Understanding and Assessing Critical Thinking Using Active Learning Strategies in Undergraduate Social Work Courses Through Bloom's Mastery Learning

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Abstract of the Dissertation

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The ability to think critically is a fundamental competency in social work education, yet research on effective pedagogical strategies to foster this skill remains limited. This study compares the impact of active learning versus traditional teaching methods on critical thinking in a 100-level undergraduate social work course. Using a quasi-experimental design, students' level of critical thinking was assessed using open-ended essay prompts three times during a 15-week semester using the Holistic Critical Thinking Scale Rubric (HTCSR). Although the results were not statistically significant regarding the level of critical thinking as related to the pedagogical approach, trends in students' performance and potential influences were discovered. The findings provide a foundation for future research on the impact of pedagogy on students' critical thinking in social work higher education.

Keywords: critical thinking, active learning, active learning pedagogy, Bloom's Taxonomy. Undergraduate social work

Dedication

This is dedicated to my family, passed and present. Where we come from gives us the strength to keep moving. #MurdayStrong

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This later-in-life dissertation is the culmination of years of learning, practice, blessings, and opportunities. I could not have reached this moment without the support, guidance, and love of many.

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Chapter 1: Introduction

"Learning without meaning is often soon forgotten" (Gleason et al., 2011, p. 1)

As student preparedness for higher education declines (Huebeck, 2024), universities are faced with the challenge to create and deliver curricula in a way that meets the needs of a range of students, including those underprepared (Brower et al., 2021). Recently exacerbating this problem, Polikoff et al. (2023) described the COVID-19 pandemic as leading to a "deep and widespread loss of learning and engagement" (p. 9) for students across academic levels. With many higher education institutions promoting critical thinking as a valuable learning outcome of the service they provide, they are now challenged to offer evidence of their success (Butler, 2024).

Higher education instructors are tasked to approach the delivery of course content in undergraduate courses as reflective or critical thinkers (Dewey, 1910), with the understanding that creative, direct, individualized, and supportive instruction allows postsecondary students to maintain and succeed at the university level (Perin & Holschuh, 2019). In turn, instructors model for and foster critical thinking in students while encouraging engagement, stimulating cognitive performance, and improving participation in the educational process while delivering essential course content (Belchior-Rocha & Casquilho-Martins, 2019; Schmidt et al., 2015). To meet this challenge, a move from the traditional lecture to a more engaged, active pedagogical approach in higher education is needed (Schmidt et al., 2015). Santos and Serpa (2020) support this transition, stating that the use of active learning offers a "high potential in student learning regarding the development and attainment, of specific and transversal competences necessary for the 21st century, in terms of their employability, entrepreneurship, innovation, literacy, and contribution to sustainable development" (p. 167).

Problem Statement

There is no defined algorithm for making sound decisions with vulnerable populations (Verbugh, 2019). Social work students need to be trained on how to develop fair and judicious arguments and to deliver those arguments clearly (Gibbons & Gray, 2002). They need to learn how to consider diverse perspectives (Osborn & Karandikar, 2022), demonstrate the capacity to be flexible and consider what cannot be seen (Gibbons & Gray, 2002), make reasonable and sound decisions, and apply theory to practice (Verbugh, 2019). All these skills must be learned while maintaining awareness of how personal values and experiences may impact these experiences.

Uribe-Enciso et al. (2017) stated that the acquisition of critical thinking skills in social work education moves students beyond intellect; it fosters students' "leadership, companionship, courage, creativity, perseverance, discipline, freedom, honesty, maturity, integrity, autonomy, transformation, discernment, and empathy" (p. 85). Arguably, these qualities are core traits possessed by professional social workers for making sound decisions. It is the responsibility of higher education institutions and instructors to create environments that adequately encourage the development of this skill in social work education (Verbugh, 2019).

As a competency-based profession (CSWE, n.d.b), social work educational objectives and outcomes are determined and evaluated by a governing body, the Council on Social Work Education (CSWE). With the initial intention to move social work from a mission performed by charities to an established profession (CSWE, n.d.a), the CSWE began accrediting Master of Social Work (MSW) programs in 1898. Following the adoption of social welfare content at the undergraduate level, the CSWE issued accreditation standards for curriculum, faculty, and program organization for Bachelor of Social Work (BSW) programs in 1974. The CSWE

requires programs at both levels to meet defined standards, ensure that students are prepared for the demands of the profession, and that students demonstrate competence in a range of skills.

The CSWE describes competence as a holistic experience, including "knowledge, values, skills, and cognitive and affective processes that include the social worker's critical thinking, affective reactions, and exercise of judgment in regard to unique practice situations" (CSWE, n.d.b, p. 7). To ensure that students enter the profession prepared to meet the diverse needs of varied populations and systems, the CSWE outlines Educational Policy and Accreditation Standards (EPAS) that each accredited program must include and evaluate in their curriculum. Within these standards are nine social work competencies (C): Demonstrate Ethical and Professional Behavior (C1), Advance Human Rights and Social, Economic, and Environmental Justice (C2), Engage Anti-Racism, Diversity, Equity, and Inclusion (ADEI) in Practice (C3), Engage in Practice-Informed Research and Research-Informed Practice (C4), Engage in Policy Practice (C5), Engage with Individuals, Families Groups, Organizations, and Communities (C6), Assess Individuals, Families Groups, Organizations, and Communities (C7), Intervene with Individuals, Families, Groups, Organizations, and Communities (C8), and Evaluate Practice with Individuals, Families, Groups, Organizations, and Communities (C9) (CSWE, n.d.b). The CSWE reviewed and revised the social work EPAS in 2015 and 2022.

Within the nine competencies required by CSWE in each accredited social work program, students are required to develop critical thinking and associated skills (CSWE, n.d.b) during undergraduate and graduate studies; however, little research has been presented on critical thinking in social work education (Abrami et al., 2008; Mathias, 2015; Johnston, 2009; Verbugh, 2019). Currently, very little is known about whether social work students are explicitly taught to think critically (Mathias, 2015; Tilbury et al., 2010). Although various approaches to delivering

content in social work have been studied, very few studies on the promotion of critical thinking have been conducted (Johnston, 2009; Verbugh, 2019).

Background

For nearly two hundred years, universities have relied on lecturing as the primary pedagogy for delivering course content (Omelicheva & Avdeyeva, 2008; Schueler, 1951). Although lectures are effective in covering large amounts of course content, it is a passive mode of content delivery that limits active engagement and "leads to bored students adept at securing grades by memorizing information they barely understand, struggle to apply, and cannot analyze or critique" (Bloom, 1956, as cited in Linneman, 2019, p. 23). Schueler (1951) described lectures as "probably the most ineffective and wasteful of methods" (p. 92) of teaching in higher education, suggesting that this pedagogy widens the gap between the student and knowledge, and the student and instructor. Further, the lecture method eliminates students' power to be active agents in their own learning, as they are directed on what to know rather than decide what is important to learn (Walker, 2003). In spite of the continued reliance on lecturing in higher education, there is growing research on the need for alternate strategies for delivering course content and reaching educational objectives (Schmidt et al., 2015).

In the higher education classroom, instructors must engage the students in critical thinking for learning to occur (Letseka & Zireva, 2013). Many definitions of critical thinking have been offered (Walker, 2003), beginning with John Dewey (1910), who described critical thinking as "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends" (p. 6). Held as the most applied definition for the discipline of social work education, Gambrill (2012) described13nowledge points and skills attributed to the critical social work

thinker, all of which are intentional (evaluate, recognize, clarify, distinguish, refine, detect) and require analysis of experiences (similarities, prejudice, generalizations, contradictions, reasoning, connections, perspectives).

In response to the criticism of using a flat lecture format for engaging learning, the identification and exploration of alternate pedagogies has risen. Dillenbourg (1999) and Prince (2004) promoted active learning and supported collaborative learning to foster student engagement. Bonwell and Eison (1991) introduced active learning in the classroom to foster investment in the learning process and application of content. The pedagogical approach, flipped learning, requires students to learn less complex and theoretical components of content out of class and perform higher-level learning through assignments in the classroom (Bergmann & Sams, 20123 Veres & Muntean, 2021). More recently, Reber et al. (2017) reported that focusing on relationships within the classroom and making meaning of content through a Constructivist approach improves students' retention of information, acquisition of learning outcomes, depth of thought, confidence in learning, and connection with instructors.

Akimov et al. (2023) state that "teaching styles, classroom activities, and instructor interactions with students" (p. 2) are the most important factors in promoting student performance in education. Meeting students at their current level of academic ability, incorporating active learning strategies to teach content offers a student-centered approach, individual and collective engagement, and relationships with peers and the instructor (Deng, 2019; Gómez-Poyato et al., 2019; Prince, 2004). The term *active learning* has been broadly defined as "any instructional method that engages students in the learning process" (Prince. 2004, p. 1). The objective of this approach is to enhance student thinking through activities that stimulate deeper levels of thinking, achievement, and motivation (Prince, 2004). Learners are empowered within the context of this approach to both immerse themselves in the process and

take advantage of diverse strategies, connecting to their learning environment and to others (Shroff et al., 2021). With this, students engage in strategies that demand intentional involvement, collaboration, cooperation, and problem-solving (Hood Cattaneo, 2017; Mello & Less, 2013; Prince, 2004; Salemi, 2002). By intentionally engaging students in meaningful ways, instructors are able to assess students' individual learning, adjust content delivery, and identify and address gaps in learning (Theobald et al., 2020). Incorporation of this approach in the higher education setting allows instructors to foster self-efficacy where students take ownership of their learning (Shah, 2019) and increase opportunities for higher-order thought (Bloom, 1968).

As the learning environment evolves into a safe and collaborative space, the active strategies can increase in difficulty (Brower et al., 2021) to encourage students' higher-order thinking and content mastery. Students then begin to learn to think while working and work while thinking (Bloom, 1968; Mekonnen, 2020). Higher-order thinking reflects that the student has moved beyond basic memorization and recall to what is more often described as critical thinking (Bloom, 1968). The definition of critical thinking has roots back as far as John Dewey (1910), with many theorists offering perspectives on its definition and operationalization since that time (Ennis, 1991; Facione, 1990; Glaser, 1942; Lipman, 1998; Paul, 1992; Siegel, 1980). However, there is some unity among theorists regarding the higher-order cognitive skills possessed by the critical thinker: interpretation, analysis, evaluation, inference, explanation, and self-regulation (Facione, 1998b; Mathias, 2015; Nieto & Saiz, 2011). Uribe-Enciso et al. (2017) believed that critical thinking could not be obtained unless a student was an *active* participant in the learning process.

Instructors hold a privileged position in promoting critical thinking for undergraduate students. Growing evidence shows that using an active learning approach in higher education classrooms promotes critical thinking, specifically for first-year and underrepresented students

(Styers et al., 2018). Instructors lay the foundation for how students will approach learning, engage with content, and remain committed to the journey of higher education (Caldwell et al., 2021; Fox, 2013).

The Importance of Critical Thinking in Social Work Education

The CSWE first introduced the importance of critical thinking in 1992 (Gambrill, 2006, as cited in Mathias, 2015); however, the council did not define the concept until several years later (CSWE, 2015). The CSWE presented its definition of critical thinking as "an intellectual, disciplined process of conceptualizing, analyzing, evaluating, and synthesizing multiple sources of information generated by observation, reflection and reasoning" (CSWE EPAS, 2015, p. 20).

Accredited social work programs are required to demonstrate that Bachelor of Social Work (BSW) graduates demonstrate critical thinking and associated skills in all nine competencies prior to degree completion (CSWE, n.d.b). The application of critical thinking skills presents in two competencies (C): Demonstrate Ethical and Professional Behavior (C1) and Engage in Policy Practice (C5). Critical evaluation is noted in six competencies: Advance Human Rights and Social, Racial, Economic, and Environmental Justice (C2), Engage in Practice-Informed Research and Research-Informed Practice (C4), Engage with Individuals, Families, Groups, Organizations, and Communities (C6), Assess Individuals, Families, Groups, Organizations, and Communities (C7), Intervene with Individuals, Families, Groups, Organizations, and Communities (C8), Evaluate Practice with Individuals, Families, Groups, Organizations, and Communities (C9). Finally, the 2022 EPAS (CSWE, n.d.b) mentions critical reflection in one competency: Engage Anti-Racism, Diversity, Equity, and Inclusion (ADEI) in Practice (C3).

To meet the requirements set by the CSWE, institutions of higher education have an obligation to teach undergraduate social work students how to think critically in the classroom in

preparation for using those skills in practicum and professional practice (CSWE, n.d.b). Once the student enters the profession, they will be required to analyze, integrate, and apply theory to work with clients (Gambrill, 2012; Verbaugh, 2019). Critical thinking is essential for the discipline, as professionals are challenged to make well-informed and complete decisions in complicated situations with vulnerable populations and demonstrate competence within ethical and professional standards (Johnston, 2009; Mumm & Kersting, 1997; NASW, 2021). Belchior-Rocha and Casquilho-Martins (2019) found that social work graduates that were specifically taught critical thinking skills during the undergraduate experience reported being more prepared for decision-making, analysis, problem-solving, detecting inconsistencies, integration of information, and abstract reasoning. They expressed that critical thinking, including those skills, must be rooted and accessible for students prior to entering the profession.

In their work with clients at all system levels, social workers demonstrate knowledge, logic, and reason (Mathias, 2015). The classroom becomes a pivotal place for learning trust, integrity, competence, and the importance of relationships; all of which are values and principles expected by their code of ethics (NASW, 2021). By intentionally modeling, teaching, and engaging students in critical thought processes, instructors can encourage the development of problem-solving, analysis, and decision-making skills (Belchior-Rocha & Casquilho-Martins, 2019; Murawski, 2014). The educators within accredited social work programs must ensure that social work students are sufficiently prepared to practice "safely, competently, and ethically with all clients, constituents, and the public" (CSWE, n.d.b, p. 5).

Recognizing the value in having students exposed to practical experience using an apprentice model, the CSWE named field (practicum) education as the discipline's signature pedagogy (CSWE, n.d.b.). As such, students attending accredited undergraduate and graduate social work programs are required to participate equally in classroom experience and field

education. Field education is defined by CSWE (2022) as "systematically designed, supervised, coordinated, and evaluated based on criteria and measures of student acquisition and demonstration of the nine social work competencies" (p. 20). Bogo (2015) describes the field education (practicum) experience as "arguably the most significant component of the social work curriculum in preparing competent, effective, and ethical" (p. 317) social work students. It is within the field education setting that students connect and integrate theories to direct practice with clients at all system levels. The practicum settings are foundational in offering opportunities for learning, collaboration, cooperation, observation, supervision, skill development (Bogo, 2015), and demonstration of the necessary skills and competencies defined by the CSWE before entering the profession (Mantulak et al., 2021).

As per C1 (Demonstrate Ethical and Professional Behavior), social workers have an obligation to engage in lifelong learning and skill development for the purpose of ensuring "relevant and effective practice" (CSWE, n.d.b, p. 8) prior to graduation. While working in the discipline, the National Association of Social Workers (NASW) Code of Ethics (2021) obligates social work professionals to engage in lifelong learning. Mueller and King (2018) describe lifelong learning in the discipline of social work as "a continuous, voluntary, and self-motivated pursuit of knowledge" (n.p.). Learning holds both professional (updated knowledge and skills) and personal (passion) development. The necessity and value of lifelong learning is stimulated in the classroom (Jivanjee et al., 2016), reinforced during the field education (practicum) experience (Mantulak et al., 2021), and required by the licensure continuing education mandates of each state (Mueller & King, 2018). Social Work faculty are pivotal role models in stimulating the desire for lifelong learning by providing creative learning resources and opportunities and motivating students to apply higher-order critical thought (Jivanjee et al., 2016).

Theoretical Foundations and Conceptual Framework

Learning to think critically includes participation in the social communities and practices within which a person is learning (ten Dam & Volman, 2004). The core principles of Social Cognitive Theory and Constructivism provide a foundation for the use of active learning in social work higher education to promote this skill by highlighting the importance of learners' active engagement, social interaction, and self-efficacy in the learning process.

Social Cognitive Theory

While the study of social development considers antecedents (parenting, culture, environment) on outcomes (all facets of development) and cognitive development considers the analysis of mental processes and representations, Social Cognitive Theory (SCT) exists at the intersection of the two, "focusing on the relationship between antecedents, mental representations, and outcomes" (Olson & Dweck, 2008, p. 195). First introduced by Bandura, SCT, an extension of Social Learning Theory, asserts that learning occurs within a social context and includes reciprocal interactions (Bandura, 1997). This interaction, termed *reciprocal determinism*, refers to the powerful exchange between the individual, their social context, and their response to received stimuli (Schunk, 2012).

Social cognitive theory asserts that, through observation, modeling, reinforcement, and self-efficacy, new learning occurs (Ilmaini et al., 2021). Bandura (1997) highlighted the significance of social comparisons, referring to the process of how individuals learn by watching others. Bandura and Jeffrey (1973) believed that, by observing and modeling the novel behaviors of others, individuals will assimilate and imitate those they perceive to be positively responded to by others. Observational learning occurs through the modeling of others in the environment, allowing others to serve as role models for effective behaviors and a means for self-evaluation (Bandura, 1977; Bandura & Jeffrey, 1973). As such, an individual assesses the benefits and

consequences of behaviors and attempts to reproduce those that appear important for achieving positive outcomes (Bandura, 2012; Bandura & Jeffrey, 1973). The capacity to learn through observation implies that learning can occur by simply modeling behavior; however, Bandura (2012) asserted that several steps were involved. For example, the steps can be comprised of intentionally paying attention to the model, retention of the observed behavior, reproduction of said behavior, and holding the motivation to imitate the modeled behavior.

Bandura (1977) believed that behavior was regulated by the consequences of behavior on one's thoughts and reinforcements observed over time. According to Bandura (1991), reinforcements were not considered a direct incentive to reproduce a behavior; rather, they indirectly impacted the potential for a behavior to reoccur. Bandura (1977) suggested that reinforcements are received through both environmental experiences and self-initiation. He proposed that individuals both anticipate the consequences and think through the potential rewards of behaviors prior to engaging.

The concept of self-efficacy describes a person's belief in their capacity to perform a determined task (Bandura, 2012; Zimmerman, 1990). With perceived self-efficacy, an individual holds the belief that they are competent and can put forth the necessary cognitive skills to successfully complete a task (Bandura, 1997, 2012). With heightened self-efficacy, an individual has the potential to feel a sense of personal mastery and confidence, promoting action, change, and adaptation (Bandura, 1997; Luszczynska & Schwarzer, 2005). Conversely, individuals with low self-efficacy experience doubt in their capacity for success (Bandura, 2012).

Applying the tenets of SCT in the classroom offers students exposure to reinforcement of accomplishments, the opportunity for social integration, development of an evolved sense of confidence and competence, opportunities for safe risk-taking, and feedback on behavior (Martin, 2004; Schunk & Usher, 2019; Zimmerman, 1990). SCT promotes strength in "cognitive

processes and performance…, including quality of decision making, goal setting, and academic achievement" (Conner & Norman, 2015, p. 128). Learners refine their skills through observation, practice, and feedback from peers and instructors with the aim of increasing confidence and self-efficacy (Bandura, 2012; Bandura & Jeffrey, 1973; Martin, 2004; Schunk & Usher, 2019; Zimmerman, 1990). When employed in the classroom, the principles of SCT assist in students' quests to gain control over significant life events to achieve a sense of agency (Schunk, 2012), while allowing them to feel in charge of their own actions and learning (Moore, 2016).

Constructivist Theory

As a foundational learning theory, Constructivism asserts that "learners construct knowledge for themselves; each learner individually (and socially) constructs meaning as he or she learns" (Hein, 1991, n.p.). During the process of constructing this understanding, a learner considers the new information being presented and interprets it through the lens of past experiences, culture, and personal views (Ültanır, 2012). As such, individuals first receive, then interpret and ultimately acquire knowledge (Mir & Goswami, 2023; Richardson, 2003). Constructivism holds the belief that knowledge does not exist independent of the knower, only the knowledge one creates through their interaction with the world (Ültanır, 2012).

Constructivism is divided into two categories: social and radical (Brau, 2020; Vanderstraeten & Biesta, 1998). Social constructivism, developed by Vygotsky, proposed that knowledge is constructed through interaction with others. Vygotsky's concept of Zone of Proximal Development (ZPD) describes "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peer" (Vygotsky, 1984, p. 86, as cited in Shabani et al., 2010, p. 238). Vygotsky (2011) posits that individuals learn best when working collaboratively with others under the guidance of a

more skilled person, such as an instructor. Completing tasks and achieving success through interaction and active engagement, the ZPD shrinks as the student reaches mastery (Shabani et al., 2010; Tudge, 1990).

With roots in cognitive theory, specifically Piaget's concepts of assimilation and accommodation, radical constructivism asserts that learning and knowledge occur second to one's subjective interpretation of experiences (Pardjono, 2002). Believing that learning was a dynamic process, Piaget (1932, as cited in Pesavento et al., 2015) asserted that "education means making creators … You have to make inventors, innovators - not conformists" (n.p.). It is through the modification of beliefs and ideas and actively constructing new knowledge that learning occurs (Martin, 2004; Mugambi, 2018; Shah, 2019). Pardjono (2002) argues that during these experiments, the environment provides active learning through the introduction of novel stimuli and demands that a person make sense of the stimuli. Further, Pardjono believed Piaget promoted discovery through learning and exploration as important throughout development, making learning an active experience.

John Dewey straddled the two camps of social and radical constructivism, presenting ideas that included components of cognitive and social learning but expanding the theory to include real-world activities (Brau et al., 1970; Mir & Goswami, 2023; Shah, 2019). Dewey (1910), rejecting repetitive delivery and rote memorization, believed that individuals grow in creativity and collective activities with direct exposure to real-world experience. In support of this belief, Dewey (1910) stated: "if you have doubts about how learning happens, engage in sustained inquiry: study, ponder, consider alternative possibilities, and arrive at your belief grounded in evidence" (as cited in Odhigambo, 2022, n.p.). All three theorists mentioned highlighting the learner as an intentional and active participant in building understanding rather than being a passive recipient of information (Dennick, 2016; Pardjono, 2002; Robbins et al.,

2019).

Constructivism views students as complex creatures, with prior experiences used as a foundation upon which they build meaning of new content and concepts (Saleem et al., 2021). Dennick (2016) describes this theory of learning as a process that connects new and preexisting knowledge. When applying this approach in the classroom, teachers become a "guide, facilitator, and co-explorer who encourages learners to question, challenge and formulate their own ideas, opinions and conclusions" (Ültanır, 2012, p. 197) rather than acting as an expert simply imparting wisdom. Students are actively engaged in the learning experience, given the opportunity to challenge existing beliefs and learn from each other. Learning results from the "intellectual, social, emotional, physical, and spiritual growth" (Williams, 2017, p. 93) of the entire person; it is not purely academic. The mission of the instructor becomes providing experience and challenge from which students can construct and create rather than receive knowledge (Dennick, 2016; Shah, 2019; Thosare, 2015).

Employing a constructivist approach in the classroom includes several principles that define the learning environment: learning is active, learning involves language, learning is a social experience, learning happens in the context of the environment, and motivation is a key component of learning (Hein, 1991). To facilitate this, instructors are tasked with creating opportunities for reflective practices, providing real-world circumstances for students to apply content, providing the transfer of knowledge from personal to broader contexts, creating collaboration between learners, embracing inquiry-based learning, and integrating evaluation methods within the learning process (Bada & Olusegun, 2015; Mugambi, 2018; Richardson, 2003; Thosare, 2015). With the inclusion of these practices, learning becomes a self-driven social process that fosters creativity and individuality, meeting each student where they are (Saleem et al., 2021). In turn, students develop agency and ownership concerning their academic

achievement while experiencing collaboration, social connection, cognitive growth, and acquisition of new skills (Saleem et al., 2021).

Chapter 2: Literature Review

The following chapter will define the concepts of critical thinking and active learning along with relevant themes for each concept and their direct connection to social work education. This chapter will also provide a description of Bloom's Taxonomy. At its conclusion, this chapter will explore the intersection of these concepts in an undergraduate social work course. By synthesizing existing literature, this review aims to explicate the theoretical underpinnings and practical implications of integrating active learning strategies to foster critical thinking skills within an undergraduate 100-level social work course.

Defining Concepts

Critical Thinking

Critical thinking (CT) is thinking with a purpose (Ennis, 1991; Facione et al., 1995). It is both a cognitive and an affective experience (Facione, 1990, 1998b); it is active and intentional (Letseka & Zireva, 2013; Walker, 2003). In their totality, these ideas describe what seems a clear concept; however, the evolution of this definition demanded more than a century of thought, theory, and research.

The modern concept referred to as *critical thinking* has roots in both theories of reasoning in philosophy and cognitive psychology (Ennis, 1991; Mathias, 2015). As interest in this area grew and social climates changed, so did the pursuit for a consensus on a working definition of the concept and the attributes associated (Facione, 1998a; Hitchcock, 2022). From the time of its introduction into research, the theory of critical thinking grew from being described as an active

cognitive experience to simultaneous cognitive and affective experiences (Mathias, 2015; Simpson & Courtney, 2002).

Critical thinking was first introduced as an educational goal in 1910 by psychologist and educator John Dewey. In his original publication of *How We Think*, Dewey (1910) defined critical thinking as "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends" (p. 6). He described critical thinking as an "active process," demanding individuals to think through situations for themself, ask questions for themself, and find relevant information for themself. Dewey (1910, 1916) believed that individuals who practiced critical thought "skillfully" reasoned through presenting issues, evaluated the evidence to support the issue, and considered what conclusions might be drawn from that evidence. It was through this cognitive process that Dewey believed individuals would actively, carefully, and persistently engage in thought to validate, modify, or create conclusions (Dewey, 1910, 1916).

Gibbons and Gray (2002) noted that Dewey criticized traditional education and was the first educator to recommend that learning move from content to process, or active and reflective learning. As a microcosm of society, Dewey (1910, 1916) viewed the classroom as a setting for modeling and learning by experience. He proposed a project model of teaching to support education as an individual experience where knowledge was acquired through active engagement rather than passive receipt. Furthermore, Dewey (1910) emphasized the use of "overt and exertive activities" (p. 43) to allow students opportunities to "train power of thought" (p. 44).

Later in the same century, Edward Glaser built on Dewey's definition of CT, defining his perspective of critical thinking as "(1) an attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experience; (2) knowledge of the methods of logical inquiry and reasoning; and (3) some skill in applying those methods"

(Glaser, 1942, p. 5). Glaser (1942) offered that thinking moves beyond finding and challenging meaning, it includes an attitude of intentionality and the pursuit of evidence for said beliefs. Glaser described skills, all of which are active and in nature, highlighting the thinker's disposition to use certain skills rather than just possessing them (Fisher, n.d).

As an influential contributor to conceptualizing critical thinking, Robert Ennis (1991) defined critical thinking as "reasonable, reflective thinking that is focused on deciding what to believe or do" (p. 6). Ennis' inclusion of the phrase "deciding what to do" adds an intentional component to critical thinking that had not been presented previously (Ennis, 1991; 1964). Although Ennis does not exclude the importance of creativity in thinking, his emphasis is on the importance of reflection, reasoning, and decision making (1991). Ennis posited that defining critical thinking moved beyond explaining CT as an action, to describing dispositions (open mindedness, being well informed, seeking reason, and attending to broader situations) and abilities (analysis, inference, clarifying, and problem solving) related to the critical thinker (1985).

Richard Paul (1992) defined critical thinking as "disciplined, self-directed thinking that exemplifies the perfections of thinking appropriate to a particular mode or domain of thought" (p. 9). Paul (1992) believed that critical thinkers in the *strong sense* possessed "seven independent traits of the mind" (p. 12): intellectual humility, intellectual courage, intellectual integrity, intellectual sense of justice, intellectual empathy, faith in reason, and intellectual perseverance. Those who develop critical thinking skills to achieve an adequate level of social success are considered to have a weaker sense or lower level of critical thinking (Paul, 1992; Paul & Elder, 2008). In addition to these contributions, Paul emphasized the importance of thinking about one's thinking to improve thinking or metacognition *(Paul-Elder Critical Thinking Framework,* 2023).

Siegel (1980) believed that "critical thinking is best thought of as an embodiment of the ideal, of rationality… principled thinking" (p. 4). Siegel (1980, 1999) emphasized a need to move beyond the narrowly presented logical nature of the critical thinker to include reasoning and dispositions that allow the thinker to apply the concepts analyzed. Focusing more on the *critical thinker,* Seigel believed that the thinker needed to possess "habits of mind and character traits" (Siegel, 1988, p. 39, as cited in Fisher, n.d.) to successfully employ critical thought. He asserted that one who uses critical thinking does more than reason through ideas and situations; the *thinker* possesses objectivity and impartiality in thinking, even when reason runs counter to their own self-interest (Seigel, 1999). Further, to be an effective critical thinker, a student must be able to move beyond evaluating claims; they must possess a willingness to do so (Siegel, 1980).

Believing that the existing definitions of critical thinking were too narrow, Lipman (1988) aimed to expand the proposed outcomes, specify the principle characteristics, and demonstrate how those two entities are connected. Lipman (1988) argues that critical thinking "(1) facilitates judgment because it (2) relies on criteria, (3) is self-correcting, and (4) is sensitive to context" (p. 39). Lipman (1988, 1998) invested significant time exploring the connection between critical thinking, criteria, and judgment, ultimately connecting the three by describing judgment as a skill, critical thinking includes skills in thinking, and criteria serve as the means to evaluate success. Although Lipman's concept of critical thinking has not received significant attention from the larger scholarly community (Fisher, n.d.), his thoughts have proven valuable in conceptualizing the promotion of critical and reflective thought in primary education (Lipman, 1988, 1998).

As reflected thus far, the nuances between and within the varied definitions of critical thinking create difficulty in identifying one overarching definition of the concept. Responding to

a request by the American Psychological Association in 1987, Peter Facione gathered more than forty-five known experts to conduct a well-ordered inquiry into the existing concept and assessment of critical thinking (Facione, 1998a). The final definition of critical thinking, as offered by Facione (1998a) in what was titled *The Delphi Report,* is as follows:

> We understand critical thinking to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based. Critical thinking is essential as a tool of inquiry. As such, critical thinking is a liberating force in education and a powerful resource in one's personal and civic life. While not synonymous with good thinking, critical thinking is a pervasive and self-rectifying human phenomenon. The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit. Thus, educating good critical thinkers means working toward this ideal. It combines developing critical thinking skills with nurturing those dispositions which consistently yield useful insights and which are the basis of a rational and democratic society. (p. 3)

Within Facione's (1998a) definition, cognitive skills and affect dimensions were identified. All of the participating experts agreed on the inclusion and operationalizing of the cognitive skills identified. However, only two thirds of the experts involved believed that the

affective dimension needed to be included in the final definition (Facione, 1990, 1998a). Those arguing against the inclusion of an affective dimension felt that the qualities in this arena describe a critical thinker rather than critical thinking (Facione, 1990, 1998a). After significant debate and negotiation, in his final submission, Facione (1998a) added the statement addressing the inclusion of the affective dimension:

> Persons who have developed these affective dispositions are much more likely to apply their critical thinking skills appropriately in both their personal life and their civic life than are those who have mastered the (cognitive) skills but are not disposed to use them. (p. 13)

Finally, Michael Scriven and Richard Paul (1987) presented the following definition of critical thinking: "that mode of thinking - about any subject, content, or problem - in which the thinker improves the quality of his or her thinking by skillfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them." (n.p.). In this definition, Scriven and Paul (1987) include the commitment to using critical thinking to guide behavior rather than passively holding information and skills. Critical thinking becomes a disciplined process, including the elements of purpose, self-efficacy, and evaluation (Saidahmadovna, 2024). Scriven offered an additional contribution to the definition in partnership with Fisher following the work of Facione and the Delphi experts (Fisher, 2014). Scriven stated that "Critical thinking is a skilled and active interpretation and evaluation of observations and communications, information and argumentation". (Fisher, 2001, p. 21). The addition of the word *observations* added a new dimension to the definition of critical thinking as it considered the interpretation of unseen details rather than analyzing information to reach conclusions (Fisher, n.d.; Glopper, 2002).

Development of Critical Thinking Skills. Several of the aforementioned pioneers defining the concept of critical thinking have suggested that thinking alone is not sufficient; dispositions (habits of mind, attitudes, and intellectual virtues) to thinking critically are also necessary (Brookfield, 1987; Facione et al., 1995; Siegel, 2017). Facione et al. (1994) describe the critical thinker to possess truth-seeking, open-mindedness, analyticity, systematicity, critical thinking, self-confidence, inquisitiveness, and maturity. Siegel (2017) spoke of the thinker as having a critical spirit, divided into several sub-dispositions: intellectual honesty, impartiality, a commitment to seek and evaluate reasons, a willingness to conform judgments and actions, and objectivity.

Brookfield (1987) offered a definition of critical thinking that included both the process of reflection and the product of decision-making. He describes five factors contributing to effective critical thought: recognizing and confronting assumptions, becoming aware of the significance of context, generating and investigating alternatives, engaging in reflective skepticism, and integrating new perspectives (McClean, 2005). Brookfield (1987) further explained critical thinking as occurring in five consecutive phases: trigger event (occurrences that create an internal discomfort), appraisal (internal assessment of nature and clarification of the problem), exploration (testing new means to navigate the situation), developing alternative perspectives (choosing the most appropriate and personally tolerable solution), and integration (integrating the chosen solution into the thinker's way of living).

Brookfield (1995, as cited in Fox, 2013) offered that well-reasoned decisions are reached through "careful examination and evaluation of beliefs, assumptions, and actions" (p. 126). Brookfield (1997) asserted that learners needed to recognize and explore the assumptions that support what they think and how they act. It was through this reflective practice that individuals become more aware of their biases and assumptions, enhancing their capacity to think critically.

Brookfield (2002) posed four lenses through which individuals could analyze situations: their own perspective (autobiographical lens), the perspective of others (student's lens), the societal or cultural perspective (colleagues' lens), and the disciplinary perspective (theoretical or literature lens). Brookfield (2017) later developed what he described as critically reflective teaching using these four lenses. Through exploring, reflecting, and engaging in meaningful dialogue with others, both the teacher and the student explore diverse perspectives, analyze arguments, and develop their own critical thinking abilities (Brookfield, 2017).

King and Kitchener's (2001) Reflective Judgement Model describes the development of reflective or critical thinking skills. Within their stage model, seven distinct but related groupings of assumptions are offered regarding the development of an individual's ability to engage in critical thinking when presented with ambiguous dilemmas (Kitchener & Fischer, 1990). Broadly summarized, King and Kitchener's 1994 model can be described as consisting of three phases: Pre-Reflective Thinking (Stages 1-2), when individuals rely on simplistic and absolute views of knowledge and accept information without questioning validity, Quasi-Reflective Thinking (Stages 3-4) when individuals begin to recognize that knowledge is not always absolute but may vary depending on context or perspective, acknowledging but struggling to evaluate critically, and Reflective Thinking (Stages 5-6) when individuals demonstrate more sophisticated critical thinking skills, understand that knowledge is complex and contingent, and are able to evaluate evidence, arguments, and perspectives critically (King & Kitchner, 2001, 2004).

Ennis (1996a), feeling that the aforementioned dispositions were too broad, too vague, and lacked means for assessment, suggested twelve dispositions, divided into three broad categories: to "(1) to 'get it right' to the extent possible, (2) to represent a position honestly and clearly, and (3) to care about the dignity and worth of every person." (p. 171-172). The first category, "get it right," included seeking alternatives and remaining open to them, endorsing a

position or thought to the degree that is justified, being well informed, and considering alternative viewpoints. His second category, representing both sides of a position with honesty and clarity, included presenting clearly and precisely the intended meaning of information, deciding and maintaining focus on what was being presented, finding and offering reasons, considering the totality of a situation, and reflecting on one's personal beliefs (Ennis, 1996a) The final category of Ennis's dispositions, caring for the worth and dignity of every individual, includes seeking and attending to the views of another, considering the level of understanding and feelings of others by managing one's critical thinking expertise, and overall concern with the welfare of others (1996a; 1996b).

Critical Thinking Assessment Tools. Despite the significant time invested in describing and defining the characteristics of critical thinking, there has been no one measure heralded as the best (Mueller et al., 2020; Paul & Elder, 2007 Stein & Haynes, 2011). Assessing the degree of one's critical thinking via standardized tests can be difficult as those measures cannot account for the personal awareness, insight, or self-deception of the test taker, hence threatening the validity of the measure (Abrami et al., 2008; Hitchcock, 2022). Nevertheless, many standardized measures have been developed, including essay prompts, faculty-designed rubrics, and standardized, multiple-choice assessments (Paul & Elder, 2007; Renaud & Murray, 2008; Şentürk, 2018). Several validated and reliable assessments have been created to assess recognition memory in a multiple-choice format: Cornell Critical Thinking Test (CCTT), California Measure of Mental Motivation (CM3), the Test of Everyday Reasoning (TER), and the Watson–Glaser™ II Critical Thinking Appraisal (W-GII); with two being subject specific: California Critical Thinking Dispositions Inventory (CCTDI) and the California Critical Thinking Skills Test (CCTST) (Butler, 2024). One widely used assessment, the Ennis-Weir Critical Thinking Essay (E-W), assesses recall memory on general content using an essay format

(Behar-Horenstein & Niu, 2011; Butler, 2024; Şentürk, 2017). One assessment uses both short-answer and multiple-choice questions, Halpern Critical Thinking Assessment (HCTA), to measure the critical thinking skills of problem-solving, hypothesis testing, reasoning, decision-making, and argument analysis (Behar-Horenstein & Niu, 2011; Butler, 2024).

Regardless of the unique factors of each designed assessment, the common intention is to assess and measure individuals' ability to think creatively, analyze information, solve problems, make reasoned judgments, and effectively communicate ideas (Butler, 2024; Mueller et al., 2020; Şentürk, 2018; Stein & Hayes, 2011). Although there is a growing interest in fostering and evaluating critical thinking in higher education (Fahim & Masouleh, 2012; Liu et al., 2014), standardized tests have not been widely incorporated into academic curriculum (Liu et al., 2014). Behar-Horenstein and Niu (2011) suggest that choosing a standardized assessment is difficult, as critical thinking development is impacted by how instructors deliver content, the material being taught, the learning environment, and the preparation or experience of the instructor. All of these factors highlight the need for assessment tools to be chosen with care and consideration for the content, the instructor, and what is intended to be measured within individual courses (Behar-Horenstein & Niu, 2011; Butler, 2024; Paul & Elder, 2007; Şentürk, 2018).

Although they are considered weaker measures than the standardized assessments (Facione & Facione, 2011), two validated rubrics were located in this review. The Association of American Colleges and Universities offers a discipline-adaptable rubric for evaluating and discussing critical thinking skills in undergraduate education; it is not intended for grading. The Critical Thinking VALUE rubric offers two critical thinking assessments: creative thinking and inquiry and analysis (Association of American Colleges and Universities, 2009). Facione and Facione (2011) first created the Holistic Critical Thinking Scoring Rubric (HCTSR) in 1991 for students to assess their quality of critical thinking in verbal presentation or written assignments.

The Holistic Critical Thinking Scoring Rubric is subject- and assessment-criteria adaptive and can be used for formal assessments with clear and objective measures (Facione & Facione, 2011). Although several universities offered examples of critical thinking rubrics, none were described as validated.

Critical Thinking in Social Work Education

The importance of developing critical thinking in higher education has been emphasized by many of the theorists who worked to define the concept. In education, teaching critical thinking and nurturing the critical spirit is a central goal (Dewey, 1910; Facione, 1998a). Instructors are role models of critical thinking, placing them at the center of a student's growth (Brookfield, 2007). When instructors intentionally teach and formally assess critical thinking, students have a greater opportunity to successfully develop the skill (Ennis, 1985). Recognizing the importance of critical thinking for social work students, definitions specific to the discipline began to emerge (Fox, 2013; Mathias, 2015; Seelig, 1991).

Weisman and Zornado (2017) defined critical thinking in social work as a basic competency, including the idea that critical thinking reflects "habits of mind" (p. 3); while Gambrill and Gibbs (2017) defined it as a purposeful application of principles, including "evaluating evidence, considering well-argued alternative views, and presenting opposing views accurately" (p. 22). Gibbons and Gray (2002) defined critical thinking in social work as the "synthesis, comparison and evaluation" (p. 22) of information from varied sources and offered creativity and learning while doing within the classroom as pivotal components necessary to prepare students for the "ambiguities and complexities" (p. 19) of the profession. The higher education setting is crucial for the development of these skills as students will be challenged to apply said skills when working within the discipline (Gambrill & Gibbs, 2017; Gibbons & Gray, 2002; Mathias, 2015).

According to Mathias (2015), the Council on Social Work Education (CSWE) began to acknowledge the importance of critical thinking in higher education in 1992. At that time, the CSWE began to require that higher education programs teach students to think critically in preparation for professional competence (Gambrill & Gibbs, 1995, as cited in Mathias, 2015). The CSWE (2015) defined critical thinking as an "intellectual, disciplined process of conceptualizing, analyzing, evaluating, and synthesizing multiple sources of information generated by observation, reflection, and reasoning" (p. 20). Maintaining the same definition offered in 2015, the newest standards offered integration of the act of critically thinking or critically evaluating in all of the nine competencies (CSWE, n.d.b). It is within the classroom that social work students are challenged to think critically, apply ethical behavior, learn reasoning, think deeply, reach reliable conclusions, and work toward meeting the competencies required by the CSWE (Letseka & Zireva, 2013; Miterianifa et al., 2020; Siegel et al., 2020).

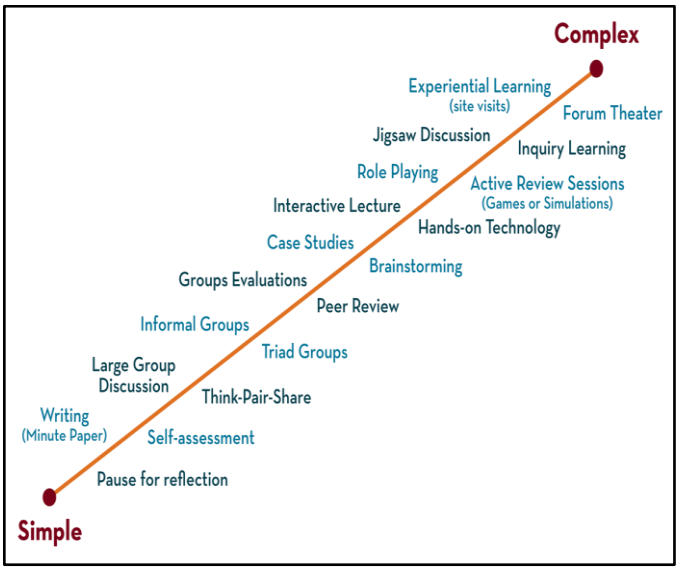
Active Learning

While there is no universally agreed-upon definition of active learning, this pedagogical strategy is considered a departure from the traditional passive, teaching-focused approach of education to a student-centered, learning-focused approach (Barr & Tagg, 1995; Bonwell & Eison, 1991; Deslauriers et al., 2019; Hood Cattaneo, 2017; Mello & Less, 2013; Pesavento et al., 2015; Prince, 2004). Bonwell and Eison (1991) defined active learning as "instructional activities involving students in doing things and thinking about what they are doing" (p. 5). Although broad, this definition allows for a spectrum of activities to be included, ranging in difficulty (Bonwell & Eison, 1991). The University of Minnesota Center for Educational Innovation (n.d.) offers a sample of active learning strategies existing on a hierarchy from simple to complex (see Figure 1). Bonwell and Eison (1991) suggest that instructors use a variety of active strategies, offer visual reinforcement of content to maintain student attention, and

encourage students to share individual insights and understanding of content. These strategies may include small group work, brainstorming, debates, and content analysis (Bonwell & Eison, 1991; Linton et al., 2014).

Figure 1

Active Learning Strategies



Note: University of Minnesota's depiction of the active learning strategies that encourage students to apply, synthesize, and engage with course content. From University of Minnesota Center for Educational Innovation. (n.d.). *Active learning*. https://cei.umn.edu/teaching-resources/active-learning

Active learning in the classroom includes student-centered learning, which has a high degree of individual and collective involvement, dynamic learning, and opportunity for direct content application (Deng, 2019; Gómez-Poyato, 2019; Prince, 2004; Wrenn & Wrenn, 2009). By intentionally engaging students in meaningful assignments, instructors encourage higher-order thinking and demonstration of content mastery. Students learn to think while doing and do by thinking (Mekonnen, 2020). Hence, students actively analyze the content learned while applying it and, apply content while learning (Arnold-Garza, 2014; Hood Cattaneo, 2017; Kennedy, 2007; Wrenn & Wrenn, 2009). Not only does this approach to teaching encourage the

synthesis of content, but it also allows instructors to encourage students to take ownership of their learning (Shah, 2019) and increases opportunities for higher-order thought (Bloom, 1968). Active learning has proven effective in increasing student performance and engagement across disciplines (Dorodchi & Powell et al., 2020).

Supporting the belief that students learn more by reflection than by passively receiving, repeating, and recalling content through their senses (Felder & Brent, 2009; Firdaus & Mariyat, 2017; Freire, 2008; Kennedy, 2007), active learning strategies demand intentional student engagement, discussion, and problem solving in collaborative, cooperative, and/or problem-based learning (PBL; Fernando Uebe Mansur et al., 2019; Hood Cattaneo, 2017; Mello & Less, 2013; Prince, 2004; Salemi, 2002). While collaborative and cooperative learning always include small group interaction and the pursuit of a common goal, the first assesses students individually and the second collectively. PBL adds an additional component of presenting complex, authentic problems for students to evaluate and research (Fernando Uebe Mansur et al., 2019; PBL, n.d.; Prince, 2004). All three approaches require students to engage in meaningful learning activities, thoughtful conversation, and higher-order thinking (Hood Cattaneo, 2017; Tabrizi & Rideout, 2017; Van Amburgh et al., 2007). Dorodchi and Powell et al. (2020) reported that the inclusion of active learning strategies offers significant benefits to student learning in introductory level courses.

Active Learning in Social Work Education

In social work education, many strategies have been applied in the higher education classroom (Wrenn & Wrenn, 2009). Tilbury et al. (2010) posited that experiential learning increases personal awareness by eroding the concept of the client as *other,* and encourages the learner to critically examine their own biases and assumptions. This often requires analyzing both personal and professional values, imagining alternate perspectives, and intentionally

reflecting on how one is engaging in the helping relationship (Wayne et al., 2010). Ultimately, this creates opportunities to think through situations, reflect, and discern the appropriate actions based on professional values and norms, several of the core skills for effective social work (Boryczko, 2020). The ability to apply academic content in controlled and professional settings fosters students' growth by exposing situational realities that are not available in a classroom environment (Wrenn & Wrenn, 2009). Through these pivotal and practical experiences, students are offered the opportunity to develop "self-directed, self-disciplined, self-monitored, and self-corrective thinking" (Schadt, 2021, n.p.).

Various active learning strategies can be implemented in the classroom to promote critical thought. Kirkendall and Krishen (2014) performed a qualitative study, exploring undergraduate social work students' perspectives on creativity and how they can be integrated into the classroom and applied to future practice. Thirty-seven undergraduate social work students at varied course levels were surveyed. The findings emphasized that fostering creativity through experiential learning activities significantly benefited social work students in preparation for real-world practice and their capacity for deeper thinking.

Omelicheva and Avdeyeva (2008) investigated the impact of traditional lecture versus active learning strategies, specifically debates, on student learning in one undergraduate political science course. The study found that active learning through debates significantly improved student engagement, critical thinking, and content retention compared to traditional lecture-based instruction. The study reported that the students participating in debates returned higher mean scores in comprehension, application, and evaluation, indicating a substantial positive impact of active learning on student outcomes.

Huerta-Wong and Schoech (2010) investigated the impact of varied learning environments and instructional techniques on the development of active listening skills among

second-semester social work students. The study compared virtual and face-to-face settings using experiential learning and lecture-based techniques. The effect size for face-to-face experiential learning was larger regarding satisfaction, perception of gains in learning, and overall learning, indicating a stronger improvement in active listening skills compared to the other methods.

Cogo et al. (2016) studied the use of case studies and role plays in fourth-year undergraduate nursing students to enhance learning and application of curriculum content. Students reported that the strategies encouraged active engagement, provided a deeper understanding of the interventions used, and applied theory to real-world nursing situations. As this was an exploratory study, no statistical evidence was provided.

Elsherbiny and Al Maamari (2021) studied game-based learning with forty-eight undergraduate social work students enrolled in two Generalist Social Work Practice courses. A quasi-experimental design compared the impact of digital game-based learning versus traditional teaching methods on learning in social work students. Significant improvement in exam performance for the experimental (game-based learning) group was found at the midterm and final assessment, while no significance was found for the control group at any point of evaluation. Additionally, students in the experimental group had more consistent attendance and were continuously engaged in learning.

Rapp-McCall and Anyikwa (2016) report that active learning strategies have been integrated into online teaching and proven to be effective in increasing student knowledge. For the purpose of this study, the body of literature on the use and effectiveness of active learning strategies in an online setting for increasing critical thinking was not explored.

Supporting Dewey's belief that students who mastered reflective thought "could extend their education beyond the classroom" (Mathias, 2015, p. 458-9), reflective writing as an active learning strategy has been incorporated into social work higher education (McGuire et al., 2009).

As reflected in Table 1, research demonstrates a positive impact on student growth and learning through the use of reflective writing as an active learning strategy. Studies found that the use of reflective writing in social work courses enhances students' metacognition, meaning-making capacity, connection to content and peers, and personal growth. For those reasons, Linton et al. (2014) posited that writing, as an active learning strategy, should be included in undergraduate courses whenever possible.

Table 1

Reflective Writing Active Learning Strategies

Study	Intention	Strategy Used	Result
Björktomta & Tham (2024)	Evaluating the impact of reflective writing on professional identity development with thirteen undergraduate social work students in their first and fifth semesters at one Swedish University.	Using logbooks, students responded to **reflective questions** about what social work is, how they fit into the profession, their professional identity, their experience with the course content, and their learning experience during field.	The use of logbooks proved meaningful in personal and professional identity development Students demonstrated significant improvement in metacognition and learning progression.
Ní Raghallaigh & Cunniffe (2013)	Examined 95 third-year social science undergraduate students' perception of seminars as a teaching strategy. The study included 468 initial questionnaires and a nine-student focus group to explore and reflect on the questionnaire.	Introduction to Social Work seminars incorporated twelve hours of active learning, including a range of "doing" and "observing" experiences and twelve hours of lectures. Participation included **individual and peer-written reflection** to understand the impact of active learning	Demonstrated students became more adept at meaning-making. Responses suggested that creating a safe and supportive learning environment enhanced student learning outcomes and facilitated the integration of theory into practice.

		strategies on engagement and learning outcomes.	
Christensen & Wärnsby (2023)	Explored ten European students' learning progression through individual and peer-written reflective writing in their third year of social work higher education.	The course included lectures, independent study, case study discussions, and individual and group-based reflective assignments. Weekly **content reflections**, instructor formative feedback, and **end-of-course reflections** were used to encourage engagement and enhance learning outcomes.	Stimulated learning progression and improved awareness of self and others, learning strategies, metacognitive skills, overall engagement, and reflective positions in students. Both student and instructor gains in engagement were presented.
Gursansky et al. (2010)	A pilot study aimed to improve reflective practice skills and enhance development of ideas and theory as they apply to professional practice. Assessed twenty students using a new online journaling tool developed at the University of South Australia.	Utilized a variety of methods to enhance reflective skills among social work students, including structured reflective exercises, discussions, and online reflective journals.	Students and instructors reported that the immediacy, intimacy, and convenience of online access improved their reflective writing analytical abilities. They acknowledged the value of journaling as an authentic learning tool with real-world applicability.
Oliván Blázquez et al. (2019)	Aimed to compare the effectiveness of a Flipped Classroom (FC) approach versus a master class approach to enhance academic performance. One hundred ten undergraduate social work students were	A randomized trial of two parallel undergraduate social work sections of Social Work with Groups (second year of the social work curriculum) were compared, one using an active learning approach and the	The FC, using active learning strategies, demonstrated higher exam grades, pass rates, and attendance. FC proved a more effective tool in promoting academic performance in both quantitative and qualitative ways

	studied at the University of Zaragoza while participating in a Social Work with Groups course.	other traditional lecturing. Innovative and active teaching methods were used, including **reflective journalism** in online tools that promote learning communities.	regarding social work higher education.
Sage & Sele (2015)	Explored the use of reflective journals as a FC technique with twenty-seven undergraduate social work students enrolled in Generalist Practice with Individuals and Families (no course level was defined). The study aimed to measure the impact of reading completion and reflective thinking.	Two sections of admitted BSW students in the required course of Generalist Practice with Individuals and Families were assigned weekly online **reflective journaling,** answering three questions reflecting on the content required for the week. Instructors provided feedback on the journal and used class time to engage in discussion, activities, and application of content.	Using a mixed-method analysis, including student surveys and journal reflections, researchers found that reflective journals increased student preparation, engagement, and learning; but demanded increased labor for both teachers and students.

An active learning approach to teaching fosters the student's capacity for higher-order thinking by improving "retention, assimilation, understanding, and proper application of course content" (Scannapieco, 1997, p. 955, as cited in Kennedy, 2007). Learning in a safe, supportive, and interactive environment allows students the opportunity to construct knowledge (Jonassen, 1991), participate actively, and demonstrate mastery of content critical thinking (Kennedy, 2007).

Gaps in the Literature

While the literature on critical thinking and active learning has significantly expanded in recent years, several gaps were apparent in this review. Several approaches to defining critical thinking exist in the literature, including an emphasis on the *features* a thinker must possess (philosophical), a *focus on the skills, behaviors, and attitudes* of the thinker (psychological), and an *emphasis on the emotional experiences* of the thinker (affective) (Matthias, 2015). Although a wide range of definitions of critical thinking have been presented, Saidahmadovna (2024) reports there is consensus that critical thinking has many dimensions involving knowledge, cognitive skills, and disposition (a state of mind to be a critical thinker). Faicone (1998a) offered a generally accepted definition of critical thinking in the Delphi Report; however, most continue to consider the concept too complex, impossible to define, or flexible (Davies, 2015; Fox, 2013; Kahlke & Eva, 2018; Verbaugh, 2019).

Teaching critical thinking skills in social work is crucial, as professionals must be prepared to analyze, integrate, and apply theory in work with clients (Gambrill & Gibbs, 2017; Verbaugh, 2019). However, little research has been presented on critical thinking in social work education (Abrami, 2008; Mathias, 2015; Johnston, 2009; Verbaugh, 2019). Very little is known about whether social work students are explicitly taught to think critically (Mathias, 2015; Tilbury et al., 2010). Although various approaches to teaching in social work have been studied, very few studies on critical thinking interventions have been conducted (Johnston, 2009; Verbaugh, 2019).

Finally, current scholarly literature on using active strategies to foster critical thinking in social work education is narrowly presented. During the review of the literature on active learning strategies in social work education, the majority of the studies explored the effectiveness of a single active learning strategy as opposed to more than one strategy. While all of these

studies demonstrated positive student gains in learning or reflection, none of the studies reported a negative impact or decline in learning.

Although very little literature was presented that incorporated more than one active learning strategy in social work higher education, several studies presented combined the flipped approach with one active strategy in undergraduate social work. Sage and Sele (2015) examined reflective journaling, measuring the impact on student engagement. Oliván Blázquez et al. (2019) and Gómez-Poyato et al. (2019) both examined the effectiveness of role playing on academic performance. Although both studies demonstrated positive outcomes for the aim of their study, the increased time demanded of instructors was mentioned (Gómez-Poyato et al., 2019; Oliván Blázquez et al., 2019). Oliván-Blázquez et al. (2022) compared two FCs, one incorporating PBL learning and the other case-based learning (CBL). The results demonstrated academic benefits for both groups, with the FC/CBL group expressing benefits for critical thinking (Oliván-Blázquez et al., 2022). Applying a variety of tools and active strategies in a social work seminar (six 2-hour seminars over six consecutive weeks), Ni Raghallaigh and Cunnliffe (2013) found that active methods enhanced student engagement; however, the study did not assess learning outcomes. No research was presented on the effective use of active learning as a primary pedagogical approach in social work higher education.

Bloom's Mastery Learning

In response to a growing concern that the gaps in student learning were not being adequately addressed, Bloom and a group of graduate students initiated a series of studies on the difference in learning between individuals in the traditional school setting (Guskey, 2007). Through observation and assessment of students and instructor methods of content delivery, Bloom noted that little variation in teaching methods were presented; all students were taught in the same manner, with the same amount of time to master learning (Bloom, 1968). With this,

education failed to consider the nature of learning and the educational needs of individual students. Bloom suggested that to decrease gaps in learning and increase individual learning, instructors needed to incorporate varied approaches to teaching to better meet the needs of diverse learners. From these studies the concept of Learning for Mastery, later Mastery Learning, was developed (Guskey, 2010).

Bloom (1968) believed that the quality of instruction was measured by its impact on the individual learner rather than on an arbitrary set of learners. In his concept of Mastery Learning, Bloom aimed to address the limitations of traditional one-size-fits-all instructional approaches by promoting the philosophy that every student has the capacity to learn if given enough time and support. The fundamental principle of Mastery Learning is that students must achieve proficiency in initial or core concepts before moving on to more complex concepts (Bloom, 1968).

To facilitate mastery of content, Bloom (1968) proposed a specific instructional strategy that included initial instruction, formative assessments, corrective activities, and enrichment activities, as reflected in Figure 2. Bloom (1964, as cited in Guskey, 2007) emphasized the importance of formative assessments throughout each instructional concept. Following each assessment, students who have not achieved mastery of the content are given individualized corrective activities aimed to offer guidance and direction to enhance attainment of said concept, while those who have achieved mastery are given enrichment activities to expand and broaden learning (Bloom, 1968). Once all students demonstrate mastery of the content delivered, the next concept can be introduced (Guskey, 2007). Bloom (1968) believed that continuous and individual feedback was a necessary component for instructors to incorporate so that students possess an understanding of specifically what needs to be accomplished to achieve mastery of content.

Figure 2

Bloom's Mastery Learning Instructional Process

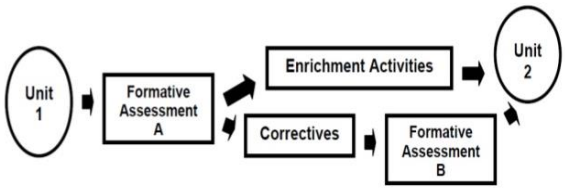


Figure 2. The Mastery Learning Instructional Process

Note: Bloom's depiction of the Mastery Learning process, including assessment and enrichment. From Guskey, T. R. (2007). Closing achievement gaps: Revisiting Benjamin S. Bloom's "Learning for Mastery". *Journal of Advanced Academics*, 19(1), 8-31.

Block and Burns (1976) describe Bloom's Learning for Mastery Theory as a "philosophically based approach to the design of a classroom environment" (p. 3). It is a cooperative, teacher-paced approach with several key principles: clear and specific learning objectives, instruction tailored to meet individual learning needs and pace of each student, ongoing formative assessment to monitor student progress, identifying areas of continued difficulty, providing timely feedback and multiple opportunities to master content, providing support and resources available for those who require it, and setting high expectations for all students to promote a growth mindset and foster a belief in the attainability of academic success (Athanassiou et al., 2003; Block & Burns, 1976; Bloom, 1968). By allowing flexibility in time, individualized goals, and structuring courses to be content-heavy in the beginning, instructors increase students' opportunities for critical thought.

To that end, educators apply Mastery Learning principles to design differentiated instruction, individual competency-based assessment strategies, and support student mastery of complex concepts and skills (Athanassiou et al., 2003; Bloom, 1968; Guskey, 2007). Mastery learning approaches have more recently been integrated into online and blended learning environments, leveraging technology to personalize instruction, diversify teaching approaches

and content, and provide targeted feedback (Forehand, 2005; Zhang et al., 2022). Applying this approach has proven to have positive impact on cognitive and affective learning (Aviles, 1998), increased exam proficiency (Guskey & Gates, 1985), and an overall positive impact on student learning (Kulik et al., 1990).

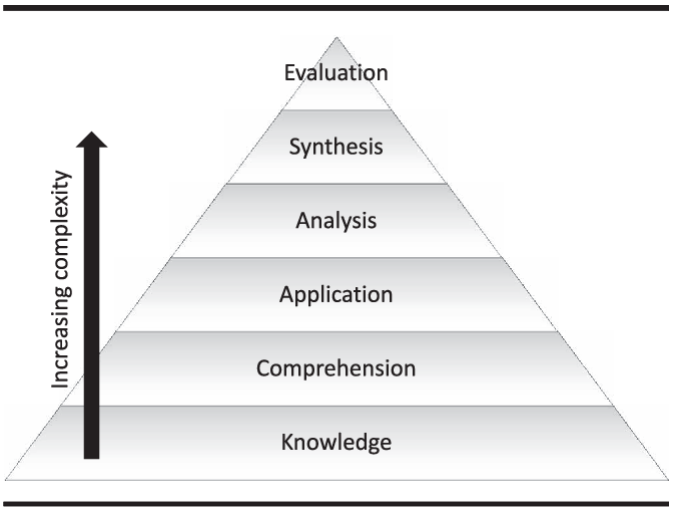
Bloom's Taxonomy

Original Handbook

Driven by theories of educational and cognitive psychology, Benjamin Bloom (1956) first introduced the *Taxonomy of Educational Objectives,* hoping to provide a shared language for educators in assessing student learning. Since that time, his taxonomy has been considered one of the most influential frameworks in educational psychology (Tabrizi & Rideout, 2017). Better known as Bloom's Taxonomy, this framework provides a hierarchical classification of three learning domains: cognitive, affective, and psychomotor (Bloom, 1956, 1968). The cognitive process domain includes knowledge and intellectual capacities (Bloom , 1956) and was fully developed with subcategories and described as *one-dimensional* (Amer, 2006) which is depicted in Figure 3. The affective domain describes the way an individual manages emotional experiences (Krathwohl et al., 1973). The psychomotor domain includes skills related to physical movement (Bloom,1956).**Figure 3**

Figure 3

Bloom's Original Taxonomy



Note: Bloom's original *Taxonomy of Educational Objectives*. From Adams, N. E. (2015). Bloom's taxonomy of cognitive learning objectives. *Journal of the Medical Library Association: JMLA*, 103(3), 152–153. https://doi.org/10.3163/1536-5050.103.3.010

Bloom's *Taxonomy* categorizes cognitive processes from lower-order thinking skills to higher-order thinking skills into a hierarchy of six levels: *knowledge* (retention of specific concepts, facts, or methods), *comprehension* (understanding the meaning of information), *application* (using acquired knowledge in new situations), *analysis* (breaking information into component parts and understanding the interrelationship), *synthesis* (creating something new by combining learned elements in novel and creative ways), and *evaluation* (forming judgments about the value of ideas, materials, or methods based on established criteria) (Bloom, 1956). The latter three skills involve deeper learning and greater cognitive engagement (Bloom, 1968). Although the cognitive processes are considered hierarchical, requiring progression from lower to higher-order thinking, Bloom believed that students may move between the six stages as learning occurs.

Revised Taxonomy Handbook

Over time, Bloom's *Taxonomy* underwent revisions and adaptations, including Anderson et al.'s revised version in 2001. In their revision, Anderson et al. (2001) emphasized the use of the *Taxonomy* for curriculum development, assessment, and instruction; rather than solely on assessment. The most noted change to Bloom's original framework included reorganizing the Cognitive Domain, shifting the language from nouns to verbs, and creating the process and levels of knowledge matrix (Krathwohl, 2002). Anderson and Krathwohl (2001) described the revised framework as two-dimensional and referred to as "the Taxonomy Table" (p. 27). Heer (2012) from Iowa State University's Center for Excellence in Learning and Teaching created a model for learning objectives (see Figure 4) depicting the two-dimensional taxonomy as described by Anderson et al. (2001).

Figure 4

A Model of Learning Objectives - Based on a Taxonomy for Learning, Teaching, and Assessing

Note: A Model of Learning Objectives–Based on a Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's *Taxonomy of Educational Objectives.* Heer, R. (2012). *A model of learning objectives: Based on A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives* [Handout]. Center for Excellence in Learning and Teaching, Iowa State University. https://www.learningoutcomesassessment.org/wp-content/uploads/2019/10/RevisedBloomsHandout.pdf

The *Revised Handbook (2001)*, an extension of Bloom's *Taxonomy*, has significantly

influenced educational practice since its inception (Athanassiou et al., 2003). Bloom articulated the key principles of Mastery Learning, highlighting the importance of individualized instruction, scaffolding, feedback, student engagement in the learning process, the importance of mastery over content, personalized instruction, and formative assessment (Bloom, 1968; Chandio et al., 2016). The revised framework aimed to address the limitations of traditional one-size-fits-all instructional approaches by promoting the philosophy that every student has the capacity to learn if given enough time and support (Bloom, 1968).

The Knowledge Dimension. The revision of Bloom's original *Taxonomy* included renaming the initial *knowledge* category to *remembering* to highlight the shift in focus from merely acquiring knowledge to actively engaging with and recalling information (Krathwohl, 2002). The term *knowledge* then served as a second dimension of the taxonomy, representing the range of knowledge that students were expected to construct or acquire (Anderson et al., 2001). Within this dimension, knowledge progresses from factual knowledge (the most basic components a student must know), conceptual knowledge (knowing the interrelationships between those basic elements), procedural knowledge (knowing the steps involved in performing a task), and ultimately metacognitive knowledge (knowledge of one's own thinking) (Anderson et al., 2001).

At the highest level, metacognitive knowledge describes thinking about one's thinking (Anderson et al., 2001; Krathwohl, 2002; Pintrich, 2002). Anderson et al. (2001) describe this to include the ability to identify effective strategies, appropriate conditions for, and effectiveness of one's learning. When a learner has reached this level in the knowledge dimension, they have developed insight into personal strengths, weaknesses, and motivating factors for learning. In turn, the learner moves beyond acquiring subject matter to applying and transferring learned knowledge to new contexts and activities (Anderson et al., 2001; Christensen & Warnsby, 2023;

Krathwohl, 2002; McDaniel, 1970). Students' metacognitive ability has proven to be a significant tool in demonstrating and understanding the learning process (Menz & Xin, 2016 in Christensen & Warnsby, 2023).

The Cognitive Process Dimension. In the revised *Taxonomy,* the cognitive process dimension (development of intellectual skills) remained consistent with the six categories of Bloom's original framework; however, semantic and order changes were implemented (Anderson et al., 2001; Krathwohl, 2002). As previously mentioned, the first category, *knowledge,* was renamed *remember* to reflect the active nature of the task. *Comprehension* was changed to *understand* to capture the range of learning demanded, from comprehension to synthesis (Krathwohl, 2002). The descriptor *synthesis* was renamed *create* and moved to the highest level of the Cognitive Domain. All levels of the Cognitive Domain were intentionally presented as verbs and described as processes. Akin to the original *Taxonomy*, the revised categories are considered hierarchical, increasing in complexity as the learner progresses. With these changes, Krathwohl and Anderson offered a two-dimensional framework, the Taxonomy Table, highlighting the intersection between knowledge and cognitive processes (Anderson et al., 2001; Krathwohl, 2002).

Forehand (2011) described the revised *Taxonomy* as having a genuine application in curriculum development, instructional planning, and assessment design across diverse educational contexts. Educators use the *Taxonomy* to articulate clear learning objectives, scaffold instruction according to cognitive levels, and develop assessments that measure student understanding and mastery of course content (Athanassiou et al., 2003; Bloom, 1956; Chandio et al., 2016; Krathwohl, 2002). Additionally, the *Taxonomy* serves as a framework for challenging higher-order thinking skills, critical thinking, problem-solving, and creativity among individual learners.

Conclusion

Synthesizing the literature on Constructivism, Social Cognitive Theory, active learning, and Bloom's Mastery Learning presented several themes regarding the acquisition of critical thinking. First, Social Cognitive Theory and Constructivism both support the concepts of critical thinking and active learning. Constructivism promotes collaborative learning environments to foster dialogue, debate, and peer review, all of which promote critical thinking through the exchange and evaluation of diverse perspectives and viewpoints. Social Cognitive Theory presents observational learning and modeling, which involves an individual assessing and analyzing the behaviors and strategies of others, considering the effectiveness and applicability to their own learning.

Constructivism, Social Cognitive Theory, Mastery Learning, and active learning all support the concepts of active engagement and agency. Constructivism encourages learners to actively construct their understanding of concepts and analyze, question, and evaluate information, fostering critical thought. The self-regulation component of Social Cognitive Theory requires the skills of goal-setting, planning, and self-assessment, allowing students to evaluate their own learning strategies and then adjust as needed for growth. Bloom's Mastery Learning promotes active engagement in learning, encouraging students to progressively develop higher-order thinking skills as they work toward mastering specific objectives, successfully completing assessments, and taking ownership of their learning. Active learning environments promote opportunities for students to engage in problem solving, inquiry, practical application of content, and deep reflection, all of which are essential components of critical thinking.

Feedback and reflection were presented as a means to promote critical thinking in both theories reviewed. In the tenets of Constructivism, reflection on learning experiences prompts learners to think critically about their understanding, identify gaps in knowledge, and generate

new insights or hypotheses. Social Cognitive Theory includes the concept of feedback mechanisms, including peer feedback and self-assessment, which provide avenues for students to critically evaluate their own performance and identify areas for improvement. Timely and constructive feedback in Bloom's Mastery Learning environments encourages students to critically reflect on their progress to identify strengths and navigate weaknesses, allowing for adjustment and progression in learning. Real-time feedback in active learning environments guides students' critical thinking by providing instructors with information on the effectiveness of teaching strategies, encouraging reflection on their approach, and adjusting as necessary. Additionally, students receive real-time feedback on comprehension and application of concepts, allowing for those adjustments to be made immediately and with guidance.

Additionally, the concepts of goal-setting and self-regulation are presented in the review of all theories. Constructivism fosters critical thought in the practice of goal setting and evaluation of necessary knowledge and skills necessary progression; while Social Cognitive Theory describes self-regulation, which requires the critical thinking skills of self-monitoring, self-reflection, and self-evaluation, all of which enable individuals to assess their progress towards goals and adjust as needed. Goal setting is an essential component of Bloom's Mastery Learning, as learning occurs in small segments and encourages students to set specific, measurable, and attainable goals, fostering the skills of planning, organization, and self-assessment. Goal setting in active learning environments promotes critical thinking through the identification of learning objectives, engaging in structured activities, evaluating progress, and making decisions about specific learning strategies and resources.

Finally, Constructivism, Bloom's Mastery Learning, and active learning support that critical thinking is fostered through constructive processes. This is presented in Constructivism as the theory asserts that the processes of problem solving, inquiry, and discovery promote

critical thinking, requiring learners to analyze information, generate hypotheses, and evaluate evidence. Bloom's Mastery Learning encourages students to engage in the higher-order thinking skill of analysis, synthesis, and evaluation as they work towards mastering specific objectives. And, active learning strategies promote opportunities for students to apply knowledge to real-world problems, analyze complex information, and construct alternative solutions.

In summary, the core principles of both Social Cognitive Theory and Constructivism provide a foundation for the use of active learning in the context of Bloom's Mastery Learning framework. Both theories highlight the importance of learners' active engagement, social interaction, and self-efficacy in the learning process, aligning with the goals of Mastery Learning to promote higher-order thinking. By integrating active learning strategies informed by these theories, educators can create engaging yet meaningful learning environments and foster active construction of deeper understanding, collaboration with peers, and mastery of the proposed learning objectives for students in social work education.

Chapter 3: Methodology

The following chapter describes the research methodology employed to investigate the impact of active learning strategies on the development of critical thinking skills among students enrolled in an undergraduate social work course. A quantitative research design was selected for this study to provide a systematic investigation of the relationship between active learning and critical thinking. The basis for choosing a quantitative approach is grounded in demonstrating the relationship between two variables (Barroga & Matanguihan, 2022) and providing objective measurement and statistical analysis, offering reliability and validity of the findings. This chapter begins by describing the undergraduate social work course used for this research project, followed by the research design including the variables, setting, sampling, and data collection. It concludes by describing the data analysis procedures, including the instrumentation tool used to address the research questions.

Research Questions

Q1. What is the impact of traditional instructional methods on the critical thinking of undergraduate students in the SOWK 110: Human Diversity and Social Interaction course?

Q2. What is the impact of active learning strategies on the critical thinking of undergraduate students in the SOWK 110: Human Diversity and Social Interaction course?

Q3. What is the difference in critical thinking between undergraduate students taught using traditional instructional methods and undergraduate students taught using active learning strategies in the SOWK 110: Human Diversity and Social Interaction course?

Q4. What is the impact of active learning strategies on the grade distribution of undergraduate students in the SOWK 110: Human Diversity and Social Interaction course?

Hypotheses

H1. Traditional instructional methods do not significantly impact the critical thinking skills of undergraduate students in the SOWK 110: Human Diversity and Social Interaction course.

H2. Active learning strategies significantly enhance the critical thinking skills of undergraduate students in the SOWK 110: Human Diversity and Social Interaction course.

H3. There is a significant difference in critical thinking skills between undergraduate students taught using traditional instructional methods and those taught using active learning strategies in the SOWK 110: Human Diversity and Social Interaction course, with active learning strategies being more effective.

H4. Active learning strategies lead to a more favorable grade distribution among undergraduate students in the SOWK 110: Human Diversity and Social Interaction course.

Positionality

As an educated, Caucasian, Christian, cis-gendered female, I am aware of the privileges that have been offered to me. Raised by a single mother in a low socioeconomic area, I can empathize with the experiences of many students; however, my life experience does not apply and cannot be compared to all. My professional journey has blessed me with diverse opportunities, offering contact and meaningful work with the most vulnerable individuals and families; however, I remain mindful that clients' experiences are theirs and I am merely a participant in their journey. This mindfulness is practiced in the classroom as well.

In my role as a social work professor, the content I teach often requires students to explore and reflect on sensitive concepts. I respect the diversity of experiences and thoughts my students bring to the class. I am aware of and transparent about the role my privilege has provided. Openly modeling for students, I consistently reflect on personal bias, feelings, and

responses to student's shared experiences. I intentionally remain cognizant that students will bring to class knowledge and experience that is more meaningful and impactful than what I can offer with personal experience and educational content. With this, my teaching approach is grounded in establishing a safe, collaborative, student-centered learning space for students to share and grow together.

For nearly thirty years, I have counseled adolescents and college-aged individuals in a clinical setting, working on identity development, advocating for social, emotional, and educational needs, and navigating conflicted relationships. My prior experience proves beneficial in understanding and meeting the needs of undergraduate students, while also presenting the challenge of remaining true to my roles as instructor and researcher. Although while conducting this study I wanted each student to succeed, I needed to allow both classes to evolve organically and perform independently. Reflection on the boundaries between clinician and instructor was a topic of weekly supervision with the social work department chair. Avoiding bias as the researcher was managed by developing and staying impartial in the delivery of all the lessons created before beginning the study.

Research Design

Quantitative research involves measurement, asking questions that quantify information, and generalizing findings to broader contexts (Gitlin & Czaja, 2016). Borgstede and Scholz (2021) describe the aim of this approach as seeking "valid mathematical representations for empirical phenomena" (p. 2). Meaning, statistically representing the relationships between variables. Although equally valuable in establishing relationships, a qualitative design is more frequently employed to describe a phenomenon rather than to statistically support a hypothesis (Alasuutari, 2009). As this study aimed to demonstrate a statistically relevant relationship between two specific variables, a quantitative approach was designed.

Described as the gold standard of quantitative research, randomized controlled trials (RCT) are being conducted with increasing frequency in educational settings (Gopalan et al., 2020). However, when limits to authentically randomizing a control group are present, researchers are challenged to design studies demonstrating causality within more naturally occurring settings (Gopalan et al., 2020). In response, many studies are structured using quasi-experimental designs when randomization is not ethically or logistically feasible (Harris et al., 2006). Quasi-experimental designs evaluate interventions and demonstrate causality between two variables using nonrandomized control groups and a pre- and postintervention comparison (Harris et al., 2006). This research approach is widely used in social science research to test hypotheses and answer questions and, when well-designed, can have considerable internal validity (Thyer, 2012). For this study, a quasi-experimental design was chosen, using two preregistered undergraduate social work sections of SOWK 110: Human Diversity and Social Interaction offered in the fall semester of 2023.

Variables

In organizing and designing a quasi-experimental study, the research questions and variables to be investigated are defined in the initial stage (Barroga & Matanguihan, 2020). For this study, the variables to be investigated are defined as:

The **dependent variable** was chosen following an extensive review of the Council on Social Work Education (CSWE) Educational Policy and Accreditation Standards (EPAS) which highlights higher education programs' obligation to foster student's critical thinking, critical reflection, and critical evaluation throughout the nine competencies (CSWE, n.d.b). When accomplished, social work graduates will be more prepared for decision-making, analysis, problem-solving, detecting inconsistencies, integration of information, and abstract reasoning when entering the social work profession (Belchior-Rocha & Casquilho-Martins, 2019).

Although many definitions of critical thinking have been presented, for the purpose of this study, Facione's (1998a) definition was adopted, including both cognitive skills and affective dispositions. The cognitive skills are operationalized as *self-regulation* (self-examination and self-correction), *interpretation* (categorization, decoding significance, clarifying meaning), *analysis* (examining ideas, identifying and analyzing arguments), *evaluation* (assessing claims and arguments), *inference* (questioning evidence, creating alternatives, drawing conclusions), and *explanation* (stating results, justifying procedures, presenting arguments) (Facione, 1990, 1998a). The two identified affective dispositions are operationalized as *approaches to life and living in general* (fair-mindedness, open-mindedness, honesty about biases and prejudice, willingness to reflect and review personal views, self-confidence in reasoning, alertness to one's ability to use CT, general inquisitiveness) and *approaches to specific issues, questions, or problems* (clarity, orderliness, reasonableness, care in focusing, appropriate precision, diligence) (Facione, 1990, 1998a, 1998b).

The **independent variable** was chosen after a review of pedagogical approaches proven to foster critical thought, specifically alternatives to traditional instructional methods. Traditional methods of instruction include passive delivery of course content using a lecture format with students reinforcing learning through independently completed assignments (Saira & Hafeez, 2021). For this study, Bonwell and Eison's (1991) definition of active learning was employed: "instructional activities involving students in doing things and thinking about what they are doing" (p. 5).

Threats to Validity

In the context of experimental design, threats to internal and external validity must be examined as they directly impact the credibility and generalizability of a study's findings (Onwuegbuzie, 2000). Internal validity examines the extent to which a study's design answers

the research questions without the influence of extraneous factors (Andrade, 2018). Onwuegbuzie (2000) describes several extraneous factors that must be considered as threats to the internal validity of experimental research: history (events occurring during data collection), maturation (natural changes occurring over time), selection bias (using nonrandomized groups), mortality (loss of group participants), testing (improvement caused by repeated test taking), instrumentation (change in instrument, facilitator, or scoring), and statistical regression (natural tendency for subject's scores to move from extreme to average). Including a control group mitigates the threat to internal validity created by history, maturation, and testing (Jenkins-Smith et al., 2024). In this study mortality did not present a threat, as all participants consented to and completed the semester-long study; no students withdrew from the course. The delivery of several assessments over fifteen weeks minimized the threat of statistical regression. According to Field (2018), collecting data at several points over time reduces this threat to validity. Selection bias must be considered as a possible threat as a convenience sample was used, preventing true random samples in both groups.

Onwuegbuzie (2000) describes external validity as the degree to which a study's findings can be "generalized to and across populations, settings, and times" (p. 6). Three sources of threats to external validity were offered: population (the extent to which a sample represents the population's greater community), ecological (the extent to which the research setting represents the setting to which the findings will be generalized), and external validity of operations (clear distinction of variables, awareness of pretest sensitization). As students self-enroll in both courses, the control and comparison groups represent a random sample of the university's population. However, because Eastern is a small, suburban, Christian university, this limits the generalizability to larger, urban, secular institutions. Finally, conducting interrater reliability with

a validated rubric and administering different essay prompts for the three assessments addressed the threat to operational validity.

Setting

Eastern University is a private Christian university, formerly named Eastern Baptist College, Eastern Baptist Theological Seminary, and Eastern College: A Baptist Institution. Its roots are in training Baptist pastors to become both "biblically informed and also culturally relevant" (Eastern University, n.d.). Beginning with one Philadelphia location in 1925, Eastern University now has a main campus in St. Davids, PA, a satellite campus in West Philadelphia (City Line), and a Junior College serving Hispanic students in North Philadelphia. The demographics provided herein are specific to Eastern University's main campus, as this is where the study was conducted.

In the fall semester of 2022, Eastern University's St. David campus had an undergraduate enrollment of 1,726 students with a 13:1 student-teacher ratio *(Eastern University - Profile, Rankings and Data,* n.d.). The overall gender and ethnic diversity included: 36% male, 64% female, 43% White, 27% African American, 14% Hispanic, and 7% unknown *(Eastern University - Profile, Rankings and Data,* n.d.). On the higher end of private school tuition, the annual cost (including room and board) for one academic year is approximately $37,420; however, the university provides students an average of $29,000 in need-based aid *(Eastern University Student Population and Demographics,* 2022). Demographic information is not yet available for the 2023-2024 academic year.

As a member of the Council for Christian Colleges and Universities (CCCU), Eastern University is involved with 185 other Christian colleges and universities internationally whose "mission is to advance the cause of Christ-centered higher education and to help our institutions transform lives by faithfully relating scholarship and service to biblical truth" (CCCU, n.d., para.

1). The Council involves universities committed to providing affordable, high-quality education to all students, emphasizing individuals who are first generation and low income. Eastern University's mission statement reflects these values, emphasizing faith, reason, and justice as the university's core focus. During the course of their studies, students are required to engage in courses aimed at fostering an understanding of each value through a Christian lens, regardless of their chosen major.

The mission statement of Eastern University's undergraduate social work department "is to educate students to be competent generalist social work practitioners who are knowledgeable, skilled, and compassionate representatives of God's mercy and justice in meeting common human needs with particular attention to vulnerable and oppressed populations and communities" (2023-2024 Eastern University Academic Catalog, n.d., n.p.). The social work program's mission aligns with the greater university to work in the service of God while adhering to the guiding principles of the social work profession, "to enhance human well-being and help meet the basic human needs of all people, with particular attention to the needs and empowerment of people who are vulnerable, oppressed, and living in poverty" (NASW, 2021, n.p.).

The Course

Description

Eastern University divides the core undergraduate curriculum into three sections: faith (spiritual development), reason (intellectual development), and justice (character development). As described in the 2023-2024 Eastern University Academic Catalog (n.d.), the justice requirement is driven by the philosophy that

> At Eastern University, we believe that God acts through individuals and the institutions they create to bring about reconciliation. This kind of transformational

> movement requires awareness, creativity, and clarity of vision in speaking truth to power and transforming our society for the greater good (para. 2)

The course used for this study (SOWK 110: Human Diversity and Social Interaction) is designated as one that satisfies the core justice requirement of the university. The course is described in the 2023-2024 Eastern University Academic Catalog (n.d.) as

> A survey of the similarities and differences of human individuals and groups, and the effect of human diversity on social interaction, within the context of social welfare and social work. Particular attention will be given to differences based on age, gender identity and sexual orientation; race, ethnicity, and nationality; culture and lifestyle; religion; ability and disability; and socioeconomic status. Material for thought and discussion will be provided by readings, videos, students' life experiences, and classroom lectures (Section SOWK 110).

This undergraduate social work course is offered on campus, in person during the fall and spring semesters; and online, fully asynchronous, in the summer and fall semesters. SOWK 110 is open to students of any major; no prerequisites are required.

Design

A multitude of strategies can be employed to foster learning and critical thinking in undergraduate courses. Active learning strategies can target individuals or small or large groups (Linton et al., 2014), and can be scaffolded to encourage higher levels of engagement and reach diverse learning styles (Dorodchi & Dehbozorgi et al., 2020). For the successful implementation of an active learning approach, sufficient time for planning and preparation is necessary (Silberman, 2009).

In preparation for the fall semester in 2023, the syllabus for SOWK 110: Human Diversity and Social Interaction was reviewed, the course content was divided into seven

modules, and each module was subdivided into 2 weeks. The course objectives for each module were reviewed, and active learning strategies to support students' learning were identified. Multiple sources were explored for active learning strategies appropriate for the undergraduate setting. This exploration resulted in the creation of an *Active Learning Content and Strategies Manual* that organized the course modules, learning outcomes, and active strategies used within each module and included facilitation instruction for each activity (see Appendix A). Figure 5 reflects the active learning strategies (in black font) employed with the comparison group. The activities in gold font represent reflective writing activities. The activities were scaffolded from simple to complex and were customized to reinforce specific course content.

Figure 5

SOWK 110: Human Diversity and Social Interaction | Active Learning Strategies Employed

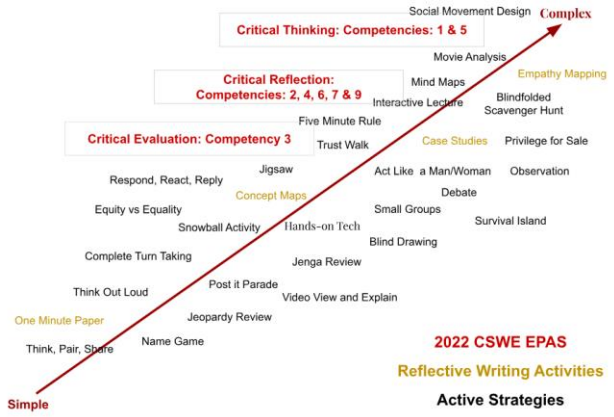
Note: Figure was adapted from Active Learning Strategies from the Center for the Advancement of Teaching Excellence | University of Illinois Chicago. (2023). https://cei.umn.edu/teaching-resources/active-learning

As accredited by the Council of Social Work Education (CSWE) social work program, Eastern University is obligated to prepare BSW graduates for critical thinking and the associated skills (CSWE, n.d.b). The application of critical thinking skills, critical evaluation, and critical reflection are specifically mentioned throughout the nine competencies (CSWE, n.d.b). It is in

the classroom setting that students are offered crucial opportunities to develop and practice critical thought, apply ethical behavior, learn reasoning, and consider alternate perspectives, ultimately meeting the aforementioned competencies (Letseka & Zireva, 2013; Siegel et al., 2020). Although all nine CSWE competencies require critical thinking or associated skills, competencies one through seven and nine are addressed in SOWK 110: Human Diversity and Social Interaction (see Appendix B). Figure 6 depicts the points at which the CSWE competencies (in red font) exist along the continuum of the scaffolded active strategies employed in this course.

Figure 6

SOWK 110: Human Diversity and Social Interaction | Course Competencies and Active Learning Strategies



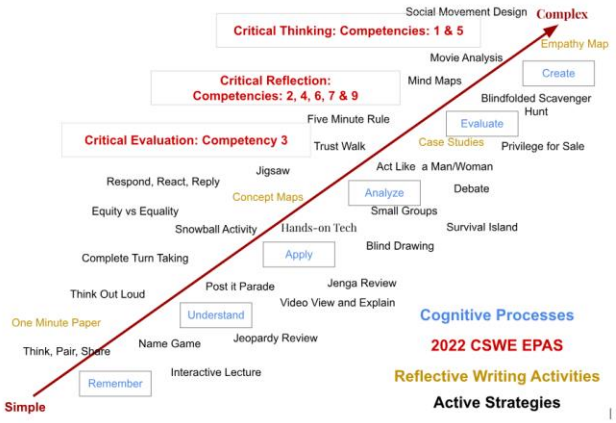
Note: Figure was adapted from Active Learning Strategies from the Center for the Advancement of Teaching Excellence | University of Illinois Chicago. (2023). https://cei.umn.edu/teaching-resources/active-learning

Concurrent with the creation of the *Active Learning Content and Strategies Manual*, the course was designed using Bloom's revised *Taxonomy* and the principles of Mastery Learning to guide the structure and content of the activities presented to students for completion. Within each of the seven modules, active strategies were designed to target a minimum of two of the six

progressive cognitive processes (remember, understand, apply, analyze, evaluate, create), as described in the revised *Taxonomy,* while reinforcing the course content. Figure 7 reflects the overlay of the hierarchical cognitive processes (in blue font) with the previously described social work competencies and active learning strategies.

Figure 7

Overlay of Competencies, Cognitive Processes, and Active Strategies



Note: Figure was adapted from Active Learning Strategies from the Center for the Advancement of Teaching Excellence | University of Illinois Chicago. (2023). https://cei.umn.edu/teaching-resources/active-learning

Limitations and Delimitations

Approval for the study from Eastern University's Internal Review Board (IRB) was applied for on March 6, 2023. After IRB revisions were completed, IRB approval was granted on May 20, 2023. Once approval was received, data were collected in the fall of 2023. It later became evident that the initial measurement tool (Critical Thinking Value rubric) was not intended for grading individual assignments. On May 8, 2024, an amendment to the proposal was submitted to the Eastern University's IRB requesting a change from the Critical Thinking Value rubric (created by the American Association of Colleges and Universities) to the Holistic

Critical Thinking Scoring Rubric (HCTSR) (Facione & Facione, 2011). The change was requested because the HCTSR integrates the skills and dispositions of critical thinking.

An additional amendment requesting two further changes was submitted to the IRB on May 14, 2024. The amendment requested a researcher review of the essay prompts to ensure consistency in using the new rubric with interrater reliability, as well as the use of a deidentified grade distribution to examine the intervention's effectiveness on overall learning. Eastern University approved all three amendments on May 24, 2024 (see Appendix C). An application for approval from Millersville University's IRB was submitted in August 2024, and approval was granted October 8, 2024.

Sample

Convenience samples are those drawn from sources that are easily accessible to the researcher **(**Alasuutari, 2009). As college students and courses are considered a convenience sample (Krathwohl & Smith, 2005), it was impossible to fully randomize the control or comparison group as students registered independently. However, because students self-enrolled in the course, factors including age, race, and gender were randomly configured, increasing the potential for generalizability. Each section of SOWK 110 is limited to twenty-five students; both sections used for this study were filled to capacity. The race, academic year, and sex of the two groups differed, as reflected in Table 2.

Table 2

Demographics of Control and Comparison Classes

Group	Race		Academic Year		Sex	
Control	White	5	Freshmen/Sophomore	19	Male	14
	Non-White	20	Junior/Senior	6	Female	11
Comparison	White	19	Freshmen/Sophomore	18	Male	9
	Non-White	6	Junior/Senior	7	Female	16

Data Collection

Recruitment

Krathwohl and Smith (2005) recommend that an experimental design maintain maximum efficiency. In the three months prior to the start of the semester, the researcher completed the Flipped Learning 3.0 Certificate Level One Master Class to learn the essential elements and best practices while being exposed to varied active learning strategies of the flipped learning approach. Additional research was conducted on active strategies aligned with the required course content. An integrated design, including learning goals, assessment procedures, and scaffolded activities (Dorodchi & Dehbozorgi et al., 2020) for each module, was created and prepared prior to the first day of the course (see Appendix A). Both sections of the course were designed to receive identical content and required identical assignments for determining the final course grade.

As stated previously, the subjects were chosen based on self-enrollment in two sections of the same three-credit, in-person, undergraduate social work course in the fall semester of 2023; no additional participants were solicited. Both sections were scheduled to meet three times per week (Monday, Wednesday, and Friday) for fifty minutes. Before beginning the semester, it

was decided that the earlier section (9 a.m.) would be the control group and the later (12 p.m.) would be the comparison group. This decision was made randomly before receiving the class rosters.

On the first day of class, each section was informed about the research purpose, design, and assessment measures of the study. Students were informed that if they had not reached the age of eighteen before the first day of the course they were exempt from participation. Students were not informed if their class would receive traditional instructional methods (control group) or an alternate approach using active learning teaching strategies (comparison group). Participation in the study was described as voluntary. As such, students in both sections were allowed two weeks (as per the university drop/add deadline) to decide if they wanted to (1) remain in the registered class and participate in the study, (2) remain in the registered class and not participate, or (3) transfer to a different instructor's section of the course offered in the same semester. At the end of the drop/add period, 100% of the students were eligible to participate, remained in their original course, and participated in the study (see Appendix D).

In the first scheduled class of week three, a paper and pencil, two open-ended question essay prompts were distributed and administered to students in both classes to obtain an initial assessment of their critical thinking. Before completing the prompt, a facilitator other than the researcher read the instructions and requested students' written consent by instructing them to check the "consent" box at the top of the prompt paper if they were willing to have their response included in the study (see Appendix E). No names or identifying information was provided by the students to preserve anonymity and confidentiality. Students were allotted twenty minutes to complete both open-ended questions. The prompts were collected and secured by the facilitator in her locked office. The researcher left the classroom during the essay completion and returned when all students were finished.

Procedures

For the first two weeks of the fall semester of 2023, both sections of SOWK 110 were delivered content using a lecture approach (traditional instructional methods). Google slides were used to present the course overview, assignment descriptions, and Module One content: Race, Racism, and Diversity. Although class discussion was encouraged, no active learning strategies were employed. In week three, the comparison group was then informed of the shift in instructional teaching methods. Applying the principles and strategies of an active learning approach course design, it was explained to students that they were expected to complete the assigned readings and corresponding videos prior to class. Students were also encouraged to bring their notes and any questions about the learning material to class for discussion or further clarification. It was further explained that, in the classroom setting, students would be expected to arrive prepared to participate in small group activities aimed at enhancing understanding of and to further explore the pre-work content. The content expectations for the next module were reviewed and the student's understanding of the expectations was solicited with verbal confirmation. No change in content delivery was communicated to the control group.

In subsequent modules, each designated to last two weeks, the course content was delivered via traditional lecture and class discussion in the control class. The comparison group was exposed to active individual and small group learning strategies in the classroom designed to align with the content of each module (Table 3). A description of each active learning strategy is provided in Appendix A. At the start of each module, the class was randomly divided into five groups. The formed groups designated who the students would work with on the activities and projects in the class for the defined two-week module. Once groups were formed, students were allowed ten minutes to introduce themselves and develop preliminary relationships before the class engaged in content and learning activities. All of the activities completed in the classroom

aimed to encourage students to critically think about and collaborate with peers on the concepts introduced in the pre-work. Within each module, the active strategies were scaffolded, beginning with simple activities targeting the cognitive process of remembering and progressing to the final process of creating. As students engaged in the assigned learning group activities, the instructor moved around the classroom, supported learning through group work, offered feedback, reinforced understanding, and encouraged the principles of critical thinking (conceptualizing, applying, analyzing, and synthesizing information).

Table 3

Course Modules and Active Learning Strategies

Module	Active Learning Strategies
Module Two: Culture, Ethnicity, Identity	One Minute Reflection Paper, Complete Turn Taking activity, Snowball Activity, Small Group
Module Three: Privilege, Power, Oppression	One Minute Reflection, Case Study Activity, Movie Analysis, Privilege for Sale, Video View and Explain, Small Group
Module Four: Class, Marginalization	One Minute Reflection, Midterm Review Jeopardy, Five Minute Rule, Small Group, Case Study, Mind Map
Module Five: Gender, Sexuality, Identity	One Minute Reflection, Respond React Reply, Line-Up Activity, Case Study, Small Group, Concept Map, Act Like a Man Act Like a Woman
Module Six: Ageism, Diverse-ability, Ableism	One Minute Reflection, Debate, Trust Walk, Case Study, Small Group, Blindfolded Scavenger Hunt, Empathy Mapping
Module Seven: Social Change, Social Action	One Minute Reflection, Post it Parade, Think Out Loud, Small Group, Movie Analysis, Concept Map, Final Review Jenga

To assess students' critical thinking midsemester and at the end of the course, paper and pencil, two open-ended question essay prompts (Table 4) were delivered to both sections in weeks seven and fourteen. As stated previously, before completing each prompt students read the instructions given by the facilitator and were offered written consent for participation. Students were again allowed twenty minutes to complete both open-ended questions. All prompts were facilitated, collected, and secured by the facilitator.

Table 4

Essay Prompts

Timing	Prompts
W3	1. How can the intersectionality of race, ethnicity, gender, sexual orientation, and socioeconomic status contribute to unique experiences and challenges for individuals? 2. In what ways can acknowledging and understanding these intersecting identities lead to more inclusive and equitable societies?
W8	1. How does power WITH (others) differ from power OVER (control) in promoting social change? 2. In what ways can power be shared to create a more equitable and just society?
W15	1. How do social institutions either challenge or contribute to ableism? 2. What systemic changes could be implemented to promote a more inclusive and equitable environment for people with disabilities?

Rigor

Alele and Malau-Aduli (2023) describe rigor, or trustworthiness, of quantitative research as the extent to which a researcher works to improve the quality of their study, including reliability and validity. Validity includes the accurate measurement of a concept or variable, that

it measures what it intends to measure (Heale & Twycross, 2015); while reliability refers to the ability of a measurement to consistently return results, regardless of administrator or circumstances (Alele & Malau-Aduli, 2023). To address the concern of validity, a previously validated tool intended to assess critical thinking in writing assignments (Facione, n.d.) was chosen for this study. As the rubric was intentionally created for adaptability (Facione, n.d.), the researcher and the facilitator discussed the purpose, implementation, and adaptability of the rubric. The researcher reinforced the importance of not focusing on content or writing, but only assessing the level or depth of critical thought as noted by the creator of the HCTSR rubric.

The facilitator, who also served as the essay rater for this study, is a full-time social work faculty member in her third year at Eastern University, where the study was conducted. She has taught SOWK 110: Human Diversity and Social Interaction synchronously each semester and asynchronously each summer since her tenure with the university. The facilitator is a Pennsylvania Licensed Clinical Social Work (LCSW) and has worked in the profession for the entirety of their career. To ensure internal consistency or reliability of the measurement tool, interrater reliability was conducted (Heale & Twycross, 2015). The facilitator and the researcher independently assessed students' written assignments and assigned a score to each using the developed rubric. The researcher and facilitator's scores were compared after each had independently rated all the essay prompts from both classes. If the rater's scores were the same for an essay prompt, the prompt was included. If the raters' scores differed on any prompt, the rationale for each assigned score was discussed. If consensus on a score could not be achieved, the essay prompt was eliminated from the study.

Students in both classes were given essay prompts on the first day of the study. The initial prompt responses, as preintervention assessments, increased the trustworthiness of any observed posttreatment changes (Thyer, 2012). To prevent threats to reliability caused by

repeated use of the same measure (Alele & Malau-Aduli, 2023), each of the delivered assessments contained unique questions related only to the content covered in the modules studied since the last assessment. Approval for the assessment rubric and the inclusion of interrater reliability was obtained by the Institutional Review Board in the institutional setting (see Appendix C)

Data Analysis

Measurement

Facione (1990) asserted that the assessment of critical thinking must move beyond consideration of students' successful responses; it must consider how they arrived at that response. Effective assessments must include both the skills and dispositions associated with critical thinking. Essay prompts and written assignments offer several advantages when assessing the level of critical thinking in adolescents and young adults (Wade, 1995). Writing assessments allow students to engage in deeper self-reflection, consider wider perspectives, develop logical reasoning (Wade, 1995), and work through conflicting thoughts before drawing conclusions (Promoting and assessing critical thinking, 2024). To offer students time for reflection, an opportunity to critically consider the content delivered, and apply reasoning, essay prompts were chosen for assessment.

Instrumentation: The Holistic Critical Thinking Scoring Rubric

The Holistic Critical Thinking Scoring Rubric (HCTSR), developed by Facione and Facione (2011), is a validated tool for assessing the quality of critical thinking in both verbal and written work through consideration of five core criteria: *interpretation* (understanding and expressing the meaning of information), *analysis* (identifying the intended and true relationships among statements, questions, and concepts), *evaluation* (assessing the credibility of statements or other representations), *inference* (drawing reasonable conclusions from available information),

and *metacognitive self-regulation* (justifying methods, results, and processes). The HCTSR offers a structured method for scoring work on a four-level, forced-choice scale: (1) Weak, (2) Unacceptable, (3) Acceptable, and (4) Strong. The tool was developed with the intention of adaptability; each criteria section can be customized to meet the expectations of a discipline-specific assignment.

Facione and Facione (1996) believed that the ratings returned for HCTSR were dependent on the comfort and strength of those applying the rubric. To increase the validity of the returned scores, the creators highly recommend that two independent raters systematically review the rubric criteria prior to use and independently assess each writing submission. Once assessed, the two raters compare scores. If a discrepancy of more than one level is discovered, the raters are encouraged to review the assignment together, discuss the evidence supporting each score, and reach a consensus on the outcome. If consensus cannot be achieved, a third rater may be consulted.

Facione and Facione (1996) conducted multiple studies demonstrating the rubric's ability to accurately measure critical thinking skills across various contexts and disciplines. The HCTSR's reliability is increased through the use of interrater reliability testing. The instrument has been tested and validated in several disciplines (Facione & Facione, 1996) and is considered to have both face and construct validity (Landis et al., 2007).

The HCTSR specifically separates writing mechanics from critical thinking assessment, which is appropriate when working with students in a 100-level course. The HCTSR was developed by researchers considered instrumental in defining and assessing critical thinking in education. In this study, the HCTSR was used to assess the critical thinking skills demonstrated in the written responses of participants. Prior to implementing the rubric, the facilitator of the prompts and the researcher met to review the scoring criteria to be applied. The researcher and

facilitator agreed that the criteria on the original HCTSR were adequate for assessing the essays for this population (see Appendix F).

Each essay prompt was assigned a code by the facilitator to prevent researcher bias when scoring. The essays were independently scored and recorded on independent Excel spreadsheets (see Appendix G) by the facilitator and the researcher to ensure consistency and interrater reliability. Any prompt received that answers only one of the two essay questions was considered incomplete and eliminated from the study. The researcher and facilitator's independent scores for the completed prompts were then compared, with discrepancies in scoring resolved through discussion and consensus. If consensus could not be achieved, the prompt was eliminated from the study. Once consensus was achieved and the scores for eligible prompts were recorded, the researcher used IBM SPSS Statistics to analyze the data.

Chapter 4: Findings

Data Analysis Process

Data utilized for this study were collected by the facilitator for the comparison and control groups three times over one semester, weeks three, eight, and fifteen. After final grades for the semester were submitted to the university, the facilitator and researcher independently scored each essay prompt using the HTCSR. As mentioned in the methodology section, scores for each prompt were assigned using whole numbers as the HCTSR is a four-level scale, and half-point scoring is inconsistent with the intent and conceptual design of the rubric (Facione & Facione, 2011). After each essay prompt was independently assessed for the control and comparison groups, the two raters compared scores. Discrepancies were discussed until a consensus rating for each prompt was reached.

Once collected and organized, IBM SPSS Statistics software was used to analyze the data. A two-by-three between-subjects ANOVA test was used to compare essay prompt mean scores between the comparison and control groups over time. Comparing individual subject's progress over time was not possible as participation in the study was anonymous. Cohen's Kappa was performed to confirm interrater reliability and consistent use of the HCTSR. A Pairwise comparison was used to analyze the change in critical thinking across weeks for both the comparison and control groups. A Fisher's Exact Test and independent t-test were performed to measure the impact of the intervention (active learning) on the overall grade distribution in both groups (comparison and control). Descriptive analyses were calculated using frequencies and percentages to further explore final grade distributions.

Results

Demographics of Participants

The total sample for both the comparison and control groups consisted of twenty-five full-time undergraduate students, with one hundred percent consenting to participate. Randomly chosen before the start of the study, the comparison group met for fifteen weeks, on Monday, Wednesday, and Friday at noon for fifty minutes. The control group met for the same fifteen weeks for fifty minutes on Monday, Wednesday, and Friday at 9 a.m. A review of the demographics (Table 5) showed the comparison and control groups were similar in academic standing: 72% (n = 18) and 76% (n = 19) Freshman/Sophomores and 28% (n = 7) and 24% (n = 6) Junior/Seniors respectively. The comparison group had a higher representation of females, 64% (n = 16), compared to the control group that included 44% (n = 11) females. Conversely, the control group had a greater male representation with 56% (n = 14) than the comparison group's 36% (n = 9).

The most significant difference in demographics between the comparison and control groups concerned identified race. The comparison group participants overwhelmingly identified as White (76%, n = 19) versus non-White (24%, n = 6). Conversely, the control group overwhelmingly identified as non-White, with 80% (n = 20) and 20% White (n = 5). No other identifying information was solicited from participants.

Table 5

Participant Demographics: Comparison and Control Groups

		Comparison Group (n = 25) n%	Control Group (n = 25) n%
Academic Standing	Freshmen/Sophomore	72% (n = 18)	76% (n = 19)
	Junior/Senior	28% (n = 7)	24% (n = 6)
Sex	Male	36% (n = 9)	56% (n = 14)
	Female	64% (n = 16)	44% (n = 11)
Race	White	76% (n = 19)	20% (n = 5)
	Non-White	24% (n = 6)	80% (n = 20)

Analysis of Essay Prompts

During the score comparison between the two raters, it was discovered that fifteen assigned scores for the comparison group as shown in Table 6 and twelve scores for the control group as shown in Table 7 differed by one level, highlighted in yellow. As suggested by Facione and Facione (2011), in these cases, the raters reviewed the independent scores, discussed the rationale supporting each, and reached a consensus on the outcome, as illustrated in Table 8 and Table 9. Discrepancies between rater scores of more than one level, highlighted in purple, included seven essays for the comparison group (see Table 6) and five for the control group (see Table 7). The two-level discrepancies were discussed in depth until a consensus was reached.

Table 6

Comparison Group HCTSR Researcher and Facilitator Essay Prompt Scores

	R	F	R	F	R	F	R	F	R	F	R	F
Student	EP1 W3	EP1 W3	EP2 W3	EP2 W3	EP1 W8	EP1 W8	EP2 W8	EP2 W8	EP1 W15	EP1 W15	EP2 W15	EP2 W15
1	1	1	1	2	3	3	3	3	4	4	4	4
2	4	4	4	4	4	4	4	4	4	3	3	4
3	4	4	4	4	3	4	4	4	-	-	-	-
4	2	2	3	3	3	3	2	2	-	-	-	-
5	4	4	3	3	1	1	3	3	4	4	3	3
6	3	3	3	3	4	4	4	4	2	2	3	3
7	2	3	4	2	4	4	3	3	2	2	3	3
8	2	4	3	3	4	4	3	3	3	3	3	3
9	3	4	3	3	4	4	4	4	3	3	-	-
10	3	3	3	3	2	3	2	4	3	3	3	3
11	2	2	3	3	4	4	2	2	3	3	4	4
12	3	3	4	4	3	3	3	3	3	3	4	4
13	4	4	4	4	3	3	3	3	3	3	4	4
14	3	4	3	3	2	2	1	3	3	2	2	3
15	3	4	3	3	2	2	2	2	4	4	4	4
16	2	4	4	4	4	4	3	3	4	4	4	4
17	3	4	4	4	3	3	1	3	-	-	-	-
18	2	2	3	3	3	3	3	3	2	2	3	3
19	3	3	-	-	3	3	4	4	2	2	3	3
20	2	2	2	2	3	3	3	3	2	2	4	4
21	2	2	2	2	3	3	3	3	1	1	3	3
22	4	4	2	2	3	3	2	2	2	2	3	3
23	3	2	2	2	3	3	3	3	-	-	-	-
24	4	3	2	4	1	1	1	1				
25	4	3	4	4								

Note: R indicates score assigned by Researcher, F indicates score assigned by Facilitator, (-) indicates eliminated prompt responses, empty cells indicate student absence

Table 7

Control Group HCTSR Researcher and Facilitator Scores

	R	F	R	F	R	F	R	F	R	F	R	F
Student	EP1 W3	EP1 W3	EP2 W3	EP2 W3	EP1 W8	EP1 W8	EP2 W8	EP2 W8	EP1W 15	EP1W 15	EP2W 15	EP2W 15
1	4	4	-	-	4	4	3	4	4	4	4	4
2	2	3	3	3	3	3	2	2	2	2	4	4
3	2	2	3	3	3	3	2	2	3	3	3	3
4	2	3	4	2	3	3	3	3	2	4	4	4
5	4	4	4	4	3	3	4	4	3	3	4	4
6	2	2	3	3	4	3	3	3	2	2	2	2
7	3	3	4	4	4	4	4	4	2	4	2	3
8	3	3	4	4	4	4	3	3	3	3	3	4
9	3	3	4	4	2	2	3	2	2	2	3	3
10	2	2	-	-	1	1	1	1	1	2	1	3
11	3	3	-	-	2	2	3	3	3	3	3	3
12	2	2	3	3	3	3	2	2	2	2	3	3
13	3	3	4	4	3	3	4	4	2	2	3	3
14	2	2	2	2	4	4	3	3				
15	3	3	2	2	3	3	2	2				
16	1	2	1	1	2	2	3	3				
17	2	2	3	3	2	4	-	-				
18	3	3	3	3	3	3	3	3				
19	4	4	4	4	3	3	3	3				
20	3	3	3	2	3	3	4	4				
21	3	3	2	2	3	3	2	3				
22	4	4	2	3								
23	3	3	4	4								
24												
25												

Note: R indicates the score assigned by Researcher, F indicates the score assigned by Facilitator, (-) indicates eliminated prompt responses, empty cells indicate student absence

A review of the score discrepancies between the researcher and the facilitator revealed a pattern in how the rubric was applied. When comparing the eleven one-point differences and five two-point differences in scores assigned for the control group, the researcher's scores were lower on 73% (*n* = 8) of the one-point differences and 80% (*n* = 4) two-point differences. Additionally, the researcher's scores trended lower when comparing the fifteen one-point differences (67%, *n* = 10) and seven two-point differences (86%, *n* = 7) for the comparison group.

Although the total sample for both classes was twenty-five students, the number of completed and scored essay prompts varied between groups and weeks. Students were not informed ahead of when the prompts were scheduled. The number of prompts collected reflects the attendance for each group on the day they were delivered. The first essay prompt delivery (week 3) measured responses from 100% (*n = 25)* of registered students in the comparison group and 92% (*n*= 23) in the control group on both essay prompts. In week eight, the second essay prompt delivered measured responses from 96% (*n* = 24) of registered students on both essay prompts for the comparison group, 80% (*n* = 20) on essay prompt one, and 92% (*n* = 23) for the control group. The final essay prompt delivery (week 15) measured responses from 76% (*n* = 19) on prompt one and 72% (*n* =18) on prompt two for the comparison group, while the control group included 52% (*n* =13) for both prompts.

Every essay that attempted to answer the prompt delivered was included in the study. Ten (.07%) of 144 completed prompts in the comparison group and four (.03%) of 114 completed essay prompts for the control group were agreed to be ineligible by the researcher and facilitator as either blank or failing to attempt the question asked (indicated with "-"). In the analysis of data, the missing and ineligible prompts were not included in the total prompts compared for each week. Table 8 and Table 9 reflect the facilitator's and researcher's final consensus for each essay prompt.

Table 8

HCTSR Final Consensus Scores Comparison Group

Student Number	EP1W3	EP2W3	EP1W8	EP2W8	EP1W15	EP2W15
1	1	1	3	3	4	4
2	4	4	4	4	3	3
3	4	4	3	4	-	-
4	2	3	3	2	-	-
5	4	3	1	3	4	3
6	3	3	4	4	2	3
7	2	3	4	3	2	3
8	3	3	4	3	3	3
9	3	3	4	4	3	-
10	4	3	3	3	3	3
11	2	3	4	2	3	4
12	3	4	3	3	3	4
13	4	4	3	3	3	4
14	3	3	2	2	3	3
15	3	3	2	2	4	4
16	3	4	4	3	4	4
17	4	4	3	2	-	-
18	2	3	3	3	2	3
19	2	-	3	4	2	3
20	2	2	3	3	2	4
21	3	2	3	3	1	3
22	4	2	3	2	2	3
23	3	2	3	3	-	-
24	3	3	1	1		
25	4	4				

Note: (-) indicates eliminated prompt responses, empty cells indicate student absence

Table 9

HCTSR Final Consensus Scores Control Group

Student Number	EP1W3	EP2W3	EP1W8	EP2W8	EP1W15	EP2W15
1	4	-	4	4	4	4
2	3	3	3	2	2	4
3	2	3	3	2	3	3
4	3	3	3	3	3	4
5	4	4	3	4	3	4
6	2	3	4	3	2	2
7	3	4	4	4	4	3
8	3	4	4	3	3	3
9	3	4	2	2	2	3
10	2	-	1	1	1	2
11	3	-	2	3	3	3
12	2	3	3	2	2	3
13	3	4	3	4	2	3
14	2	2	4	3		
15	3	2	3	2		
16	1	1	2	3		
17	2	3	3	-		
18	3	3	3	3		
19	4	4	3	3		
20	3	3	3	4		
21	3	3	3	2		
22	4	3				
23	3	4				
24						
25						

Note: (-) indicates eliminated prompt responses, empty cells indicate student absence

Descriptive Statistics for Consensus Essay Prompt Scores

Table 10 presents descriptive statistics for the comparison and control groups at three points in time based on mean scores, standard deviations, and sample sizes (*n*). Comparing the mean score between groups in week three (W3), the comparison group is slightly higher (*M* = 2.96) than the control group (*M* = 2.83) on essay prompt one (EP1); but lower (*M* = 3.00) than the control group (*M* = 3.15) on essay prompt two (EP2). In week eight (W8), mean scores are relatively similar between the comparison and control groups (EP1W8 Comparison: 3.04 vs. EP1W8 Control: 3.00; EP2W8 Comparison: 2.88 vs. EP2W8 Control: 2.85). The essay prompt scores from week 15 (W15) show a slightly higher mean for the comparison group (*M* = 2.79) than the control group (*M* = 2.62). The comparison group returns the highest mean score (*M* = 3.39) in W15 on EP2. This score is greater than EP2W15 for the control group (*M* = 3.15) and both group's EP1W15 mean scores.

The standard deviation for all scores is less than one, indicating that scores are grouped around the mean (National Institutes of Health, n.d.). The comparison group had the least variability (*SD* = .50) on EP2W15, while the control group had the greatest variability (SD = .88) on EP2W8. The comparison and control groups had similar average standard deviations, .78 and .80, respectively.

Sample sizes differed between groups and over time. The smallest group was in W15 (*n* = 13) for both essay prompts (EP1W15, EP2W15) in the control group. The comparison group consistently had more prompt responses over time (*n* =18-24) compared to the control group (*n* = 13-23). These unequal sample sizes may impact the generalizability of comparisons.

There was a decline in EP1 mean score from week one to week fifteen for both the comparison (*M* = 2.96, *M* = 2.79) and control groups (*M* = 2.83, *M* = 2.61). However, there was a slight increase in EP2 mean scores for the comparison group (*M* = 3.00 to *M* = 3.39) with no

change in the control group (M = 3.15 for both weeks). Additionally, the comparison group presented the highest mean (M = 3.39) and lowest variability (SD = .50). The control group performed consistently lower (67% of prompts) than the comparison group, with the exception of EP2W3 (comparison M = 3.0; control M = 3.15) and EP2W8 (comparison M = 2.78, control M = 2.85). Again, the small sample sizes, especially the control group (n = 13) in W15, may limit the generalizability of the findings (Table 10).

Table 10

Descriptive Statistics for Final Essay Prompt Scores

	Comparison			Control		
Prompt	*M*	*SD*	*n*	*M*	*SD*	*n*
EP1W3	2.96	.86	25	2.83	.78	23
EP2W3	3.00	.80	24	3.15	.81	20
EP1W8	3.04	.86	24	3.00	.75	21
EP2W8	2.78	.80	24	2.85	.87	20
EP1W15	2.79	.85	19	2.61	.87	13
EP2W15	3.39	.50	18	3.15	.69	13

Analysis of Mean Scores Across Assessment Points.

Overall Mean Scores and Trends. Table 11 presents the overall mean scores for the comparison and control groups at the three assessment points during the study (W3, W8, W15). The mean scores for the comparison group (M = 3.0) and control group (M = 2.98) reflect a comparable level of critical thinking. In W8, the mean score for the comparison group (M = 2.96) **and** the control group dropped (M = 2.93), demonstrating a similar pattern of performance. On the W15 prompt, the final mean score for the comparison group rebounded (M = 3.08),

showing a slight improvement from W8 (*M* = 2.96) and ending the semester with a slightly higher average than its initial W3 score (*M* = 3.00). However, in contrast, the control group's mean score continued to decline, ending the study with a mean score of 2.89 in W15.

Table 11

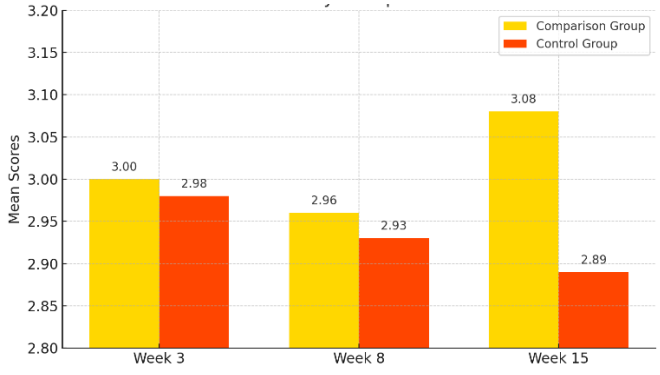
Overall Mean Scores Comparison and Control Groups

	Week 3	Week 8	Week 15
Comparison	3.00	2.96	3.08
Control	2.98	2.93	2.89

As indicated in Figure 8, the aforementioned trend in overall mean scores suggests that both groups experienced minor fluctuations in performance. The two groups experienced a similar initial trend, with both returning lower mean scores on the W8 essay prompts (comparison *M* = 3.00 in W3 and *M* = 2.96 in W8, control *M* = 2.98 in W3 and *M* = 2.93 in W8). However, the comparison group consistently maintained higher mean scores over time as compared to the control group throughout the semester, and demonstrated greater improvement by the end of the course (comparison *M* = 3.08 in W15, control *M* = 2.89 in W15).

Figure 8

Mean Score Trends Between Groups



Reliability

When multiple assessors are involved in collecting data with the use of one tool, differing interpretations of the phenomena and scoring criteria may present (McHugh, 2012). To determine the extent to which the facilitator and researcher were using the HCTSR consistently and demonstrating agreement in assigning the level of student's critical thinking, interrater reliability was tested. Several tests can be performed to ensure consistent use of an assessment tool by two raters: percent agreement, Scott's pi, Cohen's kappa, and Krippendorff's alpha (Zhao et al., 2022). Due to the multiple levels scored using the HCTSR, a Cohen's kappa statistic, designed to measure reliability between two raters using a scale greater than two values (Jonsson & Svingby, 2007; McHugh, 2012), was performed. For valid results of Cohen's kappa, five assumptions must be met: both raters are assessing the same phenomenon, the rating is measured on a nominal scale (Jonsson & Svingby, 2007), each response must have the same number of classifications, raters work independently, and the same raters assess each observation. All five of these assumptions were met.

Cohen's kappa results are interpreted as values ≤ 0 indicating no agreement, 0.01–0.20 as none to little, 0.21–0.40 as fair, 0.41–0.60 as moderate, 0.61–0.80 as substantial, and 0.81–1.00 as almost perfect (Measure of agreement, n.d.). When comparing the HCTSR ratings between the facilitator and researcher (Table 12), five kappa values demonstrated near-perfect interrater reliability, and five values demonstrated substantial reliability. The lowest kappa value (.427), W3 essay prompt one, is considered moderate interrater reliability. All of the kappa values returned p <.001, indicating statistical significance.

Table 12

Cohen's Kappa, Interrater Reliability

	N Valid Cases	Value	Asymp. Std. Error	Approx Sig.
EP1W3 Comparison	25	.427	.143	<.001
EP1W3 Control	23	.795	.108	<.001
EP2W3 Comparison	24	.812	.097	<.001
EP2W3 Control	20	.781	.115	<.001
EP1W8 Comparison	24	.869	.089	<.001
EP1W8 Control	21	.845	.103	<.001
EP2W8 Comparison	24	.811	.099	<.001
EP2W8 Control	20	.773	.123	<.001
EP1W15 Comparison	19	.847	.103	<.001
EP1W15 Control	13	.536	.172	<.001
EP2W15 Comparison	18	.783	.136	<.001
EP2W15 Control	13	.629	.179	<.001

Hypothesis Testing

Four hypotheses addressing intervention effect and interaction over time were analyzed. These analyses examined whether active learning improved critical thinking at three points over fifteen weeks. To ensure the validity of the ANOVA, the assumption of equality of variances was tested using Levene's Test. Levene's test produced a nonsignificant p-value ($p = .962$), indicating that the assumption was met. Thus, the ANOVA could proceed without concern for biased results caused by unequal variances.

Hypothesis One. The original hypothesis was that traditional instructional methods do not significantly impact the critical thinking skills of undergraduate students in the SOWK 110: Human Diversity and Social Interaction course.

A Pairwise comparison demonstrated no statistically significant change in critical thinking across weeks for the control group (see Table 13). The mean scores remained consistent from W3 ($M = 2.98$), W8 ($M = 2.93$), and W15 ($M = 2.89$) (see Table 13). The significance for all comparisons was greater than .05 ($p > .05$), so the hypothesis is accepted.

Hypothesis Two. The original hypothesis was that active learning strategies significantly enhance the critical thinking skills of undergraduate students in the SOWK 110: Human Diversity and Social Interaction course.

As shown in Table 13, the Pairwise comparison demonstrated no statistically significant change in critical thinking across weeks for the comparison group. The mean scores remained consistent from W3 ($M = 3.00$), W8 ($M = 2.96$), and W15 ($M = 3.01$). The significance for all comparisons was greater than .05 ($p > .05$); therefore, the original hypothesis was rejected because the data does not support that critical thinking was enhanced by active learning strategies.

Table 13

Pairwise Comparison of Change Over Time

	Week	Week	Mean difference	Sig
Comparison Group	3	8	.042	.836
		15	-.079	.712
	8	15	-.121	.577
Control Group	3	8	.046	.825
		15	.094	.701
	8	15	.047	.848

Hypothesis Three. The original hypothesis was that there is a significant difference in critical thinking skills between undergraduate students taught using traditional instructional methods and those taught using active learning strategies in the SOWK 110: Human Diversity and Social Interaction course, with active learning strategies being more effective.

A one-way ANOVA test was conducted to compare the essay prompt mean scores between the comparison (M = 3.01) and control (M = 2.93) groups, which collapsed over time. As reflected in Table 14, the analysis shows no significant main effect of the intervention on critical thinking scores between groups using the different teaching methods, $F(1,120) = .398$, $p = .529$. Further, there was no significant interaction between condition and time, $F(2,120) = .171$, $p = .843$. This indicates that the pattern of change in essay prompt rating over time does not differ based on condition (traditional teaching method or active learning). The original hypothesis is rejected as the data show no significant effect of the teaching method, the passage of time (weeks), or their interaction on students' critical thinking ability.

Table 14

ANOVA Between-Subjects Effects

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.375	5	.075	.152	.979	.006
Intercept	1059.387	1	1059.387	2152.726	<.001	.947
Week	.050	2	.025	.051	.950	.001
Treatment	.196	1	.196	.398	.529	.003
Week*Treatment	.168	2	.084	.171	.843	.003
Error	59.054	120	.492			
Total	1175.500	126				
Corrected Total	59.429	125				

Hypothesis Four. The original hypothesis was that active learning strategies lead to a more favorable grade distribution among undergraduate students in the SOWK 110: Human Diversity and Social Interaction course.

Although the Chi-square test is frequently used to analyze between-group nominal variables (Jung, 2014; Singhal & Rana, 2015), the data used for grade distribution included a small sample size and cells with a zero value, precluding the use of this analysis. Due to this small sample and limited data in each grade category (Jung, 2014), a Fisher's Exact Test was performed to analyze the relationship between the four variables (final grades). To perform the Fisher's Exact Test, students' final grades were analyzed using the number and percent of grades in each category (A, B, C, F) (see Table 15). There were no "D" grades received in either the comparison or control groups. A Fisher's Exact Test reflects nonstatistical significance in overall grade distribution (p = .167). However, analyzing the data using an independent sample t-test

indicated that the mean difference between the two groups was marginally significant, $t(48) = -1.74$, $p = .088$. Although this result does not reach the conventional threshold for statistical significance ($p < .05$), it suggests a potential trend in favor of the intervention group that warrants further investigation.

Table 15

Fisher's Exact Test: Grade Distribution

Grade	Group		Total
	Comparison	Control	
A	14	13	27
	56.00	52.00	54.00
B	9	5	14
	36.00	20.00	28.00
C	2	3	5
	8.00	12.00	10.00
F	0	4	4
	0.00	16.00	8.00
Total	25	25	50
	100.00	100.00	100.00

To provide a further descriptive analysis of differences in final grade distribution between the comparison and control groups, students' grades were converted to a 4.0 scale (see Table 16). Descriptive statistics, including frequencies and percentages of each grade category, were compared. Among students with the highest grades (4.0 final grade), 40% of the comparison

group (n = 10) achieved this score, compared to 32% of the control group (n = 8). This indicates a slightly higher segment of top-performing students in the comparison group.

Table 16

Grade Distribution Conversion to 4.0 Scale

Course Grade	4.0 Scale	# of Comparison	# of Control
Highest			
93–100%	4	10	8
Strong			
90–92%	3.7	4	5
87–89%	3.3	5	3
Mid			
83–86%	3	1	1
80–82%	2.7	3	1
77–79%	2.3	0	1
Low			
73–76%	2	2	1
70–72%	1.7	0	1
67–69%	1.3	0	0
63–66%	1	0	0
60–62%	0.7	0	0
Failure			
Below 60%	0	0	4

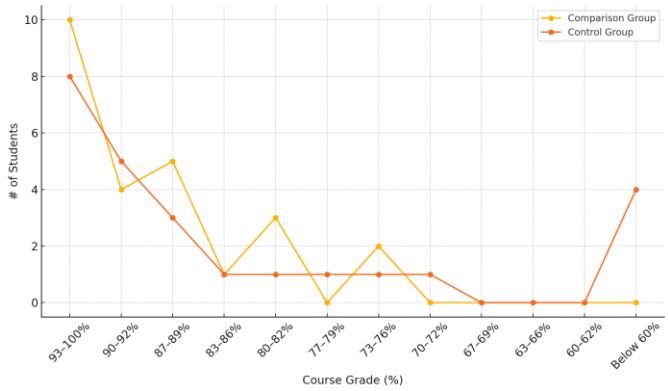
Reviewing strong final grades (3.7 and 3.3), 20% of the control group (n = 5 students) earned a 3.7 final grade, compared to 16% of the comparison group (n = 4 students). At the 3.3 final grade level, 20% of the comparison group (n = 5 students) achieved this score,

outperforming the 12% in the control group (*n* = 3 students). These results suggest similar performance in this range, with the comparison group reflecting a small advantage. In the midgrade range (3.0 to 2.3 final grades), both groups had 4% of students (*n* = 1 student each) earning a 3.0 final grade. Twelve percent (*n* = 3 students) of the comparison group presented at the 2.7 level grade, as compared to 4% of the control group (*n* = 1 student). For the 2.3 final grade, 4% of the control group (*n* = 1 student) presented in this category, while the comparison group had zero students.

The lowest grade range (2.0 final grade and below) included 8% of the comparison group (*n* = 2 students), compared to 4% of the control group (*n* = 1 students). At the 1.7 level, 4% of the control group (*n* = 1 student) fell into this category, with zero in the comparison group. The most notable difference was the failure rates (0.0 final grade), where 16% of the control group (*n* = 4 students) failed the course, compared to zero students in the comparison group.

Figure 9

Grade Distribution: Comparison vs. Control Groups



These findings indicate that an active learning approach in undergraduate social work courses may have improved overall performance while reducing student failure rates, as reflected in Figure 9. However, because the results were not statistically significant, the hypothesis must be rejected.

Summary of Findings

The data from this study provided limited but valuable information on the impact of teaching methods on students' level of critical thinking over time in one undergraduate social work course. A Pairwise contrast showed no statistically significant impact on critical thinking between the comparison and control groups. A one-way ANOVA test indicated that the intervention had no significant effect on critical thinking scores between groups using different teaching methods during the course of one semester. However, an analysis of grade distribution between the control and comparison groups demonstrates a gap in achievement between the two groups.

Chapter 5: Discussion and Implications

Using a quantitative approach, this study explored the impact of teaching methods on student's critical thinking in a 100-level undergraduate social work course. Students in two sections of SOWK 110: Human Diversity and Social Interaction, taught by the researcher, voluntarily participated in the study during the fall semester of 2023 at Eastern University. In the comparison group, students received the course content using an active learning approach, while the control group received identical course content using a traditional teaching method (lecture). Students' critical thinking was measured three times during the fifteen-week semester (W3, W8, and W15) using anonymous open-ended essay prompts. The essay prompts were scored using the Holistic Critical Thinking Scale Rubric with interrater reliability to ensure consistent and accurate application of the rubric (Facione & Facione, 2011).

The data collected were used to explore four research questions employing several statistical tests. This chapter discusses the implications of the findings, integrating educational theories, prior research, and pedagogical best practices. It also addresses study limitations and provides recommendations for future research.

Summary of Findings and Interpretation

Research question one examined *What is the impact of traditional instructional methods on the critical thinking of undergraduate students in the SOWK 110: Human Diversity and Social Interaction course?* The statistical findings confirm that students receiving traditional teaching methods (control group) did not experience significant gains in critical thinking. This is evidenced by the consistent decline in essay prompt scores over the course of the semester (W3 $M = 2.98$, W8 $M = 2.93$, W15 $M = 2.89$). A Pairwise comparison analysis demonstrated no statistically significant improvement over time ($p > .05$).

These findings align with previous research suggesting that passive learning approaches, including traditional lectures, fail to engage students in higher-order thinking processes (Brower et al., 2021; Schmidt et al., 2015). Bloom (1968) emphasizes that students require active participation, formative feedback, and opportunities for application to develop analytical and evaluative skills. The observed decline in critical thinking scores may suggest that lecture-based instruction did not provide sufficient opportunities to engage with, retain, and analyze the presented materials.

Research question two examined *What is the impact of active learning strategies on the critical thinking of undergraduate students in the SOWK 110: Human Diversity and Social Interaction course?* Students in the active learning group (comparison group) demonstrated a slight improvement in critical thinking scores over time, with mean scores increasing from (W3) $M = 3.00$, (W8) $M = 2.96$, and (W15) $M = 3.08$. Although this upward trend suggests a positive trajectory, the Pairwise comparison analysis indicated that the improvement was not statistically significant ($p > .05$).

Active learning has been consistently associated with improving critical thinking skills (Abrami et al., 2008) and engaging students in learning (Deslauriers et al., 2019), which supports the comparison group's observed trend of maintaining slightly higher scores throughout the semester. Despite the lack of statistical significance, the positive trend in mean scores presented over the course of the semester is congruent with prior research suggesting that critical thinking development may require extended time and exposure to active learning to produce measurable effects (Prince, 2004; Uribe-Enciso et al., 2017).

Research question three examined *What is the difference in critical thinking between undergraduate students taught using traditional instructional methods and undergraduate students taught using active learning strategies in the SOWK 110: Human Diversity and Social*

Interaction course? To answer this question, a one-way ANOVA was conducted to compare the mean scores between the comparison (active learning) group (M = 3.01) and the control (traditional methods) group (M = 2.93). The analysis found no statistically significant difference in critical thinking scores between instructional methods [$F(1,120) = .398$, $p = .529$], leading to the conclusion that the teaching method had no impact on critical thinking in either group. While statistical significance was not achieved, the comparison group maintained higher mean scores over time as compared to the control group, which continued to decline. As reflected in the mean score distribution, both groups declined in W8. The shared decline may be attributed to the timing of the prompt delivery. W8 was midterm exam week, potentially directing students' attention, investment, and mental capacity to other academic areas. However, the comparison groups' steady progression in mean scores implies that the intervention was moving them toward greater critical thinking.

These results provide valuable insights, supported by existing literature. According to Brookfield (2017), critical thinking is a cumulative process. Meaning, the development of critical thinking often requires sustained and continuous engagement over an extended period (Abrami et al., 2008). Short-term interventions like the fifteen-week semester allotted for this study may not have allowed sufficient time for an observable increase in critical thinking for both groups, but may provide a rationale for the modest improvements observed in the comparison group and the decline in the control group.

Facione and Facione (2011) highlight that assessments conducted within a limited timeframe often capture incremental progress rather than well-established cognitive changes. The incremental progress achieved by the comparison group reflects that the active learning approach was moving students in the direction of increased critical thought. The findings, although small, were significant. The early and consistent exposure to an active learning

pedagogy reinforced students' foundational skills in collaboration, cooperation, engagement, application and analysis of information, and personal agency in the learning process. Students can continue to build upon these gains and skills as they move forward into future classes and professional practice.

Research question four investigated *What is the impact of active learning strategies on the grade distribution of undergraduate students in the SOWK 110: Human Diversity and Social Interaction course?* Although the Fisher's Exact Test ($p = .167$) did not find statistical significance, the positive overall grades for the comparison group as compared to the control group may suggest that the active learning approach used over time contributed to better academic performance. Further support for this is evident when considering the moderate significance returned using an independent sample t-test. The t-test indicated that the mean difference between the control and comparison groups was marginally significant ($p = .088$), suggesting a possible positive impact of active learning on student performance.

The improved grade distribution observed in the comparison group may indicate that active learning strategies have enhanced their academic performance. The distribution supports Prince's (2004) assertion that an active learning approach moves students toward deeper learning and Dorodchi & Powell et al. 's (2020) finding that active learning is effective in increasing student performance. Furthermore, this finding supports the existing literature reporting the use of active learning strategies, including reflective essays, impacts students' grades, pass rates, and attendance in social work higher education (Oliván Blázquez et al., 2019; Sage & Sage, 2015).

Insights into Attendance and Engagement

A strength of this study is the potential impact of active engagement on student attendance. Students in the active learning group maintained higher attendance rates, as reflected

in the number of essay prompts completed during each assessment throughout the study; whereas the control group experienced a significant decline in attendance and essay prompt responses from W3 to W15. This finding aligns with research highlighting the role of engagement in fostering student participation and commitment to the learning process (Belchior-Rocha & Casquilho-Martins, 2019; Schmidt et al., 2015) utilizing active learning strategies, emphasizing collaboration, discussion, and problem-solving. Studies have demonstrated the importance of student investment and motivation, leading to greater class participation and persistence (Dorodchi & Dehbozorgi et al., 2020, Fernando Uebe Mansur et al., 2019; Prince, 2004).

During the course of this study, a theme emerged in the active learning strategies that stimulated student engagement: cooperative competition. Activities that required students to work in small groups to remember, apply, and analyze content while competing against other groups stimulated conversation, connection, and overall engagement. During the Blindfolded Scavenger Hunt, Privilege for Sale, Jenga, and Jeopardy (see Appendix A) activities, student engagement was significant. This experience is supported by prior studies finding that competitive games and other hands-on activities increase students' participation, connection, and engagement in the higher education classroom (Kristensen et al., 2015).

Conversely, students in the comparison group appeared the least engaged during the Complete Turn Taking activity (see Appendix A). This activity occurred in Module One of the course, shortly after the study began, and included face-to-face sharing and feedback. As research supports that a safe environment is needed for students to engage in risk taking and receiving peer feedback (Martin, 2004; Jonassen, 1991; Schunk, 2019), it is possible that students were less engaged because the time and opportunity to build a safe space in the classroom had not yet been achieved. This active learning strategy would be better used later in a course, once safety and comfort with peers have been established.

By fostering an interactive and student-centered environment, active learning instructional methods may have contributed to the comparison group's sustained attendance, thus supporting engagement as a strength of this research. Christensen and Wärnsby (2023) report that engagement-driven approaches resulted in higher levels of student participation. Again, although small, the slow and steady improvement in students' performance implies that the intervention was moving students toward greater critical thinking and engagement.

The early morning class time (9:00 AM) for the control group may have impacted engagement and attentiveness, consistent with research showing that student focus and participation are often lower in early classes (Deslauriers et al., 2019; Onyper, 2012). Miller et al. (2013) reported that traditional lectures create difficulty staying awake, paying attention, and resisting distraction. These challenges, coupled with those of an early morning class, may have created a disadvantage for students in the control group, potentially contributing to the lower mean scores achieved by the control group. In future studies, standardizing factors (consistent class time and classroom settings) when evaluating teaching interventions may reduce variability and ensure equity in outcomes assessment (Deslauriers et al., 2019).

Insights into Demographic Makeup

The demographic makeup of the comparison and control groups varied significantly, specifically regarding racial and gender representation. The comparison group was predominantly White (76%), while the control group had a majority of non-White participants (80%). The comparison group was predominantly female (64%), while the control group had a majority of male students (56%). One factor shared by both groups was the high proportion of first- and second-year students (comparison group, 72%, and control group, 76%). Abrami et al. (2008) emphasized that individual differences, including demographic factors such as age, race, and sex, can mediate the effects of instructional interventions on critical thinking. This study

supports prior research reporting that class time (Marbouti et al., 2018), attendance (Onyper et al., 2012), and engagement in lectures (Miller et al., 2013) are strong predictors of student success.

Limitations

Limitations of this study involve the fact that teaching and learning do not happen in isolation. They are impacted by contextual factors or individual and situational influences that may affect student, instructor, and group interactions that are considered fluid and dynamic; blending instructor and participants' personal characteristics, intersectional identities, and past experiences concurrent with participation in the study (Martínez et al., 2017).

Eastern University is a private Christian institution with a curriculum emphasizing faith, reason, and justice. Although the university strives to serve underrepresented students from all faiths, its specific emphasis on Christian values may impact students' engagement with secular content and compromise their sense of safety in exploring alternate views. These factors limit the generalizability of findings to broader educational settings (e.g., large, public, secular institutions). Moreover, the nonrandomized groups and demographics of the sample may have limited the generalizability of the findings of this research, as supported by Abrami et al.'s (2008) research. Reporting age, race, and sex can mediate the effects of instructional interventions on critical thinking. According to Field (2018), the small size (n = 50) of the study further limits the capacity to determine if the intervention produced significant effects, potentially resulting in a type II error (Columb & Atkinson, 2016) and rejection of a hypothesis (Rothman, 2010).

Methodological Factors

Multiple sources of bias exist in intervention research. They can present at each stage of the study, leading to divergence in data collection, analysis, and interpretation (Arias et al., 2023). When using quantitative methods, standardized questionnaires or assessments are routinely employed to measure outcomes with controlled and randomized groups (Choy, 2014). However, as in this study, randomizing groups and structured assessments are not always available. Several methodological factors warrant exploration as threats to the validity and generalizability of this study's results.

Selection and Attrition Bias. Quasi-experimental, often referred to as pre- and postintervention studies, includes a spectrum of nonrandomized intervention designs (Harris et al., 2006). These designs are frequently used when conducting a randomized study is not logistically possible or ethically sound (Harris et al., 2006). For these reasons, in social science research, many studies attempt to measure an intervention's impact experience selection bias, ultimately comparing two groups with different characteristics (Rubin & Babbie, 2006). Randomizing sample groups proves challenging when comparing teaching strategies between two classes; therefore, a convenience sample was used. At the beginning of this study, enrolled students were given the choice to remain in the class and participate in the study, remain in the class and not participate, or transfer to another section of the course. All of the students enrolled in both classes chose to stay and participate (n = 50). Because class enrollment was predetermined, the samples could not be randomized, creating potential bias and limiting generalizability.

With only twenty-five students in each group, the sample size was small. As the semester progressed, attendance and participation in the control group decreased. However, it is unknown why students' attendance became inconsistent. Attrition bias or the loss of members during a

study (Nunan et al., 2018) is a threat that needs to be considered, as reductions in sample size can compromise the reliability of statistical analyses and reduce the ability to detect a significant difference in performance. The small sample size and the loss of student essay prompts in the control group compromised the statistical power of the data analysis. This limits the capacity to determine if the intervention produced significant effects (Field, 2018).

This study highlights the importance of engagement and investment in the learning process. Students in the comparison demonstrated greater engagement, as reflected by their consistent attendance, and returned small but meaningful improvements in critical thinking. These small findings indicate that through the use of an active learning approach, learning has begun for these students. In comparison, the control group decreased in both engagement (attendance) and their level of critical thinking, implying that the traditional methods were not moving students in the control group in the direction of deeper learning.

Implications for Social Work Education

Knowledge, reason, and logic are crucial for the social work professional at the micro, mezzo, or macro systems levels (Mathias, 2015). Professional social workers are consistently challenged to assess, establish culturally sensitive plans and practices, navigate complex situations, and advocate for vulnerable populations, all of which require critical reflection and critical thought (Belchior-Rocha & Casquilho-Martins, 2019). Recognizing the importance of these skills for successful practice, The CSWE (n.d.b) began requiring accredited programs to ensure that their graduates demonstrate the capacity to think critically and reflect prior to graduation. However, as noted in the review of the literature, there is very little research on how or if higher education programs are meeting this demand.

Professional Development

Professional development is central to the practice of social work, as it ensures that social workers remain equipped with the knowledge, skills, and competencies needed to engage effectively in the dynamic and fluid profession. Effective training on student assessment is an integral component of this professional development. Braun & Borowiec (2021) reported that implementing a detailed scoring rubric offers valuable feedback, provides practical information on students' academic needs, and informs lesson development. However, subjective scoring is prone to bias if raters do not fully understand or consistently apply a rubric (Jonsson & Svingby, 2007). For example, the HCTSR (Facione & Facione, 2011) used in this study is a known and validated rubric available for evaluating student's critical thinking. However, when more than one evaluator is using the rubric, discrepancies in the application and use of the rubric may present.

The variability in scoring underscores the importance of consistent professional training. To mitigate this issue, Facione and Facione (2011) recommend that educators engage in extensive rater training, regular practice, and interrater reliability checks to mitigate discrepancies in assessment and ensure that evaluations of critical thinking are accurate and consistent. The discrepancies in how the raters applied the HCTSR in this study and the numerous conversations needed to reach consensus on essay scores highlight the variances in how two educators interpret standardized assessments. This study contributes to the literature by reinforcing the need for continued exposure to, training in, and application of standardized assessment tools in higher education.

Lifelong Learning. The 2022 EPAS (CSWE, n.d.b) and the NASW Code of Ethics (2021) emphasize the ethical obligation of social workers to engage in lifelong learning. This continuous scholarship is crucial to ensuring that social work practice remains relevant,

responsive, and impactful (Mueller & King, 2018). In their role, social work educators are instrumental in fostering a commitment to lifelong learning for their students. By creating environments that promote critical thinking, engagement, and the development of problem solving, the value of lifelong learning is stimulated in the classroom (Jivanjee et al., 2016) and reinforced during the field education experience (Mantulak et al., 2021). The consistent attendance and engagement by the comparison group receiving active learning may have fostered a greater sense of agency and engagement in learning. Their slowly improving critical thinking scores indicate that students were taking agency in their learning and investing in the process, laying the foundation for lifelong learning.

Course Mapping. Course mapping includes the creation of a detailed plan that guides delivery of instructional materials (Supovitz & Klein, 2003), allowing students and teachers a clear understanding of the course expectations and how to meet them. An effective course map aligns the objectives with assignments and activities created specifically for the content of each course. Employing an established scaffolded map of content and activities in the classroom encouraged students to build on prior knowledge, apply new knowledge, engage with peers and the instructor, ask questions, think critically, and collaborate with peers in discussions in a manner that more fully engaged them in the subject matter (Mumm & Kersting, 1997). Additionally, instructors are offered opportunities for direct observation and flexibility in instruction through informal observational assessment of students' understanding of the material. Conversely, a teaching-focus lecture format relies heavily on memorization rather than critical thinking and problem-solving, limiting engagement with the content, and real time assessment of students’ comprehension and application of materials (Klein et al., 2023). Joyner (2016) found that clear course mapping benefitted instructors by offering an understanding of when and how content needs to be introduced and the degree to which students are retaining the content.

Prior to this study, the *Active Learning and Strategies Manual* was developed, reflecting the objectives, content, and assignments of the course, using Anderson et al.'s *Revised Handbook* (2001) as the foundation for learning objectives and scaffolding of content and assignments. Having the developed manual (course map) proved extremely valuable when conducting this study. The detailed plan provided structure and clarity in how and when the content was delivered, reduced the preparation needed for each class, and offered time and opportunities for engaging with the students during class time. These experiences reinforce what has been presented in the research regarding the benefits of course mapping in higher education.

Curriculum Design. Higher education curriculum can be defined as a "blend of educational strategies, course content, learning outcomes, educational experiences, assessment, the educational environment and the individual students' learning style, personal timetable and program of work" (Harden, 2001, p. 123). Within these components of curriculum, using a student-centered approach to fostering the development of critical thinking, problem solving, and communication are considered crucial (Wang, 2023). However, there is often a remarkable difference between the official and the actual curriculum delivered by educators as they work autonomously and make pedagogical decisions based on personal knowledge, classroom dynamics, and prior professional experiences (Ballantyne et al., 2019).

The successful use of active learning strategies in social work education curriculum is documented (Huerta-Wong & Schoech, 2010; Kirkendall & Krishen, 2014; Omelicheva & Avdeyeva, 2008); however, the connection between using active learning strategies and the acquisition of critical thinking is minimally presented in the research (Johnston, 2009; Verbaugh, 2019). Further, few studies of curriculum mapping applying any pedagogical approach in the discipline of social work have been conducted (Ballantyne et al., 2019). The inclusion of an active learning pedagogy in curriculum design offers opportunities for the instructor to foster

critical thinking and associated skills while delivering content and meeting the demands required by the nine social work competencies as described in the 2022 EPAS (CSWE, n.d.b).

Skills and Competence. When entering the social work profession, former students will be required to analyze, integrate, and apply theory to direct work with clients (Gambrill, 2012; Verbugh, 2019). Critical thinking is essential for the discipline, as professionals are challenged to make thoughtful decisions supported by theory in complicated situations with vulnerable populations while demonstrating competence within ethical and professional standards (NASW, 2021; Johnston, 2009; Mumm & Kersting, 1997). Social work graduates explicitly taught critical thinking skills during the undergraduate experience are more equipped to decipher inconsistencies, analyze information and complex situations, and apply abstract reasoning to decision making (Belchior-Rocha & Casquilho-Martins, 2019).

Social work practice is inherently collaborative, requiring professionals to work across systems, disciplines, and diverse populations. During this study, students in the comparison group were exposed to interactive and cooperative learning experiences, mirroring the collaboration required in professional relationships. Incorporating a student-centered active learning approach, the classroom became a place for fostering reasoning, analysis, and ethical decision making, ensuring students were prepared to navigate complex client situations before entering the practicum experience and profession. The approach bridged classroom theory with practicum experiences and professional practice, meeting the CSWE's demand for "integration and application" (n.d.b, p. 7) of the competencies in education and practice.

Implications for Further Research

Responding to the obligation of the educator and the institution to ensure that social work students are sufficiently prepared to practice "safely, competently, and ethically with all clients, constituents, and the public" (CSWE, n.d.b., p. 5), this study aimed to illustrate that students

demonstrate greater critical thinking when a pedagogy focused on active learning is employed in 100-level social work courses. The research process and statistical results of this study yielded several insights: the importance of research design in exploring the impact of teaching approach on critical thinking, the value of clear and detailed course mapping, and the value of varied strategies for assessing students growth.

The development of critical thinking and the associated skills takes extended time and practice (Saiz & Rivas, 2023); therefore, research supports the use of longitudinal methods in obtaining an accurate understanding of the origin and evolution of this cognitive change (Grammer et al., 2013). This study was limited to the duration of one academic semester, which limited the capacity to evaluate the impact of the intervention (Caruana et al., 2015) (active learning) on students' critical thinking over an extended time. The overall grade distribution in favor of the comparison group (active learning) supports the need for a longitudinal research design to track and assess the impact of the intervention across several semesters or academic years. This may provide a more comprehensive view of the sustained impact (Verburgh, 2019) of active learning strategies on critical thinking.

The study's short design included assessing students' level of critical thinking at three points in one semester using open-ended essay prompts and assessing responses with the HCTSR. Many validated and reliable assessments, faculty-designed rubrics, and standardized multiple-choice assessments (Paul & Elder, 2007 Renaud & Murray, 2008; Şentürk, 2018) have been developed for assessing students' level of critical thinking. Replicating this study using more than one assessment measure, or increasing the number of assessment points, may return stronger evidence of active learning's effectiveness in enhancing critical thinking.

This study contributes to the discipline of social work education and leadership in three ways: it contributes to the body of knowledge regarding curriculum design and the assessment of

student learning, it contributes to the currently minimal research on critical thinking in social work education, and it offers insight into educational strategies for promoting critical thinking in social work undergraduate courses. Future research on active learning as a pedagogy to increase critical thinking in undergraduate students with a larger sample, over a longer period of time, with advanced instructor training, and using more than one assessment measure or increasing the number of assessment points may return stronger evidence of active learning's effectiveness in enhancing critical thinking. Expanding the limited body of knowledge on critical thinking in social work education (Mathias, 2015; Johnston, 2009) would guide professional development, inform curriculum design, and encourage expanding pedagogical approaches.

Conclusion

As higher education social worker instructors, we are obligated to ensure that our graduates demonstrate critical thinking and the associated skills in all the nine competencies prior to degree completion (CSWE, n.d.b). However, little research has been presented on critical thinking in social work education (Mathias, 2015; Verbaugh, 2019) or the pedagogies that promote this skill. This study aimed to demonstrate that using a student-centered, learning-focused approach to teaching versus the widely applied lecture format promotes greater critical thinking in undergraduate students in a 100-level social work course. Although the results were not statistically significant in supporting the research hypotheses, the study's findings are encouraging when examining the higher overall semester grades for students taught using active learning strategies when engaging in curriculum design.

The experiences of the researcher during this study support what has been shared in the literature regarding the time and work required when employing an active learning approach in the classroom. The amount of resources and time invested in course mapping, activity planning, and reinforcing student learning in the classroom was tremendous. Designing scaffolded lessons

and assignments was laborious. However, the comparison group was consistently more engaged and expressed investment in the activities used to apply the content. The energy of the students fostered a learning environment that encouraged the researcher to further commit to the pedagogy. And, ultimately, the small but meaningful increase in the comparison group's level of critical thinking is validating.

The most significant impact on the researcher resulting from this study is a firm commitment to using a student-centered active learning pedagogy. Since the conclusion of this study, the researcher has engaged in the next level of flipped learning training, revised three courses to be delivered with an active learning approach, challenged class times for first-year and underprepared students, and developed two new courses using the principles of Mastery Learning and the revised *Taxonomy of Learning.* Students in both classes reinforced the importance of meeting students where they are developmentally, academically, and socially.

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Appendix A

Active Learning Content and Strategies Manual

Attached

Appendix B

SOWK 110: Human Diversity and Social Interaction syllabus

Attached

Appendix C

Institutional Review Board (IRB) Approval

Attached

Appendix D

Oral Consent Script

Attached

Appendix E
Essay Prompts and Consent

Essay Prompt #1 **Week Three**

☐ Consent

Please answer the following questions - one paragraph each.

1 - How can the intersectionality of race, ethnicity, gender, sexual orientation, and socioeconomic status contribute to unique experiences and challenges for individuals?

2 - In what ways can acknowledging and understanding these intersecting identities lead to more inclusive and equitable societies?

Essay Prompt #2 **Week Eight**

☐ Consent

Please answer the following questions - one paragraph each.

1 - How does power WITH (others) differ from power OVER (control) in promoting social change?

2 - In what ways can power be shared to create a more equitable and just society?

Essay Prompt #3 **Week Fifteen**

☐ Consent

Please answer the following questions - one paragraph each.

1 - How do social institutions either challenge or contribute to ableism?

2 - What systemic changes could be implemented to promote a more inclusive and equitable environment for people with disabilities?

Appendix F

Holistic Critical Thinking Scale Rubric

Attached

Appendix G

Essay Prompt Scoring Excel Sheets

Attached