she has of making something of herself. "I didn't want to just be like everyone else I know. I mean, it's okay to go to hair school or nursing. But that's not me. I kind of want to own my own business."

**Hope.** Hope's unique approach to online learning and higher education created an interview experience that was truly enjoyable. While her quiet demeanor supported her claim to be an introvert, Hope's responses portrayed the depth of connection to her education and her intrinsic motivation to succeed. Traveling distance to the campus led Hope to take online classes, and in speaking of the experience in general she said, "Positive experiences would have been that I could do it and I got through it. So it gave me a lot of self-confidence. And there were challenges, but they weren't enough to scare me away or freak me out." Hope had changed majors twice before stepping out her comfort zone and settling on web design. She attributed this courage to her online course:

When I started taking online classes, I thought, “you know, I could really tackle something else that I wanted to branch out and do because this isn’t really what I am passionate about.” So I stepped out of my comfort zone to take on web design.

**Kim.** The youngest of the participants, Kim’s experiences and perspectives as a dual-enrollment student brought interesting aspects of online learning into focus. A senior in high school at the time of the interview, she took courses through a partnership with the local college during her junior and senior year to earn college credit while still meeting her graduation requirements. Some of the courses were offered at the high school, but Kim also took some general education courses, such as English 1101 and Introduction to Psychology, completely online. Without having prior college exposure through which to evaluate her experiences, her take on the situation was quite revealing.

So, like, they don’t baby you. It was hard . . . It was different than a regular high school class . . . I had to like-learn to study on my own. It would have been nice if I was like learning that like in my freshman year so I can build on it.

**Lily.** An articulate twenty year old with an interest in engineering and math, Lily spoke and wrote with confidence about her online learning experiences. Her first exposure to the online classroom occurred while still in high school, as she joined a bridge program that would earn her college credits while also fulfilling her diploma requirements. She presented herself as an ambitious student, with future goals of graduate school and becoming a lifelong learner. “I am interested in like way to many things for my own food. If I had the option to be in college forever, I probably would.” Lily’s perspective was detailed, as her education was an intensely personal journey that spoke to who she was and what she had accomplished. When discussing the use of her transcript as an artifact she offered, “It really shows so much, even more, than academics.”

**Luna.** Even though she was not enrolled at the time of the interview due to a recent marriage and lifestyle change, Luna's self-directed approach toward education might be some indication of her motivation to ultimately finish her degree, although she is currently contemplating a change of major. Luna reflected on the challenges of working a part-time job in retail and arranging a school schedule that was efficient and budget-friendly, which ultimately led her to the option of online coursework. "Sometimes things come up in life where you know, you're not able to do that, then you're missing classes, but when you have online things, it's a little bit more flexible." Luna was very comfortable with her learning experience, expressing her perspective confidently and logically presenting her ability to overcome challenges. She credits her point of view to her love of learning and drive to succeed. "I've always loved learning, so I've always been-or I've always tried to be a better student in that sense."

**Molly.** Quiet and reserved but honest, Molly shared her experiences in online courses deliberately but gently. Although she had challenges, she explained them constructively and in light of the context. It was apparent that her personality craved the online learning environment of anonymity as she mentioned being a loner, but she admitted her learning style was more conducive to classroom attendance. Molly is motivated by new career opportunities that may open with her degree. Her work schedule necessitates online attendance and many of the courses within the criminal justice major can be taken online. However, Molly admits it can be a struggle. "For me, the online class, it's a little, a little more challenging to learn in. I'm a bit of a procrastinator. I feel you really have to push yourself more." Molly is willing to give her studies the time it needs, but also acknowledges how much personal pressure she feels. "I get extremely bored when it comes to things like watching to videos to learn something . . . I can learn that way, but it's not the best for me . . . It's [school] just always been a struggle for me."

**Rita.** The only participant without experience in a traditional brick and mortar college classroom, Rita's perspective on online learning was perhaps one of the most holistically presented. There was no comparison between traditional and online experiences; just her perception of juggling her life as a mother to three with her chance to pursue a degree in early childhood education. Her gratefulness for online learning was evident, citing her inability to ever attend on campus due to family priorities. At the same time, she has developed the tools she needs to maintain both schooling and family as priorities.

I mean, it's important to be flexible. You know, if you didn't finish in the time window you set aside, you know—be okay with that and work around it. I find myself working mostly after the kids go to bed.

**Thalia.** One of the first to respond during the recruiting process, Thalia was an articulate and disciplined student. Her attention to detail during the recruiting process and her eager responses made the interview a very relaxed but productive experience. Although she disregarded her employment within the fast food industry as inconsequential to her overall identity, her career goals became evident during the course of our conversation as well as her motivation to continue to aim higher.

Since I was little, I have always-like—pushed myself to do bigger and better things . . . I hope it's not like a normal career where I am just going to be dredging through my life, doing the same thing over and over.

As a computer science major, Thalia enjoys the challenge of writing programs and debugging things that are not functioning as intended. Her original interest in taking online classes arose out of financial constraints and on-campus experiences that complicated her commitment to her coursework.

## **Research Methodology and Analysis**

Participants chose the means of connecting with the researcher, most of whom opted to conduct the interview through video conferencing. One participant chose to meet in person, and the location was selected by the participant with insight from the researcher as to the privacy and comfort needed to conduct the interview. Email contact allowed for distributing the informative tool, consent form, copy of the semistructured interview questions and journal instructions, but it was also used for the receipt of journal responses, issuing the gift card and member checking. For participants who chose to share their selected artifact as a photo, it was requested that the photo be sent to the researcher's personal phone or email.

At the time of the interview, initial conversation included an acknowledgement of participation, a general overview of the study, confirmation of the receipt of the consent form and a reminder concerning interview recording. The conversation then moved into demographic questioning, but in a manner that established a connection to the participant. Student responses to age, student status or declaration of their major led to brief social dialogue, establishing an open connection and rapport (Rubin & Rubin, 2012). Following these questions, the researcher led participants through the open-ended interview questions they had received with their informative handout, engaging with certain answers and pursuing topics in follow-up questioning deemed pertinent to the theme of this study. The ebb and flow of information was natural in context and designed to capture rich detail about their experiences in online learning without limitation (Rubin & Rubin, 2012; Yin, 2018).

The semistructured interview portion of the encounter was followed by a discussion of the participant's artifact. Several of the participants presented a photograph of their object during the interview while others talked about the item and offered to send a photo after the fact. These discussions and the use of a meaningful item as data brought new perspective, as artifacts are a means to gathering broad insight into an individual's experience (Yin, 2018). An artifact embodies

more than an expression of thought or opinion. It becomes a visual portrait of a student's identity within the phenomenon, adding credence to emotional interaction, physical connection and mental stimuli. Although lacking credibility as a stand-alone data source, artifacts can work to generate triangulation but also serve as a method to establish a more personal connection to the participants (Bloomberg & Volpe, 2016; Yin, 2018).

Participants were issued pseudonyms at the conclusion of their interview, and all documents received were labeled with the appropriate name. Participant interviews were transcribed within 48 hours of the encounter by the researcher, and emailed to the participant for any edits, revision, or clarification they deemed necessary. By granting participants the liberty to address the information they provided and make adjustments, internal validity is considered. Member checking is an important way of minimizing errors in the data collection process, and in this instance, it provides accurate materials for analysis (Merriam & Tisdell, 2016). One student altered her grammatical errors, but no other changes were made to content by any of the participants. After receipt of their transcripts and all of the journal entries requested, the researcher issued the gift card to participants. For those who completed the study prior to the amended research process, a gift card was sent upon receipt of IRB approval and confirmation of the participant's email address.

After the transcription had taken place, a brief personal analysis of the entire transcript took place. Memo writing became a key component of learning useful probes in future interviews, as well as refreshing a personal understanding of metacognitive elements. The memos revealed areas for follow-up questions or details needing more support. The memos also served to inform the researcher on changes or techniques that needed to be addressed in future interviews. This initial review was not looking at the data for theory-based analysis, but to become more familiar with the



participant's experience and the effectiveness of the skills of the researcher as an interviewer (Merriam & Tisdell, 2016).

**A priori codes.** The analysis of case study data has the momentous task of conveying deep understanding of themes derived from multiple data sources (Merriam & Tisdell, 2016). While making sense of the data is the overall goal of analysis, this cannot occur unless consolidation, interpretation and reduction occurs (Merriam & Tisdell, 2016). As in this study, the intensive details and descriptions offered through interviews, artifacts, and journal entries need to be carefully combed for both abstract and concrete concepts, creating a research journey that requires both deductive and inductive reasoning (Merriam & Tisdell, 2016). Grounding initial analysis in the conceptual framework guiding the research study provides clear boundaries for the direction of understanding and relevance to the phenomenon (Creswell & Poth, 2018; Saldaña, 2016).

The coding process provides significant volumes of information to the researcher, yet a well-organized approach to coding methods is “to enable an analysis that directly answers your research questions and goals” (Saldaña, 2016, p. 71). The semistructured interview questions had been carefully designed to direct the conversation toward elements of metacognitive development with the online learning environment, and these elements were derived from the literature review and conceptual framework. Participants were free to explore those experiences without undue theoretical or presumptive influence, potentially offering information that may not be useful to the purpose of the study (Creswell & Poth, 2018). The conceptual framework established the contextual elements related to metacognitive development within the online environment, and therefore became a credible foundation for identifying segments of data that may be useful (Merriam & Tisdell, 2016). The design of the initial stages of the coding process was to then identify data responsive to the research questions (Merriam & Tisdell, 2016).

Throughout the literature review and conceptual framework, key themes of metacognitive development had become apparent. The significance of these themes and their interrelated nature with online learning and metacognition also become evident during the pilot study interview encounters. As such, returning to the literature and verifying their importance led to an established set of a priori codes. A priori codes are a first cycle coding method that institutes a preliminary list of codes harmonizing with the conceptual framework and directing the analysis towards answering the research questions (Saldaña, 2016). These codes were drafted in accordance with the literature support and their direct relationships with each other (see Appendix B).

Pilot study interviews were conducted prior to the research study with participants who had previously taken online courses; therefore, it was possible to practice initial analysis according to these a priori codes. The pilot study interview conducted with the 27 year-old female was used for this exercise, as she was the closest match to the study's demographics. It was understood that these categories were not comprehensive, but contributed to deeper emergent coding practices (Merriam & Tisdell, 2016; Saldaña, 2016).

For a thorough understanding of the data, a line by line coding technique was used during the first cycle. The goal was to achieve intimate knowledge of the data in light of the a priori codes (Merriam & Tisdell, 2016). Depending on the participant or topic being discussed, the coding would be phrase by phrase or sentence by sentence. In the interest of isolating the key components of metacognition, much of the initial coding was extremely narrow in scope. Very few paragraphs or entire expressions were determined as a potential theme. From a deep learning perspective, which is the ultimate aim of metacognitive development, it is more beneficial to start with narrow themes within the conversation. Within these segments, multiple presentations of metacognition or impacting factors can be discovered. Narrow coding kept the data accurate to the a priori codes established and gave the start of the methodology firm footing from an unbiased perspective. The

smallest possible forms of codes also worked to prevent important themes from being overlooked (Bloomberg & Volpe, 2016; Saldaña, 2016). These narrow segments were later grouped or compared according to their original paragraph or expression to reveal the context of the participant response.

The remaining coding process continued by hand with colored pens and separate charts used for each area of a priori codes. Transcripts, artifact narratives and journal entry data from each participant went through this initial cycle and each additional in order to maintain triangulation. As this occurred, new codes were devised to organize similar phrases, ideas and examples. With these first few cycles of coding, descriptive coding became a default method. Saldaña (2016) states that this is a common error with first-time analysis ventures, and it was clear the initial codes were simply lists of observations, repetitions and actions that offered little insightful analysis. Expressions of motivation or identity could not be identified by the language itself, as these were complex concepts presenting multiple meanings as defined within the context of the question or perception of the individual. The repetition found in these codes became an understanding of the possible relationships to the research questions and conceptual framework, and it led to a more inductive assessment of the data probing the heart of the narrative (Merriam & Tisdell, 2016; Saldaña, 2016). Situational elements established new codes, allowing for a more concise division and placement of related items as the process continued.

The codes derived from the inclusion of situational elements provided a more holistic perspective concerning meaning. This led to a more inductive understanding of the participant's experience, relying on the supporting conceptual framework, comparing details found elsewhere in the data and the context of the element. Conceptualizing the data led to an analysis of the most essential codes against the research questions, and included looking for thought patterns, actions, or emotions that affect perceptions of metacognitive development factors while sharing a

relationship with each other (Bloomberg & Volpe, 2016). The resulting codes articulated the primary connections between participant responses and the research questions.

This coding process continued for each of the participants in the study. After three or four coding attempts, it was easier to deduce what areas of data had no relevance to the topic of the research study. This assisted with more concise coding attempts for the remaining data. Saldaña (2016) cautions that novice researchers will fall into a coding frenzy and overextend their efforts in areas unrelated to their research questions. This proved true in several of the first coding cycles for several of the participant transcripts. Thorough coding required numerous encounters with the data, rearranging themes, reclassifying subthemes and establishing credibility through contextual support (Merriam & Tisdell, 2016; Yin, 2018). The codes derived from each participant were compared against each other with overarching themes developing as the analysis continued. The emergent themes became expanded statements encompassing the meaning of their foundational codes and the overall relationship to the phenomenon. Subthemes were developed to further identify the composition of the primary themes. The final emergent themes and their subthemes were responsive to the initial research questions, conceptually congruent and inclusive of the important and relevant data derived from analysis (Merriam & Tisdell, 2016). These will be discussed in greater detail further in the chapter.

**Multiple data sources.** The use of recorded interviews, artifact discussions and multiple journal entries was designed to establish triangulation within the data and reveal the case study findings as more accurate (Yin, 2018). Rather than presenting the emerging themes as a matter of researcher perception, the final comments were supported by the credibility of three data sources. Triangulation is used to obtain both an in-depth awareness of a phenomenon and reduce misinterpretation of the phenomenon (Merriam & Tisdell, 2016). Triangulation also revealed

inconsistencies with the data, and those revelations were isolated for additional analysis as potential primary themes.

The text-based nature of the transcripts and journal entries allowed for cohesive coding techniques between the two forms of data. Although the artifact was a visual element associated with experience, the interview contained a dedicated portion to discuss meaning and significance. This part of the narrative was coded according to the steps outlined for the transcripts and journals, but each artifact was also viewed independently as insight into the more personal life of the participant. As artifacts were presented, the unique revelations of meaning illuminated the personality and characteristics of the participant (Merriam & Tisdell, 2016).

### **Summary of the Findings**

The intense analysis of the experiences and expressions of 11 participants revealed great insight into metacognitive development within the online learning environment. The intent of pursuing interviews, artifacts, and journal entries as data sources was to generate insight into the deeply personal nature of metacognition and factors affecting its development. Credit is due to the participants who were so willing to share their experiences and honestly assess the elements of metacognition presented during their interview. Although all of them share a common goal of higher education, their differing backgrounds, emotions, motivations and achievements add rich and descriptive details to the finding.

### **Presentation of the Data and Results**

This research study sought to understand the perception of metacognitive development in females who had taken or were taking courses online. Throughout the data collection process, each participant demonstrated willing to share their experiences and were eager to provide insight into the online learning environment. There was a consensus amongst participants concerning the importance of their access to online learning in order to achieve their higher education goals, but

deeper exploration of their perspectives during the coding process led to four primary themes and nine subthemes that dealt more specifically with research elements of metacognition. Each theme was supported by participant experience and expression, with great regard to context adding clarity during coding. The breadth of data obtained from 11 participants indicates the depth of meaning to be derived from their experiences. The resulting themes represent the most comprehensive but categorical analysis of the data. These themes are presented in Table 2.

Table 2

*Themes and Subthemes*

Theme	Subtheme 1	Subtheme 2	Subtheme 3
1. Both natural and conditioned responses to contextual factors encourage limited metacognitive development	Prior Experience	Personal Intuition	Virtual Environment
2. Constructive interpersonal relationships within the online environment are contingent upon shared expectations of interaction	Ambivalence towards connections	Perception of equitable effort	
3. Perceptions associated with continuity of learning are impacted by subjective factors corresponding to student expectation	Communication transactions	Course design and facilitation	
4. Surface learning is a byproduct of undirected metacognitive development	Application of learning	Autonomous effort	

**Emergent theme 1: Both natural and conditioned responses to contextual factors encourage limited metacognitive development.** During the interview, participants were asked if they had knowledge of the term metacognition. Each indicated they had no understanding of the term, yet their dialogue concerning their activities within the online environment revealed they each consistently engaged in critical metacognitive skills like self-regulation, assessment, problem-

solving and evaluation. An example of the expressions connecting three of the participants to this use of metacognition is included in Table 3, but a full overview of all participants can be seen in Appendix C.

Table 3

*Expressions of Metacognition*

Participant	April	Katie	Daisy
Self-Regulation	“I’ll just give myself a little portion of each class to do every day”	“I’ll always make sure that I am able to do what I need to do to get that A”	“Making specific deadlines. So if it was due on the 10th, I made it due on my schedule on the 8th. So I always made it early, that way I wouldn’t have the option to really procrastinate and to forget about assignments and all that. And I would set reminders”
Assessment	“Once I do it and write it down and I look at it, I know it”	“I’ve got to dig a little deeper”	“I think it kind of shows a lot of your weaknesses and your strengths in one”
Problem-Solving	“I was just like, listen—I don’t understand what is happening and I need help”	“Ask questions and do more essentially, to try and figure out what’s going on”	If we have a question, we’re going to reach out to the other leaders in the class . . . and we overcame that. We finally figured out how. We snapped pictures on Facebook of our computers back and forth and back and forth for—I guarantee you—three weeks trying to figure out what was wrong with this assignment”
Evaluation	“The things I learn in my class, I find them in my job all the time”	“I like to see how it’s happened in the process”	“So it’s definitely prepared me for like—what I’m going to do and it’s been very useful”

Throughout the course of their interviews, participants made mention of metacognitive activities and skills that were used in response to certain contextual elements. For participants like April, Kim, Molly and Rita, receipt of a poor grade or lack of clarity and disconnect with an assignment became an indicator that personal responsibility for finding a solution or getting additional help was needed. They identified that the online experience shared very little in common with their high school experiences, and action needed to be taken in order to function effectively within this new learning environment. As Kim mentioned in response to a question concerning particular struggles, “Yeah. I did [struggle]. Just with some of the professors. It was just different. They talk differently than high school teachers do.”

For participants like Katie, Ginny, Hope, Thalia, Luna, Daisy, and Lily, there was an element of personal fortitude and singular interest that fostered their drive towards coping skills with the pressures of the online learning environment. Daisy spoke to this as she revealed her self-imposed entertainment restrictions while there was still coursework outstanding, “OK. You have all the time in the world to do everything else. You have until July to finish your education. So, I'm really trying to utilize every bit of my education that I can.”

All of the participants almost immediately recognized the need for establishing their own idea of scheduling and planning, as their online coursework did not provide hard and fast deadlines. Course design and facilitation mandates a certain level of autonomy with completing assignments. This was indicated on numerous occasions with participant phrases that included examples of making schedules, establishing self-imposed deadlines, prioritizing assignments and managing distractions. The participants also offered their motivations for completion, such as recognizing their tendencies to procrastinate, the interruptions of life and their personal acceptance of accountability and responsibility. While they expressed a need to develop their own approach to completing coursework, their actions revealed their individuality, the influence of prior experience



and natural responses to their learning styles. These elements established the subthemes of prior experience, personal experience and the virtual environment as influential in their limited use of metacognition.

***Prior experience.*** Apart from Kim and Rita, all of the participants had prior traditional classroom learning as a part of their collegiate experience. These in-class experiences often became a point of comparison for their assessment of the online environment. Their understanding of strategies that worked before during their education gave them insight into what was needed as they transitioned into the online setting. Hope's overall perception of the online setting was prefaced upon this comparison of experiences

With online [learning], I would say depending on the class you take it really depends on how much you are going to learn from it. Because some, I think, require being in the classroom more than others. And I've learned more in one online class than I could have in the classroom. Whereas, in the classroom for some other classes I learn more than online.

With English classes, I would definitely suggest going to school.

This comparison was also echoed by Lily, who offered that her high school training prepared her for the math courses she had taken but that her online peers struggled with the courses. She stated, "I would tell the online learning is really good, but for your like—really hard core classes—I wouldn't recommend it." Participants found that their prior exposure to certain aspects of the subject influenced their personal responses to overcome the challenge. While their experiences generated a positive adjustment, those without a foundational experience tended to express more of a struggle.

For Kim and Rita, it was a lack of prior educational exposure that created a required an adjustment in their academic habits. Rita put it bluntly:

I don't think our high school prepared us at all for college. Not being able to raise your hand in a classroom or even to talk to a teacher and ask for help for anything like that. And not having the resources that you need on hand. You are having to find it out on your own. Kim stated equal frustrations as she reflected on the transition between her high school classes and college coursework.

Well, we could either take like English 1101 which is a college, college English class or we could have taken I guess whatever the high school class was that one of our high school teachers taught. And I just chose to take the college one. But it was harder. Like, a lot of people say that—I mean I didn't have as much preparation because I didn't take that high school class. So, like, they don't baby you. So it was hard.

***Personal Intuition.*** For participants like April, Kim, Lily, Rita and Molly, the natural response to a failing grade or negative feedback was a desire to excel during the next situation or attempt to address the area of concern. As Rita stated, “I can't wait to the last minute because it's a lot more detailed—a lot more information. So I mean you have a week to do it for a reason. You can't wait until the last second.” These responses were partially motivated for higher grades and security in their program. For Ginny, Thalia, Katie, Daisy, Hope and Luna, there was an instinctive proactive approach to the learning experience for the benefit of the learning experience as well as the desire to achieve good grades. The exact nature of their failure did not have to be revealed, as their perceptions of the situation would isolate deficiencies or challenges that should be addressed if they were to succeed in the course or a future assignment.

This subtheme emerged as an aspect of personal intuition because participants were unable to clearly identify the origins of these tendencies, apart from their love for learning, intrinsic desire to succeed and suspicions of adverse consequences. The context of each situation led to a personal understanding of their learning styles and their assumed shortcomings. Although a surface

approach, each student's analysis of the situation identifies as metacognitive processing. Thalia comprehensively addressed this process.

The online classes kind of helped me understand maybe a little bit how I work and what it takes for me to be able to learn. Like, I might be in class, I might be kind of understanding, but if I don't take an active role in being able to, like, put what I know about what I learn into actions—kind of—if I don't do that, then I'm going to fail.

Hope had a similar explanation for her understanding of a challenge and response to it.

When I would spend hours and hours on end writing a paper that should have been much easier. I tend to be a perfectionist with writing because I love to write. But in this sense, it was—I couldn't understand what she was asking. And if I had heard it from her in person or seen it done by her, I could have understood it.

***Virtual environment.*** The overall design of the online classroom necessitates an autonomous but conditioned response for learners desiring to succeed. The absence of deadlines, perceptions of accountability, grading policies designed with disincentives and required communication components demanded more than simple student engagement. The experiences from the participants indicated that such an environment necessitated employing metacognitive strategies such as planning, feedback, problem-solving, and evaluation even without knowing the underlying theme and importance of metacognition (Kizilcec et al., 2017). The absence of a physical instructor and in-class accountability was a motivation for participants to assume responsibility for their education. Each participant offered a perspective as the influence of the virtual environment on the metacognitive skills, as seen in Table 4.

Table 4

*Influence of the Virtual Environment*

Participant	
April	Even if it did not have a due date, I gave every assignment a due date to hold myself responsible
Katie	Well, if I don't know what something is, I either have to go find it online and research it or take the extra step to email the teacher or another student.
Daisy	I had an academic planner . . . As well as reminders on my phone and that definitely made me self-aware of 'I have to do these assignments. I've got to do them. I've got to send them in by this time.'
Ginny	I tend to work better when I feel that I am in control. I am not waiting on others, so I can try to get started early or call it quits when I think I've understood.
Hope	Evenings is when I was most aware or early mornings to get my homework done so I would just make that time when I could really think.
Kim	It was just different than a high school class. Like the teachers pretty much either just read it to us or we would openly discuss it in class. But I mean, with online, I had to read all of that instead of like listening to a teacher talk about it.
Lily	I think it gives students a really good opportunity to learn at their own pace and apply what they've learned and really learn the material well instead of stressing over it.
Luna	I'm not having people around and goofing off or someone else asking a dozen questions. Like I'm just able to sit there in my own little space and look at my screen.
Molly	It gets things to the point. I don't draw things out . . . I can figure it out later.
Rita	I assigned myself an assignment—so I go by the end of the week—so I'll be able to have it all done.
Thalia	If they have some of those [videos] or you're kind of supposed to watch those but not just as a tool for learning. It's kind of like you have to do this.

**Emergent theme 2: Constructive interpersonal relationships within the online**

**environment are contingent upon shared expectations of interaction.** As the participants

explored their experiences with both peers and professors, it became evident that each individual has established an expectation for the interaction. Initial layers of coding revealed multiple factors affecting engagement, as was anticipated from the prior literature review. These included tone and language, timeliness, established rapport and lack of physical connection. However, the unique opportunity to explore these factors through the personal connection of a qualitative study led to an

understanding beyond surface elements and the more personal evaluation for connectivity. Each participant identified a need for establishing a relationship with either peer or professor, yet these varied according to a perception of importance and usefulness. The overarching theme amongst their revelations became that of individual expectations that were either abandoned or reciprocated during the course of their online interactions.

Participants used comparisons with prior peer and instructor experiences to lay a foundation for their expectations of online interaction. Traditional classroom interactions had included spontaneous discussions, study assistance or shared concerns with curriculum or assignment demands, yet there was no platform to explore similar engagement within the online learning environment. Therefore, participants sought relationships with peers who mimicked their personal learning style and motivation. Failure to achieve compatibility or an inability to capitalize on potential connections led to frustrated engagement and participants felt it was acceptable to avoid personal responsibility to the online community.

Similar expectations were made for professors and course facilitators. Spontaneous, prompt, and genuine feedback was desired, as participants were familiar with a physical instructor presence that acknowledged questions, engaged in small talk and demonstrated availability. While participants acknowledged the online learning environment would alter engagement opportunities, their responses expressed disappointment and frustration that greater effort had not been made to improve course facilitation and instructor presence. A positive connection with a facilitator, as in the case of April, fostered an attitude of commitment and motivated increased effort.

Prior research had indicated a strong need for establishing identity and sense of community in order to develop a favorable perception of the online community, yet the overall indication from the participants of this study was that the online community was only beneficial when the individual's ideals of student or professors interactions were deemed acceptable (Garrison &

Akyol, 2015). It was a subjective process—allowing participants to determine what was considered appropriate or worthy of their interest. This was evident in the varying perceptions of student identity, evaluation of feedback, and instructor presence. April and Daisy provide contrasting evidence concerning the value of interpersonal relationships with peers established online. These perceptions represent the two extremes of all participants. April appreciated the ability to form friendships, so long as they shared similar experiences or qualities. “I’m not ‘friends friends’ with a lot of people from school, but the ones that I am it’s just like we’re in this together and we’re pretty much in the same boat. Daisy took an opposite approach and limited her interaction more rigorously. “I cannot relate to these people. So I don’t talk to them. I feel like the slacker mentality is going to rub off on me if I even associate with them in the discussion post.”

The other participants shared similar expectations of their peers’ input or what they hoped to gain from connecting with them. As Kim indicated, “I engaged, just not like a lot of them did. Like I feel like it was almost overboard. Just you know, unnecessary things were said.” Rita also offered a similar experience and stated that “I feel like on some level they do expect it because you know, even in our guidelines you are required to post to somebody.” Each participant spoke genuinely about their peer experience, but it was clear their assessments of peer interactions were guarded and tactful. The discussion with Lily conveyed the extent of the reserved approach expressed by the participant’s experiences. “I think, I think people are pretty respectful, but I just kind of think it goes back to the fact that nobody really cares enough to get into that. I think.”

While probing for the deeper meaning behind each experience, the participants indicated that their overall goal of getting their work done and completing their course superseded any needs to deeply connect with peers. However, when combining the overall perspective given through other answers, the journal responses and even their artifacts, it was clear their need for

interpersonal relationships was not so black and white. These observations led to the subthemes of ambivalence towards connections and perception of equitable effort.

***Ambivalence towards connections.*** While many participants indicated that adapting to the physical isolation of online learning was one of their first challenges of online learning, their resulting dialogue revealed many choose not to pursue developing substantial interpersonal relationships. Thalia felt extremely alone during her first course online, yet chose to establish a social network beyond the academic context. April had a similar experience, as did Katie and Lily. As April stated, “I was like, ‘I’m going in here, and if I have questions I am going to ask them. I’m going to talk to other people to find an answer.’” Their desire for peer relationships was contingent upon perceived usefulness. Thalia’s experience provides a glimpse into the overall thought process.

I’m more of an introvert overall, but I like having like a nice little circle of people I know who I can go to for different things. Whether it’s just companionship when we are all in the same kind boat and we all need each other, or if it’s in a situation for class where you have certain people you go to for like different assignments and stuff. And an in-person class, that’s a lot easier than if you’re just online because online you’re kind of all separated through the screen.

For the other participants, there were indications that a connection might be attempted but generally with little effort and no follow-through. Many felt it was a social obligation to establish connection with their peers, and lacked little interest in developing lasting relationships. Katie’s approach included “I guess I try to let everyone know that if they need help they can reach out to me . . . but I really don’t want anybody to hold me back from just getting my work done.” Molly was more concise in her approach: “My interaction skills with everybody is not a high point for me. So having that forced feeling of having to do it makes me not want to do that.” The other

participants had similar feelings of expectation yet highlighted their own efforts and motivations to succeed whether they had any interaction or not.

*Perception of equitable effort.* One of the most interesting findings dealing with interpersonal relationships involved a participant's assessment of peer input for the course. Many of the participants suggested their perception of a peer's effort led to either accepting or rejecting the resulting information or discussion as credible. It also raised red flags concerning the legitimacy of their online counterparts and weakened potential foundations of connection. Generally, each participant would only invest in the relationship according to a reciprocated effort but with communication but overall academic engagement. This allowed for both an encouraging response, but also opened the door for dysfunctional responses, such as with Kim and Lily. Their perceptions of peer effort guided their own personal responses or engagement in certain scenarios. The following statements are a small sample of support this theme of deep connections requiring a perception of equitable effort.

Table 5

*Perception of Effort*

Participant	
April	But I think you can tell in their responses like who is there to really learn and figure out who is there to just pass the class.
Daisy	Like everyone is just like—"Oh it's fine, I'll turn it in six weeks late and I'll get a 70 and I'll be fine." And I'm like, why would you not want to excel if you're paying for an education and you're putting in the time. Why not go ahead and put in the effort so you don't have to do a second time?
Kim	I just kind of answered it, because I don't know—like other people in the class, they didn't really take much time into answering it. Like with a full paragraph, so I would just kind of write down whatever the first thought was.
Lily	Sometimes I point out, like an opposite opinion, or like a different opinion than what they said, but they don't respond because they don't care.
Luna	At the same time, I feel like online just forces a front . . . so you're not really sure if this is how the person feels or if it's just something they're writing because they looked it up on Google. Like you don't know.
Ginny	It's kind of pointless to make an effort with people who don't really seem to care. Like at least try and follow the instructions. That just kills me.



**Emergent theme 3: Perceptions associated with continuity of learning are impacted by subjective factors corresponding to student expectation.** In addition to the contingencies established for connecting with peers, the participants of this study conveyed similar challenges with their relationships toward professors. Perceptions of the entire learning experience placed tremendous emphasis on the role of the course facilitator and execution of the curriculum. However, these expectations were individually derived and relied on personal learning styles. Participants indicated the lack of personal connection to their professors as an initial hurdle concerning their continuity of learning, potentially stemming from the lack of face-to-face interaction.

Katie, Luna, and Hope all identified the ability to converse with leadership before class or during office hours as a way of establishing connections and resolving challenges associated with their assignments. Rita, who had never taken a traditional college course, remarked that the interaction with online faculty hurt her academic growth.

I mean, they are always so quick to post ‘do you have any questions for me’ and of course, they’re saying that. But you do email them and you never hear from them, I just don’t know. In my opinion, it [faculty involvement] doesn’t exist.

Additionally, Ginny made the interesting observation that a teacher could create their own assessment and assign a value to student more easily in a classroom setting, which ultimately determines how a student will respond to a specific instructor.

It’s kind of like they are doing the same thing I am doing to them. If I act like I am good student and ask questions, I feel like they are going to respond to me better. If they think I am just there to get by, they probably aren’t going to be really helpful if I ever need it. I expect them to help me with what I need, but I think they will only do that if I help them by

being a good student. You know? It's way harder to stand out in online because you can't see them and guess what they think of you.

Although not vocalized concretely by the other participants, the frustrations they experienced or the encouragement they received in their studies stemmed from a similar subjective exploration of professor roles and assumed responsibilities. It also jeopardized the validity of potential feedback, as the varied experiences influenced supplement perceptions of instructor credibility. These ideas of what students think relative to how a professor interacts led to the supplemental themes of communication transactions and course design and facilitation.

***Communication transactions.*** Each participant made specific mention of the challenge distance learning placed on communication between student and instructor. Whether it ranged from a timeline acceptable for responses to questions or a lack of clarity concerning an assignment, each participant validated the potential for communication challenges to affect their learning potential. This presented itself in many forms, as some shared it could create a positive perception of the online learning environment and dispel prior assumptions of professor absence. For some of the participants, it led to searching for answers outside of the academic environment or turning to less-knowledgeable sources for answers that could satisfy grading requirements. For others, it left an impression of faculty involvement that carried forth into other coursework.

April had the most positive experience, as her teacher provided ways to communicate and would respond promptly. She indicated her experience might have been unusual but undeniably influential in her motivation to continue even when discouraged. The other participants expressed alternate viewpoints, using the lack of physical interaction as the reason it was more difficult to address concerns efficiently and effectively. Rather than wait for a response, participants would skeptically turn to their peers or outside resources for assistance. Lily did note that it was unfair to

generalize all professor experiences as frustrating, yet candidly admitted one bad experience impacted future experiences.

Each participant made mention of the ambiguity of faculty timelines for communication and the desire to have concrete expectations for response times. April's timely experiences increased her understanding of the subject matter and subsequently her achievement in the course. For the others, the participants indicated that without having assurance that their needs would be met or questions addressed efficiently affected their self-confidence in the assignment and the overall learning environment. As Hope explained,

I'd say my experience, my two online class experiences were very hard with the professors. Because they kind of treated it as though it wasn't their top priority to get back to the online students. I've heard from professors now, in class say 'yeah, our online students we kind of push to the back and don't communicate well with them. So that bothered me to an extent. As if we were less important to them and our learning and lessons wasn't as valuable.

***Course design and facilitation.*** In addition the areas of communication, this study revealed that the overall course design and facilitation impacted continuity of learning for the participants. Initial assessments of course design dealt especially with individual learning styles and the ways in which the online learning environment either supported or frustrated that learning style. Participants perceived the curriculum as effective or ineffective in light of their personal learning preferences. This includes the inclusion of resources and elements designed to facilitate additional instruction, but emphasis was placed in the involvement of the faculty. In particular, the feedback associated with course elements came under significant scrutiny. Learning styles were associated with retention of information, but the use of feedback was indicated as the pathway for application. As with the participant's understanding of communication timelines, there was no manual for what

to expect from the level or instruction, and each participant placed subjective standards of acceptability upon these elements. A sample look at these expectations from several participants is contained in Table 6.

Table 6

*Expectations of Course Design and Facilitation*

Participant	Course Design	Facilitation
Katie	It's harder with my visual way of learning. I can't see a teacher put something on the board and be able to follow through and understand right away.	Your teacher is not even in there with you. Your teacher has emailed you the syllabus. Your teacher has emailed what you need to get done. So you know, the classes that I've taken—my teacher is not even there. I'm just basically working for my computer.
Hope	So my grades were struggling. I'm struggling in grades because couldn't get—I was communicating with the teacher, but I wasn't understanding the material and I really needed someone to speak with me instead of reading it and trying to learn so much on my own.	[I would recommend] that they would be a little more lenient knowing you are online so they're not in personal being able to tell you 'this is the way I wanted it exactly'. Or just tell you up front-'this is how I wanted it done' would be fine.
Kim	I mean, if they said you did great then I would probably be happy and forget about it. But if they said more, like maybe give me tip on what I should be doing that would help me in the long run.	Like everything was great with interacting with the faculty. They were very helpful with questions. Just some didn't do into detail about how to do things. It was just kind of short.
Lily	A lot of them seem to be more like project and work based rather than text based-which I think gives students a really good opportunity to learn at their own pace and apply what they've learned and really learn the material well instead of stressing over it.	I guess it would be nice if the professors were engaged in the course because I feel that helps a lot. Like the very few courses that have where the professors are engaged-and that's been really helpful-and it's motivated me to keep learning and to keep doing the best I can do.
Thalia	There are some online classes that I would take because I am tired of doing stuff in person.	I just, for authority figures, I usually see them as, um, like—they may be a resource but it's weird to ask them questions about different things at the same time . . . I normally just ask them questions or tell them when I don't have a resource or something.

**Emergent theme 4: Surface learning is a byproduct of undirected metacognitive development.** As the interviews, journals, and artifacts took the researcher through a participant's learning experience, there arose questions concerning the depth of educational experience. The participants had varying motivation for completing their degree and engaging in online coursework, but a primary concern was future employment. In the situation with Kim, the high school student, advancement into full-time college enrollment was the overall goal of her online pursuits. The conceptual framework established the need to develop metacognition for academic success, but it was predicated upon the construction of deep learning (Al-Nuami, 2017; Pellas, 2014; Richardson, et al., 2017).

As participants offered details regarding their individual strategies and practices, it became evident that surface learning was a primary result when metacognitive development was self-directed. This position takes a comprehensive look at the interplay between each element, but regardless of influencing factors, reactive responses to metacognitive pressure favors a surface learning perspective. Consequently, when a course element focused on application, the corresponding development encouraged a deeper connection with the material. With each participant offering Google, the internet, classroom peers and external advisors as primary problem-solving tools, an awareness of academic maturity surfaced. This approach of simply scratching the surface of the material in order to satisfy an assessment requirement was evidenced by the two subthemes of application of learning and autonomous effort.

***Application of learning.*** The interview with Lily was the most enlightening regarding the limited scope of application encountered through the online learning experience. Her perspective articulately described the dilemma presented by the other participants, who sought to draw connections between their activities and overall relevance to long-term purpose. As Lily mentioned,

I mean, you can set it up in a way that forces you to learn. Kind of like that programming class I was telling you about. You have no choice but to learn because you're not going to get help from other people. But there are so many that you can just slide through by doing a certain amount of tasks or you're taking a task and then getting an A, but you don't actually have to learn it. So yeah, I would say you have to be really motivated to get things out of it.

The other participants indicated a similar struggle for accepting the information presented through assignments or discussion board forums. Thalia enjoyed the variety of elements, but also recognized the influences on her motivation to complete them. "They might have video lectures, but I don't usually watch them cuz I don't have time or I might not have earphones near me." Ginny reported her understanding of the discussion boards as "a waste of time . . . their opinions don't really matter to me since I don't know them." Katie offered group projects as discouraging, "because some people are better writers or some people don't do any word and you feel like what not do all this work. Other people don't have too." Rather than seeing the bigger picture of concepts or theories to be understood, their actions were shallow and pointed toward task completion for the sake of the grade.

Subsequently, course elements that were designed to enforce application received praise for their ability to make practical use of the materials presented. Both Hope and Kim offered enthusiastic reviews for the use of TED talks in drawing relationships between materials and application. Hope found that TED talk uploads, when used in conjunction with required text readings, would truly open the door to understanding the material. "When I would watch the TED talks, I could get more information. And then I would read the book . . . and that would help my learning big time." Kim felt that TED talks were especially helpful in certain courses: "I don't know how those people like make so much sense compared to like other people . . . those people really did help with like Psychology and English and uh, American Lit."

Daisy, Lily, and Luna all had experiences that stretched their understanding of the material in activities and course design that forced them beyond their comfort zone. Daisy had a course that utilized a smart book and “It was one of the coolest tools I’ve ever had for a class . . . so it really showed you what you needed to focus on what you didn’t know.” Luna had a class project that required the creation of lesson plans that could be used during a student teaching exhibition during her class. “It was more than just talking about lesson plans—it was actually me having to make my own. It was definitely more like I had to sit there and I’d think about it.” Lily had a simulation program in one of her programming classes that required intentional thought and application of previously learned skills. In her words, “You have to figure it out for yourself that really helped. Because it was the first class that actually really made your think.” The more specific the metacognitive context of the element, the deeper the learning became.

***Autonomous effort.*** The subtheme of autonomous effort arose from the repeated occurrences of participants attempting to resolve a challenge on their own accord. The self-directed nature of the online learning environment moved beyond simple scheduling or task completion deadlines. It was evident these individuals took their responsibility of completing the coursework seriously, but in accordance to what was convenient for them. Each participant expressed their use of autonomous effort in relation to their learning styles, their scheduling restrictions and their sense of frustration with the situation. April maintained a guarded approach toward peer resolution, saying “I’m not going to take what they say—usually—with much of anything, because I mean, it’s just someone’s opinion. And I’m going to listen to their opinion, but I don’t value it for a lot.” For others, their efforts included last resort attempts and resignation to the consequences. As Katie stated, “So I try to go to the other students, but if not, I just kind of fudge my way through it and hope it’s right.” Participants felt the pressure to make sure learning was achieved, but their actions revealed the depth of learning they were pursuing. Thalia

summarized this revelation when she stated, “If anything, I feel like I am more my own teacher in many of my classes than even more my professor might be . . . if they aren’t interesting, it kinds of puts it on my own shoulders to understand the material.”

When viewed according to the context of each experience, participants engaged in surface learning without clearly directed or assisted metacognitive practices. There remained ambiguity in their definition of sense of purpose and an inclination to pursue that which was convenient to the situation. Each element was therefore evaluated according to a superficial understanding of utility.

### **Summary**

The presentation of Chapter 4 was designed to share the execution of the research methodology, portray the unique and personal experiences of the participants, and summarize data and findings that arose from a careful and comprehensive analysis. The descriptive information provided from multiple data sources improved the accuracy and credibility of the outcomes, as triangulation is a well-recognized tool amongst researchers for establishing validity (Merriam & Tisdell, 2016). The methodical and meticulous approach to coding provided insight that moves beyond a descriptive analysis of experience, but led to a holistic and inductive understanding of metacognitive development in females who have pursued online learning. Four primary themes encompass the diversity presented from 11 participants, and nine subthemes offer clarification and more expanded understanding of the experiences. These four themes are as follows: both natural and conditioned responses to contextual factors encourage limited metacognitive development; constructive interpersonal relationships within the online environment are contingent upon shared expectations of interaction; perceptions associated with continuity of learning are impacted by subjective factors corresponding to student expectation; and surface learning is a byproduct of undirected metacognitive development.



The presentation of these themes was supplemented by passages of participant expressions, as well as analysis that reviewed circumstances and overall dialogue with each participant in light of the conceptual framework which grounded the research study. The next chapter will present the findings in light of its significance to the theory and practice and offer a conclusion to the research study.

## **Chapter 5: Discussion and Conclusion**

As the online learning environment expands access to higher education, the roles and responsibilities of both faculty and students continue to be redefined by the virtual classroom. Academic literature exposes these areas of change, giving attention to the effect of identity on academic success (Oz, 2016; Richardson et al., 2017). Shared purpose, insightful feedback, task utility and a perception of engagement will either challenge or support a student's understanding of their role within the classroom (Hayes et al., 2015; Khodabandelou et al., 2015; Koohang et al., 2016), while instructor presence creates an additional influence on student engagement (Garrison & Akyol, 2015; Dockter, 2016). These areas significantly impact metacognitive development. An exploration of the factors affecting metacognitive development was the foundation for this study.

In an academic context, the role of metacognition connects to deep learning (Razzak, 2016). Deep learning is an advanced cognitive process that correlates theory with application, makes sense of the abstract, establishes expectations, and evaluates personal progress (Lee & Choi, 2017; Pearson & Harvey, 2013). It shifts the cognitive focus from a static understanding to a purposeful interaction with the material. Although implementation occurs in response to external influences, the development of metacognition is a complex but internal personal process (Kizilcec et al., 2017; Lake & Boyd, 2015). The online learning environment requires strong metacognitive foundations for productive engagement, yet elements with an online course have the potential to jeopardize true deep learning experiences (Garrison & Akyol, 2015).

The literature reveals a consistency in female student performance and engagement within an online classroom when compared to male students in similar courses (Lake & Boyd, 2015; Sawhney & Bansal, 2015). The virtual learning habits of females have been explored through numerous quantitative studies, yet few studies have expressly considered metacognitive development from a qualitative perspective. The foremost goal of this study was to understand the

relationship between the online learning environment and metacognitive development in females between the ages of 18–24 who have taken between two to five online courses.

### **Summary of the Results**

Through a data collection process that included interviews, artifacts, and personal documents, the lived online education experiences of 11 females were explored and evaluated according to the following research questions:

- RQ<sub>1</sub>: How do female students perceive their metacognitive development when engaged in the online learning environment?
- RQ<sub>2</sub>: How are the interpersonal relationships established in the online learning environment perceived as useful by female students for metacognitive development?
- RQ<sub>3</sub>: What online course components are perceived as most influential for their metacognitive development by female students?

These questions were devised according to a conceptual framework that views metacognitive development as dependent upon a successful collaboration of elements spanning both the social learning theory and student approaches to learning theory (Bandura, 1977; Biggs, 1987). Deep learning occurs when there is harmony amongst elements of identity, emotion, interest, community, and proximity (Al-Nuami, 2017; Dockter, 2016; Dudek & Heiser, 2017; Gutierrez de Blume et al., 2017). However, the online learning environment presents a challenge to a successful integration of these elements as students are physically removed from a classroom situation. This alters how students perceive their personal identity and understand the academic community. The theories of transactional distance (Moore, 1997) and community of inquiry (Garrison, 2007) address these obstacles, and were included in the conceptual framework for the influential nature

their components may have on the development of metacognition in an online learning environment.

Student perception of the learning environment has the ability to motivate increased academic engagement or create dysfunctional adaptive strategies (Al-Nuami, 2017; Dockter, 2016). A favorable social presence and positive perception of identity generates interest in a student's academic pursuit, as student's perceive a sense of belonging and increase their engagement through the development and use of self-regulation strategies (Bandura, 1977; Garrison & Akyol, 2015; Hayes, Shea, & Sith, 2015). These strategies include planning, monitoring, goal setting, self-evaluating, assessing, and offering or accepting feedback (Alliprandini et al., 2015; Lehmann et al., 2014). The combined use of these strategies and a favorable perception of self within the online community creates a deep learning approach to the material.

Within the online environment, complicating factors of isolation and distance threaten a constructive perception of the online community and one's sense of belonging (Peaslee, 2018; Razzak, 2016; Richardson et al., 2017). As a student reflects upon the environment, task utility and perception of control are also called into question (Rubin et al., 2018; You & Kang, 2014). Their responses to these elements determine the extent of their deep learning. The research questions designed for this study explored female responses to the components of online learning which had the most significant impact and influence on metacognitive development and deep learning.

### **Discussion of the Results**

By engaging with 11 female participants and their experiences through semistructured interviews, artifacts, and journal entries, this study identified the individual components of metacognition that are unique to females within an online learning situation. After a thorough analysis of the data, which began with an a priori scheme derived from the literature and culminated in an inductive coding approach interpreting context and thought against the research

questions, four primary themes and nine subthemes emerged. The four major themes are: both natural and conditioned responses to contextual factors encourage limited metacognitive development; constructive interpersonal relationships within the online environment are contingent upon shared expectations of interaction; perceptions associated with continuity of learning are impacted by subjective factors corresponding to student expectation; and surface learning is a byproduct of undirected metacognitive development. The overarching themes respond to the research questions, and when combined with their subthemes, emphasize areas of higher education practice and patterns that can empower females toward metacognitive development and academic success. The experiences of the participants highlighted the influence of identity and community in shaping their online perception, and participant responses articulated a need for greater instructor presence, an understanding of task utility, and elements that intentionally developed metacognitive skills.

### **Research Question 1**

The first research question explored the basic components of metacognitive practice as revealed by female student experience. The study expanded on a participant's cognitive understanding of the term metacognition and focused on the aspect of application. None of the 11 participants had heard of the term *metacognition*, yet each participant relayed activities and practices that coincided with metacognitive functions. Perceptions of these activities included the idea that certain strategies were necessary and essential to being successful in the online learning environment. For the participants of the study, their online coursework often allowed them the liberty to determine their own schedule for logging into the course and submitting assignments. Their experiences revealed that they felt responsible for their activity and earning a passing grade, and therefore would devise a plan to ensure this happened. The strategies included setting goals, planning their activities, establishing a schedule, problem-solving and evaluating their progress.

These are considered valid metacognitive practices (Broadbent & Poon, 2015). The example that April provided of her process, “Once I do it, and I write it down, and I look it, then I know I can move on,” confirms the research that “one’s approach to learning is closely related to the learning strategies one uses” (Lee & Choi, 2017, p. 145).

Each of the participants articulated how they approached their abilities to complete the tasks and assignments, but there was little mention of the importance of completing the work for the sake of personal learning and cognitive development. The participants all revealed their academic pursuits were for the purpose of career opportunities, and the primary motivation for engaging with the course work was graduation. Therefore, their use of metacognitive skills was in response external factors rather than an internal quest for knowledge. In short, the implementation of comfortable metacognitive strategies was reactionary, rather than proactive.

The responsive nature of these strategies do not fully support an assumption of deep learning (Coertjens, 2018). As Charlotte mentioned, “I can’t just start working. I have to take extra steps to figure out what the teacher is asking for.” This idea of providing answers or assignments based on criteria was a foundational motivator for all of the participants. Their engagement was a surface learning approach that sought to meet grading requirements, an assumption of instructor expectation, or simply to finish the task by the deadline. Participants relied on rubric evaluations for developing their approaches to assignments or interactions, or with discussion forums, evaluating their own work according the minimums required. Several of the participants indicated they were comfortable with being average students, indicating the motivation for their level of engagement. When looking at their motivation for employing learning strategies, deep learning did not occur although there was in indication of metacognitive use.

Within their experiences, participants relayed contextual elements that required the use of metacognition, such as flexibility with deadlines and resolving conflicting sources of information.

While participants shared similar experiences due to course design elements, each responded differently to demands of time and attention. Their responses to each situation varied, with some students relying on prior collegiate experience to inform their decision-making. The participants who were familiar with traditional classroom settings were able to implement the strategies that had proved successful in the past and adapt them to the online environment. Those who were unsuccessful in processing the information felt the pressure to alter their performance or seek additional help because low grades, complete frustration, and feelings of confusion were present. Evaluation and assessment are metacognitive components, and the red flags of performance were the catalysts for individuals to pursue alternative approaches to the information. Many of the participants indicated the need for self-correcting behaviors simply because the isolation of online environment thwarted their ability to rely on peer or instructor help for clarification. Their hope for doing better in the future rested on their personal effort.

Others attributed their responsive metacognitive strategies to personal characteristics that were continually maturing. This became particularly evident through the presentation of artifacts. Several had items that dealt with time-management, but April identified her planner as an expression of personal control. She revealed that many of the negative experiences in her life were beyond her control, but as she maintains her daily planner and calendar, she feels that she has assumed control of her life and is directing her journey toward a more positive outcome than the experiences of her past. Hope displayed a picture of her horse as an artifact, and relayed that she used his quiet and calming presence to rehearse information and study materials. However, the more she developed this habit, working with her horse became a reminder that schoolwork was a priority and she did not have time to waste. For her, this calming exercise became a type of accountability partner, developing her sense of responsibility and commitment. This personal

maturity and sense of responsibility was echoed by several of the participants, and provided an early foundation for metacognitive functions prior to the online environment.

Kim, the dual-enrollment high school student, shared feelings of uncertainty as she entered the online environment: “I didn’t feel like I was prepared for those online classes in high school . . . It’s over now and I did fine, I guess.” Her success was attributed to external support and assistance, but thinks that her performance would have been better if she had waited a while longer: “I kind of think I would have matured as a student.” Kim’s personal exposure to self-regulation was minimal, as she indicated her high school teachers were very accommodating and in her words, “babied the students.” Her artifact was her MacBook, a Christmas gift that she received during the semester she took online courses. For her, this was the ability to complete her schoolwork from anywhere, as her social life did not really accommodate the demands of online learning. By using the calendar and scheduling function, she was able to set deadline for her homework, but she did not have to sacrifice her personal time to complete the work. She simply incorporated school into her routine. This approach revealed the development of metacognition, but for the sake of task completion rather than deep learning.

Without prior knowledge of the definition of metacognition and by sharing their stories of online learning, all of the participants agreed that the very nature of the virtual environment demanded the use of metacognitive strategies in order to do well in an online course. Because activities of metacognition are individually constructed, there were no right or wrong displays of metacognitive implementation amongst the participants. However, there was a clear distinction between strategies employed for deep or surface learning approaches. This understanding of contextual responses supports prior research concerning the design of online learning and its effect on learner autonomy and learning processes (Broadbent & Poon, 2015; Lehmann et al., 2014).

## **Research Question 2**



The second research question directed the focus towards the relationships established in an online course, and it included conversations about both peer and faculty connections. The literature review suggested social presence as a primary factor in establishing a favorable perception of a learning environment, including a need for identity and sense of community (Garrison & Akyol, 2015). As the participants engaged in the interview process, the line of questioning explored perceptions of their peers, their instructors and factors that encouraged or impeded the development of significant connections. For all of the participants, prior experiences with face-to-face classroom interactions established preconceptions of productive relationships that the online delivery method failed to satisfy. Each participant relied on their prior classroom experiences to frame their perceptions of the online environment.

Interestingly, when interview questions asked about the online community, participants automatically assumed establishing social networking connections with their online peers played a vital role in authentic relationships. The familiarity with online communication through networking sources played a role in a participant's understanding of peer identity. The participants interpreted a sense of community as a social element, decrying any need for additional friendships because of the social balance they maintained outside of academics. There was no perceived value or benefit from connecting with online peers, attributed mainly to a lack of follow-up connection in the real-world. The disconnect from the online community, in addition to assumptions of a dead-end relationships, also stemmed from a judgement perspective concerning reciprocity of effort.

The participants revealed a desire for engagement and authenticity from peers and faculty that mirrored their own efforts. Participants evaluated the credibility of their peers against a display of engagement and tone, while they sought insight and feedback from their instructors to validate their student status and course success. Discussion forums and team projects were identified as

areas where participants felt a lack of consistency in effort and attention from both their peers and the course facilitator. As Daisy identified,

I've noticed a lot of people in my class are very delayed. They turn in their stuff six weeks late. They just want to breeze by and get a C. You know, the whole C's get degrees and all that. I hate that saying . . . Why not go ahead and put in the effort so you don't have to do a second time?

Lilly also mentioned her concern with the engagement of her peers, and spoke of the apathy she perceived from their lack of commitment and diligence to the assignments. As she said,

“Sometimes I point out, like an opposite opinion or like a different opinion than what they said, but they don't respond because they don't care.” She was equally critical of the effort displayed by instructors throughout the course.

I think there are very few professors that care about it, and a lot of professors just don't really care about their online courses. So a lot of them just seem to like set up the online course at the beginning of the semester and then they don't really do anything with it at all.

Kim reported a similar experience with her professors, and in one course felt that she had a robot for a professor.

Yeah, sometimes we would not get responses and sometimes, It's like-it would be just everybody that would ask the same question, he would have like the same, exact same response. And it was just weird. I don't know if he would like copy and paste stuff like over and over again.

For a majority of the participants, relationships were viewed as a means to an end, advocating that each connection held potential value when their counterpart (whether peer or professor) mirrored their endeavors and complimented their learning needs. Ginny stated it succinctly, “They are there when I need them, but for me, I try not to use them. I would rather try

to do it on my own before I go and bother a bunch of random people.” Kim established connections with her online peers outside of the virtual classroom, but also spoke to the uniqueness of her situation as a dual-enrollment high school student taking online classes with her traditional classmates.

As a general practice amongst the 11 participants, relationships were only sought after when it proved beneficial to their personal goals or the course requirements. Connecting on a superficial level often satisfied requirements for discussion board or team project assignments, while out-of-class contact was usually for clarity or information related to a specific course element. Deeply engaging in conversations that challenged or elaborated on theory rarely occurred. Molly shared her disinterest in pursuing meaningful academic conversations as she referenced discussion board interactions. She states, “All the classes I’ve had they use a lot discussion boards where the professor poses a questions. Students answer back and forth and that really does nothing for me.” Failure to connect with peers was not wholly seen as a negative online experience, but rather an opportunity to insulate their own performance against perceived inferior effort. This was reinforced by a perception of little long-term value in establishing meaningful relationships with peers. Daisy commented that “It’s very different for every person, but for my general perspective, I do think that it does make it a little bit easier to avoid forming those connections because you don’t have the repercussions from your peers.”

Participants who were unable to validate their connections to faculty regarded the situation as an assumed byproduct of the online learning environment. The lack of office hours, the pace of communication, and the absence of face-to-face attention were all considered negative influences in developing a relationship with their instructors, yet all but one of the participants felt this did little to influence their overall performance in a course. When asked if the interaction with online faculty has helped or hindered her growth, Luna mentioned, “It has definitely helped in the sense

of someone is always there to answer a questions, but I think on the flip side of that it has hindered because that answer may not be right away.” Furthermore, each participant developed strategies to address these concerns such as seeking help from peers or internet resources. As a whole, participants expressed an attitude of indifference toward the lack of connection, blaming the environment for the lack of interaction. It was neither a positive or negative assessment, but a challenge for them to assume responsibility for their online success.

The participants also regarded their professor’s merit as influential in the same way they developed their foundational assumptions for pursuing relationships with peers. Participants engaged more fully with a course and identified with the objectives when led by faculty who displayed higher levels of interest and engagement, as noticed through insightful feedback, online presence, quality of course design, and ease and speed of communication. A low instructor presence, as evidenced by little diversity in the instructional design of online classroom, little to no feedback, failing to reply to communication and attempts, and inconsistent grading habits developed an indifference toward deep learning. In these scenarios, participants regarded coursework as simply a means to an end. Hope indicated feelings of rejection and isolation from her professor given her status as on online student and the instructor’s absence from the community: “We were less important to them and our learning wasn’t as valuable.” Garrison (2011) included teacher presence in the theory of community of inquiry, as it is the design, organization, and facilitation of the online learning environment that propels “personally meaningful and educationally worthwhile learning outcomes” (Al-Nuami, 2017, p. 501). When there is a perceived increase in teaching presence, female engagement also rose (Al-Nuami, 2017).

The areas of disconnectedness expressed throughout the participant interviews and journal entries were attributed to issues of time and distance. Transactional distance played a part in their perception of establishing relationships, yet most of the participants did not purposely seek to

engage with peers and validate a connection. As Rita explained, “There are people on the other side that you know you are talking to but you don’t get it. I guess it’s kind of like a robot. You don’t know anything about them.” Participants cited a perception of tone, a determination of a legitimate need of assistance, an assessment of overall character and barriers of demographic elements as reasons for avoiding relationships with fellow students. Two participants shared experiences of taking more than one class with the same individual, and it was enough common ground to reach out for academic assistance. The other nine participants established an online identity that implied a willingness to help, but never initiated such contact with their online peers. These participants felt their lengthy and persuasive appeals in discussion forums and a choice to respond to more than the minimum required number of peers would indicate their level of credibility and knowledge. Ginny was the most critical of this process as she stated, “I want to be a team player, but I am not going to do all the work for them. They can come to me if they need something.” All participants believed it is easier to establish authentic relationships through face-to-face interactions within a classroom environment than reaching out through digital means.

The importance of relationships, as identified through this study, might be more reflective of a millennial perspective and culture. Given the initial remarks and comments made concerning social media connections and establishing community through online networking avenues, the participants are accustomed to superficial relationships for the sake of polite connections but with little expectation of value. All of the participants viewed daily exchanges within a physical classroom as a way to establish relationships, yet few of them revealed they had done so in a manner that extended beyond the classroom setting. The idea of community has been reshaped by the digital age, and the participants of this study, although advocating for simultaneous chat functions and better communication systems, held to an idea of community as being available for each other. Digital connections present an allusion of closeness, yet as the participants revealed,

there is no connection unless there is some perception of value or mutually beneficial exchange motivating the relationship.

### **Research Question 3**

The final research question explored participants perspective of course elements and the impact on metacognitive development. The participants' experiences brought diversity with online exposure, as courses taken and programs of study were varied. In spite of these differences, many of the participants spoke of similar instructional methods and course assignments. The overall perception revealed that a lack of variety in course elements could potentially work against participant learning styles. As Molly revealed, "It's more difficult for me to learn through an online process of just reading the materials or doing the online videos. I have to work harder than being able to experience it and learn that way."

For those who engaged best through visual and tactile methods, the online environment held few opportunities for participants. These participants found alternative instructional help, and often utilized tools and resources that did not maintain academic rigor. By choosing to pursue resources beyond the academic environment, participant's jeopardized the authenticity and credibility of deep learning. Rather than turning to their course syllabus and areas of the learning management system designed to address questions and offer assistance, participants looked for temporary solutions in YouTube, Wikipedia and family and friends to answer immediate assignment or task needs. Every participant mentioned the use of Google as their primary resource when the online classroom failed to provide enough instruction. Thalia was a staunch supporter of the internet as a means of solving a problem, "You can also do a lot of research and other stuff just by googling everything." There was little regard for the credibility of sources used for academic purposes, and this pursuit led participants away from deep learning.

Four participants recalled specific courses and the assignments within them that created application scenarios, but the majority of the courses taken did not provide enough activity and engagement to foster metacognitive strategies of application and evaluation. Several participants mentioned the use of Ted Talks as the most effective form of taking textbook information and understanding it in layman's terms. As the speakers would discuss the theories highlighted in the week's reading, connections to real-world application would be made, challenging participants to move beyond terms and definitions and find meaning in their own situation. Kim, the dual-enrollment student, said she learned more from the Ted Talks than she did the rest of the course instruction in her psychology and American literature courses.

The Ted Talks really do help, I say, break it down really well. The speakers just really, really make sense. They just do-you get a better understanding for it. I don't know how those people like make so much sense compared to like other people.

When viewed contextually, participants were rarely willing to engage in discussion forums and activity, perceiving little value in information regarded simply as the opinion of a peer. As Rita mentioned, "You don't talk outside of the line, you know? You answer the question, we respond and you know, you move on." The lack of faculty direction and involvement in these activities weakened the effectiveness of the exercise, and participants perceived these elements as busywork and a formality rather than deep learning opportunity. The participants were very outspoken with their opinions and perceptions of discussion forums.

Of the participants, Lilly had the sharpest criticism and prefaced her opinion in light of her peer's performance when it comes to engaging in online discussions. She stated, "People [students] don't take them super seriously. Like go write a couple sentences, then you comment on other people because you have to and you say something like one sentence." There was an obvious cynicism to the effectiveness of the assignment, especially when viewed against a student's

perception of their peer's performance and effort. Kim had a similar expression detailing her level of engagement.

I just kind of answered it [discussion point] because, I don't know? Like other people in the class, they didn't really take much time into answering it—like with a full paragraph, so I would just kind of write down whatever the first thought was.

However, participants did express appreciation for the practicality of an activity that challenged their understanding of a topic or theory. Participants recognized the benefit of engaging with different opinions and perspectives. Charlotte mentioned, “I can see what one person's opinion is and balance that against mine so I can respond to them and say ‘here's what mine is’ and we could have a discussion about it.” Hope also indicated this awareness, saying “I would imagine that's their goal. So that you're communicating and not just kind of being an introvert. Shutting yourself out from the world and taking on life.” As a whole, the participants felt that the lack of structure hindered attempts at true reflective and insightful discourse. As such, participants relied more on their autonomous efforts for truly absorbing the material, rather than viewing course elements objectively and with metacognitive importance.

Too much autonomy can encourage unfounded increases in self-efficacy. Participants were confident in their abilities to complete assignments, but the overall danger in this perceived confidence is the potentially dysfunctional strategies that are employed in the process. The long-term effects of surface learning strategies may impact career aptitudes and skill development. The training received during academic pursuits is designed to improve cognitive functions, and a healthy response to the challenges is to approach difficult situations for the potential it may hold.

### **Discussion of the Results in Relation to the Literature**

During the literature review, several key components were identified as necessary to establishing deep learning within the online learning environment. These attributes influence metacognition and impacted a student's perception of the learning environment. When viewed in



light of the findings of this study, the participant experiences reveal unique perspectives on metacognitive development in the online learning environment. The resulting themes and subthemes are directly connected to these attributes.

### **Self-Regulation**

The first theme revealed through data analysis states that both natural and conditional responses to contextual factors encourage limited metacognitive development. This was evidenced through participant actions of self-regulation, and associated with influencing factors or prior experience, personal intuition and the virtual environment. Self-regulation is a primary component of metacognition, with students demonstrating strategies of planning, monitoring, evaluating, and making adjustments through the course of their education (Lehmann et al., 2014; Pellas, 2014). Strong displays of self-regulation increase favorable learning experiences, heightened self-efficacy, and greater academic achievement (Pellas, 2014; You & Kang, 2014). In a study by Alliprandini et al. (2015), younger female college students displayed minimal self-regulation strategies and high levels of dysfunctional learning strategies. Dysfunctional strategies include cramming, procrastination, and distracted study techniques such as listening to music or socializing with friends while completing assignments (Alliprandini et al., 2015). For students applying metacognitive strategies, self-regulation acknowledges the adverse effect of these activities on academic achievement and alters behaviors or environments to be more constructive (Alliprandini et al., 2015; Lehmann et al., 2014).

This revealed that participants would devise personal accountability measures for completing their work. The use of calendars, cellphone reminders, and daily planners were some of the methods used for strategizing and planning their coursework. Objectively seeking and interpreting feedback or input from peers and professors also displayed a willingness to engage in evaluating their progress and altering their habits, plans, or presentation as necessary to earn a

higher grade. Participants were quick to identify areas of weakness concerning their approach to online learning, indicating social activities and personal habits could jeopardize their grades and overall educational goals. The experiences shared throughout this study coincide with the findings concerning self-regulation as an influencing factor in metacognitive development.

## **Identity**

The second emergent theme dealt with participants understanding of identity and their place within the online community. The findings revealed that constructive interpersonal relationships within the online environment are contingent upon shared expectations of interaction. This position was further revealed through ambivalence towards connections and founded upon perceptions of equitable effort. Participants approached their online peers on an *as needed* basis, looking at the perception of value the connection held. If a peer did not seem to be their academic equal, no relationship was desired. If there was mutually beneficial outcomes from interaction and assisting, participants would be acceptable to forming a relationship. However, there were no indications that a relationship was needed in order to thrive in the online environment.

Researchers have established identity as a complex but vital component of the female online learning experience (Du et al., 2016; Garrison & Akyol, 2015). The social community in online learning has the potential to dispel stereotypes and bias associated with gender or age-related variables, giving female students the perception of opportunity in establishing their identity (Du et al., 2016; Garrison & Akyol, 2015; Richardson et al., 2017). The perceptions of acceptance, equality, support, and contribution can impact the formation of online identity in a female student, which will subsequently affect the overall perception of the online environment and student engagement (Du et al., 2016; Richardson et al., 2017; Rubin et al., 2018).

This study supported literature findings that identity is influential, but the experiences of the participants did not place significant emphasis on a deep need for a favorable perception of

identity as influential in overall engagement. This finding was of particular interest, as it presented an alternative perspective to the research conducted by Hamid et al. (2015). The study considered the benefits of implementing online social networking tools for teaching and learning within an online course, but it dealt wholly with a range of social technologies that were not mentioned or explored in this study. The data from nine focus groups comprised of a mix of male and female students supported the use of social connections for collaborating, sharing content, deepening a student's mastery of the course material, and accessing feedback (Hamid et al., 2015). These interactions created more favorable perceptions of online relationships and the fostered idea of community; two things which significantly contribute to a favorable learning environment (Garrison & Akyol, 2015; Henderson et al., 2015).

This opinion was not echoed by the 11 participants of the metacognitive development study, and influencing factors may be attributed to a lack of exposure with the social technologies used in the prior research, the demographic differences of age and gender, as well as the degree level obtained. This study choose a younger, strictly female demographic with relatively minimal online learning exposure. Age, experience, academic maturity and metacognitive development create learning patterns and approaches that significantly impact a student's collegiate journey, and consistent engagement and intrinsic motivation occurs more prominently in a middle-aged female bracket with substantial life experience and greater number of courses completed (Alliprandini et al., 2015; Henderson et al., 2015; Rubin et al., 2018; Vermunt & Donche, 2017). These differences could impact the varying perspectives concerning the significance of peer relationship, as the participants from this study placed a moderate emphasis on establishing connections and did so only when it suited their academic needs and satisfied personal preferences of authenticity. Mature learners with deeper metacognitive tendencies may be able to appreciate the value in establishing academic connections regardless of how it suits a personal need (Du et al., 2016; King, 2014).

The overall perception of teaching presence was also revealed through this study. Garrison and Akyol (2015) promote direct instruction and facilitating discourse as two fundamental elements of design and organization that a professor can control to stimulate student engagement within an online course. Drawing students into the idea of online community is done through sharing personal meaning with the material and directing discussions towards deep learning applications (Dockter, 2016; Garrison & Akyol, 2015; Khodabandelou et al., 2015). Literature supports student engagement as responsive to course design and facilitation, and from a deep learning perspective, this idea was supported through the participant's experiences (Al-Nuami, 2017; Lee & Choi, 2017; Lundberg & Sheridan, 2015). Participant's desired insight and feedback from the instructors of their courses, as it was deemed valuable to continued academic success. However, failing to receive the communication they desired or the attention they sought and expected did not detract from a personal commitment to complete the course. While instructor presence was considered it important, it did not impact surface learning approaches and strategies. Participants still submitted homework assignments by deadlines, worked through their resources and participated as required in discussion forums and team projects. Deep learning did not occur, as participants indicated most of their activities were to satisfy an inconsistent grading standard or assumptions of what the professor wanted.

## **Perception**

Throughout the course of the study, the questions and interactions were designed to elicit the female perception of their metacognitive development. This was done through an exploration of the elements of both metacognition and deep learning. Female students adapt their learning strategies and overall engagement according to their perception of the learning environment (Gutierrez de Blume et al., 2017). In this study, a third emergent theme arose concerning the perception of the learning experience. Perceptions associated with continuity of learning are

impacted by subjective factors corresponding to student expectation. As subjective factors could influence an either positive or negative perception, the implications of this theme on approaches to deep learning are significant.

Favorable perceptions, as encouraged through intellectual challenge, a sense of community and perceived self-efficacy, increase student engagement and support deep learning (Al-Nuami, 2017; Richardson et al., 2017). Female students rely on a combination of perceived learning, the perceived usefulness of activities, and the perception of social presence to determine their interaction with peers and display positive self-regulation strategies (Khodabandelou et al., 2015; Razzak, 2016). Student expectations for the online learning environment are devised according to prior learning environments and past experiences. A combination of these expectations and a current assessment of their environment and situation is the perception that guides either a surface or deep learning approach (Richardson et al., 2017).

This study was designed for female students with limited online learning exposure in order to avoid potential bias from years of online experiences. While the goal was to explore the initial perceptions of online coursework, it was understood that personal experiences are often shared according to more recent experiences. Only two participants had never taken a traditional campus-based college course and were able to share their experiences completely according to their online exposure. The remaining nine participants evaluated their perceptions according to their traditional classroom experiences. They drew comparisons between traditional and online coursework, and it became the foundation for their assumptions and expectations of the online learning environment. The participants established preconceptions concerning how communication should work and desired reciprocal engagement. They also formulated opinions as to effective teaching methods or learning activities according to experiences within a brick and mortar classroom. These perceptions influenced their decision-making but in ways that reflected a surface learning adaption

to their environments (Lake & Boyd, 2015). Their motives for engaging with the community, classroom environment and course materials were hinged upon their perceptions rather than desire for deep learning applications (Lee & Choi, 2017).

### **Self-Efficacy**

The emotional motivation propelling female student engagement is found in their perceived levels of self-efficacy, yet it is also observed through academic success and increased displays of engagement (Wang et al., 2013). Self-efficacy is “linked to the level of confidence that a person has according to his abilities to perform an action” (Bandura, 1977 as cited in Javed & Tariq, 2016, p. 42). Feelings of self-efficacy contribute to decision-making with career or academic situations, and can be developed through specific areas of instruction, training, and hands-on experience (Javed & Tariq, 2016; Lourens, 2014; Monteiro & Almeida, 2016). Research indicates that a strong sense of identity, encouraged and supported by the learning community, aids in the development of personal self-efficacy (Lourens, 2014; Pellas, 2014).

The data from this study led to a fourth emergent theme that addressed the influence of self-efficacy on metacognitive development. The theme revealed that surface learning is a byproduct of undirected metacognitive development. In relation to the attribute of self-efficacy, participants in this studied relied on their own efforts and abilities to acquire new information, determine application and resolve conflict. When engaged in the online learning environment, decision-making was shown to be an important component of a participant’s perception of control. Looking for answers and resolving concerns beyond the virtual classroom revealed their sense of responsibility but also reflected their capability to succeed in spite of the unorthodox approach to academics. Relying on tools like Google, Wikipedia, and YouTube demonstrated their sense of self-efficacy, but the impact of these choices revealed surface learning approaches that sought

information to meet assessment requirements rather than engaging critically and thoughtfully with the material.

The participants of this study expressed satisfaction with their grades and performance during their online courses, and each one attributed their success to the ability to find the answers they needed and meet grading requirements. Their sense of self-efficacy did not stem from their ability to absorb the material and make application, but their understanding of how the online learning system worked and what needed to be done in order to make good grades and continue on in their program. In this regard, the results from the study support the idea that self-efficacy contributed to increased student engagement, but it does not guarantee an increased development and application of metacognition.

### **Limitations**

This study offers insight into the perception of metacognitive development in females taking online courses, but its primary limitations are the sample size and selective nature of the recruiting process. The recruiting was confined to a rural college and only accepted female participants who were between the narrow age range of 18–24 years old. It demanded a limited online exposure, establishing an eligibility requirement of between two to five online courses completed with a “D” or higher. While this study cannot be considered a comprehensive analysis of all higher education institutions and their student populations, the research site and participants could represent any number of colleges, universities and female students across the country. The delimitations that were established provided focus and boundaries for the study, yet did they did restrict the sampling location and number of participants.

The nature of a qualitative study also relies heavy on the experiences of the participants, and unless relayed truthfully and accurately, the analysis could inadvertently be grounded in bias or misrepresentations of the actual occurrences (Creswell & Poth, 2018; Merriam & Tisdell, 2016). Accounting for researcher bias throughout the coding process was an attempt to minimize undue

influence during the analysis phase, but the human element of the coding process and researcher understanding may also present itself as a limitation with this study. The use of pilot study identified areas of weakness in the researcher's interviewing skills, and highlighted areas that could influence a participant's response. This approach offered data that was purely related the participant's experience. The use of a priori coding scheme was another area of protection against researcher bias, as the initial coding scheme was grounded in literature and theory rather than the researcher's personal understanding of metacognition. Steps were taken to avoid potential bias, such as member checking and the use of multiple forms of data. Through these steps, the researcher accounted for the limitations that were present in the study.

### **Implication of the Results for Practice, Policy, and Theory**

This case study contributes to the growing body of qualitative literature exposing female learning patterns in an online environment. The use of personal experiences from 11 participants reveals notable themes of metacognition and its impact on deep learning. While the literature review confirmed the need for metacognitive strategies and development to pursue deep learning, little exploration has been done to critically assess the female perspective of factors that impact metacognition in online learning environment. The analysis from this study provides several areas where further attention and change is warranted. These include areas of practice, theory and policy.

#### **Implications for Practice**

Through the testimonies of the participants, it was revealed that there are several areas of improvement when devising online curriculum from a metacognitive perspective. While course elements are often designed to improve metacognition and motivate student engagement (Dudek & Heiser, 2017), the data revealed that an absence of authoritative direction and instructional consistency would only stimulate a surface learning approach to the course environment. In light of this study, the analysis revealed that metacognitive strategies are employed as a reactionary



response rather than a proactive approach toward academic success without proper guidance and feedback.

The opportunities for students to engage with course materials should address scenarios of application and real-world implications in order to more holistically explore student learning. The participants of this study offered their own ideas for areas of practice, and many of them advocated for altering instructional methods to adapt to learning style differences. Few found it helpful to simply read through textbooks and understand what was most important in the required materials. The use of multi-media presentations can address learning style challenges, but would be most effective if the instructor was clearly visible and identifiable. The lack of physical connection to peers and faculty can be addressed through real-time web conferencing or live chat features. Many advocated for the removal of discussion board forums and replace it with a simulation project or virtual chat function that allows for simultaneous exchanges of ideas.

Metacognitive development is a personal process, yet it is influenced by the perception of the surrounding environment (Lundberg & Sheridan, 2015; Pellas, 2014). If the student perceives that others around them are committed to engaging with the material and challenging their own thoughts and assumptions, it will serve as motivation and potentially lead to a deep learning encounter with the material (Vermunt & Donche, 2017). Although this learning approach significantly but favorably impacts retention, the student develops the self-efficacy and experience needed to thrive outside of the classroom (Abdellah, 2015).

### **Implications for Policy**

Just as online students are evaluated and graded according the amount of effort they display with their coursework, so too should faculty members be held accountable for their instructional and facilitating efforts. Every participant but one indicated that there was a noticeable absence of instructor involvement when evaluating discussion forum responses, desiring feedback and waiting

on return emails or messages. Online coursework should provide areas of autonomy as it increases student flexibility, but it should not marginalize the importance of academic excellence and professional responsibility. Students should not need to seek external support and additional resources from unreliable sources such as Google or YouTube when an instructor is accessible. Systems of faculty evaluation should include accountability for their course presence and provision of quality instruction and feedback as it impacts student engagement. Razzak (2016) states that deep learning and critical thinking are promoted when faculty increase their involvement with online students and provide a context for discovery-learning, active engagement and application.

Student engagement with course materials should also involve more real-time assessments of learning and explore the digital opportunities presented by online delivery (Henderson et al., 2015). Several of the participants had very little familiarity with field-specific assignments and digital learning tools. Those who did receive instruction by way of an interactive textbook, team project, real-world software assignment or multimedia activities confirmed an increase in their confidence with the material and the ability to translate theory into practice. Designing the online curriculum to be student-centric will include instructional conventions that engage the students with difficult cognitive tasks or activities that involve formulating hypotheses, interpreting or analyzing information, constructing argument, drafting multiple solutions and synthesizing multiple forms of data (Lee & Choi, 2017). The tasks reflect a deep learning approach to the material and require an advanced usage of metacognitive strategies (Broadbent & Poon, 2015). By resolving these concerns with policy changes, the online curriculum can more fully address female learning needs and encourage metacognitive development.

### **Implications for Theory**

This study was founded upon a multifaceted conceptual framework that supported deep learning as a primary outcome of metacognitive development (Biggs, 1987; Bandura, 1977;

Flavell, 1979). It took into account the influence of the online community, student identity and the impact of transactional distance (Garrison & Akyol, 2015; Moore, 1997). While the results from this study supported the theoretical underpinnings of metacognition and its impact on deep learning, the perception of identity and one's responsibility to the online community do not fully coincide with the ideas of teacher and learner presence as devised by Garrison (2007) in his community of inquiry theory. Within a CoI environment, the connections between social and cognitive presences will create a favorable perception of the learning environment. Teacher presence is the catalyst that draws the community together through curriculum design, instructional methods, and tasks (Garrison & Akyol, 2015). These elements are designed to incite collaborative exchanges amongst academic peers. However, when any component—whether social, learner, or teacher presence—is perceived as missing, the resulting environment creates a dysfunctional exchange of social responsibilities rather than supportive academic relationships (Al-Nuami, 2017).

A student's need to connect with peers must move beyond establishing a socio-emotional presence, and yet the responses of each participant identified this type of relationship as their primary understanding of the online community. True community cohesion will require an intellectual focus, which in part is the responsibility of the course facilitator through design, instruction and student accountability (Du et al., 2016; Hayes et al., 2015). By understanding how a student values an online relationship, curriculum and course design can be devised to create opportunities that challenge their assumptions and portray relationships as a necessity for academic success. The focus of all interaction and instruction should be for the stimulation of deep learning (Rubin et al., 2018).

Exploring how instructors perceive the importance of their involvement within the online learning environment will also address this area of relationships. The theory of transactional

distance is of particular importance to this understanding (Moore, 1997). When social interactions are perceived as unauthentic, students will disengage from a deep learning approach and respond according to reactionary impulse (Dockter, 2016). Communication patterns in a peer/instructor distance relationship are perceived as an indicator of the social connection existing between the two (Ekwunife-Orakwue & Teng, 2014). When students experience delayed emails, a lack of feedback, little instructional presence, and inconsistent grading standards, emotions of anxiety, frustration, mistrust and misunderstanding influence the overall perception of the learning experience (Dockter, 2016; Ekwunife-Orakwue & Teng, 2014). The significance of the instructor presence is validated through the results of this study, as participants indicated their dissatisfaction with their online experiences and their course facilitators. While they did complete their assignment and finished their courses, their testimonies revealed surface learning approaches rather than a deep learning assimilation of the material.

### **Recommendations for Further Research**

This qualitative study can be replicated in other institutions to provide additional insight into the perceptions of metacognitive development for females taking online classes. By expanding on the age range and including all courses a participant attempted, it could examine arguments that metacognition and deep learning are influenced by both age and experience. The selection of participants could also be extended to include 4-year institutions and students at a graduate level of academic achievement. As the United States census information indicated a gap in the 4-year and graduate school achievement of females compared to the males who responded to the survey, this could illuminate new areas of difficulties female students experience, and assess whether their metacognitive skills are thoroughly grounded and capable of addressing the challenges they face as they pursue higher education (United States Census Bureau, 2017). Studies could also be limited to

specific disciplines to determine the effectiveness of online instruction, especially those disciplines where females constitute a minority of those enrolled.

A study that expands upon the area of interpersonal relationships in the online learning environment would help add more clarity the body of research on the community of inquiry theory. As the results of this study revealed preconceptions and assumptions as influential in determining viable relationships online, further research could examine these areas and address the situations that seem to perpetuate potentially unrealistic expectations for online involvement. A study that chooses to focus on the perceptions of online instructors and their identity within an online course may bring awareness as to how course curriculum or faculty training can be redesigned to improve the relationships between student and instructor. It could also add clarification to the definition of online community roles and how to mingle the two successfully.

Lastly, studying the long-term effects of metacognitive development in females would be beneficial for the demographic as a whole. Even without substantial educational achievement, foundational decision-making based on mature metacognitive strategies can improve the success of females in a variety of environments. A study that focuses on females who have dropped out of online college courses and explores the situations or challenges that incited the decision could provide information about curriculum design, instruction or community that is unique to the demographic.

### **Conclusion**

The purpose of this qualitative case study was to explore female perceptions of their metacognitive development when engaged in an online learning environment. The researcher sought to explore their experiences holistically, and it was directed by questions that explored factors impacting both metacognition and the participant's perception of the online environment as a whole. Factors of influence included the perception of identity and self-efficacy as they relate to

connecting with the online community, and the exploration of which course elements were most assistive in developing one's metacognitive strategies. A primary outcome of increased metacognitive use in the online learning environment is a deep learning approach that moves away from theory and toward critical thought and application of the course material. By acknowledging that factors of physical connections, proximity and facilitation created potential complication for metacognitive development in an online learning scenario, the conceptual framework was designed to promote deep learning as a result of metacognitive development only when student's favorably responded to adverse conditions and relied on social constructs for increased motivation.

Through a data collection process that involved interviews, personal journal entries and artifacts, 11 female participants between the ages of 18–24 shared their personal experiences with online learning. Through extensive coding measures that began with an a priori coding scheme and finished with an exhaustive inductive analysis, the data revealed that metacognitive development can occur without a participant recognizing its impact or function. Each emergent theme was associated with the attributes that define metacognition and explored for potential implications to the field of higher education. These findings assist with filling a disparity in the amount of qualitative literature exploring female metacognition in an online learning context, while also providing practical areas of improvement for higher education's online curriculum design and instructional methods. The research revealed that in spite of negative perceptions concerning influencing elements, the participants were able to complete their coursework through limited metacognitive use and with a surface learning approach. It provided insight into the contextual elements of online learning that have the most significant influences on developing metacognitive skills for the purpose of deep learning.

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## **Appendix A: Pre-Pilot Semistructured Interview Questions**

1. What is your age?
2. What is your ethnic background?
3. What is your student status?
4. How long have you been a student and what is your major?
5. What prompted to you to register for online classes?
6. What is your perception of the online classroom?
7. How would you define your understanding of metacognition?
8. How do you feel the online learning environment has improved your understanding of self and the ability to learn?
9. What course elements have you found to be most effective in developing your critical thinking or processing skills?
10. What are the greatest challenges you have encountered in your online learning experience?
11. What strategies have you used to address the challenges you encountered?
12. What is your perception of the online community and establishing connections with peers?
13. What strategies have you employed to establish your identity in the online course community?
14. How have the interpersonal relationships of your online learning experience impacted your academic engagement?
15. Describe an experience working with your classroom peers that was beneficial to your learning experience.
16. How has your interaction with online faculty helped or hindered your academic growth?

### **Artifact Follow-Up**

1. Describe an item of importance to you which may symbolize your online learning experience.
2. Describe something you have accomplished, as a result of your online learning experience.
3. Describe any items you have chosen to collect and keep during your online learning journey, and why they are important.

## **Appendix B: Post-Pilot Semistructured Interview Questions**

1. What is your age?
2. What is your ethnic background?
3. What is your student status?
4. How long have you been a student and what is your major?
5. What prompted to you to register for online classes?
6. What is your perception (what are your thoughts) about the online classroom?
7. Are you familiar with the term metacognition? (if no, then present definition)
8. Given this definition, how you explain metacognition in your own words?
9. As you think about metacognition, how do you feel the online learning environment has improved your understanding of self and the ability to learn?
10. What course elements have you found to be most effective in developing your critical thinking or processing skills?
11. What are the greatest challenges you have encountered in your online learning experience?
12. What strategies have you used to address the challenges you encountered?
13. What is your perception of the online community and establishing connections with peers?
14. Are you familiar with the term identity? (if no, refer to definition sheet)
15. In light of this definition, what strategies have you used to establish your identity in the online course community?
16. How have the interpersonal relationships of your online learning experience impacted your academic engagement?
17. Describe an experience working with your classroom peers that was beneficial/helpful to your learning experience.
18. How has your interaction with online faculty helped or hindered your academic growth?

19. What is your overall perception concerning your connections or communication with online faculty?

### **Artifact Follow-Up**

1. Describe an item of importance to you which may symbolize or give us the best snapshot of your online learning experience.
2. Describe something you have accomplished as a result of your online learning experience.
3. Describe any items you have chosen to collect and keep during your online learning journey, and explain why they are important.

### **Conclusion**

Are there any final thoughts you would like to share about your online learning experience?

### **Appendix C: Interview Resource—Definition of Metacognition**

**Metacognition:** the individual mental processes that include learning, reasoning, memory, problem-solving, and attention and decision-making to pursue authentic learning

**Identity:** an understanding of who I am as a person in whatever role or environment I am engaged in

## Appendix D: A Priori Coding Scheme

### *A Priori Coding Scheme*

Area of Metacognition		Literature Support
Self-Regulation	<i>AL; CoI; SLT; TD</i>	Artino & Jones, 2012; Cho & Shen, 2013; Garrison & Akyol, 2015; Gutierrez-Brajos, 2015; Hayes et al., 2015; Kizilcec et al., 2013; Pellas, 2014; Wang & Ross, 2013; You & Kang, 2014)
Task Utility	<i>SAL; SLT; CoI</i>	Dang et al., 2016; Dicker et al., 2018; Garrison & Akyol, 2015; Henderson et al., 2015; King, 2014; Lee & Choi, 2017; Lourens, 2014; Lundberg & Sheridan, 2015; Razzak, 2016)
Identity	<i>SAL; SLT; TD; CoI</i>	Du et al., 2016; Dudek & Heiser, 2017; Garrison, 2007; Garrison & Akyol, 2015; Lourens, 2014; Richardson et al., 2017)
Emotions	<i>SAL; CoI; SLT; TD</i>	Artino & Jones, 2012; Dang et al., 2016; Du et al., 2016; Khodabandelo et al., 2015; Lake & Boyd, 2015; Pellas, 2014; You & Kang, 2014)
Peer Relationships	<i>SLT, CoI, SAL; TD</i>	Du et al., 2016; Dudek & Heiser, 2017; Garrison, 2007; Garrison & Akyol, 2015; Hayes et al., 2015; Khodabandelo et al., 2015; Lunderberg & Sheridan, 2015; Richardson et al., 2017)
Instructor Relationships	<i>SLT, CoI, SAL; TD</i>	Dang et al., 2017; Garrison, 2007; Garrison & Akyol, 2017; Hayes et al., 2015; Khodabandelo et al., 2015; Lundberg & Sheridan, 2015; Razzak, 2016; Richardson et al., 2017)
Achievement	<i>SAL, SLT; CoI</i>	Artino & Jones, 2012; Cho & Shen, 2013; Dang et al., 2017; Gutierrez-Brajos, 2015; Kizilcec et al., 2016; Lake & Boyd, 2015; Richardson et al., 2017; Wang & Ross, 2013)
Motivation	<i>SLT; SAL; TD; CoI</i>	Lee & Choi, 2017; Lake & Boyd, 2015; Gomez, 2013; Gutierrez-Brajos, 2015; Kizilcec et al., 2016; Pellas, 2014; Richardson et al., 2017; Wang & Ross, 2013)
Self-Efficacy	<i>SLT; SAL; CoI</i>	Cho & Shen, 2013; Dang et al., 2017; Gomez, 2013; Gutierrez-Brajos, 2015; Lourens, 2014; Pellas, 2014; Wang & Ross, 2013)
Setting	<i>SLT; CoI; TD</i>	Diep et al., 2017; Garrison & Akyol, 2015; Page & Kulick, 2016; Rubin et al., 2018; Vermunt & Donche, 2017).

SAL: Student Approaches to Learning; CoI: Community of Inquiry; SLT: Student Learning Theory; TD: Transactional Distance



## Appendix E: Expressions of Metacognition

### *Expressions of Metacognition*

Participant	Self-Regulation	Assessment	Problem-Solving	Evaluation
April	"I'll just give myself a little portion of each class to do every day"	"Once I do it and write it down and I look at it, I know it"	"I was just like, listen—I don't understand what is happening and I need help"	"The things I learn in my class, I find them in my job all the time"
Katie	"I'll always make sure that I am able to do what I need to do to get that A"	"I've got to dig a little deeper"	"Ask questions and do more essentially, to try and figure out what's going on"	"I like to see how it's happened in the process"
Daisy	"Making specific deadlines. So if it was due on the 10th, I made it due on my schedule on the 8th. So I always made it early, that way I wouldn't have the option to really procrastinate and to forget about assignments and all that. And I would set reminders"	"I think it kind of shows a lot of your weaknesses and your strengths in one"	If we have a question, we're going to reach out to the other leaders in the class . . . and we overcame that. We finally figured out how. We snapped pictures on Facebook of our computers back and forth and back and forth for—I guarantee you—three weeks trying to figure out what was wrong with this assignment"	"So it's definitely prepared me for like—what I'm going to do and it's been very useful"
Ginny	"I check my schedule and just try to get it all done at the beginning of the week if I can"	"Usually I know the subject I am good in so I will know how much work the class is going to take to get a good grade"	"I hate not knowing, but sometimes the answer or information isn't there. I guess I try to find it on my own even if it might be wrong"	"I always check the rubric grade for what I got wrong so I can do it different the next time"

## Appendix E: Expressions of Metacognition (Continued)

### *Expressions of Metacognition*

Participant	Self-Regulation	Assessment	Problem-Solving	Evaluation
Ginny	"I check my schedule and just try to get it all done at the beginning of the week if I can"	"Usually I know the subject I am good in so I will know how much work the class is going to take to get a good grade"	"I hate not knowing, but sometimes the answer or information isn't there. I guess I try to find it on my own even if it might be wrong"	"I always check the rubric grade for what I got wrong so I can do it different the next time"
Hope	"I can push myself. So I know now that I will push myself and I will get it and make the good grade"	"You have such and such time, have it done by this class time. And you have to make that your own. And I think it would be helpful if you wanted to have your own career or be self-employed"	"I would try and do it all, firsthand, and then if it happened again, I would question the peers to see if it happened to them"	"The fact that I could understand better what she was asking . . . and I could go from there"
Kim	"I had to read the passage and keep up with like-what chapter I was reading"	"I didn't feel like I was prepared for those online classes in high school"	"But I got help from another teacher at my school"	"I had to like—learn how to study on my own"

## Appendix E: Expressions of Metacognition (Continued)

### *Expressions of Metacognition*

Participant	Self-Regulation	Assessment	Problem-Solving	Evaluation
Lily	"I get motivated when I have a checklist of things to do and I can just cross them off"	"I actually think that what you did wrong feedback is more useful than the positive feedback, but it is nice to have positive feedback especially is you do something really well and you weren't sure about it."	"That you have to figure it out for yourself that really helped. Because it was the first class that actually really made you think"	"I feel like when I'm getting more responsibility and like less stress you need to take this test at this time and know this material here . . . it just makes learning easier"
Luna	"You know, maybe the teacher says it's a three to five page paper and I'm like I know I can get by with three but I have enough information for five pages"	"It's easier for me to focus on the online class because it's just me with what you know, I am learning on the screen"	"If I need to pause something or rewind until I can catch-you know-what the teacher says hey this is really important"	"There are some assignments where I just know that's not coming back good because I know-you know-I sent it off in a hurry and didn't do the best I could"
Molly	"Doing it online, I can't let myself go. I end up pushing myself to get things done on time"	"I can learn that way, but it's not the best way for me to learn . . . I connect better when I can be shown how it's done"	"If I ever felt that kind of an issue where I just needed the confirmation of something . . . it just kind of forces me to do more the reading aspect of it and try to understand it":	"I know I could benefit greatly from it [feedback] and sometimes I know I need it, but just my recluse personality doesn't always want to speak up and say something"

## Appendix E: Expressions of Metacognition (Continued)

### *Expressions of Metacognition*

Participant	Self-Regulation	Assessment	Problem-Solving	Evaluation
Rita	"You have to plan everything out-what you're going to do when-so you can have everything done by the time its due"	"I feel because I have to teach myself its important to learn how I learned so I can teach myself more effectively"	"I find myself googling a lot of things even after I've read all the material or watched all the movies"	"I look for any clues they left on my paper. Like any feedback that I can use for next go around. You know, what I can to make it better"
Thalia	"I might take it over and over until I get a 100%"	"Put what I know about what I learn into action, kind, if I don't do that, then I'm going to fail"	"You can do a lot of research and stuff by googling everything"	"I'll take it [quiz] before I have even read it the chapter just to see what I knew previously. And then go back once I learn it"

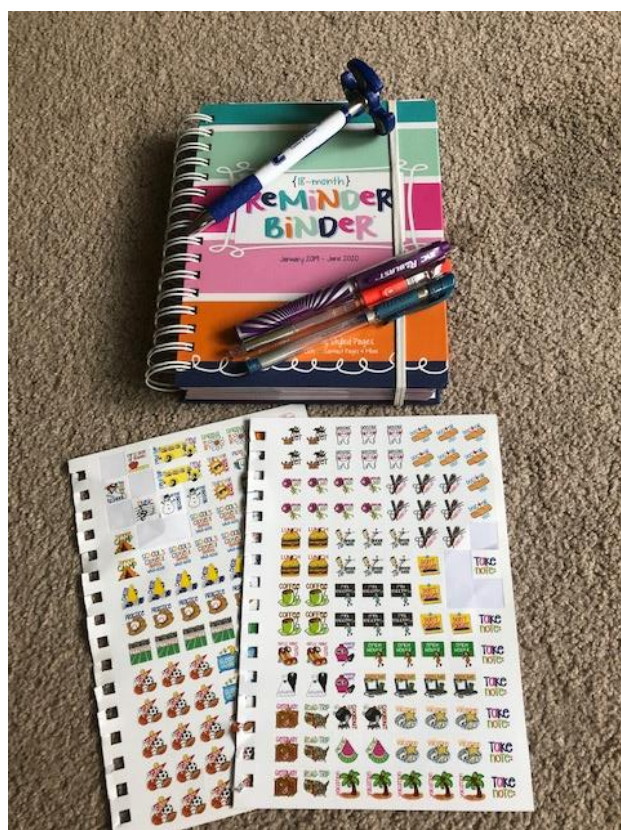
## Appendix F: Examples of Artifacts



*Submitted by Kim*



*Submitted by Hope*



*Submitted by Luna*



*Submitted by Thalia*

## **Appendix G: Statement of Original Work**

The Concordia University Doctorate of Education Program is a collaborative community of scholar-practitioners, who seek to transform society by pursuing ethically-informed, rigorously-researched, inquiry-based projects that benefit professional, institutional, and local educational contexts. Each member of the community affirms throughout their program of study, adherence to the principles and standards outlined in the Concordia University Academic Integrity Policy. This policy states the following:

### **Statement of academic integrity.**

As a member of the Concordia University community, I will neither engage in fraudulent or unauthorized behaviors in the presentation and completion of my work, nor will I provide unauthorized assistance to others.

### **Explanations:**

#### ***What does “fraudulent” mean?***

“Fraudulent” work is any material submitted for evaluation that is falsely or improperly presented as one’s own. This includes, but is not limited to texts, graphics and other multi-media files appropriated from any source, including another individual, that are intentionally presented as all or part of a candidate’s final work without full and complete documentation.

#### ***What is “unauthorized” assistance?***

“Unauthorized assistance” refers to any support candidates solicit in the completion of their work, that has not been either explicitly specified as appropriate by the instructor, or any assistance that is understood in the class context as inappropriate. This can include, but is not limited to:

- Use of unauthorized notes or another’s work during an online test
- Use of unauthorized notes or personal assistance in an online exam setting
- Inappropriate collaboration in preparation and/or completion of a project
- Unauthorized solicitation of professional resources for the completion of the work.

## Appendix G: Statement of Original Work (Continued)

I attest that:

1. I have read, understood, and complied with all aspects of the Concordia University–Portland Academic Integrity Policy during the development and writing of this dissertation.
2. Where information and/or materials from outside sources has been used in the production of this dissertation, all information and/or materials from outside sources has been properly referenced and all permissions required for use of the information and/or materials have been obtained, in accordance with research standards outlined in the *Publication Manual of The American Psychological Association*.

*Heather Richards*

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Date