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Student Perceptions About How Supplemental Instruction and Instructor Engagement Support Academic Achievement in a College-Level Statistics Course

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This is to certify that the doctoral study by

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Walden University
2025

Abstract

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MA, Long Island University, 2004

BS, York College, 2000

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Higher Education Administration

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Abstract

Many college students enter postsecondary education underprepared for college-level mathematics, posing challenges for course completion and degree attainment. In response, a local community college system implemented a mainstreaming initiative that places underprepared students directly into college-level statistics courses with supplemental instruction (SI). This basic qualitative study explored students' perceptions of the role of SI and instructor engagement in supporting their success in a college-level statistics course. The research was guided by Vygotsky's sociocultural theory. Semistructured interviews were conducted with 10 students enrolled at a comprehensive college who had completed the course. Through thematic analysis employing open coding yielded five distinct themes: instructor responsiveness amid academic challenges, effective and engaging teaching practices, collaborative learning and class experience, timely and accessible academic support, resilience and achievement in the classroom, and instructor responsiveness amid academic challenges. Participants described how instructional support, peer collaboration, and personalized guidance contributed to their motivation, confidence, and course completion. Findings suggest that instructor engagement and peer-led SI were essential for fostering persistence and academic success in entry-level mathematics. Implications for positive social change include improving student retention and informing course design practices that foster inclusive and supportive learning environments in community college settings.

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Dedication

This study is lovingly dedicated to my husband, Derrol, and our two beautiful daughters, Taylor and Sophia. Derrol, thank you for standing by my side through the late nights and for celebrating every small victory along the way. Your unwavering support was the anchor that kept me grounded and determined.

Taylor and Sophia, your patience, understanding, warm smiles, and comforting hugs gave me the strength to keep moving forward. You reminded me daily of the legacy I hope to leave one that shows you how much you matter and that every dream is worth pursuing.

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To my beloved family and close friends, your encouragement and constant cheering kept me going when I needed it most. I could not have done this without you. To Taylor and Sophia—let this be a testament that hard work and perseverance truly do pay off.

And finally, to my loving husband: you are my greatest supporter. Thank you for giving me the space to grow, create, and finish what I started. Your unwavering motivation sustained me to the very end. I love you and the life we've built for our two precious daughters.

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Chapter 1: Introduction to the Study

In the United States, institutions of higher education commonly use standardized assessment practices to determine incoming freshmen's placement and eligibility for college-level coursework in English and mathematics. For the past two decades, community colleges have faced significant challenges with large numbers of incoming students underprepared for college-level work, often resulting in placement into developmental courses (Alkhateeb, 2022; Grubbs, 2020). Saxon and Martirosyan (2023) reported that only 39% of high school graduates are academically prepared for college-level mathematics. Additionally, Alkhateeb (2022) asserted that 68% of incoming community college freshmen require some form of developmental mathematics. Further, developmental mathematics has the highest rates of failure and non-completion compared to developmental English (Alkhateeb, 2022). Furthermore, Saxon and Martirosyan indicated that only 33% of students placed in developmental mathematics successfully complete the course sequence.

These low pass rates have both academic and economic consequences, particularly for underserved student populations, and negatively impact retention and degree completion rates. Persistently low success rates in traditional developmental mathematics courses have brought attention to the ineffectiveness of traditional course structures (Boatman, 2021). As a result, a growing number of community colleges and state university systems nationwide revised their developmental education policies to support innovative developmental instructional methods and interventions (Boatman, 2021). The goal was to decrease the amount of time students take to complete developmental coursework and increase student retention and graduation rates. Finster and Feldman (2023) reviewed 21 developmental education programs nationwide from 1993 to 2015 and found that placement in developmental education courses at 2- and 4-year institutions negatively impacts degree attainment, success in college-level courses, and credits earned. As a result, 32 states have mandated reforms to developmental education (Saxon & Martirosyan, 2023). Despite these large-scale efforts, there remains a critical gap in practice: many institutions have implemented co-requisite or mainstreaming models without adequately understanding how students experience and respond to supplemental instruction (SI) and instructor engagement as part of these reforms.

At the study site, for example, while data show increased pass rates for students placed directly into college-level statistics courses with SI, it is unclear which instructional or relational factors contribute most to these outcomes from the student perspective. This lack of insight inhibits faculty and administrators from making evidence-informed adjustments to co-requisite course design and support services, limiting the potential effectiveness of developmental education reform initiatives.

The university system that served as the site for this study consists of seven community colleges, two comprehensive colleges, nine senior colleges, and seven graduate schools. The present research focused specifically on the seven community colleges within this system. For the purposes of this study, these institutions will collectively be referred to as the seven community colleges (SCC). The challenges with low pass rates of students placed in developmental mathematics in this university system were synonymous with the national challenges. According to Logue et al. (2019), among students who entered college in 2011 and required developmental mathematics, only 7% graduated within 3 years, compared to significantly higher graduation rates among students placed directly into college-level statistics courses.

In response to these outcomes, the university system implemented the Mathematics Mainstreaming Initiative across the SCC in 2013. This pilot program sought to improve student retention and degree completion by placing students directly into a college-level statistics course supplemented with SI, rather than through the traditional developmental mathematics sequence (Kosiewicz & Ngo, 2020). The initiative randomly assigned students to one of two pathways: a traditional developmental mathematics course or a college-level statistics course with SI support. Of the 717 students who participated, 36% of those in the developmental math track completed the course, compared to 56% in the mainstreamed statistics course with SI (Logue et al., 2017).

While these data highlight improved academic outcomes in the mainstreaming model, the reforms have largely been evaluated through quantitative measures of success, such as pass rates and degree completion. What remains underexamined and crucial to understanding the efficacy and equity of such reforms are students' own perceptions of how SI and instructor engagement influenced their learning and academic persistence. Efforts to reform developmental education, both locally and nationally, have rarely incorporated the voices of the students they aim to serve. This lack of qualitative insight represents a significant gap in practice. Without a deeper understanding of students lived experiences, institutions may miss critical opportunities to refine co-requisite models in ways that are pedagogically responsive and socially inclusive.

This study examined students' perceptions of the role of SI and instructor engagement in a college-level statistics course. The study's findings may provide senior administrators in the university system at SCC with valuable information that will inform future curricular instruction that will support students holistically. Chapter 1 introduces the study and establishes the foundation for the research. It begins with a discussion of the background of the study to contextualize the research problem and highlight existing gaps in both the literature and professional practice. The chapter then presents the problem statement, purpose of the study, and the central research question that guided the inquiry. The study is grounded in sociocultural theory, which serves as the conceptual framework. Additionally, this chapter outlines the nature of the study, defines key terms, and discusses the underlying assumptions, scope, and limitations. The chapter concludes by addressing the significance of the study and its potential implications for fostering positive social change.

Background

As colleges increasingly enrolled students who were underprepared for entry-level, gateway college courses particularly college-level statistics there was growing pressure to offer targeted academic support. This issue, exacerbated by persistent disparities in high school preparation, led to the widespread adoption of developmental coursework. Students from historically underserved backgrounds were often the students who are unprepared for college-level statistics and were frequently placed into remedial math courses. As a result, students from underserved backgrounds are disproportionately represented at two-year institutions, a trend largely driven by the open-access admissions policies and the evolving needs of community college populations (Bozonelos et al., 2024). Learners from underrepresented groups frequently face intersecting barriers to academic success, including limited financial resources and insufficient academic preparation.

These challenges frequently impede student retention and overall academic progression. Over the past decade, both community colleges and universities have implemented a range of interventions aimed at reforming developmental education, as institutions across higher education have increasingly prioritized student retention and graduation. SI has been recognized as an effective intervention strategy for challenging courses and has been widely adopted by the U.S. Department of Education as well as by institutions internationally (Barrasso & Spilios, 2021). Research conducted by Bozonelos et al. (2024), Bowman et al. (2023), and Channing and Okada (2020) indicate that first-year students who participate in SI exhibit higher retention rates, primarily due to the development of academic skills and the learning strategies fostered through SI support. Two key features of the SI model include peer engagement and collaborative learning which have been found to promote social learning and academic integration, which are essential for student success (Dekker et al., 2025).

Instructor and student engagement within the classroom are also critical components of effective learning environments (Gregg & Shin, 2021). Instructor engagement, defined as the stimulus or pedagogical activity that fosters critical thinking and active learning, plays a pivotal role in shaping classroom dynamics (Saucier et al., 2022). While research explicitly examining instructor engagement remains limited, Saucier et al. (2022) cited that instructor behaviors, such as enthusiasm, are positively correlated with heightened student engagement, motivation, and academic performance. Similarly, Qureshi et al. (2023) emphasized the importance of transitioning from traditional, lecture-based instruction to active learning environments that prioritize student centered approaches. Among the various strategies associated with active learning, collaborative learning emerges as the most impactful, as it encourages peer interaction and fosters deeper understanding. Intentional efforts by instructors to promote student participation have been shown to enhance both learning outcomes and academic achievement (Qureshi et al., 2023). The inter-connectivity between SI and instructor engagement lies in their shared foundation in social interaction, aligning with the principles of sociocultural theory, which is the conceptual framework underpinning this study.

Although SI has demonstrated effectiveness in developmental education reform, particularly in mathematics, there remains a gap in qualitative research exploring students' perceptions of the combined influence of SI and instructor engagement on academic success. This gap highlights a need for further investigation. Consequently, this study aimed to address this gap by examining student perspectives on the role of SI and instructor engagement in the context of a college-level statistics course.

Problem Statement

The problem addressed in this study is that despite institutional efforts to improve student outcomes through placement into college-level statistics courses with SI, little is known about how students perceive the role of SI and instructor engagement in their academic success. While quantitative data indicate improved pass rates in co-requisite course models, student voices have been largely absent from the evaluation of these reforms. This lack of understanding limits educators' ability to refine instructional practices and support strategies in ways that are responsive to student needs and experiences. While developmental courses have historically been designed to enhance student achievement and prepare learners for college-level work, emerging data suggest that students in co-requisite models such as college-level statistics paired with SI exhibit higher pass rates (Math Matters Initiative, 2020). This study explored student perceptions of the role of SI and instructor engagement in influencing their academic performance within such a course structure. The findings can provide insight into how students perceive the impact of SI and instructor engagement on their academic achievement in entry-level mathematics, thereby contributing to the broader discussion on developmental education reform and student success strategies.

Purpose of the Study

The purpose of this basic qualitative study was to explore students' perceptions of the role that Supplemental Instruction and instructor engagement have in their experiences within a college-level statistics course.

Research Question

The following research question guided this study: What are students' perceptions of the role of SI and instructor engagement in a college-level statistics course?

Conceptual Framework

The conceptual framework for this study is grounded in Vygotsky's sociocultural theory, which emphasizes that comprehension, meaning, and significance are co-constructed through social interaction. Learning, according to Vygotsky, is a dynamic and culturally mediated process that occurs through guided participation with more knowledgeable others (MKOs) within the learner's zone of proximal development (ZPD; Vygotsky, 1978). While often aligned with constructivist perspectives, sociocultural theory is distinct in its focus on cultural tools, historical context, and the centrality of language in cognitive development (Vygotsky, 2011). A central element of this theory is the ZPD, which emphasizes scaffolded learning and is defined as the range of tasks a learner cannot complete independently but can accomplish successfully with appropriate guidance and support. Learning, therefore, occurs most effectively within this zone, where cognitive development is scaffolded by interaction with others (Vygotsky, 1978). The MKO, such as an instructor, peer, or other facilitator, plays a crucial role in supporting learners within this zone by offering the necessary cognitive and academic assistance (Dinh & Phuong, 2025). This framework highlights the importance of social interaction and instructional support in promoting meaningful learning and academic growth.

In educational settings, sociocultural theory emphasizes the importance of collaborative interactions, inquiry-based learning, and the process by which learning occurs through social interactions and shared experiences that enhance the meaning of learning (Dinh & Phuong, 2025; Naidoo & Mabaso, 2023). This framework can be used to explore how students perceive the role of SI and instructor engagement in a college statistics course. The course design follows sociocultural principles, with the instructor supporting students' cognitive and academic growth. Sociocultural theory helps examine students' learning experiences within an interactive environment. Chapter 2 provides a detailed discussion of this framework and related literature.

Nature of the Study

This study examined students' perceptions of the role of SI and instructor engagement in a college-level statistics course, with particular attention to how these factors influenced their academic achievement. A basic qualitative research design was employed, as this methodological approach is well-suited for exploring how individuals interpret and make meaning from their lived experiences (Tisdell et al., 2025). The rationale for selecting this design lies in its capacity to capture the nuanced, subjective experiences of students within a specific educational context. The purpose of utilizing this qualitative approach was to gain an in-depth understanding of students' perspectives, particularly how their engagement with SI sessions and interactions with instructors contributed to their learning and academic performance. Qualitative inquiry is especially appropriate for this study because it facilitates the collection of rich, descriptive data through one-on-one interviews, offering insights that may not be accessible through quantitative methods. While quantitative research relies on numerical data and statistical analysis, qualitative research emphasizes context, depth, and the meanings individuals attach to their experiences thereby aligning with the goals of this investigation (Tisdell et al., 2025).

A purposive sampling strategy was employed to select a sample of 10 to 12 first-year college students currently enrolled in a college-level statistics course supported by SI. This sampling method was appropriate given the study's aim to obtain a deep and focused understanding of the phenomenon under investigation (Creswell & Guetterman, 2024). Each participant took part in a semistructured interview guided by an interview protocol. The questions were designed to promote natural, conversational dialogue and were informed by the study's conceptual framework. Data analysis commenced immediately following the final interview and involved a systematic process, including reviewing audio recordings and field notes, manual transcription of interview data, and coding for emergent themes. This iterative process facilitated a comprehensive interpretation of students' experiences and perceptions, ultimately contributing to the study's broader goal of understanding the impact of SI and instructor engagement on academic achievement.

Definitions

College level statistics: College level statistics is defined as an entry level credit bearing course in mathematics (Richards & Kelly, 2025) and often developmental education.

Developmental education: Developmental education is coursework offered by post-secondary institutions to prepare students for success in credit-bearing college level English or Math (Goldwasser et al., 2017; Sisaket, 2023).

Instructor engagement: Instructor engagement, as perceived by students in traditional classroom settings, refers to the degree to which instructors demonstrate attentiveness, enthusiasm, interpersonal interaction, and instructional responsiveness that collectively foster a supportive and participatory learning environment (Balwant, 2022).

Supplemental instruction (SI): SI is defined as an assistive program that seeks to improve academic performance in high-risk classes through the support from peer mediation (Lindsay et al., 2024).

Assumptions

There were several underlying assumptions surrounding this study. First, it was assumed that the selected qualitative methodology and research design were appropriate and effective for addressing the research problem and exploring students' perceptions (Billups, 2021; Durdella, 2023). This aligns with the how the researcher's assumptions impact the overall decisions made therefore shaping the research (Billups, 2021). Second, it was assumed that participants possessed a clear understanding of the terminology used during the interviews and were aware of the nature and structure of the college-level statistics course in which they were enrolled. Finally, it was assumed that participants responded to interview questions truthfully and offered sincere, reflective insights based on their personal experiences. Recognizing and articulating these assumptions in advance allowed me to prepare more effectively and approach the research process with greater reflexivity and intentionality (Olmos-Vega et al., 2023). This awareness contributed to the credibility of the study and supported a more ethical and thoughtful approach to data collection and interpretation.

Scope and Delimitations

The scope of this study was limited to first-year students enrolled in a college-level statistics course and in a Science Technology Engineering Mathematics (STEM) based major that included SI. The sample was taken from one of the comprehensive colleges within the SCC. These students were selected because they could offer specific insights into their classroom experiences. The study was delimited to first-year students, as the course in question is typically taken during the first year of college. Additionally, the interview questions were designed to focus exclusively on the participants' perceptions of their classroom experience. Due to the small sample size, the findings of this study may not be transferable to all community colleges, as the sample may not be representative of the broader student population.

Limitations

One of the goals of qualitative studies is to ensure that the study can be generalized and has transferability (Kuckartz & Radiker, 2023). Several limitations impacted the scope and generalizability of this study, particularly in relation to transferability and credibility. First, the study was conducted at a single comprehensive college within a SCC. Although the original research site was intended to be a community college, administrative challenges and difficulties in recruiting student participants necessitated a site change. The new study site was a comprehensive college which consisted of both two-year and four-year degree programs (i.e., associate and bachelor's degrees), as a result, the findings may not be transferable to all higher education institutions, particularly those that serve distinct populations or offer only 2-year degree programs.

Credibility is a key criterion for evaluating the trustworthiness of qualitative findings (Adler, 2022; Billups, 2021). A second limitation of the study pertains to concerns about credibility arising from potential participant bias. Student responses were shaped by their individual experiences and expectations related to the course and their interactions with the instructor. As such, these subjective accounts may not fully represent the perspectives of the broader population of first-year students enrolled in college-level statistics courses supported by SI.

A third limitation involves assumptions related to participants' familiarity with key terminology. Assumptions defined as the underlying beliefs that inform research design can influence the interpretation of data (Kuckartz & Radiker, 2023). In this study, several participants were unfamiliar with terms such as co-requisite and SI, necessitating additional explanation during interviews. This lack of familiarity may have influenced both the depth and accuracy of their responses.

A fourth limitation was the small sample size. While all components of trustworthiness were addressed, a larger and more diverse participant pool may have yielded richer data and broader insights. Finally, the study's findings are not generalizable across all academic disciplines, as it was delimited to students pursuing STEM majors. Students in non-STEM disciplines may not be required to take college-level statistics, further limiting the applicability of the results.

Significance

The significance of this study lies in its exploration of student perceptions regarding a reformed instructional approach in college-level statistics, specifically focusing on the integration of SI and instructor engagement. By investigating how students interpret the influence of SI and instructor support on their academic success, this study seeks to uncover the key attributes that contribute to the effectiveness of co-requisite and SI-supported models. Moreover, this study will address a critical gap in practice related to the role of instructor engagement an element widely acknowledged as influential in student success impacts SI-supported learning environments. The findings from this study have the potential to inform institutional practices and promote positive social change. For example, insights gained may prompt a reevaluation of the admissions process for incoming first-year students, encouraging a more holistic approach that accounts for the specific needs and characteristics of the student population seeking enrollment at SCC. In addition, the results may support the redesign of academic advising models to incorporate a more proactive, intrusive advisement framework that fosters deeper student engagement in academic planning and support services (Thomas, 2020).

Furthermore, this study may provide valuable guidance for department chairs and faculty by offering evidence-based practices that can enhance instructional effectiveness in the classroom. These implications extend to broader conversations surrounding equitable access to college-level coursework and improving academic persistence (Gilstrap, 2020), particularly in gateway courses such as statistics. Ultimately, such advancements could contribute to increased retention and graduation rates among historically underserved student populations, thereby advancing the institution's mission of promoting equity and student success.

Summary

This chapter presented the background of the research problem, articulated the purpose of the study, and outlined the conceptual framework and nature of the investigation. It also addressed the study's underlying assumptions, scope, delimitations, and significance, thereby establishing the foundational context from which this research was established. The aim of the study was to understand the perceptions of students placed a college-level statistics course about how SI and instructor engagement influenced their academic achievement. Guided by the lens of sociocultural theory, this study focused on how social engagement and collaborative engagement shaped their classroom experiences. The findings from this study may inform administrators about the effectiveness of the college-level course and identify if SI or instructor engagement were helpful.

Chapter 2: Literature Review

Despite ongoing efforts to improve student success in higher education, many students continue to struggle in college-level statistics courses (Hernández et al., 2025), which serve as a significant barrier to degree completion. SI has been widely implemented as a strategy to enhance student learning and retention (Bozonelos et al., 2024), yet there is limited research on how students perceive its effectiveness in improving their understanding and performance in statistics. Additionally, while instructor engagement is recognized as a critical factor in student success (S. Wang et al., 2024), there is a gap in practice regarding its role within the context of SI-supported learning environments. Therefore, the purpose of this basic qualitative study was to explore students' perceptions of the role that SI and instructor engagement have in their experiences within a college-level statistics course. By examining these perspectives, this research aims to contribute to a deeper understanding of how SI and instructor involvement influence student success, informing future instructional strategies and academic support services in higher education for students in college-level statistics courses.

Existing literature highlights the importance of developmental education reform, scaffolding strategies, SI, peer engagement, academic advising, and other targeted approaches in promoting student achievement and persistence (Bowman et al., 2023; Brower et al., 2021; Lane et al., 2020). The challenge of incoming freshmen being eligible to enroll in college-level statistics courses is well-documented, with research highlighting high failure and withdrawal rates that impede degree completion (Alkhateeb, 2022). SI has been implemented as an academic support strategy designed to improve student learning outcomes through peer-assisted study sessions, with studies demonstrating its effectiveness in increasing course performance and retention (Hernández et al., 2023). However, research remains inconclusive on student perceptions of SI's role in fostering deeper understanding and long-term academic success.

Simultaneously, instructor engagement has been identified as a critical component of student motivation and achievement, with active involvement from faculty members shown to enhance student participation and comprehension in challenging courses (Harrington et al., 2021; Tinto, 2017). Despite this, limited research explores the intersection of SI and instructor engagement within the same learning environment, particularly in quantitative disciplines like statistics. Recent studies (e.g., Delgado et al., 2021; Ryu et al., 2022) suggest that the effectiveness of SI may be influenced by faculty attitudes, instructional approaches, and integration with classroom pedagogy, yet student perspectives on these dynamics remain underexplored. This gap in research highlights the need to examine how students perceive both SI and instructor engagement in their statistics courses, contributing to a broader understanding of effective academic support strategies in higher education. This literature review examines existing research related to the history of higher education, developmental education and reform efforts, advisement, at-risk students, student persistence, SI, mainstreaming, and on-time support strategies. This comprehensive review aims to understand how first-year targeted interventions influence retention and graduation rates. The chapter concludes with a discussion of the significant concepts and the current gaps in understanding this phenomenon.

Literature Search Strategy

The articles used in this study were primarily sourced from Walden University's online database to ensure access to current and relevant information. The databases included EBSCO eBooks, Education Source, ERIC, Google Scholar, ProQuest Central, the *Journal of College Student Development*, the *Journal of College Student Retention*, the *Mathematics Education Research Journal*, and Sage Journals. These resources provided peer-reviewed articles on topics such as first-year placement, first-year advisement, at-risk students, student persistence, developmental education reform, SI, on-time support, student achievement, and the history of community colleges. Additionally, articles were selected to provide historical context within higher education and to explore the evolution of developmental education reform. Sociocultural theory served as the conceptual framework, offering a strong foundation for guiding and framing this study. The keyword search terms included *developmental mathematics*, *at-risk students*, *first-year students*, *persistence*, *engagement and first-year students*, *developmental education reform*, *supplemental instruction*, *math mainstreaming efforts*, and *retention*. The search process was iterative and extensive, requiring continuous refinement of search terms to ensure the retrieval of relevant articles. At times, locating appropriate sources proved challenging, necessitating significant effort in modifying search strategies to obtain pertinent literature.

Conceptual Frameworks

This study is guided by Vygotsky's (1978) sociocultural theory to explore how students construct knowledge through peer-assisted learning and faculty interactions. Vygotsky emphasized that learning is inherently social, occurring through meaningful interactions with MKOs in culturally and contextually relevant ways. According to this theory, knowledge is constructed through dialogue, collaboration, and guided support rather than as an isolated, individual process.

By examining student perspectives, this research seeks to uncover how SI and instructor engagement shape learning experiences, offering insights that may inform future instructional practices and academic support strategies in higher education. Vygotsky (1978) believed in the interdependence of learning and development, introducing key concepts such as the ZPD and the MKO (Abderrahim & Gutiérrez-Colón Plana, 2021). The ZPD represents the cognitive space where students can progress beyond their current abilities with guided support, while the MKO concept emphasizes the necessity of knowledgeable facilitators in helping learners acquire new skills they cannot yet achieve independently (Abderrahim & Gutiérrez-Colón Plana, 2021). Learning, therefore, is not an isolated endeavor but a process deeply dependent on these social and instructional supports.

Within the framework of SI, peer leaders and instructors serve as MKOs, guiding students through complex statistical concepts, fostering collaborative learning, and providing scaffolded support. SI sessions function as structured learning environments within students' ZPD, where they engage in problem-solving beyond their independent capabilities but within reach through peer-assisted guidance. These interactions highlight the importance of social discourse, scaffolding, and collaboration in helping students expand their ZPD, enabling them to tackle problems they might otherwise find insurmountable (Casler-Failing, 2024). Vygotsky (2011) also asserted that this learning model is student-centered rather than teacher-centered, positioning the learner as an active participant in knowledge construction.

This student-centered engagement involves immersion in collaborative environments where learners and instructors co-construct knowledge (Glazer, 2023). Sociocultural theory is grounded in the premise that students thrive in learning environments enriched with scaffolding, which fosters academic growth (Dreyer, 2024). Tang et al. (2024) described sociocultural theory as an ongoing learning process facilitated by interactions between learners and MKOs. This framework is particularly relevant for examining the relationship between SI and instructor engagement in supporting student achievement in a college-level statistics course. Rooted in sociocultural theory principles, the SI model emphasizes peer collaboration, scaffolded support, and meaningful instructor questioning, enabling students to collectively navigate problem-solving (Casler-Failing, 2024). By applying Vygotsky's sociocultural theory, this study investigated student perceptions of how SI and instructor engagement contribute to their learning experiences in a college-level statistics course. The ZPD provides a framework for evaluating SI's effectiveness, while the MKO concept helps analyze how peer leaders and instructors scaffold student success.

Literature Review Related to Key Concepts and Variables

This literature review begins with an introduction to the challenges students experience with college-level statistics courses subsequently highlighting the high failure and withdraw rates. Next, the foundation of SI begins by evolution of higher education and developmental education specifically focusing on community colleges within the United States illustrating how the expansion of higher education to include diverse populations led to the development of educational support structures which include remediation, tutoring, and a growing need for student support services within collegiate systems nationwide. The review then explores developmental education reform efforts, highlighting key legislative measures to increase student retention and to increase graduation rates in community colleges. Following this, a review of SI is explored and discussed. This section concludes with a discussion about the impact of instructor engagement in the classroom.

Challenges in College-Level Statistics

Research suggests that many first-year students arrive underprepared for college-level statistics, prompting colleges to implement curriculum modifications that expedite developmental coursework while promoting student retention and degree completion, with mathematics being the most common area of need (Hernández et al., 2023; Hodges et al., 2021; Petillo & Anuszkiewicz, 2023). Boatman (2021) and Hernández et al. (2023)

reported that only 16% of students enrolled in developmental mathematics courses pass, contributing to low retention rates and poor degree completion outcomes. This low success rate of students highlighted the need to depart from the traditional developmental education.

Traditional developmental education typically follows a 15-week semester-long format, requiring students to complete multiple sequential courses before progressing to credit-bearing coursework (Boatman, 2021; Finster & Feldman, 2023). For students with significant remedial needs, this structure often results in spending an entire academic year in non-credit developmental courses, creating a bottleneck that delays degree progression (Hernández et al., 2023). Research has shown that traditional developmental pathways, particularly in mathematics, did not adequately prepare students for success in college-level courses (Finster & Feldman, 2023). As a result, even students who advanced to college-level statistics often lack the foundational skills needed to pass the course subsequently undermining persistence and contributing to lower completion rates.

These outcomes disproportionately affect racially marginalized students, further exacerbating existing equity gaps in degree attainment (Hernández et al., 2023). In a study of 21 developmental education programs nationwide spanning 1993 to 2015 placement in developmental education courses at 2- and 4-year institutions negatively impacted degree attainment, success in college-level courses, and overall credits earned (Finster & Feldman, 2023). This created a national crisis, forcing legislative action to address the rising costs associated with offering developmental courses and the low degree completion rates.

To address the growing population of academically underprepared students entering colleges and universities, states implemented drastic reforms to developmental programs in both English and mathematics (Beck, 2022; Mokher & Jacobson, 2022). Many states began to implement developmental reform policies that drastically shifted existing policies surrounding developmental education (Schudde et al., 2025). Legislative mandates called for the creation of alternative course delivery models the most popular models include acerated remedial courses, modularized models, and co-requisite support with SI (Boatman, 2021; Hernández et al., 2023). These academic interventions were intended to increase student retention and degree completion.

Opponents of developmental education reforms in mathematics argue that the under preparedness of students stems from inadequacies in high school education (Alkhateeb, 2022). They also contend that proposed reforms may not adequately support students with deep remedial needs, are misaligned with actual student requirements, and are implemented without sufficient faculty input (Cafarella, 2023). These concerns highlight the ongoing debate over the effectiveness and long-term impact of developmental education reforms in higher education.

The co-requisite model with SI is a widely adopted alternative model which has shown success in students from historically underserved populations. Despite its popularity and success there are limited studies which explores how the roles of both the instructor and SI may contribute to student achievement. This study focused on student perceptions of SI and instructor engagement in fostering academic success. The findings from this study may reveal new insight about how the integration of SI and instructor engagement supports academic achievement.

Brief History of the Evolution of Higher Education

The evolution of developmental education in higher education reflects a transformation from exclusive, elite-focused institutions to more inclusive centers of learning with a mission to serve the community. While this shift created more educational opportunities for the community, these expansion efforts exposed gaps in the academic readiness of the student demographic's colleges were now serving. Early colleges in the U.S., were modeled after European institution's and primarily served white male elites, with curricula centered on theology, law, and the liberal arts (Huang & Yanan, 2024). Since the student demographic was limited to the elite, student needs were centered around giving access to exclusive libraries, expanding networks, and training to hold key leadership positions (Huang & Yanan, 2024; Kisker et al., 2023). The Industrial Revolution was a period of substantive change in higher education during this period curricula shifted from traditional curricula centered on religion, law, and liberal arts and introduced specialized programs in agriculture and engineering while broadening access to education (Wheeler, 2012).

During this period, higher education expanded to serve the middle class and prepare students for a workforce increasingly reliant on technical and service industry jobs that emerged during the postwar era (Wan, 2022; Wheeler, 2012). While initially focused on agriculture and engineering, land-grant institutions eventually broadened their academic offerings to include liberal arts and professional degrees (Singh, 2021). This institutional evolution was made possible by the Morrill Land-Grant Act of 1862, which provided federal funding for the purchase of land to expand universities across the United States. This act led to the establishment of public universities, shifting higher education beyond the elite and toward serving the broader community (Singh, 2021; Wheeler, 2012). By 1890, public universities existed in every state, and a second Morrill Act was enacted to provide additional funding for integrating land-grant colleges or creating separate institutions for Black students, leading to the establishment of historically Black colleges and universities (Palmadessa, 2023; Singh, 2021; Wheeler, 2012).

The Higher Education Act of 1965 further strengthened educational institutions by providing federal funding to colleges and universities nationwide (Coyne, 2019). This act established Pell Grants, offering financial aid to low-income students, and expanded student loan programs (Coyne, 2019; Ris, 2023). Additionally, HEA allocated funding to institutions serving disadvantaged populations and introduced student support programs designed to help underserved students succeed (Ris, 2023). The act also implemented regulatory measures and accreditation standards to ensure that colleges and universities met federal funding requirements (Ris, 2023). As a result of these milestones, college and university enrollments surged, increasing educational opportunities for minorities, students with special needs, and those from low-income backgrounds. However, this expansion also highlighted the need for robust student support programs to ensure academic success and retention among diverse student populations.

Recognizing these challenges on a national level, the Truman Commission, which emerged in the post-World War II era, sought to expand access to education for all Americans, regardless of age, race, gender, or socioeconomic background (Palmadessa, 2023). The post-World War II era ushered in a new wave of educational access reforms that significantly reshaped the student demographic. The mission of the Truman Commission was to eliminate segregation in education and increase federal financial aid programs, which ultimately led to the creation of community colleges (junior colleges) to serve local communities (Singh, 2021; Wheeler, 2012). The commission's vision emphasized equity and accessibility, shaping the modern landscape of higher education (Palmadessa, 2023; Singh, 2021; Wheeler, 2012). The GI Bill provided financial support to returning veterans, introducing students from varying educational backgrounds and socioeconomic statuses to higher education.

Similarly, the rise of community colleges, also known as junior colleges, were originally established to meet the educational needs of local communities, these colleges provide affordable and accessible pathways for diverse student populations by offering both general education and vocational courses (Fifolt, 2018; Grubbs, 2020). As open-access institutions, community colleges implement open admissions policies, requiring all incoming freshmen to take placement tests to assess academic readiness and address disparities (Lane et al., 2020; Sand et al., 2020). This infrastructure allowed students from historically underserved populations to pursue higher education, and created pathways for students who did not meet the admission requirements of four-year institutions. These developments promoted social and economic mobility but brought new challenges.

As colleges increasingly enrolled students who lacked academic preparedness for entry level gateway college-level courses, particularly in college-level statistics, institutions faced mounting pressure to provide targeted academic support. This challenge, compounded by persistent gaps in high school preparation, gave rise to the widespread implementation of developmental coursework. Over time, such courses became a standard component of community college curricula (Ris, 2023), designed to support academically underprepared students and improve their chances of success in credit-bearing programs.

Developmental Education and Reform Efforts

As community college enrollment became increasingly diverse in ethnicity, gender, and socioeconomic background, developmental education emerged as a foundational component of the curriculum (Cafarella, 2023; Hodges et al., 2021). Broadly defined, developmental education refers to pre-college-level courses and academic support services aimed at helping underprepared students achieve success in credit-bearing coursework (Beck, 2022). While often associated with contemporary reform efforts, the roots of developmental education stretch back to the earliest American institutions—such as Harvard, Yale, and the College of William & Mary—which offered tutoring to students who lacked the academic preparation expected for collegiate studies

(Cafarella, 2023). Kisker et al. (2023) highlighted that tutoring was one of the earliest forms of academic support. However, over time, stigmas developed, associating tutoring with students who were academically underprepared. Although tutoring remains a common form of support, academic services have evolved into more proactive models that emphasize early intervention and skill development (Bowman et al., 2023; Cafarella, 2023). Yet, there is still a need to respond to stigmas with tutoring.

In response to these challenges, institutions sought innovative strategies to improve student persistence and achievement. Early approaches such as remedial education and traditional tutoring models offered some support but often failed to engage students or address the root causes of academic struggles (Hernández et al., 2023). Recognizing the need for a more collaborative and proactive intervention, the University of Missouri-Kansas City developed SI in the 1970s to support students in historically challenging courses (Barrasso & Spilios, 2021). Unlike traditional tutoring models, SI integrates structured peer-led sessions that reinforce key course concepts while promoting active learning strategies. This innovative approach has since become a widely adopted method for improving retention, comprehension, and academic achievement in subjects like statistics particularly for students historically marginalized in higher education. This historical progression from expanded access to rising achievement gaps underscores the critical need for proactive academic support strategies like SI.

Supplemental Instruction and Student Success

SI is grounded in Vygotsky's concept of the ZPD, which highlights the social nature of learning and the role of guided interaction in advancing cognitive development (Channing & Okada, 2020). Within the context of SI, the ZPD represents the gap between what a student can achieve independently and what they can accomplish with the support of a more capable peer or instructor. SI is designed to leverage this dynamic by fostering collaborative learning, peer-led scaffolding, and the development of academic strategies that support student autonomy (Dekker et al., 2025). Research has demonstrated the benefits of such support, particularly in developmental mathematics, where student achievement improves when instruction incorporates active learning and timely academic intervention (Saxon & Martirosyan, 2023). Additionally, instructor presence and engagement have been found to create welcoming environments that promote student confidence and persistence (Beck, 2022). While existing studies support the effectiveness of SI in improving academic outcomes, few have examined the specific elements within SI, such as peer support, instructor engagement, or instructional design, that students themselves perceive as most impactful.

SI or peer led study groups was first developed at the University of Missouri–Kansas City to support students enrolled in high-risk, credit-bearing courses (Dekker et al., 2025; Edlin & Guy, 2019). This measure served as a cost-effective approach to support a large-scale inflow of students who needed additional academic support. Dekker et al. (2025) described the key elements of SI which are peer-assisted learning, collaborative and active learning environments, structured sessions, and voluntary participation. SI is used across the globe and is a widely adopted reform effort often used in developmental mathematics coursework.

As the SI course structure can vary based on institution, need, and discipline, the SI structure used in this study places students into a credit-bearing course while concurrently enrolling them in a developmental support course led by peer facilitators (Hernández et al., 2025). Research by Cafarella (2023), Channing and Okada (2020), and Hernández et al. (2023) suggested that this structured approach incorporates Vygotsky's ZPD by utilizing peer leads to enhance student understanding through collaborative and active learning strategies. This course structure has been found to reinforce learning activities and deepen students' understanding of subject matter (Allen et al., 2021). Similarly, Edlin and Guy (2019) highlighted that the rationale behind this instructional model is to enhance learning through class discussions and peer mentoring.

Effectiveness of Supplemental Instruction

The effectiveness of SI has been widely studied and debated. Recent research indicates that students who participate in SI tend to achieve higher grades, succeed in their corresponding courses, and persist toward degree completion, demonstrating SI as a viable alternative to traditional developmental courses (Allen et al., 2021; Edlin & Guy, 2019; Hernández et al., 2023). Dekker et al. (2025) conducted a quasi-experimental study comparing students who participated in SI with those who did not, while controlling for relevant variables. Hernández et al. (2025). found that SI participation significantly improved both academic performance and retention rates. In addition to these cognitive outcomes, the researchers also identified non-cognitive benefits, including enhanced mental well-being and stronger social relationships among SI participants. Placing students directly into credit-bearing courses with SI components has been shown to reduce the stigma associated with traditional developmental education while enhancing student outcomes.

A key pedagogical approach in SI courses is educational scaffolding, which enables instructors to tailor support based on students' individual learning needs, gradually decreasing assistance as students gain confidence and competence (Brower et al., 2017). In addition to instructional strategies, classroom environments cultivated by faculty play a critical role in promoting student achievement (Hernández et al., 2023). While the adoption of corequisite models marks a shift in developmental education policy, Hernández et al. (2023) emphasized that structural reform alone is insufficient to eliminate disparities in student outcomes. Student success in corequisite settings has been linked to several instructional and support practices, including strong instructor-student relationships, timely academic interventions, referrals to tutoring, and modularized instruction, which offers learners increased autonomy (Brower et al., 2018).

Moreover, peer interactions and collaborative learning activities foster a sense of belonging and emotional engagement, further contributing to positive academic experiences (Chan et al., 2023). Collectively, these student-centered, research-informed strategies embedded within SI frameworks support more equitable and effective learning outcomes. Students placed directly into credit-bearing courses with SI components has been shown to reduce the stigma traditionally associated with developmental education while improving academic outcomes (Hernández et al., 2025). A core feature of SI is the use of scaffolding the learning environment.

This approach has strengthened SI improving student outcomes and gave students more individual support while this approach was successful, it alone does not eliminate disparities in student performance (Brower et al., 2017; Hernández et al., 2023). In research facilitated by Brower et al. (2018) found improved outcomes are more strongly associated with robust instructor-student relationships, timely academic interventions, modularized instruction that promotes learner autonomy, and strategic referrals to tutoring. Moreover, the new classroom environments offered by SI created more opportunities for peer connections ultimately establishment more collaborative efforts. Peer collaboration and group activities within SI contexts have been shown to strengthen students' sense of belonging and emotional engagement (Chan et al., 2023). Collectively, these practices contribute to more equitable and inclusive learning experiences.

Although a substantial body of research supports the effectiveness of SI, several scholars have highlighted important limitations. Allen et al. (2021) and Lane et al. (2020) argued that much of the existing research remains narrow in scope, often overlooking the complexities of the learning process and failing to contribute meaningfully to broader educational reform. Additional concerns include the overemphasis on a single subject area, limited evaluation of student attendance patterns, and a lack of attention to factors such as student ability and motivation. Hernández et al. (2025) similarly observed that, while SI promotes equity, inclusivity, and improved coordination between academic resources and student support services, many students enter SI programs without a clear understanding of their purpose or expectations. These criticisms underscore the need to examine how students perceive their placement in SI, particularly in terms of understanding its purpose and recognizing its potential benefits. Gaining insight into these perceptions may reveal why some students engage with SI more effectively than others and how such engagement contributes to their academic success.

Building on this perspective, Shidler et al. (2024) emphasized that students placed in reformed developmental education settings are more likely to succeed when they view the curriculum as relevant and responsive to their academic needs. Given that marginalized and underrepresented students are more likely to be placed in reformed developmental education courses, educational leaders must incorporate instructional strategies that specifically support students who have been disadvantaged by traditional developmental education models (Hernández et al., 2025).

Osborne and Lang (2023), asserted that most educators acknowledge the need for a comprehensive approach is necessary to effectively address developmental education. While various strategies have been implemented, one of the most consistently recognized methods for improving student achievement is the use of intentional, student-centered pedagogical strategies which is found in SI. While there is extensive research on the effectiveness and limitations of SI, there remains a gap in the literature regarding students' perspectives on SI and its impact on their academic achievement. To date there are limited qualitative studies which examine students' perceptions of how SI and instructor engagement contribute to their success in college-level statistics a gap which this study intends to address.

Instructor Engagement

Instructor engagement is often attributed to student success and refers to the level of involvement, enthusiasm, and engagement an instructor has with their students in the classroom. Educational institutions are constantly evolving to introduce new instructional strategies to better support student learning. Dawe (2020) asserted that instructors have two primary responsibilities: teaching academic skills and addressing students' social needs. By fostering self-esteem, a process well-documented in studies such as Andrews et al. (2020) which highlighted the benefits of instructor engagement through active learning techniques, and students are better supported in their academic growth.

Active learning has been defined as any instructional methodology that engages students in the learning process, facilitating a student-centered learning environment by infusing collaborating and interactive learning practices (Andrews et al., 2020; Qureshi et al., 2023). The core elements of active learning include the interplay between collaborative and interactive learning. Collaborative learning facilitates learning within a group through social relationships. Interactive learning involves engagement with academic resources and the collaborative interactions students experience with their peers (Qureshi et al., 2023). These learning strategies are grounded in Vygotsky's sociocultural theory, which posits that individuals construct knowledge through social interaction, the co-construction of meaning, and guided participation within their ZPD. Understanding the relationship between instructor engagement and academic achievement is crucial to understanding the best teaching practices that best support student achievement.

Teaching strategies such as collaborative and active learning environments have been found to be an effective way to engage and motivate students in statistics (Bromage et al., 2022). Despite the advantages of collaborative and active teaching strategies, statistics instruction in higher education continues to carry a negative reputation. Students often report difficulty passing college-level statistics courses, while faculty face challenges teaching students who are academically underprepared, struggle to see the relevance of the subject, and frequently lack motivation to engage with the material (Andrews et al., 2020; Bromage et al., 2022).

Moreover, it is important to understand that teaching a statistics course is different from a traditional mathematics course as the curriculum is focused on data and interpreting results as opposed to computation (Bromage et al., 2022). Thus, combining a college-level statistics course with SI contributes to student persistence and retention by incorporating engagement, timely support, and community learning (Barrasso & Spilios, 2021). However, a gap in research remains which examines how instructor engagement within SI supports student achievement. Further exploration in this area can contribute to the development of effective academic learning strategies to better support the students enrolled in college-level statistics courses with SI.

Summary and Conclusions

College-Level Statistics remains a significant barrier to degree completion for academically underprepared students (Hernández et al., 2025). SI a widely adopted alternative model has been instrumental in improving student persistence and course completion rates (Barrasso & Spilios, 2021). SI is grounded in the core principles of sociocultural learning theory which scaffold in teaching practices that include collaborative and active learning strategies (Channing & Okada, 2020). Despite evidence supporting the effectiveness of SI, limited qualitative research has explored students' perspectives on how SI contributes to their academic success. While instructor engagement has also been associated with improved academic outcomes, there remains a gap in understanding how faculty involvement specifically influences student achievement within SI-supported learning environments.

The scope of this literature review includes insight on the evolution of higher education to contextualize how the expansion to include more diverse populations led to the development of educational support systems designed to assist academically underprepared students. Additionally, this review examines how Sociocultural theory serves as the Conceptual foundation for this study, demonstrating the interconnectivity between SI with the core principles of constructivism using ZPD and MKO to as a benchmark for success (Channing & Okada, 2020). This study seeks to address the gaps by exploring students' perceptions about how the role of SI and Instructor Engagement in a college-level statistics contributed towards their academic achievement. Chapter 3 outlines the research methodology, including the rationale, data collection and analysis procedures, and the role of the researcher.

Chapter 3: Research Method

The purpose of this basic qualitative study was to explore students' perceptions of the role that SI and instructor engagement play in their experiences within a college-level statistics course. By examining these perspectives, this research aimed to contribute to a deeper understanding of how SI and instructor involvement influence student success, informing future instructional strategies and academic support services in higher education for students in college-level developmental statistics courses. Chapter 3 will review the appropriateness of the qualitative methodology, role of the researcher, overall methodology, and conclude with the protocols planned for trustworthiness.

Research Design and Rationale

In higher education, student success remains a persistent challenge, particularly in college-level statistics courses, which often serve as gatekeepers to degree completion (Alkhateeb, 2022). SI has been widely implemented as a peer-assisted learning strategy aimed at improving student comprehension and retention in these courses (Hernández et al., 2025). However, while SI has been shown to enhance academic outcomes, little is known about how students perceive its effectiveness in supporting their learning. Additionally, instructor engagement is a well-documented factor in student success, yet its role within the SI framework has not been fully explored.

Through a qualitative research design, this study sought to answer how students perceive the role of SI and instructor engagement in their experiences within a college level statistics course. In order to answer this question, understanding a student's experience requires an approach in the form of language and expression which reflects an experience (Saldana, 2021). Qualitative research is used to understand how people interpret these experiences (Tisdell et al., 2025).

This interpretive research, rooted in anthropology and sociology, explores social and cultural aspects of human experiences (Tisdell et al., 2025). Qualitative research is used to generate new insights by gathering data in natural settings through observations, interviews, and document analysis (Olmos-Vega et al., 2023). This study employed a basic qualitative design to analyze participants' experiences and infer meaning. Interviews were guided by the study's focus, with analysis centered on identifying themes and patterns to interpret participants' behaviors.

Basic qualitative research was chosen as the optimal design to explore the breadth of information necessary to understand and interpret student perceptions through in-depth interviews (Billups, 2021; Tisdell et al., 2025). This approach enables researchers to collect rich, detailed data from each participant, facilitating a comprehensive study of their perspectives, motivations, and classroom experiences. Additionally, this methodology is well-suited for examining complex, non-quantifiable topics such as emotions and personal experiences (Ravitch & Carl, 2021), allowing for a deeper understanding of students' motivations and perceptions (Billups, 2021). The flexibility of this research design also permits the exploration of unexpected themes that may emerge throughout the study (Billups, 2021). In this study, the subjective experiences of student participants who had taken a college-level statistics course were examined to understand how SI and instructor engagement contributed to their success. Their responses were considered authentic and provided meaningful, in-depth data to address the research question.

There are six common traditions in conducting qualitative research: basic qualitative research, phenomenology, ethnography, grounded theory, narrative inquiry, and case studies. While these methodologies share certain attributes, each is distinct in terms of focus, data collection, and sample selection (Lochmiller et al., 2023; Tisdell et al., 2025). Phenomenology is used to understand the essence of lived experiences, while ethnography is used to examine human society and culture (Durdella, 2023). For example, a phenomenological design is best suited for exploring deep emotional experiences of a specific phenomenon. However, since this study did not center on a particular phenomenon, phenomenology was not an appropriate choice.

Ethnography, which requires prolonged immersion in a group's culture to provide a holistic view (Billups, 2021; Durdella, 2023; Lochmiller et al., 2023), was too extensive for this study, which focused on individual student experiences. Narrative inquiry analyzes stories as a basis for research, whereas case studies focus on a single unit, individual, or process for in-depth investigation (Tisdell et al., 2025). Grounded theory, which is used to develop new theories based on real-world observations (Billups, 2021), was unnecessary since the goal was not to create a new theory but to gain a deeper understanding of student perspectives. Finally, case studies examine specific events, individuals, groups, or organizations using multiple data sources (Durdella, 2023;

Lochmiller et al., 2023). Since this study was not centered on a specific case, a case study approach was not deemed appropriate. Therefore, after the review of these traditions, I concluded a basic qualitative study focusing on individual student experiences rather than an entire cultural setting was the most appropriate fit.

Role of the Researcher

In qualitative studies, the researcher serves as the primary instrument for data collection and participant observation (Durdella, 2023; Ravitch & Carl, 2021). As the sole researcher for this study, my responsibilities included recruiting participants, conducting one-on-one semistructured interviews, transcribing and coding the data, analyzing findings, and presenting results. Additionally, my role involved ensuring trustworthiness, dependability, credibility, transferability, and confirmability. I was also responsible for identifying potential biases and implementing strategies to mitigate them. I have a professional relationship with the study site, having been employed there for over 15 years. For the past 9 years, I have held a management position where I was responsible for making decisions regarding office practices and procedures as well as implementing them. Currently, I serve as a senior administrator for enrollment management, participating in various committees related to this field. Given this background, I had to consider potential biases and conflicts of interest. Recognizing the importance of ethical standards throughout the research process was essential.

Participant selection could also be seen as an area subjected to bias. Given that the researcher is the instrument in qualitative studies it is essential for the researcher to be removed from the process to minimize bias and assumptions (Billups, 2021). As a preventive measure, the chair of the math department at the study site was provided with participant selection criteria and used them to generate a list of eligible participants, whom they then recruited via email. All participants signed an informed consent agreement and received no compensation for their participation. Additionally, no special treatment or favorable actions were extended to participants, and students who chose not to participate were not denied any opportunities. Participants were also informed that their involvement was voluntary and that they could withdraw at any time.

To minimize researcher bias and ensure the authenticity of participants' responses, I followed guidelines outlined by Creswell and Guetterman (2024) to control researcher bias. Specifically, I relied solely on the collected data to report findings and manually transcribed all interviews. I also adhered strictly to the interview script, ensuring that all questions were open-ended and did not lead participants toward specific responses. Finally, I implemented member checking, allowing participants to review their transcripts to confirm that their responses accurately reflected their intended messages.

Methodology

Basic qualitative research design was the most suitable design methodology for this study as it allowed the researcher to explore the perceptions of students on the role SI and Instructor Engagement have in a college-level statistics course through semistructured interviews. The basic qualitative research design approach provided flexibility, which enabled the researcher to explore, interpret, and describe the lived experiences of the participants without adhering to a strict format (Tisdell et al., 2025). Ravitch and Carl (2021) asserted that the purpose, and the audience informs the direction and style of the study. Furthermore, a basic research design is used to understand people and interpret their experiences (Tisdell et al., 2025).

Interviews were the primary data collection instrument used in this study. The data collected through the interviews provided essential information to answer the research question. Interviewing was the best approach to capture participant feelings and interpretations of the world around them (Tisdell et al., 2025). A semistructured approach, provided the most flexibility and helped to facilitate insightful and meaningful information from each participant. To encourage comprehensive student responses a mix of experience, feelings, and behavioral questions were developed to foster rich detailed responses from participants.

Participant Selection

The target population for this study was first-year college students who were enrolled in a college-level statistics course with SI and majoring in a STEM major. Students were recruited from one of the comprehensive colleges within the SCCs within the university system. Students were selected using a purposive sampling method from among students who have completed the course and recommended through a gatekeeper. Purposive sampling is often used by researchers to find participants who provide information that can lead to in-depth understanding of a problem (Creswell & Guetterman, 2024). Since the research question for this study was focused on the perceptions of the role of SI and Instructor Engagement in a college-level statistics course, this sampling strategy was justified because the specific sample sought out had sufficient and specific knowledge of this experience. Thus, the inclusion criteria for this study were specific to students who enrolled in a college-level statistics or completed a course with SI. Students not enrolled in a college-level statistics course with SI were exempt from participating in the study.

To recruit participants for the study, I emailed the departmental chair of the math department at one of the SCCs and informed the chair of the nature of the study and inquired about the possibility of interviewing students who were currently enrolled or recently completed a college-level statistics course with SI. Next, the department chair developed a query based on the studies participant criteria to send an email to all students currently and to students who recently completed the course, informing them of the nature of the study and inquired about their interest in participating in the study. Students were recruited until the sample size of 10-12 participants was achieved. Each interested participant sent me an email to inform me of their interest to participate in the study and in a subsequent email was emailed the consent form to sign. After which, a mutually convenient interview date and time was scheduled.

Instrumentation

In qualitative research, the researcher serves as the primary instrument (Tisdell et al., 2025). As such, the researcher is solely responsible for data collection, participant interaction, and analysis, seeking to deepen their understanding of the phenomenon under study through both verbal and non-verbal communication (Tisdell et al., 2025). The primary goal of qualitative interviews is to capture participants' perspectives, experiences, and emotions, with the interviewer facilitating and guiding the conversation (Billups, 2021). To minimize researcher bias engaging in reflexivity by bracketing was used. This methodology is most commonly used in phenomenology; however, bracketing has been found to be useful across all qualitative studies (Billups, 2021). Bracketing involves the researcher suspending their personal judgments by disclosing their background and connection to the study through prolonged engagement with the subject the researcher can collect rich data while suspending their own assumptions (Billups, 2021).

To minimize potential bias and enhance the trustworthiness of the data collection process, I employed a semistructured interview protocol. This approach, which combines a basic qualitative design with semistructured interviews, allowed me to engage directly with participants and gain a comprehensive understanding of the phenomenon under study. Yin (2016) emphasized that semistructured interviews encourage a conversational dialogue between the researcher and participant, fostering a more natural and relaxed exchange. To ensure consistency across all interviews, I used a structured script as a guide (Billups, 2021). This interview protocol was instrumental in collecting data that directly addressed the problem and purpose of the study.

The primary data collection instrument was the interview guide, which comprised of 10 questions designed to explore students' perceptions of how instructor engagement and SI impact their academic success in a college-level statistics course (Appendix B). The research questions were developed based on the conceptual framework of the study and an in-depth literature review that identified key gaps in existing research. Durdella (2023) and Tisdell et al. (2025) emphasized that obtaining high-quality data depends on well-developed, open-ended questions. To ensure clarity and depth in responses, follow-up questions were used when participants provided incomplete or vague answers, ensuring that the essence of their experiences was accurately conveyed (Billups, 2021). Prior to data collection, the interview questions were reviewed and approved by both my dissertation committee and the Institutional Review Board (IRB) to ensure their alignment, relevance, and appropriateness for the study.

Procedures for Recruitment, Participation, and Data Collection

After receiving IRB approval to conduct the study, I was directed to contact the Dean at my study site to assist me in sending the recruitment email. After several email exchanges, the initial recruitment email was sent to approximately 80 eligible students. This process was repeated several times and yielded one student response, which resulted in a no-show and unsuccessfully rescheduling of the interview. I informed my Chair of the challenges that I encountered. and it was recommended that I consider changing my study site. I contacted IRB and followed the required steps to change the study site location. After receiving approval from IRB to change my study site, I was directed to contact the Chair of the Math Department at the new site. We scheduled a meeting to discuss my needs and within days the recruitment email was sent to approximately 300 students who recently completed a college level statistics course with SI. This email generated five student inquiries from students who wanted to learn more about the study, but only two students agreed to participate in the study.

After not receiving enough participants, I contacted the Director of the Accelerated Study Associate Program who agreed to contact additional students. This change generated 4 student responses which all lead to student interviews. After conducting the fourth interview. I encountered a new challenge with scheduling interviews. There were students who were interested in participating in the study but wanted the interview to be in person. I contacted IRB and submitted the required form to change the format of the interview from zoom only to in-person or zoom. This change allowed for more student flexibility. Once approval was received, students were provided with flexibility in scheduling their interviews, accommodating their preferences for timing and format. This adjustment allowed for the successful completion of the remaining six interviews, ensuring a comprehensive dataset across all ten participants. The data collection process spanned from May 2023 to May 2024, demonstrating the extended timeline required to accommodate participant availability and ensure flexibility. All Zoom interviews were recorded using a cloud-based platform and transcribed within 24 hours of each session. Transcriptions were completed manually by listening to the audio recordings and typing participants' responses verbatim into a Word document. To ensure accuracy, each transcript was carefully reviewed and cross-checked against the original audio. All data were backed up and securely stored on a flash drive.

Additionally, detailed notes were taken during each interview to document both verbal responses and notable non-verbal behaviors exhibited by participants.

Data Analysis Plan

To address the research question for this qualitative study, I employed a basic qualitative research design and followed a structured data analysis plan as outlined by Billups and Saldana (2021). The initial phase of analysis began immediately after completing all interviews. During this stage, I engaged deeply with the collected data by repeatedly listening to the recordings, reviewing field notes, and manually transcribing each interview into a Microsoft Word document. This process enabled me to immerse myself in the data, ensuring accuracy while gaining a comprehensive understanding of participants' responses. Before proceeding to the next phase, each transcript was carefully reviewed and cross-checked against the corresponding interview recordings to verify accuracy. The second phase involved coding and data reduction. I employed an inductive and analytical coding approach, allowing codes to emerge naturally from the data rather than imposing predetermined categories (Tisdell et al., 2025). Similar responses were clustered and systematically organized using color coding in a Microsoft Excel spreadsheet. This iterative process continued until all responses were categorized, facilitating the identification of patterns and relationships within the data.

In the final phase, I grouped the coded data into broader conceptual categories aligned with the study's conceptual framework. This thematic synthesis provided structure to the emerging findings, helping frame the study's narrative (Billups, 2021). To enhance the credibility and trustworthiness of the study, I also examined discrepant cases. These are responses that deviate from dominant themes. These outliers were critically analyzed to assess whether they offered alternative explanations, challenged existing interpretations, or introduced unique perspectives that enriched the findings. Rather than disregarding them, I integrated these perspectives into the analysis to ensure a more nuanced and comprehensive understanding of student experiences with SI and instructor engagement. This approach reinforced the reliability (Olmos-Vega et al., 2023) of the study by demonstrating openness to diverse viewpoints and mitigating the risk of selective interpretation.

The entire data analysis process was conducted manually, without the use of qualitative data analysis software. While some researchers utilize tools like Dedoose or NVivo for coding and thematic organization, I opted to use Microsoft Excel for data management and organization. By systematically following a process of transcription, open coding, axial coding, and thematic synthesis, I was able to derive meaningful insights that directly align with the study's research questions and theoretical framework (Billups, 2021; Olmos-Vega et al., 2023). This structured methodology ensures that the findings remain firmly grounded in participant narratives, offering a comprehensive understanding of student perceptions regarding SI and instructor engagement in a college-level statistics course.

Trustworthiness

To establish creditability and validity the guidelines set forth by the Institutional Review Board (IRB) at Walden University were used to ensure that the study was conducted in accordance with the ethical guidelines. The following section outlines how trustworthiness was established throughout the study by addressing four key criteria: credibility, transferability, dependability, and confirmability (Ravitch & Carl, 2021).

Credibility

Tisdell et al. (2025) asserted that creditability ensures that a study measures what it intends to measure. Credibility will be established upon completion of the transcripts by the researcher reviewing the audio recordings of each interview to ensure accuracy. As a second measure, all participants will be emailed their completed transcripts for review and accuracy and given the opportunity to ensure that the transcript accurately represents the information that they intended to convey. As a final measure, the researcher will take field notes to ensure that every moment, such as background noises, emotions, and body language, etc., was documented and captured in the transcription. This measure will help ensure that my perceptions and ideas of the data were accurate.

The coding process will involve several detailed steps to ensure that the right code was assigned following Saldana’s (2021). The first step will incorporate each interview question in an Excel spreadsheet and to place each Participant response under each question. This measure will allow me to identify similarities or differences among student responses and to develop initial codes. Next, I will analyze each response a second time and cross reference field notes to ensure that all body language and emotion was captured and reflected. This procedure will allow me to highlight keywords or recurrent words to identify categories and themes. This step ensures that the themes chosen were valid and consistent.

Transferability

Transferability in qualitative research, also known as external validity, refers to the extent to which findings from one study can be applied to similar contexts or populations, and is typically achieved through rich, thick descriptions and maximum variation sampling (Tisdell et al., 2025). To enhance transferability in this study, I provided detailed descriptions of the research setting and incorporated direct quotes from participant interviews. Additionally, I maintained a research journal to document emerging data and observations. Billups (2021) emphasized that comprehensive notes, capturing both verbal and non-verbal observations, contribute to the depth and applicability of qualitative research. This approach ensures that the findings of this study can be meaningfully applied to other studies with similar subjects and topics. Another strategy employed was maximum variation sampling, which involves selecting participants who represent a range of experiences within the studied phenomenon (Ravitch & Carl, 2021). The sample population for this study consisted of students who had completed a college-level statistics course with SI. By including individuals with diverse perspectives, the findings provide a more comprehensive understanding of the topic and enhance the study’s transferability.

Dependability

Tisdell et al. (2025) asserted that dependability refers to the extent to which research findings are consistent with the data collected. To establish dependability in this study, a meticulous and transparent process was followed from data collection through the development of findings, thereby ensuring the rigor and trustworthiness of the results (Ravitch & Carl, 2021). All procedures outlined in the methodology section were strictly adhered to. The interview protocol approved by Walden University's Institutional Review Board (IRB) was implemented without deviation. Each participant was interviewed either via Zoom or in person, based on their preference. All interviews were recorded using Zoom or an audio recording device. Subsequently, the recordings were transcribed manually and saved as Word documents, each labeled with a unique pseudonym to protect participant identity. In addition to audio recordings, observational notes were taken during the interviews to capture nonverbal cues and highlight particularly compelling responses.

Confirmability

Confirmability ensures that research findings accurately represent participants' perspectives rather than researcher bias (Billups, 2021). To establish confirmability in this study, I maintained an audit trail to document the research process, track the progression of thematic analysis, and promote transparency. Additionally, I manually transcribed each interview to enhance the accuracy and authenticity of participant responses. This practice is crucial for maintaining researcher objectivity and faithfully representing student perspectives in the findings (Stahl & King, 2020). To further support confirmability, I kept a reflective journal throughout the study, documenting my thoughts, observations, and potential biases. This practice fostered self-awareness and helped minimize unintentional influence on the analysis. By integrating these strategies, I strengthened the study's credibility and ensured that the findings remained firmly rooted in the participants lived experiences.

Ethical Procedures

Measures were taken in advance to protect the rights the participants of the study. The IRB at Walden University ensured that all researchers prescribed to specific ethical guidelines set forth by the institution. Before engaging with participants, IRB approval was granted, and written informed consent was obtained from all participants. Informed consent advises the participants of any risks during the study, identified their role in the study as voluntary, and that they could withdraw from the study at any time. Before starting each interview, participants were advised why the study was being conducted and that any information shared would be used for this study. This measure was done to gain trust from each participant.

Summary

The focus of this chapter was to provide a comprehensive review of the research methodology used for this study. This study utilized a semistructured interview process by interviewing 10 students and individually to understand their perceptions about the role of SI and Instructor Engagement in a college-level statistics course with SI, using a purposive sampling method. Each interview was recorded and transcribed manually. The data were then organized using inductive coding to identify themes and patterns based on student responses. The data will then be analyzed to conclude and answer the research question. The comprehensive results of the study will be discussed in Chapter 4.

Chapter 4: Results

This basic qualitative study explored the student perceptions regarding the role SI and instructor engagement have in a college-level statistics course through semistructured interviews. Participants were interviewed on a one-on-one basis to facilitate an in-depth discussion to understand their perceptions of the role of SI and instructor engagement in a college-level statistics course. This study was centered on the following research question: What are students' perceptions of the role of SI and instructor engagement in a college-level statistics course? This chapter outlines the setting, data collection, data analysis, results, and evidence of trustworthiness. The setting will provide details of the locations where the interviews were conducted. The next step was the data collection process, followed by an examination of the data analysis.

Setting

All participants of the study were first-year students at the time the interview was conducted. The criteria for inclusion in this study were students who completed a college level statistics course with SI. The target population for this study were students who were previously enrolled in a college-level statistics course with SI. Invitations to participate were sent via email, and potential volunteers who responded to the invitation email were sent detailed information about the interview including an informed consent for consideration. Students who elected to participate in the study returned a signed consent form, after which an interview was scheduled at a mutually convenient time. Ten participants volunteered to participate in this study. One of two methods used to conduct student interviews based on the preference of the participant either by via Zoom or in person using a voice recorder app. Each interview lasted anywhere from 12-40 minutes.

Data Collection

Interviewing was the most suitable methodological approach for this study, as it facilitates the collection of rich, descriptive data regarding participants' emotions and their interpretations of their lived experiences (Tisdell et al., 2025). For the current study, the data were collected from 10 participants who completed a college level statistics course with SI using a semistructured interview protocol. According to Tisdell et al. (2025), a small participant pool allows for a robust in-depth data for qualitative studies to achieve saturation. Ten participants were enough participants to interview, as I was able to successfully manage and analyze the data. In addition, data saturation had been reached by the 10th participant as no new information emerged from the interview. Therefore, I was able to conclude that 10 participants were an adequate sample size for this study.

After receiving approval from IRB to change my study site, I was directed to contact the chair of the math department at the new site. We scheduled a meeting to discuss the criteria for the study and my expectations for their involvement. A few days following our meeting the recruitment email was sent to approximately 300 students who recently completed a college level statistics course with SI. This email generated five student inquiries from students who wanted to learn more about the study, but, after responding to their inquiries, only two students agreed to participate in the study. After weeks of sending recruitment emails, and sending follow-up emails and no student inquires, the chair of the math department recommended that I contact the Director of the Accelerated Study Associate Program (ASAP) program as their academic advisors work very closely with their students and the advisors might assist by connecting me with students who may be interested in participating in the study.

I contacted the program director and shared the details concerning the nature of my study, who agreed to send the email. This change generated four student responses, which all lead to student interviews. After conducting the fourth interview. I encountered a new challenge with scheduling interviews. There were students who were interested in participating in the study but wanted the interview to be in person. I contacted IRB and submitted the required form to change the format of the interview from zoom only to in-person or zoom. This change provided more flexibility, by allowing students to choose an interview modality that met their needs.

Once approval was received, students were provided with flexibility in scheduling their interviews by accommodating their preferences for timing and format. This adjustment allowed the successful completion of the remaining six interviews. The interview durations varied significantly. During the interviews, notes were also taken to capture compelling student responses and to clarify follow-up questions. The variation in interview lengths underscores the diversity of participant experiences and engagement, which is further explored in the analysis of themes. As shown in Table 1, the chronological sequence of interview dates, spanning from May 2023 to May 2024, highlights the extended timeline required to accommodate participant availability and ensure flexibility. After completing the interviews, each participant received a transcript for member checking, a process detailed further in the Evidence of Trustworthiness section.

Table 1

Interview Duration and Transcript Length

Participants	Interview Date	Interview Duration (mins)
P1	May 25, 2023	32
P2	June 1, 2023	20
P3	March 23, 2024	22
P4	July 3, 2023	25
P5	June 1, 2023	25
P6	February 14, 2024	18
P7	December 15, 2023	40
P8	December 18, 2023	12
P9	May 3, 2024	13
P10	May 6, 2024	13

Data Analysis

Data analysis is an essential component of the research process in qualitative studies, as this step provides the themes needed to answer the research question. The process began with an initial review of the audio of each interview. This step ensured that the interview was recorded, and the audio was clear. Next, I personally transcribed each interview by listening to the audio recordings and typing the responses, which were saved as Word documents using unique pseudonyms.

The study's participants included five females and five males, representing a diverse range of academic majors. Half of the participants aimed to pursue degrees in allied health or computer engineering. Additionally, seven out of the 10 participants had taken the course multiple times. Participants were recruited based on their enrollment in a college-level statistics course with SI. Demographic data were not explicitly collected, but these data emerged organically from the detailed and candid interview responses and follow-up questions.

When asked how this course impacted their student achievement most Participants shared if they passed the course, or the number of times they took the course, plans for retaking the course, and their current academic major. For example, Participant 2, a current dental lab student, emphasized that successful completion of this course positively influenced their academic achievement in Chemistry course and only took the course once. Participant 8 reported failing the course multiple times while striving to gain admission to the dental hygiene program. A recent conversation with an academic advisor confirmed that admission to the program was not possible due to academic performance in the course, which had adversely impacted the overall GPA.

However, Participant 7 was forthright about their dissatisfaction with their academic performance and shared future goals to retake the course, further acknowledging the necessity to successfully complete the course to progress within the degree program. The following section outlines the various phases used in the data analysis process as described by Saldana (2021): first cycle coding, second cycle coding, and theming and interpretation.

Phase 1: First Cycle Coding

The coding process is an extensive process that allows the researcher to analyze the data collected to identify emergent themes closely (Saldana, 2021). The first phase in the coding process began with me familiarizing myself with the data. This was achieved by carefully listening to each audio. After carefully listening to each transcript, I listened to each audio a second time to transcribe each audio recording. After this cycle, I reviewed each interview with each corresponding transcription to ensure that each transcription accurately reflected each interview. According to Saldana (2021), this process allowed me to immerse myself in the data and make preliminary assumptions.

Inductive coding was used to capture the unique ideas expressed by each participant. Kuckartz and Radiker (2023) defined inductive coding as the collection of bits or segments of data clustered into color categories and then named. This process allowed the codes to naturally emerge from the data, organizing the data into categories and identifying recurrent words or phrases by reviewing each transcript and highlighting keywords or phrases, similarities, or differences in student experiences aligned with the theoretical framework for this study.

Phase 2: Second Cycle Coding

I conducted a second review of each transcript and clustered similar responses to each interview question by color. The data were then organized and placed into an Excel spreadsheet, organized by participant and interview questions. For instance, participant responses to interview Question 1: “What was your initial perception of enrolling in a college-level statistics course with SI?" These participant responses to question 1 were clustered together in an Excel spreadsheet and assigned the color yellow.

This step was repeated for each interview question until all similar responses were clustered by color. Unique student responses were assigned distinct colors and listed under the corresponding question. This was done to ensure that all student responses were reflected and included all similarities and differences. After clustering the responses, each color-coded group was identified, and initial codes relevant to the interview questions were produced. For example, Question 1 produced the following initial codes: "unprepared," "lost," "confused," "complicated," "challenged," and "fearful," which were based on the key ideas from each interview. Table 2 illustrates how these initial codes progressed into themes.

The first column represents the 20 initial codes to be then categorized based on the framework of Sociocultural theory. Naidoo and Mabaso (2023) emphasized that understanding, importance, and meaning may arise through conversation and interaction. They further highlight that the individual influences the learning process and that knowledge transfer is conducive to both the learner and the environment.

Table 2

Theme Progression

Initial Codes	Categories	Final Theme	Participant Response
Unprepared, lost, confused, hard, challenging, and fear	Course Readiness; Course Experience	Perceived Lack of Preparedness	Course very tough; focus; I tried so hard (P1), Scared; a bit scared cause I didn't know what to expect (P2). Before joining the course student thought that it would be straightforward but came to learn that it was challenging(P5).
Caring; Accessible; Fun; Support; Approachable Communication; Responsive	Good Professor; Interactive	Effective and Engaging Teaching Practices	Instructor was attentive and helpful (P1), My professor, he was funny. He was the best. He was really, really funny. He didn't make the class boring. He was not professor that comes to class a, just teach, talk, and write on the board (P2). The professor made the course fun and engaging (P4).
Access; Help; Immediate; Direct; Hands-On	Class Support; Recourses	Timely and Accessible Academic Support	The ability to get answers to my questions in the moment (10). The fact that the course was in person and that I had access to my instructor and fellow classmates (P5). I enjoyed being able to get answers to my questions directly (P6). The professor would stay after class and go over material that we did not understand (P8).
Classmates, Partner; New Ideas; Motivation; Understanding	Class Activity; Group Work	Collaborative Learning and Class Experience	I was a class clown, tried to make the class fun and keep everyone motivated. I also worked with my classmates outside the classroom (P3). Liked having access to class peers and the conversation inside the classroom (P4)
Passed; Grade; Understand	Success; Persistence	Resilience and Academic Achievement in the Classroom	I passed with a B on. Yeah, I think I, I think I did well my first-time doing math at college level (P2). Even though I wasn't doing as well in the class, you know, like I stuck with it. And I, you know, and for me I had to because, you know, it really bothers me that I can't get past this class (P7).

For the secondary coding process, I sought to collapse the codes into categories guided by the framework for the study. This framework was used to categorize the initial codes into categories. One of the core principles of sociocultural theory emphasizes the role of social interaction, collaboration, and contextualized learning in constructing knowledge, which serves as the foundation for categorization. For example, initial codes such as “unprepared,” “lost,” and “confused” were grouped into Course Readiness/Course Experience, reflecting how student preparedness impacts student learning. Similarly, codes like “caring,” “access,” and “fun” were categorized as Good Professor/Interactive, highlighting the effect of social interaction, which fosters collaborative learning processes among peers.

The transition from initial codes to categories into themes is reflected in Table 2 above, specifically columns two and three. These secondary categories underscore the importance of social scaffolding, timely support, and relational learning, aligning with the conceptual framework to provide a robust understanding of how SI and engagement influence student achievement. For instance, codes such as “fun,” “support,” and “approachable” were examples of initial codes that emerged during interviews. During the secondary coding process, these codes were further synthesized into the categories “good professor” and “interactive,” resulting in the final theme of effective and engaging teaching practices.

Phase 3: Theming and Interpretation

The final phase of the coding process involved synthesizing the categories derived from the secondary coding process into overarching themes that captured the core elements of students lived experiences with SI and instructor engagement in the classroom, represented in the third column in Table 2. This thematic analysis identified five distinct themes that address the research question by highlighting key factors influencing student achievement in a college-level statistics course. Each theme represents a specific aspect of the student's academic journey, informed by their responses and grounded in the principles of sociocultural theory.

The theme of Perceived Lack of Preparedness emerged from participants' descriptions of their initial challenges, feelings of confusion, and the perceived complexity of the course. These experiences highlight the importance of readiness in influencing students' ability to engage with the material and the motivation that comes with academic preparedness. Effective and Engaging Teaching Practices reflects students' perceptions of their instructors' approachability, communication style, and interactive teaching styles. Participants noted how instructors' supportive behaviors and active involvement in the classroom fostered a more engaging and collaborative learning environment.

The theme of Timely and Accessible Academic Support encapsulates students' reliance on timely support, hands-on help, and access to additional instructional components. This theme underscores the value of SI in addressing immediate learning needs. Collaborative Learning and Class Experience emerged from students' experiences partnering with classmates and the motivational aspects of group work. These interactions contributed to a sense of community and shared understanding, reinforcing the social dimensions of learning.

Finally, Resilience and Academic Achievement in the classroom reflects participants' perceptions of their academic outcomes, persistence, and successes. This theme captured how students defined achievement, from passing grades to increased confidence and resilience. These themes provide a comprehensive understanding of the factors influencing student achievement and engagement in the context of SI.

Results

The purpose of this basic qualitative study was to explore students' perceptions of the role that SI and instructor engagement have in their experiences within a college-level statistics course. Through in-depth, semistructured interviews with ten student participants, rich qualitative data were collected to uncover insights into the factors influencing student achievement and engagement. The findings provide a nuanced understanding of the challenges, support systems, and interactions that shape students' academic journeys. The analysis revealed five key themes: Perceived Lack of Preparedness, Effective and Engaging Teaching Practices, Timely and Accessible Academic Support, Collaborative Learning and Class Experience, and Resilience and Academic Achievement in the Classroom that collectively addresses the research question and highlight the interconnected roles of preparedness, social interaction, and timely support. The following sections represent these themes, illustrating how they emerged from the data and offering a comprehensive view of students' experiences and perceptions.

Theme 1: Perceived Lack of Preparedness

Perceived Lack of Preparedness emerged as one of the initial themes from the data, as several student participants reported feeling unprepared for the course. This theme reflects students' early perceptions of how instructor engagement influenced their academic performance in a statistics course. Participants described their initial experiences as complex, time-consuming, intense, and fast-paced, frequently expressing a sense of academic unpreparedness. Initial codes such as "unprepared," "lost," "confused," "challenging," and "fear" were synthesized into two categories: course readiness and course experience, which together captured the relational dimensions of academic preparedness. The emotional responses reported by participants ranged from fear to discouragement, contributing to academic challenges for some of the participants. For example, Participant 1 shared, "This course is very tough; you need to work hard to pass; it was a long time since I took math." Followed by participant 6, who shared, "I feel like I did not go in ready. The course was not straightforward. Initially, I did not take the course seriously until I reviewed the course syllabus." Participant 7 added, "From someone returning to school after 30 years, this was intense, way too much material to cover in a short period." Participant 8 described their repeated attempts to complete the course:

> This course was very overwhelming for me. There is a lot that goes on in this course. This is my third time taking this course, but the first time I took the course, I did not put my all into the course.

While participants varied in how they described their preparation, all expressed feeling unready at the outset. However, many also described positive interactions with instructors that appeared to offset some of the initial feelings of unpreparedness. For example, participant 9 stated, “I really liked that my professor would mix real word experiences with the course material, this kept the course interesting and kept me engaged.” Followed by participant 10, who shared that, “I like getting immediate responses to my questions.”

These responses illustrate how instructor engagement, through timely communication, real-world application, and accessible support, helped students remain engaged despite their perceived lack of academic preparedness. This theme suggests that instructor responsiveness played a critical role in shaping students’ experiences and perceptions of success in the course. These encounters positively impacted their course experience in the classroom, leading to student achievements, as captured by the theme of Effective and Engaging Teaching Practices.

Theme 2: Effective and Engaging Teaching Practices

The theme of Effective and Engaging Teaching Practices emerged as a critical factor influencing students’ experiences and academic success in the college-level statistics course. Students consistently reflected on the role of instructor interaction and described their instructors as caring, funny, engaging, approachable, communicative, and responsive. These qualities contributed to a supportive and positive learning environment. Initial codes such as “access”, “communication”, “responsiveness”, “fun”, and “caring” were grouped into the two categories Good Professor and Interactive, which together form the theme of Effective and Engaging Teaching Practices. These categories illustrate how instructor behaviors impacted students’ ability to engage with and understand the course material.

For instance, Participant 2 described the instructor’s interactive approach and clear communication:

> My professor was the best. He would communicate to us in a way that was easy for us to understand. He would give us a lot of practice in the classroom by giving us a problem to work on, and he would walk around the classroom and watch each student solve the problem.

This type of engagement was further supported by Participant 1, who highlighted the instructor’s willingness to offer additional support and motivational support:

> Our professor would put problems on the board and ask us to come to the board to share how we answered the questions. My professor would also stay after class to review material to ensure we understood how to solve the problem. Even though, I ended up failing the course, the encouragement that I received from my instructor boosted my confidence.

Access to the instructor during and after class was crucial for several students. Participant 5 shared how this accessibility enhanced their experience "I enjoyed having access to my instructor and that the course was in person." Similarly, Participant 7 emphasized how a consistent and clear teaching approach made a difference in grasping complex concepts:

> The first time that I took this course, I was completely lost. There is no uniformity in the way this course is taught. Each professor has their own way of doing things, but my current professor is great at explaining the work, and I feel like I can grasp the concepts better because real-world concepts were applied to the class, making it easier for me to understand. My professor ensured we understood the topics before going on to the next topic.

This was followed by Participant 10, who stated, "I have never been good at math, but I like getting answers to my questions in the moment. It was helpful for me to understand the material better." While most participants shared positive instructor engagement experiences, students also shared how they felt when instructors were not actively engaging in the course. Participants 7 and 8 shared similar responses and took the course multiple times due to failure. However, not all experiences were positive. Some participants described the effect of a lack of instructor engagement. Participant 8 shared their frustration with inadequate instructor support:

This college needs to hire better professors who care about students. I felt like the course was just thrown at me; this course really messed me up. Because I failed this course last semester, my GPA was impacted. I probably will not get into the major that I am looking to get into because of this class.

Likewise, Participant 7 recounted how poor instructor engagement led to widespread student dissatisfaction:

> I did not feel like my professor put much effort into this course. Our professor was so bad that most of the students in the class dropped the course by the end of the semester. Something is wrong when you start a class with 30 students, and at the end, only eight students are left.

These contrasting findings indicate Effective and Engaging Teaching Practices significantly influences students' perceptions and outcomes. Supportive and interactive behaviors exhibited by instructors not only fostered a positive learning environment but also created pathways for effective collaboration among peers. This dynamic highlights how effective and engaging teaching practices promoted a collaborative learning by encouraging group work, class discussions, and social interactions which in some instances extended beyond the classroom helped to support students' understanding of complex material. Additionally, contributing towards a positive class experience within the classroom, as captured by the theme of Collaborative Learning and Class Experience below.

Theme 3: Collaborative Learning and Class Experience

Student participants highlighted several positive encounters with both class peers and course instructors, students emphasized through their perceptions the impact social interaction played in shaping their overall classroom experience. Students shared how they used engagement to ease the tension, or support peers in navigating the stress and challenges of the complex coursework. These shared experiences were described as meaningful, comforting, and effective coping strategies that helped some students navigate the course. Initial codes such as, “classmates”, “partners”, “new ideas”, “motivation”, and “understanding” were grouped into two categories: Class Activities and Group Work. Together, these categories formed the final theme of collaborative learning and class experience, highlighting the significance of social interaction and its impact on the classroom experience.

For example, Participant 5 stated, "one of the qualities that I enjoyed most about this course was that the course was in-person, which allowed me to have direct access to both my classmates and instructor.” Which supports the positive impact of instructor and peer engagement within the classroom and how peer engagement fosters student motivation? Similarly, Participant 3 shared how she fostered engagement with her peers to keep the class motivated and provide support with course assignments. This illustrated how Peers are most likely to support their classmates with complex course material? Most participants cited having a positive experience with classmates. Reflecting on this sentiment Participant 3 stated:

> I used humor to keep the class motivated and positive. I was a class clown; I did it, so we did not feel sad and did not want to feel like a sore loser. There were a few kids in the class I would have to help with after school, like talking to them

> on the phone and texting them because they had to struggle with specific topics, too.

Participant 7, who reported taking the course multiple times reported trying to motivate the class by helping peers cope with the course also shared how engagement with one Peers provided support needed when solving a complex math problem.

Participant 7, explained, “I had bad experiences with tutoring where I was given improper guidance on how to solve a particular problem. However, my partner showed me an easier approach which proved to be more helpful.” While coping and motivation were two aspects of peer engagement, Participants 1 and 10 similarly shared how collaborative learning significantly enriched their classroom learning experience. Participant 1 shared: “My instructor would have the class work together in groups to solve math problems; we would be asked to go up to the board to show our work.” While Participant 10 shared that “It was nice know that I my fellow classmates were also struggling with the course material, when we worked in groups we worked through difficult problems as a collective group.” Both participants highlighted the impact that collaborative learning had on their classroom experience whether through collaboration or collective effort.

These findings emphasized the importance of collaborative learning in supporting students who struggled with course content while also highlighting its positive impact on collaborative learning had on the classroom experience. Specifically, the results illustrated how both collaborative learning fostered a positive learning environment for students enrolled in a college-level statistics course with SI. SI was available to all students who met the enrollment criteria for these sections. These course resources were designed to offer comprehensive support to equip students with the tools needed to succeed in the course. Course resources became the focal point for this study as the recourses offered presented more learning opportunities as presented below in the theme Timely and Accessible Academic Support.

Theme 4: Timely and Accessible Academic Support

The theme Timely and Accessible Academic Support emerged as students shared their perceptions about their enrollment in a college-level statistics course with SI. When participants were asked to discuss the benefits of taking a course with SI or if the course's structure was helpful, participants described their experience as meaningful emphasizing the accessibility of the tutors and the attentiveness of the instructors. “Access”,” help”, “immediate”, “direct”, and “hands-on” were the initial codes that surfaced from the data. Class Support and Resources grouped together ultimately forming the theme of Timely and Accessible Academic Support which highlights the importance of Instructional support in promoting academic success. For example, Participant 1 shared that they liked getting support with course assignments. Followed by participant 2 who recalled: “This is where we got the additional support and learned the additional material needed to support us in the course. The SI component covered the foundational material which were essential to pass the course.”

Similar to participant 2, Participant 4 felt the resources provided by SI was a critical component to their experience. Participant 4 explained:

> The Supplemental Instruction component is necessary as it helps you keep up with the pace of the course. The course is swift and covers many topics during one class meeting, and the Supplemental component allows you to review the material covered for the day.

The ability to keep pace with the course while being able to review the content again proved meaningful for the students. This sentiment was shared by other participants including those the value of having access to these recourses. Participant 3 recounted an experience with SI noting the effectiveness of the course structure. The student noted that the instructor's teaching style was aligned well with her needs as a visual learner.

Most participants reported utilizing the course resources, however, one participant (7) shared that they could not take advantage of the resources offered due to a conflicting work schedule. Instead, they sought support directly from the instructor after having a bad experience with a math tutor. Whereas Participant 8 recounted that they took the course three times and revealed that the first time the course was taken, they were unaware of the SI component until two months into the course.

SI in this college-level statistics course was intended to provide students with additional support and resources to support their academic success. The findings from the data suggest that students who took advantage of SI believed them to be beneficial and effective. Access to timely support provided additional practice opportunities for basic math skills, which proved essential in improving academic readiness. SI resources provided students with immediate instructor feedback and additional practice opportunities with math problems through repetition. This timely assistance enhanced student persistence and motivation and fostered student achievement, defined differently for each participant, as referenced below in the final theme of Resilience and Achievement in the Classroom.

Theme 5: Resilience and Achievement in the Classroom

Resilience and Achievement in the Classroom emerged as students expressed their perceptions of the course and identified their accomplishments. Students who did not successfully complete the course shared a sense of value in the course by celebrating their milestones and progress. Initial codes such as passed, grade, and understanding were condensed into success and persistence, shaping the final theme of resilience and achievement in the classroom. The goal for most students is defined by passing a course, but this outcome is not always determined by achievement. Smaller milestones played a crucial role in developing student confidence and fostering student persistence. Participant 1 cited that although they failed the course, they built up enough confidence to work on math problems in front of the class. While this statement was also mentioned above in the theme Effective and Engaging Teaching Practices it also highlights the achievement the student felt through an increased sense of confidence and Instructional support to display their work.

For instance, Participant 7, who initially struggled with the material, described their persistence as a personal challenge: "I didn't want to withdraw from the course, so I remained enrolled and completed it. Even though I failed before, I pushed myself to see the course through to the end." This sentiment of perseverance highlights how determination and persistence were key components of success for some students. Similarly, Participant 2 described their surprise at excelling in the course despite its difficulty, crediting their success to the structured nature of the course and their own proactive engagement:

> I did not expect to do well in this course, but I did. I typically do well in school, but I never expected to do so well in this course because it was challenging. However, I took advantage of everything this class offered. I think I passed because the course started very basic and built from there, so it was easy for me to understand the concepts.

Participant 2's experience underscores the importance of a well-structured curriculum and access to resources, both of which contributed to their ability to succeed in a course that initially seemed daunting. Similarly, Participant 3 attributed their success to the instructor's approachability and support, emphasizing how Effective and Engaging Teaching Practices played a pivotal role in their achievement.

Not all participants, however, experienced unqualified success. Participant 8 passed the course but reported that taking it multiple times had significant academic repercussions:

> Even though I am passing the class now, my GPA won't be high enough to get into the [dental hygiene] program, even if I get an A or B in the course. I came to this school to get into that program.

This quote reflects the complex nature of achievement, where passing a course may not always equate to broader academic success. For Participant 8, the difficulty and repeated attempts at the course hindered their ability to remain competitive for a highly selective program, demonstrating how course challenges can have long-term consequences.

These reflections illustrate the multifaceted nature of Resilience and Academic Achievement in the Classroom, where success can range from persistence and passing to excelling academically, depending on individual circumstances and external factors such as program requirements. For many participants, achievement was influenced by personal effort and structural supports such as SI, instructor and peer engagement, and a scaffolded curriculum that gradually built students' understanding of complex material. These findings suggest that perceptions, motivations, and experiences shape student achievement in the course.

Discrepant Cases

In qualitative studies discrepant cases are contradictory or deviant findings which require more investigation by the researcher. Tisdell et al. (2025) recommended implementing measures to challenge the emerging findings and asserted that conflicting data are more commonly found in interviews; therefore, intentional methods should be used to explain the occurrence in their study. This study involved ten participants.

Among them, seven reported failing the course multiple times despite utilizing the resources offered. In contrast, three participants reported passing the course after taking it only once, which were deemed discrepant cases. For this study, discrepant cases were defined as participants who successfully passed the course on their first attempt. For example, Participants 2 and 3 both reported passing the course despite initial concerns about the content. Their success was attributed to the instructor's approachability and a well-designed curriculum that effectively supported student learning.

Evidence of Trustworthiness

Lincoln and Guba (1985) pioneered using trustworthiness to assess qualitative research rather than using traditional scientific methods. In qualitative studies, the researcher is the primary instrument therefore it is essential to ensure trustworthiness, otherwise the entire study becomes questionable. Trustworthiness in qualitative studies is established by ensuring creditability, transferability, dependability, and confirmability (Ravitch & Carl, 2021). The following section demonstrates how trustworthiness was followed as outlined in Chapter 3.

Credibility

Credibility in qualitative research ensures that the findings of the study accurately reflect what the study intended to investigate (Lim, 2025). Lim (2025) asserted that credibility is enhanced using multiple measures as it helps to authenticate the study's findings. In this study creditability was established by employing multiple measures such as triangulation and member checking. Member checking elevates credibility in qualitative research by using the researchers' initial findings and cross-checking these findings with the participants (Lim, 2025). Member checking was established by reviewing the initial audio recordings, auto-transcribing then, and sending them to each participant for final review for accuracy and creditability. Participants were given 48 hours to ensure that the audio recordings, and transcriptions were accurate. No revisions were requested. Tisdell et al. (2025) explain that the goal of triangulation is to validate data by employing multiple methods.

To further enhance credibility, triangulation was achieved by manually transcribing each recording as recommended by my advisors and supported in qualitative research literature as a strategy to ensure accuracy and deeper engagement with the data (Ravitch & Carl, 2021). This process enabled me to capture every spoken word, sound etc. and allowed me to become more familiar with the data. As a final measure, I cross-referenced my field notes to ensure that every moment, such as background noises, emotions, and body language was documented in the transcription. This measure helped to ensure that my perceptions and ideas of the data were accurate.

Triangulation was further established through the coding process which involved several detailed steps to ensure that the right code was assigned Saldana (2021). The first step was to incorporate each interview question in an Excel spreadsheet and to place each Participant response under each question. This allowed me to see the similarities or differences among student responses and form initial codes. Next, I went back to analyze each response, and cross referenced my field notes to ensure that all body language and emotion was captured and reflected. This procedure allowed me to highlight keywords or recurrent words to form categories and themes. For example, the first interview question focused on the Participants initial perception of the course. Thus, some of recurrent words used to describe their initial thoughts were, scared, difficult, high school math, and intense. These words formed the two categories course readiness and course experience. This illustrated that students were not academically prepared for the course or prepared for the expectations that came with the course. This step helped confirm that the themes chosen were valid and consistent. The measures taken to ensure triangulation also served to minimize bias, which, according to (Lim, 2025), can arise when relying on a single method.

Transferability

Transferability in qualitative research means that the findings from one study can be applied to another study (Olmos-Vega et al., 2023). The researcher should provide enough detail to ensure that readers can determine how this study may apply to other situations (Lim, 2025). The topic, problem, and research statement presented in this study could be studied at another institution offering similar curricular programs and student demographics. One of the criteria for participation in the study was that students had to be enrolled in a college-level statistics course with SI.

SI was designed to strengthen their math skills by reviewing basic math skills to ensure students were equipped with the skills needed to succeed in the main course. Students who participated in this study were first-year students placed into this course based on placement scores. This curricular strategy has been used nationwide to support students enrolled credit- bearing courses (Bowman et al., 2023; Channing & Okada, 2020; Hernández et al., 2025). SI is one of the commonly used course redesign methods used to accelerate students who would normally be placed in developmental courses (Alkhateeb, 2022; Kane et al., 2021).

Another strategy used to confirm transferability was confirming the setting with each participant and informing each student of the study's purpose. The overarching goal of transferability is not merely to determine the applicability of the findings but to provide meaningful insights that may be relevant to other studies (Billups, 2021; Lim, 2025). This measure was used to help students understand the purpose of the student and help them understand how their feedback would be contributory to impart curricular change to help other students.

Dependability

Dependability in qualitative research pertains to the reliability, stability, and consistency of research findings, encompassing both the findings themselves and the research process across various contexts (Ravitch & Carl, 2021). In qualitative research, the researcher consumes and collects the data and actively builds trust as the data unfolds (Stahl & King, 2020). The ensure dependability in qualitative research, the researcher must ensure that the results are consistent with the data collected and could be replicated (Tisdell et al., 2025). This study followed a meticulous and transparent process from data collection to the development of findings, ensuring the rigor and trustworthiness of the results. Dependability was achieved through systematic methods, including data collection, transcription and familiarization, member checking, and coding and thematic development.

Confirmability

Confirmability in qualitative research is the process or measure the researcher takes to ensure that the research is presented in the participant's voice instead of the researcher's (Ravitch & Carl, 2021). To establish confirmability in this research, measures were taken to ensure that the exact words and phrases used by the participants were captured while providing my interpretation of how their words applied to the code, category, and theme. This attribution relied on my understanding, notes, personal experience, and other participant interviews.

A detailed audit trail was maintained to track the progression of the research from data collection to thematic analysis. This measure is crucial in qualitative studies as this ensures that the findings are based on the participants' findings and experiences (Lim, 2025). During data collection process, I transcribed each interview personally, listening to audio recordings and typing responses verbatim to ensure that participants' exact words and phrases were accurately captured. I sent the first transcription to my Dissertation Chair to review for accuracy to ensure that the process was thorough, and adequate. Following his approval and recommendations, the remaining interviews were transcribed. This detailed transcription process enabled me to remain deeply engaged with the data while minimizing errors. Pseudo names were assigned to maintain participant confidentiality, and the audio of the interviews, and transcripts were securely stored on a thumb drive for traceability.

In addition, a reflexivity journal was used throughout the research process to document thoughts, observations, and to identify potential biases during interviews and analysis. This measure is a critical measure in establishing confirmability as it ensures the objectivity of the researcher through accuracy and precision (Stahl & King, 2020). This journal provided a space to critically reflect on how my personal experiences and assumptions might influence the interpretation of the data. By regularly revisiting this journal, I ensured that my analysis remained were grounded in the participants' perspectives.

To further establish confirmability, the audit trail was used to systematically document coding decisions and thematic development (Ravitch & Carl, 2021). For example, the progression from initial codes to categories and final themes was carefully recorded and linked to participant quotes. Participant references ensured that all findings could be traced back to their original sources, ensuring transparency and supporting the interpretation of how participants' words applied to the codes, categories, and themes. These measures taken for accurate transcription, reflexivity journaling, and a comprehensive audit trail ensured that the findings were presented authentically and reflected the voices of the participants rather than my own (Lim, 2025). This approach enhances the credibility and confirmability of the research, demonstrating a clear commitment to rigorous qualitative inquiry (Ravitch & Carl, 2021).

Summary

This basic qualitative study aimed to explore students' perceptions of the role that SI and instructor engagement play in their experiences within a college-level statistics course. The research question was the guiding principle for this study and was used to generate the interview questions. The interviews were administered in a semistructured format, each conducted individually. There were ten participants in the study whose responses varied in length. Each student shared their perspective based on their personal experience, which resulted in five themes.

Five key themes emerged from the study based on student responses: Perceived Lack of Preparedness Effective and Engaging Teaching Practices, Timely and Accessible Academic Support, Collaborative Learning and Class Experience, and Resilience and Academic Achievement in the Classroom. Student Perceptions revealed that Academic Preparedness shaped the initial student expectations for the course, as most students reported not feeling prepared for the intense and complex coursework. Both Instructor and Peer Engagement were core elements that emerged from the study as Participants cited positive experiences from having meaningful instructor support, which fostered a positive learning environment and encouraged Peer Engagement through group activities, which boosted student motivation among Peers. Additionally, Participant perceptions revealed that Course Resources embedded in the SI component of the course contributed to Student Achievement as students found value in having access to immediate support with math skills and tutoring. Collectively, these curricular efforts influenced positive student persistence, motivation, and Student Achievement.

Chapter 5 contains a comprehensive review of the study's findings, highlighting the study's key findings using the framework to interpret the findings. Followed by a discussion of the limitations of the study and how this study can be used to inform future research and social change.

Chapter 5: Discussion, Conclusions, and Recommendations

Despite widespread implementation of SI as part of developmental education reform, a notable gap in practice persists. Specifically, limited attention has been given to understanding student perceptions of the combined influence of SI and instructor engagement on academic success. This lack of exploration has resulted in minimal impact on current instructional practices and program development, leaving a void of the student experience underexamined. While existing quantitative research confirms that SI can improve course pass rates (Bowman et al., 2023) and retention (Alkhateeb, 2022; Barrasso & Spilios, 2021), few studies have examined students' experiences in learning environments where SI and instructor support are integrated. This basic qualitative study sought to address that gap by exploring how students enrolled in a college-level statistics course with SI perceived the role of academic readiness, teaching practices, and classroom support in their achievement. By examining these perspectives, the study aims to contribute to a deeper understanding of how the combined impact of SI and instructor involvement influence student success, thereby informing future instructional strategies and academic support services in higher education for students enrolled in college-level statistics.

Ten students who had completed a college-level statistics course with SI at a community college within an eastern university system participated in one-on-one, semistructured interviews for this qualitative study. The data were analyzed using an inductive thematic analysis approach and the sociocultural theory, where transcripts from semistructured interviews were manually coded, categorized, and synthesized to identify recurring patterns and themes related to students' perceptions of SI and instructor engagement to answer the following research question: What are students' perceptions of the role of SI and instructor engagement in a college-level statistics course? Following is a summary of the themes, interpretation of the themes, limitations of the study, recommendations, implications for positive social change, and the conclusions.

Summary of Themes

The themes that emerged from the participants' narratives reflect how students constructed meaning from their experiences in a college-level statistics course supported by SI and instructor engagement. These themes illuminate not only what students encountered but how they interpreted their perceptions of being ill-prepared as well as the supports, and relationships that shaped their learning. Students described grappling with academic readiness, identifying instructor clarity and presence as critical to their understanding, and valuing the timely and accessible support provided through SI. They emphasized the importance of collaborative learning environments in fostering confidence and persistence, and many articulated a sense of resilience developed through navigating the demands of the course. These interconnected themes provide a foundation for interpreting the findings within the context of Vygotsky's sociocultural theory, as students relied on both peer and instructor scaffolding to move beyond their independent capabilities.

The first theme, perceived lack of preparedness reflected students' early perceptions about how instructor engagement influenced their academic performance in a statistics course. The second theme, effective and engaging teaching practices, explored the impact of instructional delivery on student learning. Students described how clear explanations, consistent pacing, and approachable demeanor from instructors made the course more manageable, while variability in teaching styles across sections created confusion and hindered comprehension.

The third theme, timely and accessible academic support, highlighted the value of immediate, relevant assistance through SI, with students viewing SI as a supportive extension of the classroom for revisiting complex material. The fourth theme, collaborative learning and class experience, emphasized the role of peer interaction in fostering community, normalizing academic challenges, and promoting active engagement. Finally, the last theme Resilience and Academic Achievement reflected students' development of persistence in response to setbacks, with many attributing their success to mindset shifts and the support systems that encouraged continued effort and course completion.

Interpretation of the Findings

The findings of this study contribute to the growing body of literature on developmental education reform by addressing a current gap concerning the combined influence of SI and instructor engagement on student achievement. While previous research has documented the effectiveness of SI through quantitative outcomes such as pass rates (Bowman et al., 2023; Channing & Okada, 2020), limited qualitative research has explored how students perceive the role of these supports in shaping their learning experiences particularly in gateway courses like college-level statistics (Hernández et al., 2025). By leveraging student perspectives, this study offers insights into how integrated academic supports can enhance both engagement and success in challenging course contexts.

The findings, organized by the themes, help answer the research question by revealing how students experienced SI and instructor engagement as interdependent factors that shaped their academic performance. Specifically, the five emergent themes of academic readiness and success in learning, effective and engaging teaching practices, timely and accessible academic support, collaborative learning and class experience, and resilience and academic achievement demonstrate how students interpret their academic success as a socially supported process, rather than an isolated cognitive task.

Theme 1: Perceived Lack of Preparedness

This theme captured participants' reflections on their perceived lack of preparedness for the college-level statistics course and how that unpreparedness shaped their academic experience. A majority of students expressed that they entered the course without the foundational math skills or confidence needed to succeed. Their descriptions included feeling "lost," "overwhelmed," and "fearful" of the content, echoing prior research that links poor academic preparation to high levels of math anxiety and reduced self-efficacy (Jehi et al., 2024; Lane et al., 2023). Participant narratives highlighted how even with SI support, academic readiness remained a barrier, particularly for students returning to college after an extended absence or for those whose high school preparation did not meet the academic rigor required to succeed in quantitative reasoning skills.

These findings align with Maciejewski et al. (2021), who argued that noncognitive factors such as confidence and anxiety significantly influence student performance in math-intensive courses. One participant, for instance, attributed their course failure to both a lack of math foundation and severe anxiety, noting, “It’s not that I didn’t want to do the work. I just didn’t know how to start.” This underscores how students placed into SI-supported, credit-bearing statistics courses may still face internal barriers that impact their ability to engage meaningfully with the curriculum. The study thus confirms prior concerns raised by Alkhateeb (2022) and Hernández et al. (2023) about the limitations of reform models that presume placement into college-level coursework alone ensures readiness.

From a conceptual standpoint, this theme connects directly to Vygotsky’s concept of the ZPD, in which learning occurs when students are supported just beyond their current level of competence. However, for ZPD to function effectively, learners must have some foundational capacity to build upon. When students lack basic readiness, the scaffolding provided—whether through SI or instruction—may be insufficient without additional supports. Furthermore, instructors and SI leaders serve as MKOs within this framework, yet their efforts were sometimes constrained by students’ underlying skill gaps. These dynamics suggest that academic success is not solely determined by the presence of support structures but by their responsiveness to each student's starting point.

The findings expand existing literature by offering a qualitative lens into how students interpret their placement into college-level statistics with SI. While Logue et al. (2017) and Petillo and Anuszkiewicz (2023) have shown positive outcomes for SI models, this study reveals that such models may still fall short for students whose academic histories have left them significantly underprepared. Thus, institutional policies that replace developmental education with co-requisite or SI models should be accompanied by more holistic assessments of readiness and more personalized interventions.

Theme 2: Effective and Engaging Teaching Practices

This theme captured participant's responses highlighting their perspectives about how instructor engagement shaped their academic experience within the classroom. Irrespective of participants feeling ill-prepared for the course, students consistently recounted instructor interactions when discussing their classroom experience. Participants described feeling that their instructor was approachable, communicative, caring, and funny which helped them to engage and understand the course material. These descriptions are positive attributes often used to describe good teacher qualities. These findings align with G. Wang and Zhao (2024) who argue how instructors play a vital role in the achievement of students as instructors' personality, disposition, and instructional behaviors exerted impact students' academic achievement. Demonstrate how instructor engagement can positively influence student motivation, which can lead to student achievement in the classroom.

One participant, who took the course multiple times due to prior course failure recalled how impactful consistent and clear teaching helped grasp complex material. They noted,"

> Each professor has their own way of doing things, but my current professor is great at explaining the work, and I feel like I can grasp the concepts better because real-world concepts were applied to the class, making it easier for me to understand.

Followed by another participant who had negative experience with the instructor, noted "This college needs to hire better professors who care about students. I felt like the course was just thrown at me." These findings highlight the positive impact that interactive teaching behaviors have on fostering supportive learning environments. They also demonstrate that Students placed in SI supported learning environments may need multiple support structures within the classroom, as one support may not be adequate for success. Research conducted by Rosser-Majors et al. (2022) supports this by noting instructor presence includes three valuable components including teaching, social, and cognitive together may lead towards greater student retention and academic success.

This theme also aligns with the sociocultural framework as instructors, and peer leaders serve as MKO's in the classroom by facilitating interactions to engage students collaboratively, encourage social discourse, and problem solve. Using ZPD interchangeably with MKO's, to work through complex problems until they have achieved the foundational support and independence needed to succeed. Student participants reported that they felt more confident when their instructor was involved in classroom activities; it helped them connect with the topic they were learning, which helped to motivate them to succeed in the class. For instance, one participant shared how their professor would engage the class through classroom activities, and noted, "Our professor would put problems on the board and ask us to come to the board to share how we answered the questions... the encouragement that I received from my instructor boosted my confidence." Which further aligns with this theory by illustrating how learning is a social, cultural, and motivational process (Barak, 2017).

Based on participant responses faculty's engagement with students, not the peer tutor, alleviated their anxiety. This finding is contrary to the whole purpose of some SI models using peer tutors. Despite, this contradiction research facilitated by Chemosit and Rugutt (2020) contend that students make more significant connections with faculty through engagement, and when faculty understand how relationships affect learning in the classroom. This is further supported by student participants who reported feeling valued when their instructors incorporated real-life examples into classroom instruction; the students connected with the topic and better understood the material. For example, one participant noted, "I feel like I can grasp the concepts better because real-world concepts were applied to the class, making it easier for me to understand." This observation is supported by Chan et al. (2023), Saucier et al. (2022), and G. Wang and

Zhao (2024) who asserted that faculty engagement is critical for students to feel comfortable, safe, and secure to approach and engage with the faculty member.

Two participants reported unfavorable experiences related to faculty engagement; however, despite their experience the discontent aligns with those who indicated faculty engagement positively affected their success. Participants who recalled poor faculty engagement indicated that their professors delivered the course in a manner that appeared to be rushed and felt that the instructor barely interacted with the class. For instance, one participant recalled the following, “I felt like the course was just thrown at me; this course really messed me up.” These reflections note the importance of intentional, empathetic instructor engagement, reminding us that students often perceive faculty care not simply through instruction, but through the quality of connection, responsiveness, and presence.

This finding supports the research conducted by Hernández et al. (2025) who suggest that only faculty trained to adopt a culturally inclusive teaching model should be assigned to teach these courses as they are more likely to connect students with resources beyond the classroom. Students interpreted this behavior as the instructor lacking a commitment to their achievement in the course, or worse instructors not believing in them. Subsequently, the student reported having to retake the course due to this perceived disengagement. These observations are consistent with the research conducted by Hernández et al. and Saucier et al. (2022), which purported that if faculty lack intrinsic motivation in the subject matter, students are more likely to believe that they do not care about them and disconnect from the course. Moreover, if a student does not believe in their ability to succeed in a course, they are less likely to achieve (Lane et al., 2023). These findings suggest that both instructor enthusiasm and student self-efficacy play a critical role in shaping academic outcomes.

The overall findings from this theme reinforce existing research on the positive influence of strong instructor-student relationships have on fostering student success. Chemosit and Rugutt (2020), supported the use of active instructor engagement amongst peers which has been found to increase student achievement. Their research supported my findings on the impact of instructor and peer engagement has student achievement in the classroom. Additionally, this theme offers a qualitative perspective about how students depict instructional support in SI supported classes.

Theme 3: Collaborative Learning and Class Experience

This theme captured student perceptions of social interaction amongst peers in a SI supported class. Peer engagement yielded positive feedback from all participants. Participants characterized their interactions with peers as helpful, meaningful, comforting, and effective in navigating complex course material. Ultimately, noting that their overall experience helped motivate and build their confidence in the class. These findings are consistent with Brower et al. (2021), who reported that scaffolding social interaction and motivation into teaching strategies used in the classroom helps foster student confidence. One participant reflected how they used humor in their peer interactions, stating, “I used humor to keep the class motivated and positive. I was a class clown; I did it, so we did not feel sad and did not want to feel like a sore loser." This example highlights the influence that peer engagement has towards providing motivational support. Similarly, another participant shared, "It was too nice know that my fellow classmates were also struggling with the course material, when we worked in groups we worked through difficult problems as a collective group." A perspective supported by Tinto's theory of student integration, affirms the relationship between persistence and campus and peer engagement (Tinto, 2017). These findings suggest that when students realize that their classmates face similar challenges this fostered a sense of solidarity and boosted their overall confidence in math.

These findings align with research conducted by Qureshi et al. (2023) who underscored the importance of peer engagement and how it contributes to a network of support for students in the classroom, bridging the academic-social divide within the classroom. Furthermore, Chemosit and Rugutt (2020) noted that students who cultivate more significant social bonds in the classroom have positive behavioral engagement, which fosters self-help skills. The scaffolding support provided in college-level statistics courses with SI is comprehensive, and students expressed that having an instructor who was engaging coupled with peer engagement fostered a classroom atmosphere that emphasized collective success as opposed to an isolated learning experience (Chemosit & Rugutt, 2020).

Theoretically, this theme is a direct application of the sociocultural framework, which supports the notion that learning is achieved through social discourse (Casler-

Failing, 2024). Central to this framework are the concepts of ZPD and MKO. By applying these concepts students can be paired with their peers who may have an advanced understanding of the material. Through guided interaction less prepared students can expand their knowledge and skills through peer support. to illustrate how learning is exchanged socially (Naidoo & Mabaso, 2023). Student accounts with peers support how social interactions within the classroom cultivated a positive learning experience that may not have been possible individually. The findings from this theme support previous research by providing qualitative insights into students' perspectives about SI highlighting how peer engagement positively influenced their classroom experience.

Theme 4: Timely and Accessible Academic Support

Timely and Accessible Academic Support captured student responses about the benefits of enrolling in a college level statistics course with SI to support their academic achievement. Most participants characterized their experience as meaningful, accessible, helpful, hands-on, immediate, and direct which echoes the research conducted by Tinto (2017) linking faculty engagement to student success and academic achievement in the classroom. Participant narratives highlighted the value of the academic support provided in the course. Connecting how critical the support was in attaining academic success in the course. In fact, two students reported that they would not have been able to pass the course without additional support. As an example, one participant shared, "the supplemental instruction component is necessary as it helps you keep up with the pace of the course." Similarly, another participant noted, "the supplemental instruction component covered the foundational material which were essential to pass the course. These findings align with the research facilitated by Boatman (2021), Logue et al. (2019), and Logue et al. (2017) who found positive results with the use of intentional instructor or guided support by a tutor. Despite the positive experience there was one participant who reported not being able to take advantage of the additional course resources offered through SI due to scheduling conflicts with work. Regrettably, the participants failed the course and stated during the interview that when they retake the course, they would take advantage of the SI component.

Although students appreciated the additional support, all participants either were unfamiliar with the term SI or did not understand the course structure. This is concerning, as it is generally assumed that students placed into college-level statistics courses with SI receive clear explanations during the academic advising process. Hernández et al. (2025) asserted that advisors take measures to ensure that students placed into co-requisite courses with SI understand the course load, structure, and how the course fits into their degree plan, as students who lack this understanding may not value the support and withdraw or stop attending the course. Since the student interviews conducted for this study did not include any questions on academic advisement, I can only infer that the advisement sessions for the students who participated in this study were unidirectional. Martin and Clayton (2022) argued that meaningful advising experience is linked to regular meetings where students are actively engaged in the advisement session. The absence of detailed insights into the advising process in this study demonstrates the need for future research to examine how the quality and structure of academic advisement may influence students' perceptions and utilization of academic support services (Richards & Kelly, 2025).

This leads me to believe that the students who participated in this study may not have asked questions during their advisement session. It is uncommon for incoming first-year students to understand the dynamics of creating their academic schedules; students are often given a schedule and unaware that they have autonomy over their schedule (Ford, 2024). Ford (2024); Hernández et al. (2025) and Martin and Clayton (2022) asserted that advisors must converse with their advisees to inform them of the academic rigor of courses they were enrolled in and identify the skills needed for student achievement. Further noting that 28% of college dropouts do so because they are unprepared for college-level coursework (Ford, 2024).

Conceptually, this theme reflects Vygotsky's sociocultural theory, illustrating how social discourse and scaffolding, provided by MKOs, expand students' ZPDs (Channing & Okada, 2020). Structured support through SI enables students to better understand complex material, enhancing academic readiness and their ability to meet course demands. These findings align with existing research by incorporating qualitative student perspectives, validating SI as an effective support mechanism in college-level statistics. Student experiences highlight the importance of interconnected engagement between instructors and peers, demonstrating how scaffolding contributes to improved academic achievement.

Theme 5: Resilience and Achievement in the Classroom

The final theme of resilience and achievement in the classroom, reflects students' reflections about how confidence helped them succeed in the course. Participants characterized their success based off their ability to pass the course, which were largely dependent upon their professor's support and encouragement. This aligns with research facilitated by Hernández et al. (2023), who argued that the effectiveness of co-requisite courses with SI are dependent upon how institutional agents create learning environments that meet the diverse needs of students. For instance, one participant discussed how they felt "seen" by their instructor because their instructor gave them individualized attention in the classroom, which boosted their confidence to display coursework with the class. Followed by another participant who was currently failing the course a third time shared, "I didn't want to withdraw from the course, so I remained enrolled and completed it. Even though I failed before, I pushed myself to see the course through to the end." This comment supports Brower et al. (2021) and Hernández et al., who asserted that scaffolding in specific teaching strategies, such as social engagement and motivation, are essential for boosting academic confidence.

Peer engagement emerged as a key component of student achievement. Participants often noted that the share struggles amongst their peers helped to boost their confidence. This aligns with Qureshi et al. (2023) who emphasized that SI supported courses foster student-centered, active learning environments that encourage motivation and knowledge building through peer interaction. These findings are grounded in the sociocultural theory, which underscores the interconnectivity between student centered learning environment found in SI supported classrooms (Dreyer, 2024; Tang et al., 2024). Dreyer (2024) asserted that such interaction amongst peers stimulates development and cognitive growth.

Additionally, Henson and George (2025) reported that student beliefs about their academic achievement can significantly impact their achievement. In this study, students correlated achievement with passing the course despite the literature, which documents higher pass rates in co-requisite courses with SI (Hernández et al., 2025; Lane et al., 2020; Logue et al., 2017; Petillo & Anuszkiewicz, 2023). Cater et al. (2022) suggested that learning and measuring success is both complex and personal to the student. Thus, factors that enable students to relate to their learning environment influence their academic achievement (Cater et al., 2022). Most students reported that the course did not positively impact their achievement because they either were going to withdraw from the class or were failing at the time of the interview. This is consistent with the findings by Zhao et al. (2022), who argued that students with low self-efficacy tend to underperform. One student, reflecting on multiple attempts to pass the course shared,

> Even though I am passing the class now, my GPA won't be high enough to get into the [dental hygiene] program, even if I get an A or B in the course. I came to this school to get into that program.

Another student who passed the course and attributed the success to the course resources shared, “However, I took advantage of everything this class offered. I think I passed because the course started very basic and built from there, so it was easy for me to understand the concepts.”

The findings from this theme reinforce the existing literature. Confidence is not the determinant of success. Students are more likely to succeed when they feel that they are academically prepared for the course content, have an engaging instructor, and have meaningful peer engagement in the classroom. Collectively these combined experiences help elevate student confidence and academic resilience. These findings echo from research conducted by Brower et al. (2021) and Chemosit and Rugutt (2020) who emphasized the significance of integrating intentional learning strategies fostering social engagement to support underprepared learners in a college-level statistics course with SI.

Limitations of the Study

This study encountered several limitations related relate to transferability and creditability. Stahl and King (2020) noted that concept of transferability refers to the applicability of the concept in similar concepts. For example, this study was limited to one of the colleges within a state university system. The intended study site was a community college; however, due to the challenges with the campus administration and recruiting student participants necessitated a site change. The new study site was a comprehensive college with two-year and four-year degree programs. Therefore, the results of this study could not be generalized across higher education systems nationwide.

The second limitation concerns the study's credibility, which refers to the trustworthiness and plausibility of the findings (Stahl & King, 2020). Potential participant biases stemming from their personal experiences may have influenced the data. Responses were shaped by individual expectations of the course and their interactions with the instructor. As a result, the findings may not fully represent the perceptions of all first-year students enrolled in a college-level statistics course with SI. It was apparent that student participants did not understand the term co-requisite or SI; much time was spent during the interview explaining the terminology; thus, student responses may have lacked a limited understanding and depth.

Consequently, students may have underutilized valuable SI resources or failed to grasp the consequences of not successfully passing the course such wasting financial resources, delaying degree progression, or dropping out of college. Additionally, as the interviewer and transcriber for this study, there were measures taken to limit interviewer bias by clarifying my role in the study, using a semistructured interview to guide the interview ensuring consistency, checking for tone and maintaining a neutral demeanor helped limit any interviewer bias.

Recommendations for Practice

The knowledge gained from this study sought to inform both academic affairs and enrollment management about the effectiveness of a college-level statistics course with SI regarding how the role of instructor engagement impacts their student achievement from the student's perspective. The goal is for these findings to inform future course curricula, design, and pedagogy.

A significant finding from the study revealed a need to closely examine the role of academic advisement. None of the study's participants were familiar with SI or understood why they were placed in the course which may have impacted students' achievement. This suggests a gap in the advisement process. Advisors should employ more holistic approaches to ensure that first-year students fully understand their course placement, including courses with built in supports like SI. This change may enable students to be better equipped and more informed about course expectations. Lastly advisors could provide meaningful support by working with students that need more instructor support.

This study also revealed that most students felt academically underprepared and overwhelmed by the rigor and pace of the course, but the role of the instructor had an impact on their success. A preparatory workshop with one-on-one instructor support is recommended for incoming students in this course. The workshop would serve as an orientation acquainting students with course resources, expectations, and available academic support while building relationships with the instructor.

The final recommendation emphasizes that institutions offering college-level statistics courses with SI must be intentional in the assignment of faculty to these sections, particularly regarding supporting underrepresented student populations, including first-generation college students, low-income students, and students from racially and ethnically marginalized backgrounds. Research by Hernández et al. (2025) discusses the importance of equity-minded practices in co-requisite instruction, highlighting the need for faculty to employ culturally responsive pedagogies, demonstrate empathy, and show a sustained commitment to student success beyond academic content delivery.

Faculty selected to teach these courses should not only possess strong content expertise but also a demonstrated capacity to foster inclusive and affirming learning environments. This includes recognizing the diverse lived experiences students bring to the classroom and adopting teaching strategies that validate and build upon those experiences. Institutions should therefore provide ongoing professional development that equips faculty with the tools to deliver instruction that integrates real-world applications, facilitates real-time feedback, and promotes active student engagement.

By prioritizing the assignment of equity-oriented faculty and investing in their development, institutions can help close achievement gaps and create more inclusive pathways for underrepresented students to succeed in gateway courses like college-level statistics. Such intentional practices are critical to dismantling systemic barriers in higher education and advancing broader institutional goals related to diversity, equity, and inclusion.

Finally, institutions who offer college-level statistics courses with SI should be more intentional about the faculty teaching the sections. Hernández et al. (2025) suggested that the faculty teaching co-requisite courses should incorporate equity minded practices, use culturally inclusive teaching methods, patience, and care for students with challenges beyond the classroom. Additionally, faculty assigned to these trainings should receive professional development and utilize teaching methods which incorporate real-time feedback and incorporate real-world examples into the course material. While these practices can support students, there is still more research that could further explore this phenomenon.

Recommendations for Future Research

The purpose of this basic qualitative study was to explore students' perceptions of the role that SI and instructor engagement have in their experiences within a college-level statistics course. The findings revealed three outcomes that students perceive as contributing to their academic success in SI-supported classrooms: preparedness, an engaging instructor, and peer engagement. Despite, these findings, I believe future research is needed particularly from the perceptions of faculty teaching college-level statistics course with supplementation instruction. Faculty insights may deepen our understanding on the curriculum's effectiveness, clarify the rationale for the current model, and potentially highlight alternative models that better serve underprepared students. Their qualitative input could meaningfully complement and validate the findings of this study.

Additionally, this study also revealed a gap in the academic advising process at the study site. Academic advisors play a critical role in developing initial course schedules and orienting incoming students to available resources (Richards & Kelly, 2025). It would be valuable to explore advisors' perceptions of their role in supporting incoming students, particularly underprepared students. Understanding how advisors communicate course expectations and resources could help ensure students are better prepared and informed. Furthermore, input from campus administrators who support these students could provide additional context on how resources align with student needs. Collectively, these perspectives could enhance this research and contribute to developing a more comprehensive and holistic approach to support underprepared students in a college-level statistics course with SI.

Implications

The implications from this study are significant to understanding how underprepared students perceive the role of instructor engagement in SI supports their academic achievement in a college level statistics course with SI. The findings underscore three key variables from this study highlighted academic preparedness, instructor engagement, and peer engagement as central to what students perceive to influence their academic achievement in SI. These insights offer valuable guidance for administrators seeking to improve student outcomes. Additionally, fostering peer engagement in structured and purposeful ways can further support student learning. Together, these interventions can contribute to increased student achievement in gateway courses such as college-level statistics, leading to improved retention rates and higher degree completion rates. Finally, this study provides a roadmap for leveraging academic advisors and faculty engagement as tools for social change within higher education, particularly for underprepared student populations.

Conclusion

The purpose of this basic qualitative study was to explore students' perceptions of the role that SI and instructor engagement have in their experiences within a college-level statistics course. The study consisted of ten student interviews' which highlighted their perceptions about their experience with SI presenting 5 themes. These themes provide nuanced insight into the specific challenges students faced, including a lack of academic preparation, inconsistent instructional practices, and confusion about course placement. Many participants expressed that the intensity of the course and absence of clear guidance undermined their confidence and contributed to feelings of discouragement. In contrast, those who benefitted from well-structured SI and engaged instructors described those supports as pivotal in navigating the complexity of the course material. By interpreting these findings through the lens of Sociocultural Theory, this study emphasizes the importance of instructional scaffolding, delivered through both peer-led SI sessions and instructor engagement, within students' ZPD.

These supports can serve as critical MKOs that help students progress academically when they could not do so alone. In relation to the literature reviewed in Chapter 2, these findings confirm the need for more individualized and socially embedded support mechanisms in developmental education and expand existing knowledge by providing first-person insights into how these mechanisms are experienced. Thus, this study not only confirms prior quantitative evidence of SI effectiveness but also offers an original contribution by contextualizing those outcomes through student voices responding directly to the gap in practice identified in both the local and scholarly settings. Ultimately, students need a combination of confidence building, peer engagement, faculty engagement, and academic preparedness to succeed in a college-level statistics course. Together, these components lead to a positive and successful experience in these courses.

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Appendix A: Interview Protocol

Interview Introduction

Welcome, and thank you for your willingness to participate in my study. The purpose of this basic qualitative study was to explore students' perceptions of the role that Supplemental Instruction and instructor engagement have in their experiences within a college-level statistics course. Your contributions may help may illustrate how supplemental instruction may be beneficial for student achievement. Before we begin, I would like to reiterate that your participation is voluntary, and you may terminate your participation at any time. Your consent to participate in this study, simply means that you agree to participate in a one-time, individual interview, and, if needed, a follow-up interview. Participating in this study does not pose a risk or direct benefit, but your participation will contribute to the field of education by adding your perceptions of students in the college-level statistics course with supplemental instruction about how the supplemental instruction was helpful. Do you have any questions before we begin?

Appendix B: Interview Questions

Interview Questions

What was your initial perception of being enrolled into a college-level statistics course with supplemental instruction?

Can you describe to me the academic structure of this course as compared to other courses that you have previously taken?

What do you feel are the benefits of taking this course?

What were your perceptions about the supplemental instruction component of the course?

What did you enjoy most about this course?

How effective is the structure of this course?

How would you feel about enrolling into another course that had supplemental instruction?

What would you make this course better?

How has this course impacted your student achievement?

What were some of the math skills that you learned while taking this course?

Appendix C: Interview Closing

Thank you for agreeing to participate in this interview. Please allow – weeks to receive a transcription of this survey. At which time you will be able to confirm that the information you contributed was accurately reflected. If there are any changes that are warranted, a brief follow- up interview will be scheduled. Thanks again for providing your valuable insight.