DEVELOPMENT OF COLLABORATIVE LEARNING MODEL FOR ENHANCING LEARNING ENGAGEMENT AMONG COLLEGE STUDENTS

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DEVELOPMENT OF COLLABORATIVE LEARNING MODEL FOR ENHANCING LEARNING ENGAGEMENT AMONG COLLEGE STUDENTS

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BY

CHEN FEI

HAS BEEN APPROVED BY THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DOCTOR OF EDUCATION IN ED.D. (EDUCATIONAL PSYCHOLOGY AND GUIDANCE) AT SRINAKHARINWIROT UNIVERSITY

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This study aimed: (1) to study the definition and components of learning engagement among college students; (2) to develop a collaborative learning model for enhancing learning engagement; and (3) to evaluate the effectiveness of the collaborative learning model in doing so. The sample consisted of freshman students from Chongqing Normal University. The research employed learning engagement questionnaires and collaborative learning model focused on promoting learning engagement. Statistical analyses included mean, standard deviation (SD), and one-way repeated measures ANOVA. Fifty students participated voluntarily, with 25 randomly assigned to the experimental group and 25 to the control group. The results were as follows: (1) learning engagement among college students comprised three components: behavioral, emotional, and cognitive engagement; (2) a collaborative learning model was developed, consisting of four phases: lead-in, task assignment and guidance, group activities, and assessment & conclusion; (3) the collaborative learning model proved effective in enhancing learning engagement, with (3.1) a significant increase in learning engagement after the model was implemented and following the follow-up period ($p < 0.05$), and (3.2) a significant improvement in learning engagement compared to the control group ($p < 0.05$).

Keyword : Learning engagement, collaborative learning, college students

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INTRODUCTION

1.1 Background of the Study

Education remains a critical engine of social mobility and collective prosperity (OECD, 2021). Within higher education, the construct of student learning engagement, of the behavioral, emotional, and cognitive energy that learners invest in academic work,which has emerged as an essential driver of success. Foundational studies demonstrate that undergraduates who report stronger engagement tend to earn higher grades, persist to graduation, and participate more fully in campus life (Carini, Kuh, & Klein, 2006; Kuh, 2008). Engagement also supports the development of metacognitive and socio-emotional capacities that underpin adaptability in fast-changing labour markets (Kahu & Nelson, 2018; Skinner & Pitzer, 2012). A recent systematic evidence map further shows that well-designed digital environments can amplify these benefits, extending engagement's influence to lifelong learning and well-being (Bond et al., 2020). Recognising these links, governments and universities now treat student engagement as a strategic priority. In China, the Ministry of Education (MOE) codified this priority through two landmark policies. The 2012 Opinions on Comprehensively Improving the Quality of Higher Education calls on institutions to replace lecture-dominated classrooms with interactive, student-centred pedagogy and to embed formative assessment in every programme. Building on that framework, the 2018 National Standards for Teaching Quality in Undergraduate Majors of Regular Higher Education Institutions translate the vision into concrete benchmark--mandating active-learning environments, blended use of educational technology, and robust academic-support systems. These directives aim to recast students from passive recipients of information into active constructors of knowledge, thereby aligning national practice with international evidence that engagement is the cornerstone of academic achievement and holistic development (Fredricks, Blumenfeld, & Paris, 2004; Pascarella & Terenzini, 2005; Trowler, 2010).

In the current study, there remains a significant challenge in maintaining and enhancing learning engagement among college students. The researcher began to focus on the issue of student learning engagement due to observations in teaching practice. Some students, despite their abilities, lacked a positive learning attitude and showed low engagement, while others actively participated and demonstrated a strong passion for learning. This difference prompted the researcher to reflect on what factors influence students' learning engagement and how teaching methods and classroom environments can be optimized to enhance their learning experience. These observations led the researcher to realize that learning engagement is not only the student's responsibility but also a key factor in teaching effectiveness. As a result, the researcher decided to study the mechanisms behind learning engagement, hoping to provide theoretical insights that could inform teaching strategies and improve students' motivation and academic outcomes. This research would not only help the researcher refine her teaching methods but also support students in better managing their learning and achieving greater academic success.

In addition, numerous studies indicate that a substantial proportion of undergraduates experience low levels of engagement, characterized by lack of motivation, limited participation in academic activities, and a general sense of disengagement from their studies (Carini, Kuh, & Klein, 2006). This disengagement not only hampers academic performance but also increases the risk of dropout, leading to negative long-term consequences for both the students and the institutions involved. Therefore, addressing this research gap in learning engagement is crucial, highlighting the need for research that explores effective strategies to boost engagement among undergraduates.

Given the importance placed on learning engagement by educational authorities and scholars, it is essential to clearly define what learning engagement entails. At its core, learning engagement refers to the level of attention, curiosity, interest, optimism, and passion that students exhibit in their learning activities (Fredricks et al., 2004). This concept encompasses more than just being physically present in the

classroom; it involves a deep and active investment in learning. Skinner and Belmont (1993) describe engagement as a dynamic process, reflecting the interplay between students' involvement in learning tasks and their emotional responses to the learning environment. This dynamic nature makes engagement a key determinant of academic success, influencing how students interact with their peers, instructors, and the learning material.

To further understand learning engagement, researchers have identified three primary dimensions: behavioral, emotional, and cognitive engagement. Behavioral engagement refers to students' active participation in academic and extracurricular activities, such as attending classes, completing assignments, and contributing to discussions (Finn & Zimmer, 2012). This dimension is the most visible form of engagement, as it can be directly observed through students' actions. Emotional engagement involves students' affective responses to their learning experiences, including feelings of interest, enthusiasm, satisfaction, and even frustration (Reschly & Christenson, 2012). This dimension captures the emotional connection students have with their learning environment, encompassing their relationships with peers, instructors, and the classroom atmosphere. Positive emotional experiences can enhance motivation and persistence, while negative emotions may lead to disengagement. Finally, cognitive engagement encompasses the mental effort and strategies students use to understand and master learning material (Connell & Wellborn, 1991). It involves higher-order thinking, critical analysis, and problem-solving skills that are essential in higher education. Cognitive engagement is closely linked to academic achievement, reflecting the depth of students' intellectual involvement in their studies.

Understanding the significance of learning engagement is vital for enhancing the educational experiences of college students. Research consistently shows that engaged students not only perform better academically but also develop critical skills that are crucial for their future careers and personal growth (Carini, Kuh, & Klein, 2006). Engagement fosters the development of critical thinking, problem-solving abilities, and self-regulation skills, all of which are essential in today's knowledge-based economy

(Pascarella & Terenzini, 2005). Moreover, engagement plays a key role in student retention, with students who are actively engaged more likely to persist and graduate on time (Kuh, 2009). Tinto (1993) emphasizes that engagement is central to student integration into the academic and social fabric of the institution, which is crucial for retention and success. Engaged students are more likely to experience a sense of belonging and purpose, leading to greater life satisfaction and well-being (Astin, 1993). Furthermore, engagement helps students form positive relationships with peers and instructors, which enriches their learning experience and supports their personal and social development.

While traditional pedagogical strategies have contributed valuable insights into fostering student engagement, growing evidence suggests they often fall short in addressing the complex and evolving demands of today's higher education landscape (Trowler, 2010; Kahu, 2013). As student demographics diversify and learning environments shift—particularly with the integration of digital technologies—there is an increasing call for instructional models that promote deeper, more sustained, and more inclusive engagement (Bond et al., 2020). Among these emerging approaches, collaborative learning environments have gained particular attention for their capacity to facilitate active learning, foster interpersonal connections, and build communities of inquiry (Garrison, Anderson, & Archer, 2000).

The Collaborative Learning Model (CLM) stands out as a pedagogical framework that leverages group-based tasks to enhance student involvement. It emphasizes the role of peer-to-peer dialogue, shared responsibility, and joint problem-solving in achieving academic goals (Johnson, Johnson, & Smith, 2014). Rooted in Vygotsky's (1978) constructivist theory, the model views learning as a fundamentally social process, wherein students develop understanding through interaction, negotiation, and reflection. Empirical studies have shown that when students are engaged in well-structured collaborative tasks, they demonstrate increased motivation, greater conceptual understanding, and improved academic performance (Slavin, 1996; Springer, Stanne, & Donovan, 1999).

A defining feature of the CLM is its focus on cooperative activities that allow students to explore complex academic content together, pooling knowledge and skills to achieve shared outcomes. This kind of environment not only enhances content mastery but also cultivates essential soft skills such as communication, leadership, and teamwork—competencies that are increasingly valued in both academic and professional settings (Barkley, Cross, & Major, 2014; Gillies, 2016). In contrast to passive learning settings, collaborative classrooms encourage learners to articulate ideas, challenge assumptions, and co-construct knowledge, thereby supporting deeper engagement across behavioral, emotional, and cognitive dimensions (Fredricks, Blumenfeld, & Paris, 2004).

The Collaborative Learning Model (CLM) is widely recognized for its potential to transform higher education settings by creating learning environments that are interactive, supportive, and intellectually stimulating. Rather than treating students as passive recipients of knowledge, CLM organizes learning around structured group activities that promote shared meaning-making and social negotiation, grounded in social interdependence theory (Johnson & Johnson, 2009). This approach has been shown to encourage students to take greater ownership of their learning, as they work collaboratively to explore ideas, justify viewpoints, and develop a deeper understanding of complex concepts (Gillies, 2016; Laal & Ghodsi, 2012).

Empirical research supports the idea that collaborative learning can increase intrinsic motivation and engagement by giving students a sense of responsibility not only for their own progress but also for the success of their peers (Slavin, 2014; Zepke & Leach, 2010). This shared accountability fosters a learning community where students feel connected, valued, and invested in the group's goals. By working through real-world problems together, learners also develop critical thinking, problem-solving, and communication skills that have direct relevance to their future professional contexts (Baines, Blatchford, & Kutnick, 2017).

Key strategies associated with the Collaborative Learning Model, such as peer teaching, project-based learning, collaborative inquiry, and peer assessment offer

practical ways to implement this approach in undergraduate education. For example, peer teaching promotes active explanation and questioning that strengthens conceptual understanding (Boud, Cohen, & Sampson, 2014; Topping, 2005). Project-based and inquiry-based learning give students opportunities to collaborate on authentic, complex challenges that demand sustained effort and reflective thinking (Bell, 2010; Blumenfeld et al.,1991). Meanwhile, peer assessment activities encourage critical evaluation and constructive feedback, helping students refine their ideas and become more self-regulated learners (Boud & Falchikov, 2007; Topping, 1998).

Overall, research indicates that CLM can significantly enhance student engagement by fostering active participation, peer interaction, and collective problem-solving. Compared to traditional lecture-based methods, collaborative approaches have been shown to support richer, more sustained engagement by making learning more socially connected, intellectually challenging, and personally meaningful (Johnson et al., 2014; Gillies, 2016). These benefits provide a compelling rationale for integrating CLM into undergraduate education to cultivate both academic success and long-term motivation.

Previous research on learning engagement has employed a range of methodologies, such as those using the National Survey of Student Engagement (NSSE), have provided valuable data on that influence engagement across different student populations (Kuh, 2001). These studies typically use statistical analyses to identify patterns and correlations between engagement and various educational outcomes, offering broad insights into factors that enhance or hinder engagement. On the other hand, qualitative research provides deeper insights into the lived experiences of students and the contextual factors that influence their engagement. Methods such as interviews, focus groups, and classroom observations have been used to explore how students perceive their learning environments, how they interact with peers and instructors, and how these interactions shape their engagement (Appleton, Christenson, & Furlong, 2008). This research highlights the importance of considering the social and

emotional dimensions of engagement and underscores the need for supportive and inclusive learning environments.

Building on these research traditions, the current study will adopt quantitative methods with some qualitative approaches, combining the strengths of both quantitative and qualitative research. This approach will enable a comprehensive examination of how collaborative learning impacts student engagement, providing both broad quantitative data and qualitative insights into students' experiences with collaborative learning. By employing this approach, the study aims to offer a nuanced understanding of how collaborative learning can enhance learning engagement and contribute to students' academic success.

In conclusion, learning engagement is a critical factor in academic success and personal development, and it has been the focus of numerous strategies and models aimed at enhancing student outcomes. However, as the educational landscape continues to evolve, there is a growing need for innovative approaches that go beyond traditional methods. The Collaborative Learning Model offers a promising solution by fostering active participation, peer interaction, and deeper levels of engagement. By focusing on the development and implementation of this model, this study aims to contribute to the ongoing efforts to enhance learning engagement among college students, ultimately supporting their academic success and self development.

1.2 Research Questions

What are the definition and components of the learning engagement of college students ?

How do develop a learning model for enhancing learning engagement through the collaborative learning?

How to evaluate the effectiveness of collaborative learning model for enhancing the learning engagement of college students?

1.3 Research Objectives

1) To study the definition and components of learning engagement among college students.

2) To develop a collaborative learning model for enhancing learning engagement among college students.

3) To evaluate the effectiveness of the collaborative learning model for enhancing learning engagement among college students.

1.4 Contribution to Knowledge

1) This study aims to provide a more comprehensive understanding of college students' engagement in learning.

2) The results will enable college instructors to utilize the Collaborative Learning model to create more effective teaching strategies, streamline instructional processes, and improve students' learning outcomes.

3) By investigating the practicality and effectiveness of the Collaborative Learning model in enhancing college students' engagement, this research will contribute to ongoing educational reform efforts.

1.5 Scope of the Study

1.5.1 Identifying population and sample

1.5.1.1 Phase 1: To study the definition and components of Learning Engagement among college students.

The research consists of three distinct phases. Phase I utilizes qualitative research techniques to investigate the theories and concepts related to Learning Engagement (LE) through an extensive literature review. In this first phase, five experts are invited to participate. The researcher conducts semi-structured interviews with these experts to collect related information regarding LE and collaborative learning model. Furthermore, while developing the LE questionnaire, 102 first-year students from Chongqing Normal University who have comparable backgrounds to the experimental subjects, are invited to take part in a preliminary trial of the questionnaire.

1.5.1.2 Phase 2: To develop the collaborative learning model for enhancing learning engagement among college students.

Phase II of the study focuses on qualitative research. Initially, the researcher performs a literature review to gain insights into the theories and concepts associated with Learning Engagement (LE). This foundational understanding is supplemented by interviews with five experts who share their perspectives on LE and collaborative learning models. The information gathered from these sources is instrumental in creating the curriculum for the collaborative learning model.

The curriculum proposed includes 14 sessions, each lasting 90 minutes, delivered over a six-week period. To assess the curriculum's effectiveness, five IOC experts review the content, and their feedback is used to make necessary refinements. After the expert evaluation, the researcher conducts a trial of the curriculum with ten first-year college students who have backgrounds similar to those of the final experimental subjects. This trial provides an opportunity for additional modifications based on student feedback, ultimately leading to the completion of the collaborative learning model curriculum.

1.5.1.3 Phase 3: To evaluate the effectiveness of the collaborative learning model on learning engagement among college students.

In the third phase of the research, the theoretical and conceptual foundations of Learning Engagement (LE) derived from the initial literature review were further synthesized with the theories and concepts of LE and collaborative learning models obtained from interviews with five experts in the first phase. These integrated theories and concepts were then combined with the collaborative learning model curriculum plan created in the second phase, resulting in the formulation of a randomized controlled pretest-post-test -follow up design in the third phase.

Population: The study involved 5860 first-year students from Chongqing Normal University, representing various faculties, including the Faculty of Education, Faculty of Art and Design, Faculty of Finance and Economics, Faculty of Physics, Faculty of Chemistry and Science, Faculty of Chinese Language and Literature, Faculty of

Mathematics and Science, Faculty of Geography and Tourism, and Faculty of Computer and Information Science and so on.

Sample: Using the Taro Yamane sample size calculation formula, a minimum of 374 questionnaires was required to be distributed. The researchers distributed a total of 710 questionnaires and successfully collected 654 valid responses. From these, the researcher identified the 50 students with the lowest scores in learning engagement (LE) to participate in the intervention experiment. These 50 students were then randomly divided into an experimental group and a control group, each consisting of 25 students. This selection was based on their lowest scores on the learning engagement questionnaire, and the researchers ensured that both groups had comparable average scores.

1.5.2 Variables

Independent variable

Collaborative Learning Model

Dependent variable

Learning Engagement

1.6 Definition of Terms

1.6.1 Definition of Learning Engagement

Learning engagement refers to the extent of involvement and active participation that students demonstrate in their educational activities. It includes a range of behaviors, emotions, and cognitive efforts, reflecting a genuine commitment to the learning experience beyond mere attendance. Learning engagement is essential as it significantly impacts academic outcomes, retention rates, and overall satisfaction with education. Learning engagement comprises three key components: behavioral, emotional, and cognitive engagement.

1) Behavioral Engagement refers to the outward actions and participation that students demonstrate in the educational setting which includes consistent class attendance, active participation in class discussions, timely submission of assignments,

and involvement in school-related activities such as group projects, extracurricular activities, and academic clubs.

2) Emotional Engagement refers to the feelings and emotional responses that students experience in relation to their learning environment and academic work which encompasses a range of emotions, from positive feelings like excitement, enthusiasm, and a sense of belonging, to negative emotions such as anxiety, frustration, or disinterest.

3) Cognitive Engagement refers to the degree of intellectual effort and thoughtfulness that students apply to their learning processes which involves deep learning strategies such as critical thinking, analysis, problem-solving, and the application of concepts to real-world situations. Cognitive engagement is about more than just memorizing facts or completing assignments; it is about making connections between new information and existing knowledge, engaging in reflective thinking, and seeking to understand the underlying principles behind the material being studied.

1.6.2 Definition of Collaborative Learning Model

Collaborative learning model refers to a carefully designed instructional framework that organizes learners into small, interactive groups, promoting collective engagement to accomplish common academic objectives.This model emphasizes structured collaboration through interdependent roles, clearly assigned responsibilities, shared decision-making, and reflective interactions among group members. Within such an environment, students actively exchange diverse ideas, skills, and experiences, jointly deepening their understanding of content, while supported by deliberate instructor facilitation and scaffolded activities that enhance both cognitive growth and social connection. The following are the steps of Collaborative Learning Model:

1) Lead-in refers to the initial phase where educators introduce the topic and set the context for the collaborative learning experience, engaging students' interest and preparing them for group work. This step includes discussions or activities that stimulate curiosity and activate prior knowledge relevant to the subject matter.

2) Task Assignment and Guidance refers to the process of distributing specific roles, responsibilities, and tasks among group members, along with providing

necessary instructions and support to ensure clarity and focus in their collaboration. This step is crucial for establishing clear expectations and helping students understand how to contribute effectively to their group's objectives.

3) Group Activity refers to the phase where students engage in collaborative tasks, working together to solve problems, share ideas, and construct knowledge through active interaction and cooperation. During this step, students practice communication and teamwork skills, fostering a deeper understanding of the material through peer learning.

4) Assessment & Conclusion refers to the final step where students reflect on their learning experiences, evaluate the outcomes of their group work, and receive feedback from peers and instructors to reinforce understanding and improve future collaborative efforts. This step emphasizes the importance of self-assessment and collective reflection, allowing students to identify strengths and areas for improvement in their collaborative skills.

1.7 Conceptual framework of the study

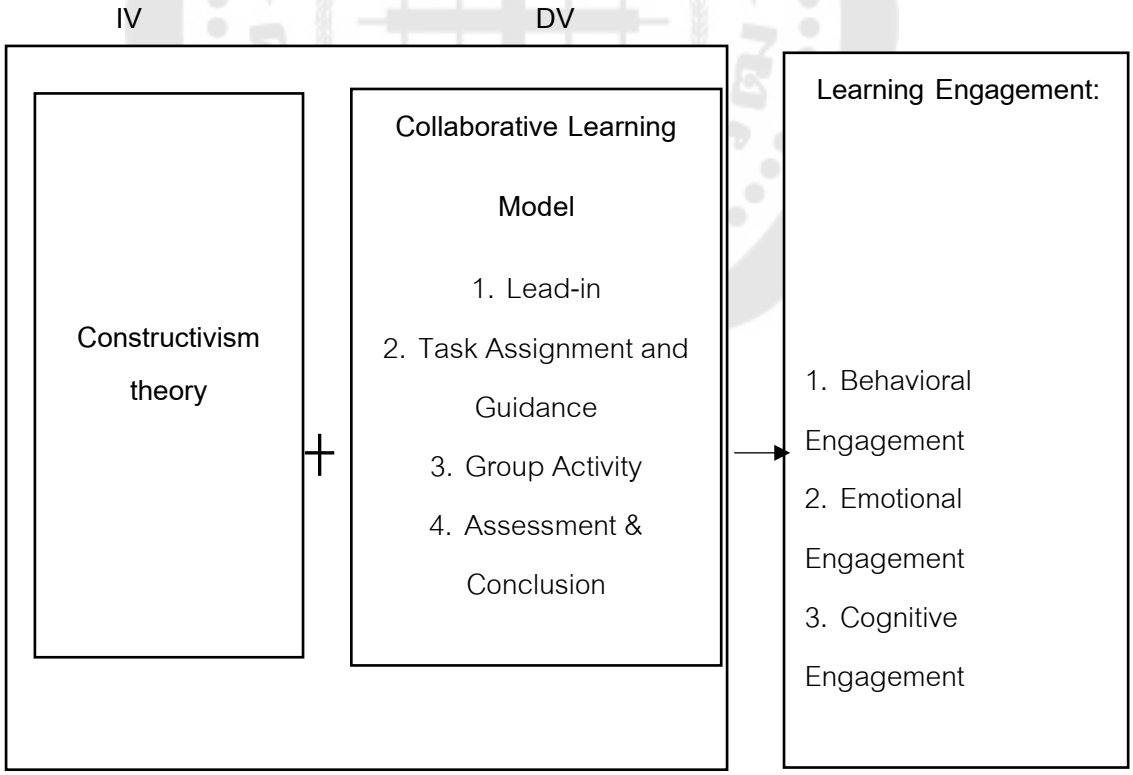

Figure 1 The Conceptual Framework

This study adopts Constructivism as its guiding theoretical perspective, recognizing that learning occurs through active meaning-making and shared exploration. Accordingly, the independent variable is structured as a Collaborative Learning Model comprising three sequential phases. The Lead-in phase helps students activate prior knowledge and clarify collective goals, establishing a shared foundation for learning. The Task Assignment and Guidance phase introduces structured activities with instructor support to ensure clarity and maintain focus. In the Group Activity phase, students work collaboratively to discuss, negotiate, and solve problems together, deepening their understanding through social interaction. These structured stages are designed to promote the three facets of the dependent variable, learning engagement: behavioral engagement (evidenced by active participation and consistent effort), emotional engagement (reflecting interest, enthusiasm, and a sense of belonging), and cognitive engagement (involving thoughtful, self-regulated learning strategies). By integrating these stages, the model aims to transform Constructivist theory into a practical approach that systematically supports comprehensive student engagement in the classroom.

1.8 Research Hypotheses

1) In the experimental group, students' learning engagement after receiving the collaborative learning model and after the follow up period is higher than before beginning the experiment.

2) In the experimental group, students' learning engagement after receiving the collaborative learning model and after the follow up period is higher than the students in the control group.

CHAPTER 2
LITERATURE REVIEW

The purpose of this literature review is to provide a comprehensive background on the theoretical and empirical research surrounding the impact of collaborative learning models on student learning engagement. It aims to demonstrate the breadth of knowledge in the area and the researcher's understanding of the major themes and findings within it. The review is organized into sections discussing the dependent variable, the theoretical framework, and the independent variable. This chapter includes the following content that the researcher has studied:

2.1 Learning Engagement

2.1.1 Definition of Learning Engagement

Learning engagement is a pivotal construct in the field of education, extensively studied for its positive association with academic achievement, retention, and overall

student success. Despite its critical importance, the concept of engagement is complex, encompassing various dimensions including behavioral, emotional, and cognitive engagement. This review synthesizes definitions and theories from a selection of scholarly works to explore the multifaceted nature of student learning engagement.

Some researchers describe engagement from perspective of the multidimensional nature of Engagement. Appleton, Christenson,& Reschly (2006), stated engagement encompasses types of involvement with school including psychological and cognitive aspects. According to Fredricks, Blumenfeld & Paris (2004), engagement is conceptualized as involving cognitive, behavioral, and emotional components. As mentioned from Skinner& Pitzer (2012), engagement is seen as the intensity and emotional quality of students' participation in learning.

Learning engagement in college contexts encompasses students' proactive involvement and sustained investment in academic activities, extending beyond mere attendance to include active participation, emotional resonance, and thoughtful cognitive engagement. As highlighted by Reschly and Christenson (2006), behavioral engagement is evident in students' attendance, assignment completion, and participation in discussions, demonstrating their outward academic commitment. Emotional engagement, often characterized by enthusiasm, curiosity, and a sense of belonging, infuses the learning process with intrinsic motivation (Kahu & Nelson, 2018). Meanwhile, cognitive engagement refers to deeper thought processes such as critical analysis, self-regulation, and metacognition—signifying students' dedication to truly understanding material (Fredricks, Blumenfeld, & Paris, 2004; Soffer & Cohen, 2019).

Recent meta-analyses underscore that learning engagement is a multifaceted construct embedding behavioral, emotional, cognitive, and even agentic components—where agency reflects active student contribution to instructional design (Fredricks et al., 2004; Reschly & Christenson, 2022; Wong & Liem, 2022). This multidimensionality has been confirmed through systematic reviews synthesizing data from over 90,000 participants across varied higher education environments, emphasizing that these dimensions collectively predict academic achievement, retention, and satisfaction

(Wang et al., 2025; Zheng et al., 2022). Teacher behavior also plays a critical role—teacher–student rapport, structured feedback, and supportive pedagogy have been shown to positively influence behavioral and cognitive engagement (Owusu-Agyeman & Moroeroe, 2023; Wang et al., 2025; Meta-analysis in turn0search0).

Learning engagement is not solely individual—it flourishes in relational and environmental contexts. Research reveals that well-structured learning communities, enriched campus climates, and positive faculty–student interactions bolster all dimensions of engagement (National Survey of Student Engagement, 2023; Gunuc & Artun, 2022; Reschly & Christenson, 2022). Co-curricular involvement, collaborative projects, and interactive class designs have also emerged as significant in promoting behavioral and emotional connection to learning (ModernCampus, 2025; Bond et al., 2023; Lei, Cui, & Chiu, 2018). Even classroom logistics—such as seating arrangements—can measurably affect engagement, as shown by studies using physiological sensors to link spatial proximity and focus to learners' engagement levels (Gao et al., 2021; Ananthan et al., 2024).

Finally, engagement is reinforced by emotional constructs like flow, which describe deep immersion and seamless interaction with tasks (Csikszentmihalyi, 1984; Borovay et al., 2019). Students often experience optimal educational states when assignments are well-balanced in challenge and interest, thereby improving cognitive and affective engagement (Schüler & Brunner, 2009).

Table 1 Other Definitions of Student Learning Engagement

Authors	Definition
Archambault, Janosz, Fallu, and Pagani (2009)	Student engagement as the degree of participation and involvement that students demonstrate in academic and extracurricular activities. They suggest that engagement is multi-dimensional, involving behavioral, emotional, and cognitive aspects.
Handelsman, Briggs, Sullivan, and Towler (2005)	Engagement is categorized into four dimensions: skill engagement, emotional engagement, participation/interaction engagement, and performance engagement.
Krause and Coates (2008)	Engagement is the time, energy, and resources students invest in learning, combined with institutional support, aimed at promoting academic success.
Martin (2007)	Engagement is the capacity and willingness of students to invest in learning tasks, with academic resilience helping them overcome challenges and setbacks.
Reeve and Tseng (2011)	Agentic engagement refers to students playing an active role in shaping their learning environment by expressing preferences and making suggestions.
Zepke and Leach (2010)	Engagement is shaped by personal agency and external factors (e.g., institutional support), with an emphasis on socio-cultural influences.

In summary, student learning engagement is a complex and multidimensional construct that plays a critical role in academic success. Drawing from various scholarly

perspectives, it is evident that engagement involves cognitive, behavioral, and emotional dimensions, reflecting how students think, act, and feel about their learning experiences. Fredricks, Blumenfeld, and Paris (2004) provide a comprehensive definition that encapsulates this idea: student learning engagement is the multidimensional involvement of students in the learning process, encompassing cognitive, behavioral, and emotional components.

2.1.2 The Components of Student Learning Engagement

Student Learning Engagement is commonly conceptualized as a multi-dimensional construct that includes behavioral, emotional, and cognitive aspects (Fredricks, Blumenfeld, & Paris, 2004). Behavioral engagement refers to students' participation in academic and social activities, emotional engagement covers students' emotional reactions in the classroom and to school, and cognitive engagement pertains to the investment in learning and the willingness to exert the effort necessary to comprehend complex ideas and master difficult skills.

Behavioral Engagement

Behavioral engagement is primarily characterized by students' participation in academic, social, and extracurricular activities (Fredricks, Blumenfeld, & Paris, 2004). It encompasses effort, attention, and persistence in learning tasks (Skinner & Pitzer, 2012), and extends to adherence to classroom norms and active involvement in classroom activities and discussions (Finn & Zimmer, 2012; Voelkl, 1997). This participation is not limited to mere physical presence but also includes the quality of engagement, such as the effort and enthusiasm displayed in learning and school-related tasks (Marks, 2000).

The operationalization of behavioral engagement varies among researchers but commonly includes measures of attendance, time on task, participation in class, and involvement in extracurricular activities (Appleton, Christenson, & Furlong, 2008; Jimerson, Campos, & Greif, 2003). This breadth underscores the complexity of accurately assessing and fostering behavioral engagement within educational settings.

Behavioral engagement is rooted in motivational theories, suggesting that students' engagement behaviors are influenced by their intrinsic and extrinsic motivations (Connell & Wellborn, 1991). The interplay between students' personal interests, their perceptions of the relevance of schoolwork, and their desire for success plays a crucial role in shaping their behavioral engagement.

Empirical studies have consistently linked high levels of behavioral engagement to improved academic outcomes. For instance, Wang and Holcombe (2010) found that students' participation in academic activities and their adherence to classroom norms were positively associated with academic achievement. Similarly, Green et al. (2012) highlighted that engagement, manifested through effort and participation in learning activities, was significantly related to higher academic performance and self-concept among high school students.

Emotional Engagement

Emotional engagement represents a critical dimension of student engagement, encapsulating the affective responses students have towards their learning environment, academic content, and the school community.

Emotional engagement is broadly understood as students' emotional reactions within the educational setting, including feelings of joy, interest, boredom, and stress (Fredricks, Blumenfeld, & Paris, 2004). Connell and Wellborn (1991) extend this definition to include feelings of belonging or connect, emphasizing the relational aspect of emotional engagement. Skinner and Belmont (1993) focus on the dynamic nature of emotional engagement, suggesting that it encompasses students' enthusiasm and emotional investment in learning, which reciprocally influence and are influenced by teacher behavior. Stipek (1998) adds that emotional engagement involves students' happiness, sadness, and anxiety, reflecting the broad spectrum of emotions that can influence and be influenced by the learning process.

Pekrun et al. (2002) highlight the role of both positive and negative emotions in emotional engagement, such as enjoyment, anxiety, and boredom, underscoring the complexity of students' affective experiences in relation to their academic work.

The concept of emotional engagement is also explored within specific cultural contexts, such as in Chinese educational settings. Li and Lerner (2011) and Zhou, Lam, and Chan (2012) provide insights into how emotional engagement manifests among Chinese students, noting the significance of emotions like enjoyment, anxiety, and a sense of belonging. These studies underscore the importance of considering cultural nuances in the understanding and fostering of emotional engagement.

Research by Ainley and Ainley (2011) and Frenzel, Goetz, and Pekrun (2009) emphasizes the importance of positive emotions, such as interest and enjoyment, in sustaining engagement and facilitating deep learning. However, the role of negative emotions, while potentially disruptive, can also signal areas where educational interventions might be most needed to support students (Reschly & Christenson, 2012).

Upadyaya and Salmela-Aro (2013) discuss the development of emotional engagement, linking it to academic success and well-being, thus highlighting the broader implications of emotional engagement for student outcomes. Wang and Degol (2014) further elaborate on the affective dimensions of engagement, pointing out the critical role of students feeling valued and included within the school community. Creating a supportive and inclusive classroom environment that fosters positive emotions and addresses negative ones can enhance emotional engagement (Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003). Teachers play a crucial role in shaping the emotional climate of the classroom, which in turn affects students' engagement and learning outcomes.

Emotional engagement is a multifaceted construct that encompasses a range of affective responses to the learning environment.

Cognitive Engagement

Cognitive engagement has been extensively studied across various educational contexts, emphasizing its role in deepening students' learning experiences, promoting higher-order thinking skills, and enhancing academic achievement.

Cognitive engagement is characterized by students' psychological investment in learning, which includes the effort to understand complex ideas and

master skills (Corno & Mandinach,1983). Zimmerman (1990) expands on this by describing cognitive engagement as encompassing self-regulated learning strategies such as planning, monitoring, and self-evaluation. Pintrich and De Groot (1990) further emphasize the role of deep processing strategies like elaboration and critical thinking, alongside the self-regulation of cognition.

Fredricks, Blumenfeld, and Paris (2004) articulate that cognitive engagement involves not just the utilization of learning strategies but also the desire to deeply understand material beyond minimal requirements. This notion is supported by Greene and Miller (1996), who highlight the importance of metacognitive strategies in achieving learning goals, pointing to the thoughtful participation in learning activities.

The concept of cognitive engagement extends across cultural boundaries, with studies exploring its manifestation in non-Western contexts. Li (2012) and Wang and Bai (2016) provide insights into cognitive engagement within the Chinese educational setting, noting the emphasis on effortful learning and the strategic application of learning methods aimed at deep understanding and problem-solving.

Guthrie and Wigfield (2000) view cognitive engagement as involving intrinsic motivation for learning and the use of strategies for mastery. Wolters (2004) and Ainley (2012) both discuss the application of cognitive strategies and persistence in learning tasks, underscoring the active pursuit of learning goals. Kahu (2013) describes cognitive engagement in terms of deep learning and the meaningful processing of information, which is echoed by Turner and Meyer (2004), who note the willingness to engage with challenging tasks and employ self-regulation strategies. Rotgans and Schmidt (2011) focus on the cognitive effort directed toward understanding new information, emphasizing the role of deep learning strategies.

Cognitive engagement is a multifaceted construct pivotal for achieving meaningful learning outcomes. The reviewed literature underscores its complexity, encompassing self-regulated learning strategies, deep processing of information, and the intrinsic motivation to master challenging material. Acknowledging and fostering cognitive engagement in educational settings can significantly enhance students'

learning experiences, leading to improved academic performance and a deeper understanding of subject matter across diverse educational contexts.

2.1.3 Measurements of Student Learning Engagement

Student engagement has been recognized as a multifaceted construct that plays a pivotal role in predicting academic outcomes, student well-being, and school retention rates. Various scholars have sought to measure and understand this construct through diverse theoretical frameworks and measurement tools, reflecting the complexity and dynamism of student engagement across educational levels.

Fredricks, Blumenfeld, and Paris (2004) laid the foundation for understanding engagement through a multidimensional framework, identifying three primary components: behavioral, emotional, and cognitive engagement. This framework has since guided many researchers in the field, emphasizing the need to look beyond mere participation in learning activities to include students' emotional involvement and cognitive investment. Similarly, the Tripartite Model of Student Engagement proposed by Lam et al. (2014) aligns with this perspective, measuring these three dimensions across various educational settings.

Several studies have concentrated on the behavioral aspect of engagement, emphasizing students' active participation in school activities. For instance, Finn (1989) developed the Participation-Identification Model, which assesses students' behavioral participation and their sense of identification with the school environment. This model has been applied to analyze student engagement as a predictor of school retention. Skinner, Kindermann, and Furrer (2009) expanded on this by incorporating emotional components through the Engagement vs. Disaffection with Learning Scale, highlighting how emotional reactions to learning experiences impact engagement.Greene et al. (2004) emphasized self-regulated learning as a crucial aspect of cognitive engagement, focusing on students' abilities to set goals, plan, and monitor their academic progress.

The Student Engagement Instrument (SEI), developed by Appleton, Christenson, and Furlong in 2008, is a widely used tool designed to measure various aspects of student engagement in school settings. The SEI was created as part of a

broader effort to better understand how student engagement influences academic performance, emotional well-being, and overall school success. The instrument aims to capture a multidimensional view of student engagement, considering the emotional, behavioral, and cognitive components that contribute to students' involvement in school activities.

Student engagement is an important factor in the success of education. In the world, various measurement tools have been developed to assess student engagement, including surveys, questionnaires, and observation methods. These tools are used to understand students' participation, motivation, and attitude in the learning process.Tools like the Utrecht Work Engagement Scale for Students (UWES-S) by Schaufeli et al. (2002) and the National Survey of Student Engagement (NSSE) developed by Kuh (2001) provide comprehensive measures of engagement that capture multiple dimensions simultaneously. The UWES-S, for example, measures vigor, dedication, and absorption, offering insights into how deeply students are involved in their academic tasks. The NSSE, on the other hand, captures data on academic challenge, collaborative learning, and student-faculty interaction, making it a valuable tool for assessing engagement at the post-secondary level.

In China, the adaptation of international instruments alongside the development of indigenous scales reflects the unique cultural and educational landscape. The Chinese Student Engagement Scale (CSES) and the Learning Engagement Scale are notable examples, tailored to measure academic, psychological, and social engagement within Chinese schools (Li, Wang, Wang, & Shi, 2010).

In 2007, China participated in the NSSE project and translated it into Chinese. Later in 2009, scholars from Tsinghua University applied for the Fund project (the tracking research on Chinese college students' learning and development). The project firstly aims to investigate college students' learning engagement from five dimensions: Academic Challenge (AC), Active and Collaborative Learning (ACL), Student-faculty Interaction (SFI), Supportive Learning Environment (SLE), Enriching Educational Experiences (EEE), and Experiences (EEE), and suggests that 'learning engagement' is

an important indicator for assessing the quality of higher education.for assessing the quality of higher education. Research employing the Experience Sampling Method (ESM) has provided nuanced, real-time insights into the engagement experiences of Chinese students, capturing the interplay between academic tasks, emotional states, and classroom dynamics (Huang & Li, 2018).

In the study "Assessing Student Engagement in Collaborative Learning: Development and Validation of a New Measure in China" by Bing Xu, Jason M. Stephens, and Kerry Lee (2023), researchers aim to introduce and validate an instrument tailored to measure student engagement within Chinese collaborative learning contexts. This research targets understanding the multifaceted nature of student engagement—emotional, behavioral, and cognitive--in collaborative settings. The creation of this culturally sensitive tool is pivotal for educators and researchers, offering a nuanced view of how Chinese students interact with and benefit from collaborative learning. Findings are expected to highlight the instrument's reliability in capturing engagement and shed light on the influences of cultural and group dynamics.

The adaptation and development of engagement measurement tools in China illustrate the importance of cultural sensitivity. Studies like those by Zhou and Lam (2016) have explored affective dimensions of student engagement, emphasizing cultural nuances in students' engagement experiences. Comparative research, such as the work of Huang and Li (2018), highlights differences in engagement patterns between Chinese and international students, pointing to the influence of educational systems, cultural values, and classroom practices. The cross-cultural application and adaptation of engagement measures not only enhance the generalization of research findings but also contribute to a more nuanced understanding of engagement as a globally relevant yet locally contextualized construct.

Table 2 Other Measurements of Student Learning Engagement

Scholars/Authors	Measuring Tool	Measurement Objects	Test Content
Bergmark, Westman (2018)	Reflective Engagement in Learning Scale	Secondary school students	Measures reflective engagement, focusing on critical thinking and thoughtful interaction with learning materials.
Fredricks, Filsecker, Lawson (2016)	Engagement in Learning Environments Framework	K-12 and higher education students	Measures engagement in digital and traditional learning environments, assessing participation, emotional involvement, and cognitive engagement.
Jang, Reeve, Deci (2010)	Autonomy Supportive Classroom Environment Scale	High school students	Measures the autonomy support provided by teachers and its effects on students' engagement.
Klem, Connell (2004)	School Engagement and Learning Motivation Scale	K-12 students	Measures how school engagement, driven by motivation and teacher-student relationships, impacts academic performance and persistence.

Table 2 (continued)

Scholars/Authors	Measuring Tool	Measurement Objects	Test Content
Li, Lerner (2011)	Positive Youth Development (PYD) Engagement Scale	Adolescents in school settings	Measures engagement from a youth development perspective, focusing on competence, connection, and contribution in education.

The diverse range of measurement tools and frameworks highlighted in the literature reflects the complexity of assessing student engagement. From the foundational work of Fredricks et al. (2004) to the development of specialized scales like the SEI and UWES-S, researchers have sought to capture the nuances of behavioral, emotional, and cognitive engagement. Studies also underscore the importance of contextual factors and teacher support in shaping engagement levels. Moving forward, a comprehensive approach that integrates these various dimensions and considers cultural contexts is essential for accurately assessing and enhancing student engagement in diverse educational settings.

2.1.5 Characteristics of Learning Engagement

Learning engagement is a multifaceted construct that encompasses various cognitive, emotional, and behavioral dimensions. Understanding the characteristics of learning engagement is crucial for educators and researchers seeking to promote effective teaching and learning environments. In this literature review, this section explore key characteristics of learning engagement supported by findings from prominent researchers in the field.

Active Participation: Active participation involves students' active involvement in learning activities, including asking questions, participating in

discussions, and completing tasks (Fredricks, Blumenfeld, & Paris, 2004). Fredricks et al. (2004) argue that active participation is a fundamental aspect of learning engagement, as it reflects students' willingness to invest time and effort in the learning process.

Intrinsic Motivation: Intrinsic motivation refers to engaging in activities for their inherent enjoyment and satisfaction, rather than external rewards or incentives (Deci & Ryan, 1985). Deci and Ryan (1985) propose that intrinsic motivation is essential for fostering sustained engagement and promoting deep learning experiences.

Autonomy and Choice: Autonomy and choice empower students to take ownership of their learning by allowing them to make decisions about their learning goals, tasks, and strategies (Reeve, 2006). Reeve (2006) suggests that providing students with autonomy and choice enhances their motivation and engagement in learning activities.

Sense of Competence: A sense of competence reflects students' belief in their ability to successfully complete tasks and achieve desired outcomes (Bandura, 1977). Bandura (1977) posits that fostering a sense of competence is crucial for promoting learning engagement and academic achievement.

Relevance and Meaningfulness: Relevance and meaningfulness involve connecting learning tasks and content to students' interests, experiences, and real-world applications (Newmann et al., 1992). Newmann et al. (1992) argue that creating meaningful learning experiences enhances students' motivation and engagement in the learning process.

Social Interaction and Collaboration: Social interaction and collaboration involve students' engagement in cooperative learning activities, peer discussions, and collaborative problem-solving tasks (Johnson & Johnson, 1999). Johnson and Johnson (1999) highlight the benefits of social interaction and collaboration in promoting active participation and knowledge construction among students.

Emotional Investment: Emotional investment refers to students' emotional attachment and investment in learning tasks, reflecting their interest, enthusiasm, and

sense of connection to the learning process (Skinner & Belmont, 1993). Skinner and Belmont (1993) argue that emotional investment plays a crucial role in promoting learning engagement and academic success.

Self-Regulation: Self-regulation involves students' ability to set goals, monitor their progress, and adapt their strategies to achieve desired outcomes (Zimmerman, 2000). Zimmerman (2000) suggests that fostering self-regulation skills enhances students' engagement and academic performance.

Flow State: Flow state refers to a state of optimal engagement and immersion in an activity characterized by intense focus, enjoyment, and a sense of effortless involvement (Csikszentmihalyi, 1990). Csikszentmihalyi (1990) argues that experiencing flow enhances learning engagement and performance.

Persistence and Resilience: Persistence and resilience involve students' ability to persevere in the face of challenges, setbacks, and obstacles encountered during the learning process (Dweck, 2000). Dweck (2000) suggests that fostering a growth mindset promotes resilience and enhances students' engagement and achievement.

In summary, the characteristics of learning engagement encompass various cognitive, emotional, and behavioral factors that contribute to students' active involvement and investment in the learning process. By understanding these characteristics and their underlying mechanisms, educators can design learning environments that promote meaningful engagement and enhance student learning outcomes.

2.1.6 Strategies for Promoting Learning Engagement

Engagement in learning is universally recognized as a pivotal factor influencing student achievement, retention, and overall academic success. Research across various educational contexts has identified a range of strategies effective in enhancing student learning engagement. This part introduce some strategies from different perspectives, highlighting the contributions of key studies and their implications for educational practice.

In examining how can enhance learning engagement among college students, Astin's Input-Environment-Outcome (I-E-O) Model (1993) provides a crucial theoretical framework. The I-E-O Model outlines three components: Inputs, Environment, and Outcomes. "Inputs" are the personal characteristics students bring, such as gender, age, academic background, and socio-economic status. "Environment" encompasses the educational and non-educational experiences students encounter, including classroom instruction, campus culture, peer interactions, and teacher support. "Outcomes" are the results achieved, such as academic success, learning attitudes, and social skills. According to Astin, student engagement is influenced by the interaction between these inputs and the educational environment. Initial student characteristics affect their perceptions and reactions to the environment, subsequently impacting their engagement and outcomes. For instance, students with strong academic backgrounds may better utilize resources, leading to higher engagement. Astin also notes that factors within the educational environment, such as teaching methods and peer support, can enhance or diminish engagement. Collaborative learning, by promoting interaction and cooperation among students, creates a supportive environment that can boost engagement. Thus, Astin's I-E-O Model helps understand how collaborative learning strategies can be designed to enhance learning engagement by addressing various environmental aspects.

Active learning strategies, emphasizing student involvement in the learning process through discussions, problem-solving, and group projects, have been widely advocated in the literature (Freeman et al., 2014). Similarly, cooperative learning, which involves students working in groups to achieve common goals, has been shown to enhance engagement and academic achievement significantly (Johnson, Johnson, & Holubec, 1994; Slavin, 1995). These approaches foster a sense of community, enhance understanding through peer interaction, and support the development of higher-order thinking skills.

In the realm of higher education, Tinto's Model of Student Retention (1993) provides a comprehensive framework that highlights the critical role of both academic

and social engagement in promoting student persistence. Tinto's model posits that student retention is significantly influenced by the degree to which students are academically and socially integrated into their college environment. Academic engagement encompasses students' active involvement in their learning processes, which includes regular interaction with faculty, diligent participation in coursework, and consistent academic performance. This engagement helps students to feel academically competent and supported, fostering a sense of belonging within the academic community.Social engagement, on the other hand, relates to students' involvement in the social aspects of college life. This includes forming meaningful relationships with peers, participating in extracurricular activities, and engaging in campus events. Social integration helps students to build a supportive network, which is essential for emotional and psychological well-being. Tinto argues that both forms of engagement are interrelated and equally important; a student who is well-integrated socially but struggling academically, or vice versa, is less likely to persist in their studies.

The integration of technology in education offers innovative ways to engage students in the learning process. Huang, Spector, and Yang (2019) discuss the potential of technology-enhanced learning environments in the Chinese context to improve engagement and learning outcomes. This is echoed in international research, where technology is leveraged for interactive and personalized learning experiences, promoting deeper engagement with the content (Tamim et al., 2011).

Feedback and formative assessment are critical for guiding student learning and engagement. Hattie and Timperley (2007) highlight the significant impact of effective feedback on enhancing student learning, a view supported by Xu and Brown (2016) in the context of Chinese classrooms. These practices involve providing students with regular, constructive feedback on their progress, enabling them to understand their learning needs and improve accordingly.

Inquiry-based learning, advocating for a student-centered approach that encourages curiosity and investigation, draws on the philosophical foundations of Dewey (1938) and aligns with Hung & Chou’s (2014) findings on the effectiveness of project-

based learning in Chinese education. Both approaches emphasize real-world relevance, fostering engagement through exploration and creative problem-solving.

The importance of culturally responsive teaching, highlighted by Gay (2010) and Ladson-Billings (1994), underscores the role of culture in engagement. This strategy involves recognizing and valuing students' cultural backgrounds, thereby making learning more relevant and engaging. In China, integrating cultural elements into teaching has been shown to increase interest and motivation in learning (Lee, C. D. (2007)).The promotion of self-regulated learning strategies, as outlined by Zimmerman (2002) and exemplified in the Chinese context by Lai, E. R. (2011), emphasizes the importance of teaching students to manage their own learning processes. This approach fosters autonomy, a critical aspect of engagement, by encouraging goal setting, strategic planning, and self-reflection.

Collaborative learning (CL) significantly enhances student learning engagement through multiple mechanisms. First, CL stimulates students' active participation by encouraging group interactions and task distribution. In this process, students are not just passive recipients of knowledge but active participants in sharing information and solving problems (Johnson & Johnson, 1999). This active engagement deepens students' understanding of the material and enhances their motivation to learn (Gokhale, 1995). Additionally, the emotional support provided through group interactions plays a crucial role. In these interactions, students receive emotional resonance and a sense of belonging, which increases their emotional investment in learning (Barkley et al., 2014). The collaborative nature of CL not only engages students cognitively but also strengthens their emotional motivation, further boosting their overall learning engagement. Moreover, CL fosters cognitive engagement by providing immediate feedback and promoting critical thinking. Through group discussions, students receive feedback from peers and instructors, which helps them identify and correct cognitive misunderstandings, thus facilitating their learning process (Black & Wiliam, 1998). The need to evaluate and discuss different perspectives in problem-solving encourages critical thinking, which deepens their understanding of the subject matter (Slavin, 1995).

At the same time, CL strengthens social interactions among students, helping them not only acquire knowledge but also build social connections, boosting their self-efficacy and teamwork skills (Chickering & Gamson, 1987). These combined factors collectively enhance students' learning engagement, contributing to both academic performance and sustained motivation for learning.

Enhancing student learning engagement requires a multifaceted approach that combines pedagogical innovation with a deep understanding of student needs and contexts. The integration of international and Chinese perspectives provides a rich repertoire of strategies that can be adapted and implemented across different educational settings to foster engaged, motivated, and successful learners.

2.1.7 Researches Related to Learning Engagement

The multifaceted nature of learning engagement has been the subject of extensive education psychological research, reflecting its critical role in enhancing student achievement, satisfaction, and overall educational experiences. This integrative literature review synthesizes findings from ten pivotal studies, spanning various domains including active learning, technology integration, emotional engagement, peer learning, and culturally responsive pedagogy. The collective insights from these studies offer a comprehensive understanding of the strategies and factors influencing learning engagement across different educational settings.

The 2006 study by Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L., titled **"Measuring cognitive and psychological engagement: Validation of the Student Engagement Instrument,"** focuses on developing and validating an instrument to assess students' cognitive and psychological engagement in educational settings. This research primarily aimed to offer a reliable tool that educators and psychologists could use to understand and measure the multifaceted nature of student engagement, which encompasses cognitive, emotional, and behavioral components. The validation process demonstrated that the Student Engagement Instrument (SEI) is a robust tool for capturing essential dimensions of engagement, providing valuable insights into how engaged students are in their learning processes. The significance of this study lies in its

contribution to educational psychology by providing a validated measure that can help in the early identification of students at risk of disengagement and dropout, facilitating targeted interventions to improve educational outcomes.

In the 2015 study **"Student Engagement Scale: Development, Reliability, and Validity"** by Gunuc and Kuzu, published in Assessment & Evaluation in Higher Education, the authors focus on creating and validating a new scale to measure student engagement in higher education contexts. Their research aims to address the multifaceted nature of student engagement, encompassing emotional, behavioral, and cognitive dimensions, and to provide a reliable and valid tool for assessing it. Through rigorous testing and analysis, Gunuc and Kuzu successfully demonstrate the scale's reliability and validity across different educational settings. Their findings contribute significantly to the field by offering a comprehensive instrument that educators and researchers can use to assess and understand student engagement more deeply. This scale not only facilitates the evaluation of educational strategies and their impact on engagement but also helps in identifying areas for improvement in teaching and learning environments. The development of this scale is a valuable addition to educational research, providing a standardized method to measure a critical factor in student learning and success.

Some study focus on implications for higher education. Fredricks, Blumenfeld, and Paris (2004) in their paper **"School Engagement: Potential of the Concept, State of the Evidence,"** published in the Review of Educational Research, critically examine the concept of school engagement, exploring its dimensions and assessing the existing research evidence regarding its impact on academic achievement. The authors identify three key components of engagement: behavioral, emotional, and cognitive. They argue that understanding these dimensions is crucial for developing strategies to enhance student engagement in educational settings. Their review of the literature reveals that higher levels of engagement are consistently associated with better academic outcomes, including higher grades, test scores, and graduation rates. The significance of this work lies in its comprehensive synthesis of the concept of engagement, highlighting its

multifaceted nature and its critical role in educational success. This paper serves as a foundational reference for educators, researchers, and policymakers interested in fostering environments that engage students deeply in their learning processes.

Ella R. Kahu's 2013 study, **"Framing Student Engagement in Higher Education,"** published in "Studies in Higher Education," critically examines the concept of student engagement, proposing a comprehensive framework to understand its dynamics within higher education. Kahu aims to deepen the conceptual understanding of engagement by integrating perspectives from psychology, sociology, and education. The paper identifies various factors influencing student engagement, including institutional support, teaching quality, and student identity. Kahu's findings suggest that engagement is a complex, multifaceted phenomenon that evolves from the interaction between students and their educational environment, significantly impacting their learning and development. The significance of this research lies in its holistic approach to framing student engagement, offering a nuanced perspective that transcends simplistic measures. By providing a more detailed understanding of the factors that foster or hinder engagement, Kahu's framework serves as a valuable guide for educators and policymakers in designing strategies to enhance student experiences and outcomes in higher education.

Vicki Trowler's 2010 **"Student Engagement Literature Review"** for The Higher Education Academy synthesizes research on student engagement within higher education. Trowler's review aims to consolidate existing knowledge on engagement, defining its key components and identifying factors that influence student participation in academic and campus life. The findings outline engagement as multifaceted, involving behavioral, emotional, and cognitive dimensions, and underscore the role of institutional culture in shaping engagement opportunities. This review is significant for its broad overview of student engagement, providing educators and higher education policymakers with a comprehensive understanding of how to foster an environment that supports active and meaningful student involvement. By highlighting best practices and

areas for further research, Trowler's work guides efforts to enhance educational experiences and outcomes for students across higher education institutions.

The researches presented in this review underscores the complexity of learning engagement and the variety of strategies that can enhance it. Active participation, emotional well-being, social interaction, and cultural relevance emerge as key dimensions of engagement. These findings suggest that educators should adopt a holistic and nuanced approach to foster an engaging learning environment, one that caters to the diverse needs and backgrounds of students, thereby promoting deeper and more meaningful learning experiences.

Although various strategies have been proposed to improve learning engagement, there is a noticeable gap in research concerning how specific models, such as collaborative learning, contribute to sustained engagement across its multiple dimensions—behavioral, emotional, and cognitive. While the positive effects of active teaching methods like problem-based learning and peer assessments have been widely acknowledged, less attention has been given to the detailed processes by which collaborative learning specifically enhances these different forms of engagement. Most studies tend to focus on the immediate outcomes of collaborative learning, with limited exploration of its long-term impact on academic success and retention. Additionally, there is a lack of research on how collaborative learning can be effectively applied in various academic contexts, from large lecture halls to smaller, more interactive seminars. This gap highlights the need for research that explores how collaborative learning can be tailored and scaled to fit different disciplines and institutional environments. By addressing this gap, the current study seeks to develop a collaborative learning model that can better engage students and improve their academic performance over time.

2.2 Collaborative Learning Model

2.2.1 Definition of Collaborative Learning Model

Collaborative Learning Model is defined as an educational approach where learning occurs as students work together in groups towards a common goal, reflecting on their learning and processes (Laal & Ghodsi, 2012).

Some researchers consider collaborative learning to be an educational approach that emphasizes student interaction and shared responsibility. Webb (1982) explains that collaborative learning involves small groups working toward a common goal, where each student's success depends on both individual effort and group collaboration. Smith and MacGregor (1992) describe it as a pedagogical method in which students work in teams on problems or projects designed to ensure both positive interdependence and individual accountability. Gokhale (1995) highlights that collaborative learning encourages the development of critical thinking skills through dynamic interaction and shared inquiry. Similarly, Gillies (2007) defines collaborative learning as an approach where groups of learners work together to solve problems, complete tasks, or produce projects. Laal and Ghodsi (2012) also emphasize that collaborative learning involves learners cooperating to solve problems, complete assignments, and achieve deeper understanding.

Salomon, G., & Perkins, D. N. (1998) considered collaborative learning as a situation where learning takes place through the interaction and collaboration of individuals within a group, emphasizing both individual cognitive contributions and the development of shared understanding and knowledge.

Collaborative learning is broadly understood as a structured, interactive educational method in which small groups of students work together to achieve shared academic goals, relying on each other's knowledge, perspectives, and skills (Faculty Focus, 2024; Cornell CTI, 2024). The core of this approach lies in positive interdependence, individual accountability, and promotive interaction—where students provide mutual feedback, resolve misunderstandings, and push each other toward deeper understanding (Faculty Focus, 2024; Johnson & Johnson, 1994; Wikipedia,

2025). Research in various higher education domains supports the notion that, when tasks are cognitively challenging, open-ended, and require group-generated solutions, students display stronger collaboration, shared responsibility, and ownership of learning outcomes (Trimmer et al., 2016; Shapiro et al., 2016).

Meta-analyses consistently confirm that small-group collaborative activities significantly enhance student engagement, performance, critical thinking, and retention compared to traditional lecture formats (SAGE meta-analysis, 2012; Faculty Focus, 2024). In science and engineering education, collaborative learning enables peer-led knowledge co-construction, where students collaboratively solve problems that none could resolve individually (Brundage et al., 2023; PMC, 2016). Similar benefits are observed in computer-supported collaborative learning (CSCL), which integrates digital technologies to orchestrate group dynamics, improve motivation, and foster reflective interaction (Knutas et al., 2019; Garcia et al., 2023). These studies collectively affirm that deliberate implementation of CSCL and well-structured collaborative pedagogy maximizes student contributions and minimizes unbalanced workloads within group settings (PMC, 2016; Garcia et al., 2023).

Importantly, the relational and socio-emotional aspects of collaborative learning are increasingly valued. Students engaged in collaborative tasks often report heightened motivation, elevated satisfaction, and deeper peer relationships—while instructors recognize improved problem-solving and communication skills within groups (Faculty Focus, 2024; Cornell CTI, 2024). Recent investigations also demonstrate the importance of appropriate group sizing, task complexity, and autonomy in determining collaboration success (PMC, 2025; LifeSciEd, 2016). Educators are therefore encouraged to design group structures that foster equitable workload distribution, shared decision-making, and reflective group processing to sustain high engagement levels (Faculty Focus, 2024; Johnson & Johnson, 1994).

Studies examining collaborative learning models have found them to be effective in promoting higher levels of student engagement and academic achievement compared to traditional teaching methods (Johnson & Johnson, 2009). For instance,

research by Slavin (1996) highlights the success of cooperative learning in improving inter-group relations and individual achievement. Further, meta-analyses by Kyndt et al. (2013) have synthesized findings from numerous studies to conclude that collaborative learning has a positive impact on both knowledge acquisition and the development of higher-order thinking skills.

In summary, contemporary scholarship defines collaborative learning model in higher education as a deliberate instructional model where small, interdependent student teams work toward common objectives, exchanging knowledge, negotiating understanding, and supporting each other's growth. It is characterized by cognitively demanding tasks, active student agency, and positive interdependence, facilitating richer learning experiences than solitary or competitive formats.

2.2.2 Theory Foundation of Collaborative Learning Model

Constructivism serves as the central theoretical foundation of the Collaborative Learning Model (CLM), framing learning as an active, social, and meaning-making process rather than passive reception. Rooted in the work of Piaget (1970) and Vygotsky (1978), constructivist theory emphasizes that learners build new knowledge by integrating their prior experiences with new information through processes of accommodation and assimilation. In this view, knowledge is not transmitted intact from teacher to student, but is co-constructed in context through purposeful activity and social negotiation (Fosnot, 2013).

In higher education, this constructivist perspective underpins the design of collaborative learning models that organize students into structured, interactive groups where peer dialogue, negotiation, and shared problem-solving are essential. According to Dillenbourg (1999), collaborative learning involves multiple learners working toward shared goals in ways that require mutual engagement and coordinated activity, aligning precisely with constructivist claims that knowledge is socially situated and jointly produced. The Collaborative Learning Model operationalizes these ideas by emphasizing positive interdependence, individual accountability, and promotive interaction, creating

conditions in which cognitive conflict and resolution deepen understanding (Johnson & Johnson, 1999).

Vygotsky's (1978) concept of the Zone of Proximal Development (ZPD) is especially central to the theoretical rationale for CLM. ZPD describes the difference between what a learner can achieve independently and what can be achieved with guidance and collaboration. In collaborative learning models, peers serve as more capable others who scaffold each other's learning through questioning, explaining, and co-construction of knowledge (Mercer & Littleton, 2007). This guided interaction promotes internalization of new concepts and strategies, aligning with Vygotskian notions of mediated learning.

Research consistently supports the effectiveness of collaborative learning models rooted in constructivist theory. For example, Kirschner, Sweller, and Clark (2006) note that although minimally guided instruction can be ineffective in some contexts, well-designed collaborative learning incorporates scaffolding that reduces cognitive load while maintaining active engagement. Stahl, Koschmann, and Suthers (2006) argue that Computer-Supported Collaborative Learning (CSCL) explicitly draws on socio-constructivist principles to design environments where learners build shared meaning through dialogue and artifacts.

Moreover, Slavin (2014) demonstrates that structured cooperative methods such as the Jigsaw technique exemplify constructivist ideals by requiring students to become both learners and teachers within groups, promoting accountability and distributed expertise. Similarly, Johnson and Johnson's (2009) extensive meta-analytic work confirms that cooperative learning strategies based on constructivist assumptions consistently outperform competitive or individualistic approaches in terms of achievement, motivation, and social cohesion.

Overall, constructivism provides the theoretical grounding for the Collaborative Learning Model by insisting that learning is inherently social, context-bound, and participatory. CLM embodies this theory by deliberately designing group structures and

activities that promote shared meaning-making, critical dialogue, and peer support, fostering deeper understanding and durable learning outcomes.

2.2.3 The Key Elements of Collaborative Learning

There are numerous research studies that have explored the components of collaborative learning, identifying key elements that contribute to its effectiveness. Collaborative learning is a pedagogical approach that involves groups of learners working together to solve a problem, complete a task, or create a product. This approach is grounded in the belief that learning is a social process, where interactions among learners enhance understanding and mastery of subjects. Here are some of the widely recognized components of collaborative learning, supported by research: positive interdependence, individual and group accountability, interpersonal and small group skills, face-to-face promotive interaction, and group processing.

Positive Interdependence

This element stresses the need for group members to rely on one another to achieve their goals. It means that the success of each individual is linked to the success of the group as a whole. Positive interdependence encourages cooperation and ensures that all members have a stake in the group's outcome. Members of a group perceive that their success is linked to the success of the group as a whole. Johnson and Johnson's work on social interdependence theory has extensively documented the importance of positive interdependence in collaborative learning (Johnson, D.W., & Johnson, R.T., 1989).

Individual Accountability

While collaborative learning emphasizes group achievements, individual accountability ensures that each member is responsible for their contribution. This component prevents "free-riding" where one or more members rely on others to do the work. It ensures that each student is held accountable for their part of the work, promoting equal participation. Each group member is accountable for their contribution to the group effort. Slavin has emphasized the role of individual accountability in ensuring all group members engage actively with the task (Slavin, R.E., 1996).

Interpersonal and Small Group Skills

Effective collaboration requires students to communicate clearly, resolve conflicts, provide and receive feedback constructively, and lead or follow as necessary. Gokhale has argued that collaborative learning fosters the development of critical thinking skills as learners engage in dialogue and challenge each other's ideas (Gokhale, A.A., 1995). These skills are crucial for the smooth functioning of the group and for achieving the learning objectives.

Face-to-Face Promotive Interaction

This involves direct interaction among group members, where they support and encourage each other's efforts to learn. It includes discussing concepts, sharing insights, and working through problems together. Research by Barkley, Cross, and Major highlights the importance of face-to-face interaction in promoting engagement and understanding among group members (Barkley, E.F., Cross, K.P., & Major, C.H., 2014. This component emphasizes the importance of verbal and non-verbal communication in collaborative learning.

Group Processing

Sharan and Sharan have discussed group processing as a component that enables groups to evaluate their functioning and effectiveness, leading to improved outcomes (Sharan, S., & Sharan, Y., 1992). Group processing allows members to reflect on their group sessions to identify what worked well and what didn't. This involves discussing the group's dynamics, the effectiveness of the collaboration, and making plans for improvement. It's essential for continuous improvement and for ensuring that all members contribute effectively.

These components collectively ensure that collaborative learning is effective, engaging, and results in meaningful learning outcomes. Implementing these elements requires careful planning and facilitation by educators to create an environment where collaborative learning can thrive.

2.2.4 Typical Strategies for Collaborative Learning Model

The Collaborative Learning Model (CLM) in higher education has been developed to move beyond traditional, lecture-focused methods by promoting student

interaction and joint meaning-making. Instead of positioning learners as passive recipients, CLM structures activities that encourage dialogue, negotiation, and collective exploration of ideas, drawing on social constructivist perspectives that emphasize learning as a social process (Vygotsky, 1978; Johnson & Johnson, 2009). Within this framework, several well-established strategies have proven especially effective for university contexts: Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, and Peer Assessment.

Reciprocal Peer Learning involves students alternating between explaining concepts and questioning peers to deepen understanding. By engaging in this structured exchange, learners clarify their own thinking while helping classmates address misconceptions, creating a collaborative environment that supports critical analysis and communication development (Boud, Cohen, & Sampson, 2014; Topping, 2005). This approach is particularly well-suited to seminars, tutorials, and small-group discussions that benefit from active student participation.

Project-Based Learning encourages students to collaborate over time to investigate complex questions or challenges, producing tangible outcomes that integrate theoretical knowledge with practical application. By working in teams, students learn to plan, negotiate roles, and solve problems together, helping them connect coursework to professional skills they will need beyond university (Bell, 2010; Blumenfeld et al., 1991). In higher education, PBL supports sustained inquiry while fostering teamwork and reflective learning practices.

Inquiry-Based Learning emphasizes student-driven investigation, where groups generate questions, design methods for exploration, and analyze results collaboratively. This approach promotes curiosity and intellectual risk-taking, requiring learners to evaluate evidence, construct arguments, and justify conclusions (Levy et al., 2013; Bruce & Bishop, 2008). For university students, inquiry-based activities help build academic literacy and encourage them to actively co-create knowledge within their disciplines.

Peer Assessment offers another valuable strategy for collaborative learning by turning evaluation into an interactive, dialogic process. Through reviewing peers' work and providing feedback, students develop greater awareness of quality standards and refine their own understanding. Nicol and Macfarlane-Dick (2006) highlight that effective formative feedback supports students' self-regulated learning by clarifying goals and encouraging reflection. In CLM contexts, structured peer feedback and reflective activities can help students monitor their learning, enhancing cognitive engagement and sustaining motivation. Boud and Molloy (2013) emphasize feedback as a dialogic, ongoing process that builds students' evaluative judgment. Integrating peer assessment and group reflection in CLM supports self-regulation and responsibility, contributing to higher levels of learning engagement.This practice supports critical reflection, improves self-regulation, and cultivates the ability to deliver and receive constructive critique in a respectful academic setting (Topping, 1998; Boud & Falchikov, 2007).

In summary, these strategies illustrate how CLM can be adapted effectively in higher education to promote meaningful interaction, cooperative problem-solving, and a shared commitment to academic goals. Research has consistently demonstrated their potential to improve learning outcomes by supporting cognitive development, social connection, and student motivation. By integrating these approaches, educators can foster more inclusive, engaging, and responsive learning environments that meet the diverse needs of university students.

2.2.5 Advantages and Limitations of using Collaborative Learning

Collaborative learning is a central pedagogical approach that promotes social interaction and group-based activities to foster deep learning and skill development. As researchers explore its applications in different contexts, a rich tapestry of benefits and limitations emerges, highlighting both its potential and its challenges. This section aims to provide a comprehensive understanding of the benefits and limitations associated with the use of collaborative learning in educational settings by synthesizing findings from different studies.

Advantages:

Collaborative learning is widely recognized for its potential to create learning environments that are interactive, supportive, and intellectually engaging. By working together, students take greater ownership of their learning processes and develop a stronger sense of responsibility toward shared academic goals, which can increase their motivation and investment in learning activities (Dillenbourg, 1999; Johnson & Johnson, 2009).

One of the key advantages of collaborative learning lies in the development of communication and critical thinking skills. Participation in group tasks encourages students to express their ideas clearly, actively listen to peers, and resolve differences constructively. These practices not only support academic achievement but also prepare learners for effective professional and social interactions (Johnson & Johnson, 2014). Structured group discussions also provide opportunities for students to analyze multiple viewpoints and construct well-reasoned arguments. Engaging in these dialogues helps cultivate higher-order thinking skills such as analysis, evaluation, and synthesis, contributing to a deeper grasp of complex topics (Barkley, Cross, & Major, 2014).

Collaborative learning has also been shown to enhance problem-solving abilities and conceptual understanding, particularly when students work through challenging questions or authentic projects as a team. Research demonstrates that cooperative learning methods can improve students' capacity to apply knowledge in novel situations and develop solutions collaboratively, underscoring the value of shared inquiry and discussion (Slavin, 1996; Johnson, Johnson, & Smith, 2014). Additionally, when learning environments intentionally include diverse perspectives, group discussions can become even richer, promoting broader understanding and fostering an inclusive academic community (Gillies, 2016).

Peer feedback is another integral element of collaborative learning that supports students in developing empathy, trust, and social awareness. Through giving and receiving constructive feedback, learners refine their understanding and learn to engage respectfully in critique. This process also helps build emotional intelligence and

teamwork skills that are highly valued in professional contexts (Boud & Falchikov, 2007; Topping, 1998; Johnson & Johnson, 2014).

Limitations:

Despite these clear advantages, collaborative learning also presents challenges that must be carefully managed. Unequal participation can emerge when some students dominate while others remain passive, a problem often linked to social loafing. Ensuring individual accountability and structuring activities to promote balanced participation are essential strategies to address this issue (Slavin, 1995; Johnson & Johnson, 1989). Managing group dynamics can also be complex, as conflict, misunderstandings, or interpersonal tensions may arise, requiring deliberate facilitation and conflict resolution strategies (Michaelsen & Sweet, 2008; Johnson & Johnson, 1989).

Moreover, implementing collaborative learning can be time-intensive, requiring careful planning, scheduling, and coordination, especially in large classes. Instructors must allocate sufficient time for preparation, facilitation, and assessment to ensure its effectiveness (Slavin, 1996; Dillenbourg, 1999). Another concern is the potential for groupthink, where students prioritize agreement over critical analysis, limiting diverse viewpoints and innovation (Janis, 1982). To mitigate this, instructors should design tasks that encourage debate and critical reflection, along with clear criteria for evaluating both group outcomes and individual contributions.

In conclusion, collaborative learning offers significant opportunities to enhance student motivation, deepen understanding, and develop essential skills for academic and professional success. However, realizing its full potential requires thoughtful design and evidence-based strategies to address the challenges inherent in group work. By doing so, educators can create more inclusive and effective learning environments that support diverse learners in an increasingly connected world.

2.2.6 Researches Related to Collaborative Learning

Collaborative learning has emerged as a pivotal educational approach, emphasizing the importance of social interaction and group-based activities in fostering deeper learning and skill development.

Bruffee, K. A. (1999). **"Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge"** Bruffee (1999) explores the theoretical foundations and practical implications of collaborative learning in higher education. He argues for the restructuring of traditional educational models to promote interdependence among learners and the co-construction of knowledge. Bruffee's work highlights collaborative learning as a means to challenge hierarchical knowledge structures and empower students as active contributors to their learning process.

Barkley, E. F., Cross, K. P., & Major, C. H. (2014). **"Collaborative Learning Techniques: A Handbook for College Faculty"** Barkley, Cross, and Major (2014) compile a comprehensive handbook detailing various collaborative learning techniques applicable to college classrooms. They categorize approaches such as think-pair-share, jigsaw, and collaborative writing, providing educators with step-by-step instructions and case studies for implementation. Their resource serves as a practical guide for enhancing student engagement and learning through structured collaborative activities.

Cohen, E. G., & Lotan, R. A. (2014). **"Designing Groupwork: Strategies for the Heterogeneous Classroom"** Cohen and Lotan (2014) discuss strategies for designing effective group work in heterogeneous classrooms, drawing insights from K-12 education that are relevant to higher education. They propose differentiated approaches to group formation and task design to accommodate diverse learner needs and maximize collaborative learning outcomes. Cohen and Lotan advocate for inclusive practices that foster equitable participation and mutual support among students in collaborative settings.

Johnson, D. W., Johnson, R. T., & Smith, K. A. (2014). **“Cooperative learning: Improving university instruction by basing practice on validated theory”** Johnson, Johnson, and Smith (2014) present evidence from decades of university-level research showing that structured collaborative learning increases student engagement by creating positive interdependence and accountability. Their work demonstrates that when undergraduates work in well-designed groups, they participate more actively,

show greater motivation, and achieve deeper conceptual understanding, supporting CLM as a proven strategy for promoting learning engagement in higher education.

Slavin, R. E. (2014). **"Cooperative learning and academic achievement: Why does groupwork work?"** Slavin (2014) synthesizes empirical findings on cooperative learning among undergraduate students, highlighting how collaborative tasks with clear group goals foster engagement. He emphasizes that shared objectives and individual accountability increase students' investment in learning activities, resulting in sustained behavioral participation, improved attitudes, and deeper cognitive engagement in university classrooms.

Gillies, R. M. (2016). **"Cooperative learning: Review of research and practice"** Gillies (2016) reviews higher education studies showing that collaborative learning environments support undergraduate engagement by encouraging dialogue, negotiation, and shared problem-solving. Her analysis points out that structured group tasks promote active participation and social connectedness, while well-defined roles and instructor facilitation strengthen emotional and cognitive aspects of student engagement.

Laal, M., & Ghodsi, S. M. (2012). **"Benefits of collaborative learning"** Laal and Ghodsi (2012) examine empirical studies on collaborative learning in universities, finding that group-based strategies boost student engagement by making learners more active, socially connected, and reflective. They argue that collaborative learning models help undergraduates move beyond passive reception to become partners in knowledge construction, supporting behavioral, emotional, and cognitive engagement.

Zepke, N., & Leach, L. (2010). **"Improving student engagement: Ten proposals for action"** Zepke and Leach (2010) discuss collaborative learning as a key practice to enhance undergraduate engagement. Drawing on empirical studies and university case examples, they show that group-based activities foster participation, build a sense of belonging, and promote critical reflection, making collaborative learning a central approach for engaging students more deeply in higher education contexts.

In summary, research on the Collaborative Learning Model has highlighted its shift away from one-directional teaching toward environments where students work together, discuss ideas openly, and build understanding in groups. Scholars have emphasized its grounding in social learning theories, noting that these structured group activities encourage students to think carefully, listen to others, and develop more nuanced perspectives. At the same time, studies in higher education have linked collaborative learning practices with stronger student engagement overall. When learning is designed to be interactive and inclusive, students often show greater interest in their courses, connect more with classmates, and approach their studies with more curiosity and commitment. This combination of theory and empirical evidence supports the view that collaborative approaches can offer practical ways to enhance engagement in undergraduate settings and provides a clear motivation for exploring their use in this research.

CHAPTER 3
METHODOLOGY

The chapter serves as a crucial component of this doctoral study, outlining the systematic processes and research strategies employed to investigate students' learning engagement. This chapter provides a detailed explanation of the research design, data collection methods, and analytical procedures, ensuring the rigor and reliability of the findings. The selection of appropriate methodologies is fundamental to addressing the research questions and objectives, offering a robust framework for exploring the complexities of learning engagement in educational settings.

The purpose of this research would be:

1.To study the definition and components of learning engagement among college students.

2.To develop a collaborative learning model for enhancing LE among college students.

3.To evaluate the effectiveness of the collaborative learning model for enhancing LE among college students.

In order to achieve these research objectives, the research was divided into the following three phases:

Phase 1: To study the definition and components of learning engagement among college students.

This study adopted a blend of qualitative and quantitative research approach, combining qualitative and quantitative techniques to ensure a robust investigation. The researcher first conducted an extensive review of relevant literature and carried out in-depth interviews with five senior experts in psychology and education to collect essential insights. Analysis of these materials led to the identification of key terms, practical definitions, and the core components of learning engagement (LE) among college students. Building on these findings, a structured questionnaire was developed to measure LE among college students, with careful attention to ensuring its reliability through systematic validation procedures.

Phase 2: To develop a collaborative learning model for enhancing LE among college students.

The researcher sought to develop a collaborative learning model aimed at improving learning engagement among college students. Drawing on the data gathered during Phase One, along with an extensive review of the literature, relevant theoretical foundations, and insights from interviews with five senior experts, a set of guiding principles was established to inform the model's design. Based on these principles, a teaching plan of 14 instructional sessions, each 90 minutes long, was created to strengthen learning engagement. This stage focused on building a collaborative learning framework intended to foster meaningful engagement in higher education, laying the groundwork for its subsequent evaluation.

Phase 3: To evaluate the effectiveness of the collaborative learning model for enhancing LE among college students.

To assess how effectively the collaborative learning model functions in practice, it was implemented with a selected group of participants. The researcher employed the measurement tools developed in Phase One, specifically, the survey questionnaire, to administer pre-tests, post-tests, and follow-up assessments. This evaluation was designed to gain a thorough understanding of the model's impact in authentic educational settings and to provide a systematic analysis of its overall effectiveness.

3.1 Phase 1: To study the definition and components of learning engagement among college students

3.1.1 The Collection of Qualitative Data

3.1.1.1 Literature review study

The first stage of research is divided into three steps, the first is literature review. This step aims to obtain theoretical and conceptual information about LE by systematically analyzing and synthesizing existing academic literature and research findings. As the starting point of the research, the literature review is helpful to

understand the definition and scope of LE and its development in the fields of education and psychology.

In the literature review study, the researcher collected a wide range of relevant literature on LE, including but not limited to academic journal articles, books, research reports and other relevant publications. Through systematic analysis and summary of these literature, researchers can identify different scholars' viewpoints and definitions of LE concept, as well as the application in practical education and social environment.Interview: Informal conversational Interviews with college teachers and students

3.1.1.2 The Development of Semi-Structured Interview Questionnaire

(1) Literature Review and Interview Guide Development

A thorough review of existing literature and research on Learning Engagement (LE) was conducted using qualitative methods to establish a solid foundation for this study. This review informed the design of a semi-structured interview guide featuring open-ended questions tailored to elicit meaningful insights from qualified participants in the field. The interview guide focused on several key areas:

1) Identifying the core components of Learning Engagement among college students;

2) Developing guidelines for constructing a Collaborative Learning Model to enhance Learning Engagement in higher education;

(2) Experts Interview

The study's interviews drew on the expertise of five senior experts specializing in psychology and education from Chongqing Normal University. Two of them are professors with doctor degree, two of them are associate professors, and one is lecturer. Each of them brings extensive professional experience and deep disciplinary knowledge. Their diverse insights contributed valuable perspectives to inform the study's design and analysis.

(3) Design and Quality Assurance of the Interview Instrument

Semi-structured interviews served as the primary data collection tool, with a systematic process employed to ensure the quality and rigor of the interview guide:

1.Comprehensive literature review: Researchers conducted an in-depth examination of relevant learning engagement literature, reviewing established methods for developing semi-structured interview protocols to guide question formulation.

2.Clarification of objectives and question design: Clear objectives were defined for the interviews, and the thematic structure of the questions was carefully planned to ensure thorough coverage of all relevant topics.

3.Development of open-ended questions: Questions were crafted to align with the study's goals while maintaining clarity and coherence throughout the interview guide.

4.Expert validation: The draft interview guide underwent review by professionals in the field to confirm its accuracy, relevance, and appropriateness.

Revision and refinement: Feedback from these expert reviews was incorporated to improve the guide's quality and ensure it was well-suited to the study's aims. A detailed illustration of the development process is provided in the accompanying diagram.

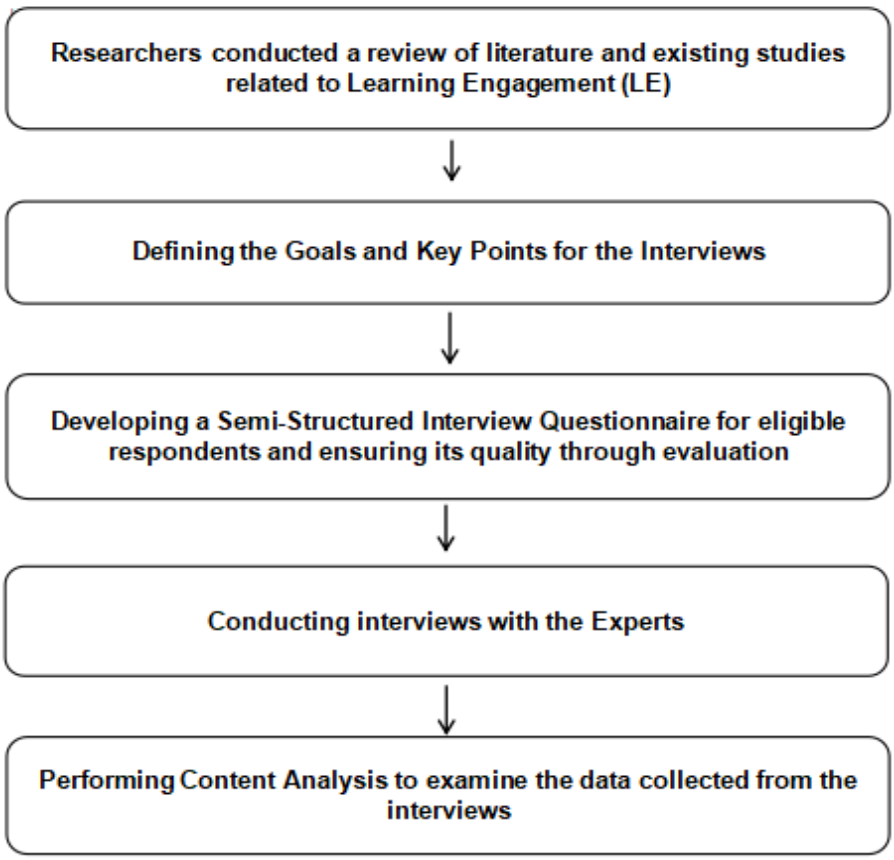

Figure 2 Steps of a Semi-Structured Interview Guideline

3.1.1.3 Development of the Questionnaire on Learning Engagement among College Students

A structured questionnaire was designed following an in-depth literature review to capture multiple dimensions of learning engagement. This development process included drafting items using Likert scales, multiple-choice formats, and open-ended questions. The initial version addressed the three core components of LE and was submitted for evaluation by five experts in the field, who provided ratings ranging from 0.8 to 1.0. The draft instrument was then piloted with a group of 102 college students sharing similar backgrounds, resulting in a reliability coefficient of 0.945. Based on these pilot findings, the questionnaire was revised and refined, producing a final version of 36 items covering the three components of learning engagement. This finalized instrument was subsequently used to survey college students' learning

engagement levels.The instrument used for the study was the questionnaire of students' learning engagement, which included the following steps:

1.By studying relevant academic literature, books and domestic and foreign studies, the researchers interviewed with 5 experts, summarized the definition and components of students' learning engagement,including: behavioral engagement, emotional engagement, cognitive engagement.

2.According to The Student Engagement Instrument (Appleton et al.,2006) and the National Survey of Student Engagement (NSSE) (Kuh, 2001), the researcher adopted questionnaire questions about college students' learning engagement, including three dimensions: behavioral engagement, emotional engagement, cognitive engagement.

3.Researcher developed the questionnaire on learning engagement among college student including 36 items. This instrument thoroughly addresses the three core components of learning engagement, allocating 12 items each to behavioral, emotional, and cognitive engagement.

4.The questionnaire of college student learning engagement was submitted to three experts for review. They evaluated the content for accuracy, the clarity and appropriateness of the language, and the alignment of each question with its operational definition. In addition, the experts assessed the instrument's empirical validity, focusing on its content validity. The Index of consistency (IOC) calculated from their ratings ranged from 0.8 to 1.0 across all 36 items. Based on their feedback and recommendations, the researcher revised and refined the questionnaire to improve its overall quality.

5.The revised College Student Learning Engagement Questionnaire was administered to a sample of 102 first-year college students with comparable backgrounds. Data were collected using the validated instrument, and all 102 completed questionnaires were included in the analysis. Based on this data, Cronbach's α was calculated to assess internal consistency, resulting in an overall reliability coefficient of 0.945 for the questionnaire.

The Questionnaire on Learning Engagement Among college Students is composed of two parts: Part A, which gathers basic personal information, and Part B, which addresses various aspects of students' learning engagement, including both subjective and objective experiences as well as external influences. The questionnaire is designed to ensure that students do not experience fatigue, with a suitable number of questions that cover the three key dimensions of college students' learning engagement. These dimensions are behavioral engagement, cognitive engagement, and emotional engagement.

Each item in the Learning Engagement Questionnaire was assessed using a five-point Likert scale, with response options ranging from 1 (strongly disagree) to 5 (strongly agree). This categorization method is adapted from prior research employing Likert-type scales to measure psychological constructs (e.g., Akin et al., 2019).The scoring is as follows:

- 1.00-1.69: Very Low
- 1.70-2.00: Low
- 2.01-3.40: Medium
- 3.41-4.20: High
- 4.21-5.00: Very High

In subsequent phases, a measurement instrument for college students' learning engagement was constructed using information derived from the charts.

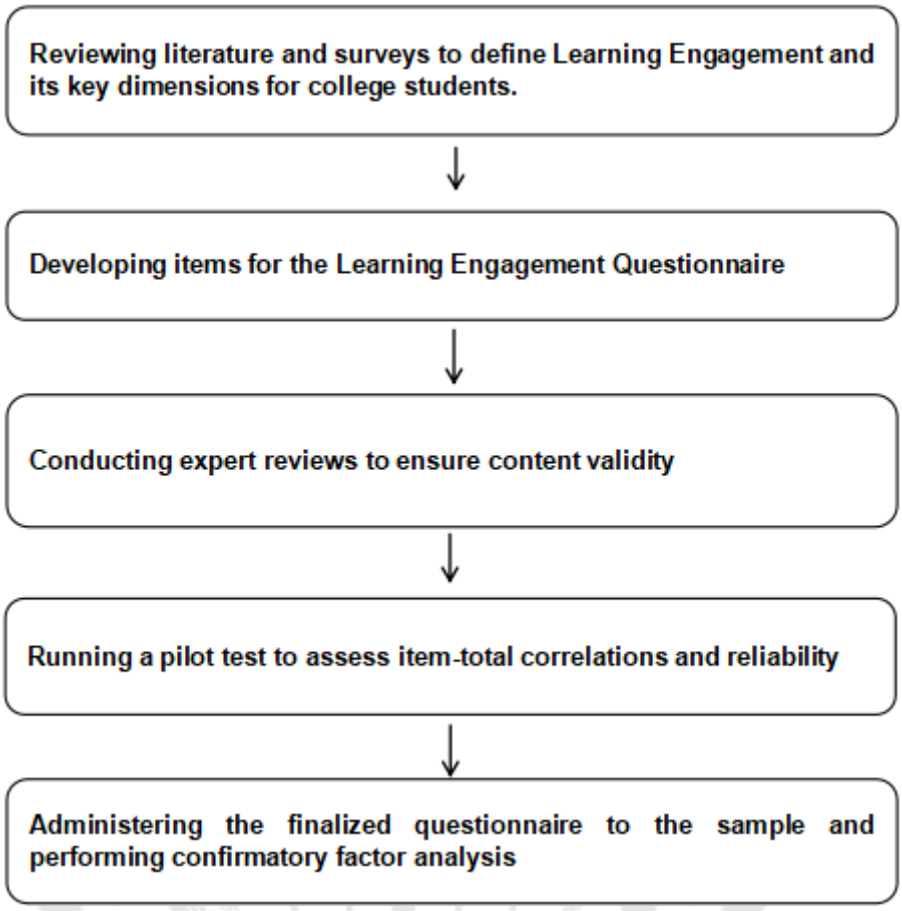

Figure 3 Development of the Learning Engagement Questionnaire for College Students

In this study the college students learning engagement questionnaire plan and a part of items are in the following:

Table 3 Questionnaire on Learning Engagement Among College Students

Instructions: Thank you for participating in this survey on learning engagement. Your responses will help us understand how students engage with their academic work and identify ways to improve the learning experience. This survey is anonymous, and your answers will be kept confidential. Please answer all questions honestly based on your personal experiences.

Demographic Information

Gender:

Major:

NO	ITEM	SCALE				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Behavioral Engagement	1	2	3	4	5
0	I complete my homework before the deadline.					
00	I actively participate in group discussions during class.					
	Emotional Engagement	1	2	3	4	5
0	I am genuinely interested in the topics covered in my courses.					

Table 3 (continued)

NO	ITEM	SCALE				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
00	I am highly motivated to perform well in my studies and achieve good grades.					
	Cognitive Engagement	1	2	3	4	5
0	I reflect on my learning process and plan how to improve.					
00	I analyze my mistakes and plan how to avoid them in the future.					

The Questionnaire on Learning Engagement Among college Students is composed of two parts: Part A, which gathers basic personal information, and Part B, which addresses various aspects of students' learning engagement, including both subjective and objective experiences as well as external influences. The questionnaire is designed to ensure that students do not experience fatigue, with a suitable number of questions that cover the three key dimensions of college students' learning engagement.

These dimensions are behavioral engagement, cognitive engagement, and emotional engagement.

3.2 Phase 2: To develop a collaborative learning model for enhancing learning engagement among college students

3.2.1 Development of the Collaborative Learning Model

The collaborative learning model developed for this study is grounded in a thorough literature review and insights gathered from teacher interviews. The key components of this model include structured group activities, peer-to-peer interaction, and the assignment of specific roles. The researcher aims to define the essential elements that form the foundation of the collaborative learning model. These components are designed to foster a cohesive and effective learning environment where students actively engage, support each other, and work together to achieve collective learning outcomes. The development process of the model is outlined as follows:

Step 1: Literature Review and Preliminary Model Design

A comprehensive review of relevant literature on collaborative learning models, as well as the theories and information associated with them, was conducted. This review formed the basis for the initial design of the collaborative learning model.

Step 2: Alignment with National Policies and Educational Objectives

In accordance with national educational policies and guidelines, such as the Outline of the National Innovation-driven Development Strategy and the Opinions on Accelerating the Construction of High-level Undergraduate Education, the course objectives were determined, taking into account the current status of college students' learning engagement.

Step 3: Curriculum Design Based on University Requirements

Considering the university's curriculum structure and the specific professional requirements of the students involved in the study, the content, duration, and activities for the course were determined. These were aligned with the university's academic framework and the expectations for student learning outcomes.

Step 4: Theoretical Framework and Initial Model Draft

Using social constructivism and engagement theory as the primary theoretical frameworks, the first draft of the collaborative learning model was developed. The proposed model consisted of four main steps: lead-in, task assignment and guidance, group activities, and assessment & conclusion.

Step 5: Pilot Testing and Refinement

A try-out test of the collaborative learning model was conducted with 10 students from a non-experimental class. Based on feedback from these students and suggestions from academic experts, the model was refined. Informal conversations with the students after the test provided valuable insights into their learning experiences, which were used to make further adjustments.

Step 6: Expert Evaluation and Model Validation

To validate the effectiveness of the collaborative learning model, the researcher invited 5 experts to assess its feasibility. The experts evaluated the model's appropriateness, consistency, and overall quality, providing feedback and recommendations for improvement. The evaluations of IOC scores is 1.0, indicating a reasonable alignment with the intended learning objectives. Based on the experts' feedback, further refinements were made to improve the lesson plans.

Step 7: Finalization of the Collaborative Learning Model

Following the experts' suggestions and modifications, the collaborative learning model was revised. The final version was submitted to the experts for a consistency check, specifically evaluating the terminology used and ensuring alignment with the model's objectives. This process confirmed the model's coherence. The finalized model consists of four key steps: lead-in, task assignment and guidance, group activities, and assessment & conclusion. Thus, the final collaborative learning model was determined.

3.3 Phase 3:To evaluate the effectiveness of the collaborative learning model for enhancing learning engagement among college students

In the third phase of the study, the researchers focused on the impact of the Collaborative Learning model on college students to improve their learning engagement. The study utilized a Quasi-Experiment (QE) design that includes experimental and control groups using a two-group research design and a pretest and post-test (Control Group Pretest, Post-test Design). This is a widely used experimental design that helps to evaluate the effectiveness of a learning model.

3.3.1 Research design

To establish a rigorous framework that allows for the robust evaluation of the collaborative learning model in enhancing student engagement. The study adopted a quasi-experimental nonequivalent control group design. This approach is selected to address the practical constraints of random assignment in educational settings while still providing a robust framework for comparison. The experimental group consists of 25 college students exposed to the collaborative learning model, while the control group consist of a comparable class of 25 that continues with traditional learning methods.

Key Elements:

Pretest-Post test -follow up Structure: Both groups was assessed at three strategic points: before the intervention (pretest), after the experiment (post test) and a month later(follow-up). This repeated measure design will help track changes in engagement over time, offering insights into both the immediate and sustained impacts of the collaborative learning model.

Table 4 Randomized Pretest-Post test -Follow Up Design

Group	Pre-test	Experiment	Post-test	Follow-up
ER	T_1	X	T_2	T_3
CR	T_1	——	T_2	T_3

The meaning of the symbols is as follows:

	experimental group
	control group
	random assignment
	testing prior to the intervention experiment (Pretest)
1	
	test following intervention experiments(Post-test)
2	
	test one month after the experiment(Follow-up)
3	
	Treatment: Implementing the learning engagement model in the class to experiment
	no treatment

3.3.2 Research Instruments

This study utilized the questionnaire on college students' learning engagement, which was developed in the second phase of the research, as the primary research instrument.

3.3.3 Participants

A total of 654 first-year students from Chongqing Normal University participated in the pre-test. From this pool, the lowest 50 scoring students were selected. These 50 students were then randomly assigned to either the experimental group or the control group, with each group containing 25 participants. This randomization ensured balanced

representation of low-scoring students in both groups for the subsequent learning model intervention. The experiment of collaborative learning model was delivered exclusively to the students in the experimental group.

3.3.4 Research Procedure

Pre-test

The researcher used the Learning Engagement (LE) questionnaire designed for college students as the assessment tool to conduct a pre-test. A survey was distributed to 654 university students to evaluate their levels of learning engagement. Based on the results, responses were ranked, and the 50 students with the lowest scores were selected as the research sample.

Treatment (Experiment period)

During this stage, the researcher carried out instructional activities following the established schedule, implementing the collaborative learning model. This phase spanned six weeks and included 14 sessions, each lasting 90 minutes. The control group, in contrast, did not receive any learning model intervention.

Post-test

Upon completion of the experimental activities, the researcher conducted the "Learning Engagement Survey for College Students" to the participants. Both the experimental and control groups finished the post-test assessments to measure changes in learning engagement.

Follow-up (One Month Later)

Four weeks after implementing the Collaborative Learning Model, the researcher administered the Learning Engagement Questionnaire once again to the participating college students. This follow-up data was collected and analyzed to evaluate the longer-term effects of the intervention. During this tracking period, students did not participate in any other structured teaching models or interventions, ensuring that the results would specifically reflect the sustained impact of the Collaborative Learning Model without external instructional influences.

3.3.5 Data Analysis

In this section, the researcher provides a structured approach to classifying and quantitatively analyzing the data to meet the study's objectives. The analysis process involves the following stages:

1) Preliminary Statistical Analysis:

Conduct basic statistical procedures on the raw data, including calculation of means and standard deviations.

Use t-test to identify significant differences in learning engagement (LE) levels among participants.

2) Quality Assessment within the Collaborative Learning Model:

Perform quality checks to evaluate how effectively the collaborative learning model promotes learning engagement among college students. This includes reviewing the accuracy and consistency of instructional content delivered through the model.

Calculate a consistency index informed by expert evaluations to assess the reliability and validity of the collaborative learning strategies employed.

3) Comparative Analysis:

Apply one-way repeated measures ANOVA to analyze changes in mean learning engagement levels within the experimental group before and after the experiment, and use repeated measures ANOVA to compare differences between the experimental and control groups over these same time points.

Analyze interactions among factors influencing learning engagement to gain deeper insights into the collaborative model's effectiveness.

By employing these analytical methods, the researcher aims to deliver a comprehensive evaluation of the data, thereby demonstrating the effectiveness of the collaborative learning model in enhancing learning engagement among college students.

CHAPTER 4
RESEARCH RESULTS

Research Topic: "Development of Collaborative Learning Model for Enhancing Learning Engagement among College Students"

The research aims to investigate the learning engagement among college students, focusing on the development and evaluation of a collaborative learning model aimed at enhancing learning engagement among this demographic. The study establishes symbols and letters for data analysis and presents corresponding data analysis results as follows:

Table 5 Symbol and abbreviation of Data Analysis

Abbr.	Meaning
α	Cronbach's Alpha
E	Experimental Group
C	Control Group
LE	Learning Engagement
BE	Behavioral Engagement
EE	Emotional Engagement
CE	Cognitive Engagement
CLM	Collaborative Learning Model
N	Number Of Participants In The Group
M	Mean Value
SD	Standard Deviation
t	t-test Value
p	Probability Value

In this study, the researcher introduced three parts of data analysis, as follows:

Phase 1: To study the definition and components of learning engagement among college students

Phase 2: To develop collaborative learning model to enhance the learning engagement among college students

Phase 3:To evaluate the effectiveness of collaborative learning model for enhancing the learning engagement among college students

4.1 Phase 1: To study the definition and components of learning engagement among college students.

In defining the definition and components of Learning Engagement (LE), this research drew on the framework described by Fredricks, Blumenfeld, and Paris (2004). Their widely cited definition served as the primary reference for articulating LE in this research. In addition, the researcher conducted interviews with five experts to explore their perspectives on the definition and key components of LE. The detailed findings from this investigation are presented below:

4.1.1 Definition of Learning Engagement

To deepen our understanding of learning engagement, interviews were conducted with several academic experts in the fields of educational psychology, student development, and higher education. The experts provided valuable insights into the definition in real-world academic settings.

Based on interviews conducted with five experts, some described learning engagement from the perspective of its purpose and intended educational impact. *"Learning engagement is students' active involvement aimed at achieving deeper understanding and better academic outcomes, emphasizing its role in promoting meaningful and sustained learning."*(Expert 1). Similarly, *"As the extent to which students commit to learning activities to enhance knowledge retention and academic success, underscoring engagement's importance in supporting improved performance and long-term motivation. "*(Expert 3). These insights highlight that learning engagement is not

merely about showing up but about intentionally working toward valuable learning goals and academic growth.

Learning engagement is broadly defined as the degree to which students actively participate and invest in their educational activities, which goes beyond mere attendance to include emotional, cognitive, and behavioral dimensions. Several experts agree on the importance of this multifaceted concept. *"Learning engagement is not limited to the time spent in the classroom but encompasses the depth of students' involvement in the learning process"*(Expert 2). *"Learning engagement is essential for improving student retention rates and overall satisfaction with their educational experience."* (Expert 4) Engaged students are not only more likely to succeed academically but are also more likely to develop a lasting commitment to learning and personal growth.

Learning engagement is understood as a multi-dimensional concept involving students' emotional, cognitive, and behavioral participation in their education. As one expert noted, *"Learning engagement is not limited to the time spent in the classroom but encompasses the depth of students' involvement in the learning process"* (Expert 5). This expert further explained, *"Emotional engagement is about students genuinely caring about what they're learning and feeling motivated to explore it in greater depth"* (Expert 2). They also highlighted cognitive engagement by saying, *"It means putting real mental effort into understanding concepts, making connections, and thinking critically about the material"* (Expert 3). Finally, regarding behavioral engagement, the expert commented, *"It's seen in actions like participating in discussions, staying on task, and consistently completing assignments"* (Expert 4).

Through these expert interviews, others emphasized the concrete ways learning engagement shows up in academic contexts. "Learning engagement is not just attending class but really getting involved in learning activities and staying committed throughout the process" (Expert 3). "Learning engagement is about students consistently showing up ready to participate in a meaningful way and going beyond simply being present" (Expert 4). "Learning engagement is the level of active participation students bring to their

studies, showing genuine interest and a real dedication to learning tasks" (Expert 5). Taken together, these perspectives highlight learning engagement as a mix of behavioral actions, emotional connection, and cognitive effort that reveal how deeply students are involved in their education.

Analysis of the expert interviews revealed a clear consistency between their views and the conceptual framework proposed by Fredricks, Blumenfeld, and Paris (2004). The experts' definitions emphasized behavioral, emotional, and cognitive dimensions of learning engagement, closely reflecting the same three-component model identified in the literature. They also stressed that engagement means more than attendance, highlighting sustained, meaningful participation that supports academic success. Given this alignment, this study adopts a definition of learning engagement as students' active, deliberate involvement in educational activities, expressed through their behaviors, emotions, and cognitive efforts to deepen understanding and improve academic outcomes.

4.1.2 Components of Learning Engagement

Through these expert interviews, participants generally agreed with the framework proposed by Fredricks, Blumenfeld, and Paris (2004), which defines learning engagement as a multidimensional construct consisting of behavioral, emotional, and cognitive components. The experts confirmed that these three aspects are essential for understanding how students truly engage in their academic work. Based on the researcher's review of the literature and these expert interviews, the study identified three key components of learning engagement among college students, which are as follows:

Behavioral Engagement

Through these expert interviews, participants discussed the visible aspects of learning engagement that characterize its behavioral component. As Expert 2 put it, *"Behavioral engagement is really about what students are actually doing—you know, showing up for class, turning in their work on time, and getting involved in the activities that matter"* (Expert 2). Expert 3 explained, *"It's not just how often they participate but whether they're really putting in effort and staying focused instead of just going through*

the motions" (Expert 3). Expert 5 added, *"When students are behaviorally engaged, they're not just sitting there quietly; they're asking questions, joining in discussions, working with classmates—basically taking an active role in their learning"* (Expert 5).

These expert perspectives consistently matched with the definition of behavioral engagement described by Fredricks, Blumenfeld, and Paris (2004), which emphasizes students' observable actions and participation as key indicators of their involvement in learning. Based on these expert insights and supported by Fredricks, Blumenfeld, and Paris's (2004) framework, this study defines behavioral engagement as the set of visible actions and participatory behaviors that demonstrate students' commitment to learning. This dimension includes consistently attending classes, actively taking part in discussions, completing assignments on time, and meaningfully engaging in both collaborative and individual academic tasks.

Emotional Engagement

Through these expert interviews, participants described emotional engagement as the feelings and attitudes that draw students into their learning. As Expert 1 put it, "Emotional engagement is really the spark, it's that genuine interest or enjoyment that gets students to care about what they're learning" (Expert 1). Expert 3 explained, "When students actually feel connected to the material or have positive emotions about the class, they're way more likely to participate, ask questions, and really put effort into understanding it" (Expert 3).

Other experts highlighted the role emotional engagement plays in supporting students through challenges they face in college. Expert 4 noted, "It's especially important in higher education because students deal with stress and anxiety, and emotional engagement can help them feel less isolated and more motivated to keep going" (Expert 4). Expert 5 added, "It's that emotional piece that keeps students involved over time—it helps them handle frustration or setbacks and stay committed to learning even when it gets tough" (Expert 5).

These expert perspectives align with the framework described by Fredricks, Blumenfeld, and Paris (2004), which defines emotional engagement as students'

affective responses that support their involvement in learning. Based on these insights, this study defines emotional engagement as the range of feelings and emotional reactions students experience in relation to their academic work and learning environment. This dimension includes positive emotions such as interest, enthusiasm, and a sense of belonging, while also recognizing the importance of managing negative emotions like anxiety or frustration to maintain meaningful and sustained engagement.

Cognitive Engagement

Through these expert interviews, participants described cognitive engagement as the mental effort and thoughtfulness students bring to their learning. Expert 2 explained, “Cognitive engagement is really about students thinking about how they learn—reflecting on what works for them, changing strategies if needed, and staying focused on really understanding the material” (Expert 2). Expert 3 added, “It’s more than just memorizing facts; students who are cognitively engaged want to really make sense of ideas and figure out how to use them in different situations” (Expert 3).

Other experts emphasized the depth of understanding and self-regulation involved in cognitive engagement. As Expert 4 put it, “When students are cognitively engaged, they’re pushing themselves to understand harder concepts and think critically about what they’re learning instead of just taking it at face value” (Expert 4). Expert 5 added, “It also means they’re managing their own learning—setting goals, monitoring their progress, and keeping themselves on track even when it’s challenging” (Expert 5). Expert 1 noted, “Students who put in that mental work tend to do better overall because they’re using strategies that really help them master tough material” (Expert 1).

These expert perspectives align with the framework described by Fredricks, Blumenfeld, and Paris (2004), which defines cognitive engagement as students’ investment in learning, use of deep strategies, and sustained mental effort to understand complex material. Based on these insights, this study defines cognitive engagement as the degree of intellectual effort, strategy use, and reflective thinking students apply to their learning. This dimension includes critical thinking, problem-solving, analyzing

concepts deeply, and applying knowledge to new contexts to achieve meaningful understanding and academic success.

4.1.3 Reliability Test of Learning Engagement Questionnaire for College Students

Appendix F displays the reliability analysis for the learning engagement (LE) questionnaire completed by college students. In this context, reliability refers to the consistency of the measurement and is essential for ensuring the credibility and precision of research findings. To evaluate the internal consistency of the LE survey, the Cronbach'sα coefficient was calculated.

As shown in the table1, The learning engagement questionnaire produced an overall Cronbach'sα coefficient of 0.945, suggesting a high level of internal consistency. This result indicates that the items appear to measure the intended aspects of learning engagement among college students with reasonable consistency. Therefore, the questionnaire can be considered an appropriate tool for assessing learning engagement in this study.

4.2 Phase 2: To Develop a Collaborative Learning Model for Enhancing Learning Engagement among College Students

Based on the results from the previous research phase, this study refined its understanding of the level, definition, and essential components of learning engagement among college students. Considering the characteristics of these students, the researchers developed a collaborative learning model aimed at enhancing learning engagement through 14 structured instructional sessions. The description of the experiment is divided into two main parts: (1) an explanation of the underlying concepts and principles guiding the collaborative learning model, and (2) a detailed account of how the intervention is organized to foster learning engagement among college students. The following sections provide these details.

4.2.1 Concepts and Principles of Developing Collaborative Learning Model to Enhance Learning Engagement among College Students

Researchers have thoroughly defined and delineated the components of learning engagement among college students. Through a comprehensive review of the literature and analysis of interview data, the primary framework identifies three essential components of college students' learning engagement: 1) Behavioral Engagement, 2) Emotional Engagement, 3) Cognitive Engagement.

To enhance learning engagement, learners can participate in activities tailored to the collaborative learning model, such as group discussions, peer teaching, cooperative problem-solving tasks, and shared research projects. A collaborative learning model refers to an educational approach that emphasizes active student collaboration in learning processes, where learners work together to solve problems, share knowledge, and support each other's learning. In this study, the researchers implemented a comprehensive approach, allowing students to enhance their learning engagement through collaborative teaching activities integrated into their school schedule. These activities were specifically designed to foster interaction, collective problem-solving, and mutual learning among students, consistent with the principles of the collaborative learning model.

These activities are designed to offer students pathways to increased learning engagement. The theoretical foundation is rooted in constructivism utilizing the collaborative learning model (Johnson&Johnson,2009), problem-based learning (Barrows&Tamblyn,1980), and experiential learning (Kolb, 2015). This combination of theories serves to enhance students' active participation, foster deeper cognitive engagement, and create meaningful connections between their learning experiences and real-world contexts. It provides a robust theoretical framework for both further research and practical applications aimed at improving college students' learning engagement. By emphasizing collaborative interaction and shared knowledge construction, the approach aligns with social constructivism and engagement theory, which highlight the importance of active, participatory learning for fostering motivation

and engagement in educational settings. The use of the collaborative model in student activities significantly contributes to their sustained involvement and enthusiasm in the learning process.

Additionally, the researcher sought advice from evaluation model experts and conducted interviews to better understand how to develop a collaborative learning model. In order to enhance college students' learning engagement, experts' opinions reached a consensus, summarized as follows:

1.Based on the preceding literature review and analysis of learning engagement (LE) and its three components, along with the defining characteristics of the Collaborative Learning Model (CLM), this study identified four key instructional steps as appropriate for promoting engagement: Lead In, Assignment and Guidance, Group Activity (including Practical Activities, Small Group Learning, Discussion, and Sharing), and Assessment & Conclusion. These steps reflect principles highlighted in the reviewed research and were further validated through expert consultation, with all five interviewed experts confirming the suitability and relevance of this structured approach for enhancing learning engagement among college students.

2.Experts pointed out that when developing the Collaborative Learning Model (CLM), it's important to help students take an active role in learning. They stressed teaching students not just to participate and put in effort (behavioral engagement), but also to build real interest and motivation (emotional engagement) and to think deeply and reflect on ideas (cognitive engagement). According to the experts, giving students clear chances to practice all three aspects through collaborative activities is key to preparing them for future academic challenges.

3.Experts also agreed that for the CLM to work well, the quality of activities matters more than how many there are. They recommended designing activities that encourage meaningful interaction and shared learning experiences. This helps students engage behaviorally, emotionally, and cognitively with their peers. By talking, working together, and reflecting on what they learn, students are more likely to understand and remember important ideas they can use later on.

4.Traditional teaching methods in China are often conventional, especially in large class settings. To enhance students' learning engagement, project-based activities should be differentiated from traditional lecture-based courses. These activities should emphasize experiential learning, allowing students to actively engage with the content, collaborate with peers, and apply their knowledge in practical contexts.

Theoretical Foundations: Constructivism

The development of these four instructional steps in the Collaborative Learning Model is grounded in the principles of constructivism, which emphasize that learners actively build knowledge through meaningful interactions and experiences. In the Lead In stage, constructivist theory supports engaging students' prior knowledge and creating context for new learning, helping them connect new concepts to what they already know. The Assignment and Guidance phase aligns with scaffolding, where the instructor provides clear goals, resources, and structured support to help students manage challenging tasks. During the Group Activity stage—including practical activities, small-group learning, discussion, and sharing—students co-construct understanding through social interaction, peer dialogue, and collaborative problem-solving, all of which are central to constructivist learning environments. Finally, the Assessment & Conclusion step encourages reflection and consolidation of learning, allowing students to evaluate their understanding, share insights, and apply knowledge to future contexts. By structuring teaching practices around these steps, the model applies constructivist principles to promote deeper learning engagement among university students.

4.2.2 Development of Collaborative Learning Model to Enhance Learning Engagement among College Students

When developing the Collaborative Learning Model (CLM), researchers incorporated learner-centered teaching principles and insights from expert interviews to structure the learning process effectively. The model was designed around four key steps: Lead In, Assignment and Guidance, Group Activity, and Assessment & Conclusion. This structured sequence reflects recommendations in collaborative learning

research, which emphasize clear guidance, scaffolding, and opportunities for social interaction to support knowledge construction (Johnson, Johnson, & Smith, 2014).

These collaborative learning activities encouraged students to share ideas, engage in meaningful dialogue, and co-construct understanding with their peers. By actively participating in discussions, practical tasks, and small-group problem-solving, students developed higher-order thinking and deeper comprehension of content. The model also aimed to create an inclusive and supportive environment where learners respected diverse perspectives, built positive relationships, and offered mutual assistance—practices widely recognized as essential for effective collaborative learning (Gillies, 2016).

Through engaging in the Collaborative Learning Model (CLM), students worked collaboratively to share and exchange ideas with their peers, supporting the development of higher-order thinking and deeper understanding. They took an active role in their learning engagement (LE) by contributing thoughtfully, discussing concepts openly, and articulating their perspectives. These collaborative activities were designed to foster a supportive, respectful, and interactive atmosphere, encouraging students to build positive relationships, appreciate diverse viewpoints, and provide mutual assistance and encouragement.

1. Development Goals of the Collaborative Learning Model in this Study

In this study, the collaborative learning model, designed to enhance college students' learning engagement, consists of a series of learning activities developed by the researcher. The aim is to provide participating college students with an improved learning engagement experience. The model is structured around objectives as follows:

1) Enhancing Behavioral Engagement among College Students

The Collaborative Learning Model (CLM) is designed to strengthen college students' behavioral engagement by encouraging consistent, active participation in academic and campus activities. This dimension focuses on supporting students to take initiative, contribute meaningfully to classroom discussions, and complete tasks with sustained

effort. CLM aims to cultivate behaviors that demonstrate commitment and responsibility, both in individual work and collaborative group settings, ensuring students remain attentive and involved throughout the learning process.

2) Enhancing Emotional Engagement among College Students

Another key purpose of the CLM is to foster students' emotional engagement by helping them build positive connections to their learning experiences. This involves creating a supportive environment where students develop self-acceptance, confidence, and a sense of personal value. By encouraging emotions such as interest, motivation, and enjoyment, CLM seeks to promote meaningful emotional connections that make learning more rewarding and personally significant for students.

3) Enhancing Cognitive Engagement among College Students

The CLM also targets the enhancement of cognitive engagement by supporting students' intellectual investment in learning. This includes promoting critical thinking, encouraging thoughtful reflection, and helping students apply their knowledge across different contexts. By developing metacognitive skills such as self-regulation and problem-solving, CLM aims to deepen students' understanding and enable them to meaningfully integrate new knowledge with existing concepts for long-term academic success.

The Collaborative Learning Model (CLM) is developed to enhance college students' learning engagement (LE) and consists of 14 carefully designed instructional sessions. Each session incorporates student-centered teaching strategies alongside relevant psychological approaches to support and improve students' active participation, motivation, and overall learning experience.

2.The Steps of the Collaborative Learning Model

Based on the literature review and professional opinions from 5 experts, the collaborative learning model is structured into four key steps: Lead In, ask Assignment and Guidance, Group Activity and Assessment&Conclusion.The development of these four instructional steps in the Collaborative Learning Model is grounded in the principles

of constructivism, which emphasize that learners actively build knowledge through meaningful interactions and experiences.

The four steps of the collaborative learning model based on the constructivism are as follows:

Step 1: Lead-in (Warm-up and Introduction)

In the Lead In stage, constructivist theory supports engaging students' prior knowledge and creating context for new learning, helping them connect new concepts to what they already know. This initial step involves creating a welcoming and engaging environment to introduce the main theme of the lesson. Teachers pose thought-provoking questions, create a stimulating learning situation, and activate prior knowledge to engage students. The goal is to spark curiosity and encourage students to think critically about the topic, setting the stage for active participation and collaboration throughout the lesson.

Step 2: Task Assignment and Guidance

The Assignment and Guidance phase aligns with scaffolding, where the instructor provides clear goals, resources, and structured support to help students manage challenging tasks. In this step, the teacher provides clear task assignments and guidance to support students' understanding. This includes brief mini-lessons, where key concepts are explained, and students are provided with the necessary tools or frameworks to tackle the task. The teacher plays a facilitative role, offering direction and clarification while encouraging collaborative exploration and peer support. The focus is on promoting shared learning goals and helping students develop a collective understanding of the content.

Step 3: Group Activity

During the Group Activity stage, including practical activities, small-group learning, discussion, and sharing—students co-construct understanding through social interaction, peer dialogue, and collaborative problem-solving, all of which are central to constructivist learning environments. Students work in small groups to engage in collaborative activities that require discussion, problem-solving, and knowledge sharing. These activities are designed to promote critical thinking, encourage peer-to-peer learning, and apply the concepts taught in Step 2 to real-world situations. Students are encouraged to exchange ideas, reflect on different perspectives, and support each other's learning. The teacher acts as a facilitator, monitoring the groups, providing

support when needed, and ensuring that all students are actively participating in the collaborative process.

Step 4: Assessment and Conclusion

the Assessment & Conclusion step encourages reflection and consolidation of learning, allowing students to evaluate their understanding, share insights, and apply knowledge to future contexts. By structuring teaching practices around these steps, the model applies constructivist principles to promote deeper learning engagement among university students. The final step focuses on assessing the students' learning outcomes and reinforcing the lesson's key takeaways. This includes both formal and informal assessments, such as group presentations, peer feedback, and individual reflections. Students are encouraged to reflect on what they have learned and how they applied their knowledge through the collaborative process. The teacher provides feedback on both the process and the content, highlighting areas of strength and offering suggestions for improvement. The lesson concludes with a summary that reinforces the main concepts and encourages students to think about how they can apply their learning in future contexts.

Each of these steps is designed to foster engagement, collaboration, and critical thinking, ensuring that students actively participate in the learning process and work together to achieve their learning goals.

3.Contents used to organize learning activities of Collaborative Learning model

In this study, college students' learning engagement comprises three components, and the course activities will focus on these areas.

In this study, college students' learning engagement is understood to comprise three core components: behavioral engagement, emotional engagement, and cognitive engagement. The course activities designed under the Collaborative Learning Model are specifically structured to target and enhance these dimensions of engagement. The considerations for organizing these activities are as follows:

1.Behavioral Engagement To enhance behavioral engagement, the Collaborative Learning Model encourages active participation and responsibility in the

learning process. Activities are designed to involve students in group discussions, collaborative problem-solving tasks, and hands-on activities that require their active involvement. Students are encouraged to take on different roles within their groups, contribute their ideas, and engage in peer feedback. By incorporating these interactive and action-based activities, the model ensures that students are not passive recipients of information but are actively engaged in applying their knowledge and working collaboratively to achieve learning objectives.

2.Emotional Engagement Emotional engagement is fostered through activities that help students build connections with the content and with each other. The Collaborative Learning Model creates a supportive environment where students feel safe to express their ideas, take risks, and affirm each other's contributions. By working together in groups, students develop a sense of community and mutual support, which strengthens their emotional investment in the learning process. Teachers also use positive reinforcement and provide regular feedback that encourages self-efficacy and motivation. Additionally, activities are designed to be personally relevant, allowing students to see the value of what they are learning and feel more emotionally connected to the material.

3.Cognitive Engagement Cognitive engagement is central to the Collaborative Learning Model, as the model emphasizes deep, critical thinking and active knowledge construction. Activities are designed to challenge students' thinking by presenting complex problems or real-world scenarios that require analysis, reflection, and synthesis of ideas. Students are encouraged to engage in metacognitive activities, such as self-reflection and peer discussions, which help them monitor and regulate their learning. The model also promotes the development of higher-order thinking skills, as students are tasked with applying their learning in novel contexts and engaging in collaborative problem-solving. This fosters deeper cognitive involvement and helps students develop a more profound understanding of the content.

Through the intentional design of activities that target each of these three components of behavioral, emotional, and cognitive engagement, the Collaborative

Learning Model provides a holistic approach to enhancing students' learning engagement. The model emphasizes not only active participation but also emotional connection and intellectual investment, ensuring that students are fully engaged and motivated in the learning process.

1.Experiment period

The duration of the collaborative learning model includes 14 learning plans, each of which lasts 90 minutes, twice a week and is carried out in six weeks.

2.Principles for Activity Implementation

The learning activities of this study were organized according to the following principles, grounded in the Collaborative Learning Model for enhancing learning engagement:

1) Fostering Innovation and Practical Abilities: The model encourages students to innovate within the framework of professional and social practices. Activities are designed to enhance students' research and observational skills, promoting cognitive engagement by challenging students to think critically and creatively within collaborative settings.

2)Facilitating Opportunities for Critical Thinking and Social Connection: Collaborative learning activities provide students with the chance to develop their cognitive engagement by solving complex problems together and making connections with broader societal issues. This enhances their ability to think critically, work cooperatively, and see the relevance of their learning in real-world contexts.

3)Encouraging Positive Thinking and Stimulating Potential: The model promotes emotional engagement by creating a supportive and motivating environment. Activities are designed to stimulate students' intrinsic motivation, encouraging them to take initiative, engage positively, and tap into their full potential through collaborative work.

4)Promoting Peer Collaboration and Support: In line with the Collaborative Learning Model, students are encouraged to help each other and cooperate to achieve common project goals. This peer interaction enhances both

behavioral and emotional engagement, as students share responsibility and contribute to a collective learning experience. Positive feedback is provided throughout the process to nurture creative thinking and reinforce students' self-efficacy.

By organizing learning activities based on these principles, the Collaborative Learning Model creates a dynamic and engaging learning environment that fosters active participation, emotional connection, and deep cognitive involvement in the learning process.

1.The Role of the Researcher

The researcher's role in the Collaborative Learning Model for enhancing learning engagement includes the following responsibilities:

1) Understand and Study the Collaborative Learning Model: The researcher must thoroughly understand the principles and characteristics of the Collaborative Learning Model to effectively implement it and enhance student engagement across all dimensions—behavioral, emotional, and cognitive.

2) Make Relevant Preparations: Prior to implementing the Collaborative Learning Model, the researcher must prepare appropriate learning activities, resources, and guidelines that foster active student participation, collaboration, and engagement.

3) Facilitate Interaction and Cooperation: The researcher must create a supportive learning environment that encourages positive interaction and cooperation among students. They should guide students through the learning process using teaching strategies such as observation, stimulation, linking ideas, and iterative feedback, ensuring that all students remain engaged and motivated.

4) Monitor Student Learning and Behaviors: The researcher needs to closely observe students' learning processes and behaviors, providing timely feedback and support. This helps maintain high levels of behavioral and cognitive engagement, ensuring students stay focused and actively involved in the learning activities.

By fulfilling these roles, the researcher supports the active, emotionally connected, and intellectually involved learning experiences that are central to the Collaborative Learning Model.

2.The Roles of Participants

The role of participants in the learning activities under the Collaborative Learning Model for enhancing learning engagement are as follows:

1)Cooperate and Participate: Participants are expected to engage actively and cooperatively in every activity. This ensures high levels of behavioral engagement, where students take responsibility for their role in the group, contribute their ideas, and actively participate in discussions and tasks.

2)Express Opinions Freely: Students are encouraged to share their viewpoints openly, based on personal interests and experiences. This fosters a sense of emotional engagement, as it allows students to feel valued and motivated to participate by expressing their individual perspectives in a supportive environment.

3)Respect Others' Opinions: Respecting the opinions of others is crucial for maintaining a positive and inclusive learning environment. By respecting diverse viewpoints, students develop emotional engagement and a collaborative spirit that enhances the group dynamics and strengthens relationships among participants.

4)Listen and Encourage: Active listening is a key skill in collaborative learning. Students are encouraged to listen attentively to their peers and offer constructive encouragement. This not only supports emotional engagement but also fosters a positive atmosphere that boosts motivation and self-confidence among students.

5)Collaborate on Opinions: Participants work together to express and refine ideas, building on each other's contributions. This promotes cognitive engagement by encouraging deeper thinking and collaborative problem-solving. Students actively share, discuss, and refine their understanding of the content as they engage with each other's perspectives.

6)Observe and Help: Students are encouraged to observe their peers' behaviors and offer sincere help without bias. This reinforces behavioral engagement as students take initiative to support others, creating a collaborative environment where everyone contributes to each other's success.

7)Comply with Activity Requirements: Participants are expected to follow the requirements of each activity diligently and responsibly. This ensures behavioral engagement, as students take ownership of the tasks assigned to them and follow through with the necessary effort and attention.

8)Reflect and Document: After each activity, students reflect on their learning experiences and document their thoughts, insights, and challenges. This reflection process promotes cognitive engagement by encouraging students to think critically about what they have learned and how they can apply it in future situations.

By clearly defining these roles, the Collaborative Learning Model helps students engage on multiple levels—behaviorally, emotionally, and cognitively—thus enhancing their overall learning experience and promoting deeper, more meaningful engagement in the learning process.

In this research, the researcher developed a collaborative learning model intervention to enhance college students' learning engagement. It consists of 14 learning programs, as detailed in Appendix I. From here's how the researcher explained the steps of the learning plan:

Session 1: Orientation

The purpose of this first session is to introduce students to the concept of Learning Engagement (LE) and to establish the foundation for using the Collaborative Learning Model (CLM) throughout the course. Grounded in constructivist learning theory, the session is designed to create a supportive and interactive environment that encourages students to reflect on their own learning behaviors, emotions, and thinking processes. Activities are developed to help students recognize the importance of Behavioral Engagement (active participation and effort), Emotional Engagement

(interest, motivation, and connection), and Cognitive Engagement (critical thinking and reflection).

To achieve these goals, the session applies key CLM strategies, including small-group discussions, peer sharing, and guided reflections. These strategies allow students to articulate their understanding of LE, exchange ideas with classmates, and collaboratively define what engagement means in their context. By building a sense of community and shared purpose early on, this lesson aims to increase students' readiness to participate actively in later sessions, fostering a learning environment where they feel motivated, connected, and intellectually engaged.

Session 2: Introduction of learning engagement: behavioral engagement

This session introduces students to the concept of Behavioral Engagement as the first step in strengthening their learning engagement through the Collaborative Learning Model (CLM). The aim is to raise students' awareness of their own learning behaviors—such as attending classes regularly, participating actively in discussions, submitting assignments on time, and joining group or extracurricular activities. Designed to be reflective and interactive, the session encourages students to evaluate their current habits, identify areas for improvement, and share ideas with peers. By using self-assessment worksheets, peer discussions, and small-group brainstorming, the lesson creates opportunities for students to exchange practical strategies and commit to specific goals. This collaborative approach not only clarifies expectations but also supports students in developing consistent, proactive behaviors essential for academic success.

Session 3: Enhancing Behavioral Engagement (Rule-Building & Role Assignment)

This session focuses on deepening students' understanding of Behavioral Engagement by targeting class attendance and active participation. It is designed to help students recognize the importance of showing up consistently and contributing meaningfully to class discussions—key aspects of engaged learning. The session uses CLM strategies such as peer dialogues, paired brainstorming, and whole-class sharing to identify barriers and develop concrete, personalized strategies for improving

attendance and participation. By incorporating role-play and structured class discussions, students experience what active participation looks like in practice. The goal is to build confidence, accountability, and shared norms for engagement, laying the groundwork for a more connected and interactive learning community.

Session 4: Strengthening Behavioral Engagement (Responsibility and Accountability)

This session shifts the focus to students' responsibility for submitting assignments on time—an essential part of Behavioral Engagement. The purpose is to help students understand how effective time management and personal accountability support consistent academic progress. Through collaborative activities such as self-reflection, small-group discussions, and shared planning, students examine their own challenges with deadlines and brainstorm practical solutions. By designing individualized time management plans, they learn to break tasks into manageable steps and develop habits that reduce procrastination. The collaborative design of the session fosters peer support and mutual encouragement, aiming to help students build discipline and ownership over their learning commitments.

Session 5: Behavioral Engagement Summary and Reflection

This concluding session serves to consolidate what students have learned about Behavioral Engagement in the previous sessions. The primary goal is to encourage reflection on personal progress and to strengthen long-term commitment to consistent engagement behaviors. Through self-assessment, group discussions, and the creation of personalized improvement plans, students evaluate their attendance, participation, and assignment submission habits. The session emphasizes sharing strategies, recognizing challenges, and setting clear, realistic goals for the future. By fostering an open, supportive environment, the lesson helps students connect their behaviors to their academic outcomes and reinforces the importance of sustained, proactive engagement as part of their learning journey.

Session 6: Introduction to Emotional Engagement

This session introduces students to the concept of Emotional Engagement as part of the broader effort to strengthen learning engagement through the Collaborative

Learning Model (CLM). The design emphasizes helping students recognize the range of emotions they experience in academic settings, from excitement and motivation to frustration or anxiety. Using CLM strategies such as guided reflection, peer discussion, and small-group analysis of case studies, students are encouraged to identify their own emotional patterns and understand how these feelings influence their learning. By promoting open dialogue and self-awareness, this session aims to lay the groundwork for developing positive emotional connections to learning, building a supportive environment where students feel more comfortable sharing experiences and supporting one another in managing emotions constructively.

Session 7: Building Positive Emotional Responses

This session focuses on helping students actively cultivate positive emotional responses that enhance their motivation and persistence in learning. The lesson is designed to deepen students' understanding of how emotions like excitement, interest, and enjoyment can improve their engagement and academic outcomes. Through CLM activities such as personal self-assessment, pair discussions, and collaborative analysis of case studies, students share experiences that have triggered positive emotions and develop strategies for fostering such responses in challenging academic situations. The goal is to encourage students to recognize what motivates them, exchange ideas with peers, and adopt practical approaches that make learning more enjoyable and personally meaningful.

Session 8: Enhancement of Emotional Engagement- Managing Negative Emotions in Learning

While positive emotional engagement is vital, managing negative emotions such as anxiety, frustration, or boredom is equally important. This session will focus on how students can identify and manage negative emotions that arise during learning, preventing these feelings from hindering their academic performance. Cavanagh (2014) stresses the importance of emotional regulation in learning. Cavanagh argues that students who are taught emotional regulation techniques—such as mindfulness or cognitive reframing—are better able to manage negative emotions and, consequently, maintain their engagement in challenging academic tasks. This emotional resilience not

only helps students overcome frustration and anxiety but also enhances their ability to persist through difficulties, improving both learning outcomes and well-being.

Session 9: Reflection and Strategies for Continued Improvement

This final session brings together the insights and strategies developed in the previous Emotional Engagement lessons to help students create personalized, sustainable plans for ongoing growth. The design emphasizes structured reflection on individual emotional engagement journeys, encouraging students to recognize their progress and set realistic goals for the future. Through CLM activities including self-assessment, peer feedback, and collaborative discussion, students share effective strategies and learn from one another's experiences. The goal is to help students build a clear, actionable plan for maintaining and enhancing emotional engagement, ensuring they remain motivated, resilient, and connected throughout their academic careers.

Session 10: Introduction to Cognitive Engagement

This session introduces students to Cognitive Engagement as a key dimension of Learning Engagement within the Collaborative Learning Model (CLM). It aims to prompt students to think about how they approach learning tasks, encouraging them to move beyond simple memorization toward meaningful understanding. Activities are designed to help students reflect on their study habits, share insights with peers, and recognize the value of critical thinking and deep learning strategies. By creating a space for discussion and exchange, the session sets the tone for students to take greater responsibility for their intellectual involvement and prepares them for more advanced engagement in later lessons.

Session 11: Fostering Critical Thinking

This lesson focuses on developing students' capacity for critical thinking as an essential part of Cognitive Engagement. The design emphasizes questioning, analyzing, and considering multiple viewpoints, helping students become more thoughtful learners. Through collaborative discussions, partner work, and small-group case analysis, students practice articulating their ideas and challenging assumptions in a supportive environment. The goal is to strengthen their ability to evaluate information and reason effectively, skills that will serve them in academic settings and beyond.

Session 12: Applying Knowledge and Problem-Solving

This session builds on previous work by helping students apply what they know to new and practical contexts. The focus is on enhancing problem-solving skills and demonstrating how knowledge can be used creatively and analytically. Activities encourage students to work in groups to analyze real-life scenarios, propose solutions, and refine their ideas through feedback. By engaging in collaborative planning and structured sharing, students learn to break complex problems into manageable steps and develop strategies that highlight the relevance of their learning to everyday challenges.

Session 13: Consolidating Cognitive Engagement Skills

Designed as a reflective session, this lesson invites students to consider how their thinking has evolved over the course of the Cognitive Engagement units. It encourages them to assess their own growth in areas such as critical analysis, problem-solving, and knowledge application. Students discuss successes and challenges with peers, share strategies that worked for them, and identify areas they wish to strengthen. The aim is to help students see cognitive engagement as an ongoing process and to support them in developing personal action plans that will guide their continued learning.

Session 14: Assessment & Conclusion – Reflecting on Learning Engagement

The final session brings the entire Collaborative Learning Model course to a close by encouraging students to reflect on their journey across all 14 sessions. It provides structured opportunities to review progress in behavioral, emotional, and cognitive engagement, helping students recognize how their learning habits and attitudes have changed. Through self-assessment, group discussion, and peer feedback, students consider what strategies have been most effective and set goals for maintaining and building on these practices. The session reinforces the importance of continuous self-awareness and collaboration, aiming to equip students with tools to stay engaged and motivated in their future academic work. Additionally, the session emphasizes the value of setting intentions for ongoing personal development. Students are guided to think about practical ways to apply the knowledge and strategies they

have gained, helping them plan for sustained progress in both their academic work and personal growth.

Overall, the course has been designed as an engaging journey in which students not only acquired new knowledge but also practiced collaboration, critical thinking, and self-awareness. These capabilities are intended to support their learning engagement well beyond this class. The full 14-session plan of the Collaborative Learning Model, structured to enhance learning engagement among college students, is summarized in the following table.

Table 6 Collaborative Learning Model For Enhancing Learning Engagement among College Students

Session	Learning Activity	Objective	Strategy/Technique
1	Orientation	1. To introduce the concept and significance of learning engagement. 2. To introduce collaborative learning and course.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment
2	Behavioral Engagement: Introduction and Group Interactive Activities	1. To introduce the concept of behavioral engagement and explain its importance in academic success. 2. To encourage students to reflect on their current behavioral engagement and identify strategies to improve in areas like attendance, participation, and assignment submission.	Project-Based Learning (PBL) Reciprocal Peer Learning, Inquiry-Based Learning,

Table 6 (continued)

Session	Learning Activity	Objective	Strategy/Technique
3	Behavioral Engagement:Rule-Building & Role Assignment	1. To improve students' consistency in class attendance and participation. 2. To encourage active involvement in class discussions and activities.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning
4	Behavioral Engagement: Responsibility and Accountability:	1. To take responsibility for individual tasks within a collaborative project. 2. To demonstrate accountability by working collaboratively to complete a group project.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning
5	Behavioral Engagement: Summary and Reflection	1. To present collaborative work effectively to the class. 2. To reflect on personal and group performance, providing constructive peer feedback.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment

Table 6 (continued)

Session	Learning Activity	Objective	Strategy/Technique
6	Emotional Engagement: Introduction	1. To help students understand the concept of emotional engagement and its impact on learning outcomes. 2. To guide students in recognizing and managing their emotional responses to learning environments, fostering a more positive and productive academic experience.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment
7	Emotional Engagement: Building Positive Emotional Responses	1. To help students recognize and enhance positive emotional responses (e.g., excitement, motivation) in their learning activities. 2. To teach students strategies for fostering positive emotions, even in the face of challenging academic tasks.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment

Table 6 (continued)

Session	Learning Activity	Objective	Strategy/Technique
8	Emotional Engagement: Managing Negative Emotions in Learning	1. To help students recognize and understand the impact of negative emotional responses (e.g., anxiety, frustration) on their learning. 2. To teach students strategies for managing and reducing negative emotions to enhance their emotional engagement in academic activities.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment
9	Emotional Engagement: Reflection and Strategies for Continued Improvement	1. To help students reflect on their emotional engagement journey and the strategies they have learned. 2. To guide students in creating a long-term plan for maintaining and enhancing emotional engagement in their academic work.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment

Table 6 (continued)

Session	Learning Activity	Objective	Strategy/Technique
10	Cognitive Engagement: Introduction	1. To introduce the concept of cognitive engagement and explain its role in achieving deep learning and academic success. 2. To encourage students to reflect on their own cognitive engagement levels and develop strategies to improve their critical thinking, problem-solving, and conceptual understanding in their learning.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning,Peer Assessment
11	Cognitive Engagement: Critical Thinking	1. To strengthen students' ability to analyze and evaluate information critically, and to apply these skills to their learning. 2. To help students develop strategies for questioning assumptions and approaching problems from multiple perspectives.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment

Table 6 (continued)

Session	Learning Activity	Objective	Strategy/Technique
12	Cognitive Engagement: Problem Solving and Application	1. To enhance students' problem-solving abilities and their capacity to apply knowledge to real-world situations. 2. To encourage students to think creatively and analytically when tackling problems.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning
13	Cognitive Engagement: Integration and Reflection	1. To help students integrate critical thinking, problem-solving, and real-world application into a cohesive approach to learning. 2. To encourage students to reflect on their cognitive engagement progress and set personal goals for continued improvement.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment
14	Assessment & Conclusion-Reflection on Learning Engagement	1. To reflect on personal growth in the three dimensions of engagement: behavioral, cognitive, and emotional. 2. To develop strategies for continued improvement in collaborative learning practices.	Reciprocal Peer Learning, Project-Based Learning,Inquiry-Based Learning, Peer Assessment

4.3 Phase 3: To evaluate the effectiveness of the collaborative learning model for enhancing learning engagement among college students

In order to evaluate the effectiveness of the collaborative learning model for enhancing learning engagement among college students, the researcher proposed two hypotheses:

Hypothesis 1: In the experimental group, students' learning engagement after receiving the collaborative learning model and after the follow up period is higher than before beginning the experiment.

Hypothesis 2: In the experimental group, students' learning engagement after receiving the collaborative learning model and after the follow up period is higher than the students in the control group.

Data analysis results as following:

4.3.1 Comparison of Pretest Differences Between Control and Experimental Groups

Prior to the implementation of the collaborative learning model, statistical analyses were conducted to compare the experimental group and the control group. Quantitative results are expressed as mean ± standard deviation ($x \pm s$). Comparisons between groups were performed using the t-test, with a p-value below 0.05 indicating statistical significance.

Table 7 Comparison of Pretest Differences Between Control and Experimental Groups

Component	Group	N	Mean	Std. Deviation	Std. Error Mean	t	P	Cohend
Behavioral Engagement	Control Group	25	1.747	0.245	0.049	-0.132	0.896	0.268
	Experimental Group	25	1.757	0.290	0.058			
Emotional Engagement	Control Group	25	1.670	0.321	0.064	-0.676	0.503	0.262
	Experimental Group	25	1.720	0.183	0.037			
Cognitive Engagement	Control Group	25	1.963	0.327	0.065	0.100	0.920	0.352
	Experimental Group	25	1.953	0.376	0.075			
Learning Engagement	Control Group	25	1.772	0.126	0.025	-1.304	0.199	0.117
	Experimental Group	25	1.815	0.108	0.022			

1. As shown in the table, the mean behavioral engagement scores for the control group and the experimental group are 1.747 and 1.757, respectively. An independent samples t-test revealed t = -0.132, with a corresponding p = 0.896 (P > 0.05). Therefore, there is no significant difference in the behavioral engagement dimension between the two groups before the experiment.

2. The mean emotional engagement scores for the control group and the experimental group are 1.670 and 1.720, respectively. An independent samples t-test yielded t = -0.676, with a corresponding p = 0.503 (P > 0.05). Thus, there is no significant

difference in the emotional engagement dimension between the two groups before the experiment.

3. The mean cognitive engagement scores for the control group and the experimental group are 1.963 and 1.953, respectively. An independent samples t-test produced t = 0.100, with a corresponding p = 0.920 (P > 0.05). Hence, there is no significant difference in the cognitive engagement dimension between the two groups before the experiment.

4. The mean learning engagement scores for the control group and the experimental group are 1.772 and 1.815, respectively. An independent samples t-test indicated t = -1.304, with a corresponding p = 0.199 (P > 0.05). Therefore, there is no significant difference in the learning engagement dimension between the two groups before the experiment.

In summary, since there are no significant differences in the pre-test learning engagement scores between the control and experimental groups, they can be used as valid subjects for the Collaborative Learning Model intervention.

4.3.2 Results of Data Analysis for the Experimental Group

In this study, the researcher used a one-way repeated measures ANOVA to compare the level of learning engagement among college students in the experimental group before the experiment (Pretest), after the experiment (Post-test), and follow-up.

Table 8 One-way Repeated Measures ANOVA for the Experimental Group

Components	Point	Mean	Std. Deviation	F	P	LSD
	Pretest	1.752	0.038			2>1,3>1
Behavioral Engagement	Post-test	2.060	0.099			

Table 8 (continued)

Components	Point	Mean	Std. Deviation	F	P	LSD
	Follow up	2.100	0.091			
	Pretest	1.695	0.037			2>1,3>1
Emotional Engagement	Post-test	1.907	0.077			
	Follow up	1.940	0.104			
	Pretest	1.958	0.050			2>1,3>1
Cognitive Engagement	Post-test	2.175	0.100			
	Follow up	2.187	0.104			
	Pretest	1.802	0.017	9.999	0.001	2>1,3>1
Learning Engagement	Post-test	2.047	0.041			
	Follow up	2.076	0.048			

The results from the one-way repeated measures ANOVA provide clear evidence of significant improvements across all dimensions of learning engagement (LE) following the implementation of the Collaborative Learning Model (CLM). The findings demonstrate positive changes sustained over time, with no significant decline during the follow-up phase.

Behavioral Engagement

Mean scores for behavioral engagement increased from 1.752 at pre-test to 2.060 at post-test, and further to 2.100 at follow-up, indicating a consistent upward trajectory. The LSD post-hoc comparisons confirmed that both post-test and follow-up means were significantly higher than pre-test levels ($p < 0.05$), while the difference between post-test and follow-up was not significant. The slightly higher standard

deviations at post-test (0.099) and follow-up (0.091) compared to pre-test (0.038) suggest greater variability in student participation after the intervention. Overall, these results indicate that CLM successfully enhanced students' active participation and sustained behavioral engagement over time.

Emotional Engagement

Emotional engagement also demonstrated a notable improvement, with mean scores rising from 1.695 at pre-test to 1.907 at post-test and 1.940 at follow-up. The LSD test revealed significant differences between pre-test and both post-test and follow-up scores ($p < 0.05$), confirming the effectiveness of CLM in fostering positive emotional connections to learning. The gradual increase suggests that students developed greater interest, motivation, and a sense of belonging throughout the intervention period, with these gains maintained during the follow-up.

Cognitive Engagement

Cognitive engagement showed a steady and sustained enhancement, with mean scores progressing from 1.958 at pre-test to 2.175 at post-test and 2.187 at follow-up. The LSD analysis indicated that both post-test and follow-up means were significantly higher than pre-test ($p < 0.05$). The standard deviations remained stable between post-test (0.100) and follow-up (0.104), reflecting consistent intellectual investment among students. These findings suggest that CLM effectively promoted deeper cognitive processing, problem-solving, and reflective learning practices.

Overall Learning Engagement (Composite Dimension)

For the composite measure of learning engagement, mean scores increased from 1.802 at pre-test to 2.047 at post-test and 2.076 at follow-up. The repeated measures ANOVA revealed a highly significant main effect of time ($F = 9.999$, $p = 0.001$), with LSD tests confirming that both post-test and follow-up scores were significantly higher than pre-test. The relatively low standard deviation at pre-test (0.017) compared to post-test and follow-up (0.041–0.048) suggests greater initial homogeneity, with increased variability following the intervention possibly reflecting individualized responses to collaborative activities.

Collectively, these results demonstrate that the Collaborative Learning Model (CLM) intervention had a significant positive impact on students' learning engagement across behavioral, emotional, and cognitive dimensions. The sustained improvements observed at follow-up indicate that the effects were not only immediate but also durable over time. Notably, behavioral engagement exhibited the largest increase, underscoring the effectiveness of structured collaborative strategies in promoting active student participation.

These findings highlight the value of integrating CLM into instructional design to foster comprehensive learning engagement in higher education. By supporting students' active involvement, emotional investment, and cognitive effort, CLM offers a robust approach for enhancing academic success and promoting long-term student development.

Correlation Analysis of college students' learning engagement before the experiment (Pretest), after the experiment (Post-test), and follow-up (1M Later) (n=25).

When there is a relationship between variables that cannot be directly interpreted as causal, this relationship is referred to as a correlation. This study employs Pearson correlation to analyze the relationships among the various variables.

Table 9 Correlation Analysis for Learning Engagement

	Pretest	Post-test	Follow-up
Pretest	1		
Post-test	.362**	1	
Post-test	.393**	.661**	1

** Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficients for the learning engagement pre-test, post-test, and follow-up data are 0.362, 0.393, and 0.661, respectively. The corresponding p-values are all below 0.01, indicating significant statistical significance, which confirms that there is a significant correlation among the three sets of data regarding learning engagement.

4.3.3 Results of data analysis for the experimental group and control group

In this study, the researcher used a one-way repeated measures ANOVA to compare the level of learning engagement among college students in the experimental and control groups before the experiment (Pretest), after the experiment (Post-test), and follow-up.

Table 10 Repeated Measures ANOVA Analysis for Comparison between Control Group and Experimental Group

Components	Gruop	Time	Mean	Std. Deviation	Level
Behavioral Engagement	Control Group	Pretest	1.747	0.054	low
		Post-test	1.78	0.139	low
		Follow up	1.773	0.129	low
	Experimental Group	Pretest	1.757	0.054	low
		Post-test	2.34	0.139	Medium
		Follow up	2.427	0.129	Medium
Emotional Engagement	Control Group	Pretest	1.67	0.052	low
		Post-test	1.71	0.109	low
		Follow up	1.647	0.147	low

Table 10 (continued)

Components	Gruop	Time	Mean	Std. Deviation	Level
Cognive Engagement	Experimental Group	Pretest	1.72	0.052	low
		Post-test	2.103	0.109	Medium
		Follow up	2.233	0.147	Medium
	Control Group	Pretest	1.963	0.07	low
		Post-test	1.967	0.142	low
		Follow up	1.933	0.147	low
Learning Engagement	Experimental Group	Pretest	1.953	0.07	low
		Post-test	2.383	0.142	Medium
		Follow up	2.44	0.147	Medium
	Control Group	Pretest	1.793	0.024	low
		Post-test	1.819	0.059	low
		Follow up	1.784	0.068	low
	Experimental Group	Pretest	1.81	0.024	low
		Post-test	2.276	0.059	Medium
		Follow up	2.367	0.068	Medium

For Behavioral Engagement, in Control Group, the M values at pre-test, post-test, and follow-up are relatively close, with minimal fluctuations. However, the standard errors at post-test and follow-up are comparatively larger, indicating a higher degree of

data dispersion. Overall, the behavioral engagement level remains low over time, with no significant changes observed, while in Experimental Group, starting from the post-test, the M values show a significant increase, with further growth observed from post-test to follow-up. The standard error remains stable, and both post-test and follow-up averages are at a moderate level, suggesting a significant enhancement in behavioral engagement following the intervention, with effects that are sustained over time.

For Emotional Engagement, in the Control Group, the average values at the three time points exhibit slight fluctuations, with a small increase from pretest to post-test, followed by a decline from post-test to follow-up. The standard error increases at follow-up, and overall, the emotional engagement remains at a low level, showing no significant changes over time, while in Experimental Group, the average value at post-test shows a substantial increase compared to pretest, continuing to rise at follow-up. The standard error does not exhibit any abnormal changes, with both post-test and follow-up values at a moderate level, indicating that the intervention has a positive and sustained effect on emotional engagement in the experimental group.

For Cognitive Engagement, in Control Group, the average values across pretest, post-test, and follow-up show almost no change, with larger standard errors at post-test and follow-up, indicating poor data stability and consistently low levels of cognitive engagement, which do not change over time, while in Experimental Group, The average at post-test is significantly higher than at pretest, with further increases observed at follow-up. The standard error does not show significant abnormalities, and both post-test and follow-up values are at a moderate level, reflecting effective improvement and maintenance of cognitive engagement in the experimental group due to the intervention.

In general Learning Engagement: in Control Group, the average values across the three time points show minimal fluctuations, with standard errors increasing at post-test and follow-up, remaining at a low level, indicating no significant progress in learning engagement over time, while in Experimental Group the average at post-test shows a significant increase compared to pretest, with continued improvement at follow-up. The standard error remains stable, with both post-test and follow-up values at a moderate

level, suggesting a noticeable enhancement in learning engagement due to the intervention, with effects maintained during the follow-up period.

In summary, the control group maintains low levels of engagement across all dimensions and time points with no significant changes. In contrast, the experimental group exhibits significant increases in engagement across all components to moderate high levels during the post-test and follow-up phases after the CLM implementation. These findings indicate that the CLM has a positive and sustained impact on behavioral, emotional, cognitive engagement in the experimental group. The interaction effect of time and group is evident, with the intervention showing advantages over time in the experimental group, while the control group is less affected by time.

Table 11 Mauchly's Test of Sphericity

Within Subjects Effect	Value	F	Hypothesis df	Error df	Sig.
Time	Behavioral Engagement	0.811	9.819	2	0.007
	Emotional Engagement	0.794	10.833	2	0.004
	Cognitive Engagement	0.973	1.275	2	0.529
	Learning Engagement	0.924	3.739	2	0.154

Mauchly's test of sphericity was conducted to determine whether the covariance matrices of the repeated measures (across time points) met the assumption of sphericity. The results indicated significant findings for behavioral engagement ($p = 0.007$) and emotional engagement ($p = 0.004$), which suggest a violation of the sphericity assumption. Therefore, adjustments to the degrees of freedom for the within-subject effects of these two measures are necessary (e.g., using Green house-Geisser or Huynh-Feldt corrections). In contrast, the results for cognitive engagement ($p = 0.529$) and learning engagement ($p = 0.154$) were not significant, indicating that the sphericity assumption was met for these measures, and no corrections are required.

Table 12 Time/Multivariate Tests

Effect		Value	F	Sig.
Between Subjects	Intercept	0.990	1544.109	<0.001
Within Subjects	Group	0.448	12.441	<0.001
	Time	0.583	9.999	<0.001
	Time*Group	0.563	9.999	<0.001

The results of the multivariate tests for time effects indicate that, within the between-subject effects, the intercept term is significant ($p < 0.001$), suggesting a substantial baseline effect of the model. Additionally, the group effect is significant ($p < 0.001$), indicating that there are significant differences in the overall means of the dependent variable between the different control groups and the experimental group. In terms of within-subject effects, the main effect of time is significant ($p < 0.001$), indicating an overall difference in the means of the dependent variable across pre-test, post-test, and follow-up measurements. Furthermore, the time × group interaction is significant ($p < 0.001$), suggesting that the effect of the group on the dependent variable varies over time.

Overall, the significant main effects of time, group, and the time × group interaction imply that learning engagement increases over time, with notable differences in learning engagement among the various groups that change over time.

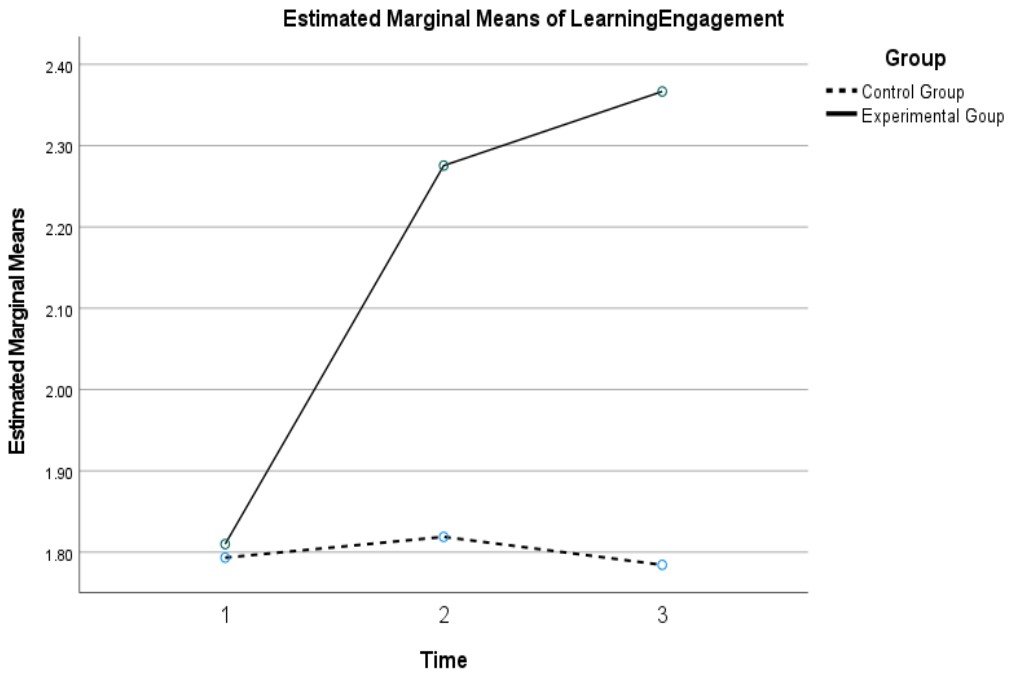

Figure 4 Mean of Learning Engagement (experimental group+control group)

Note:Group 1(solid line)for experimental group,group 2(dashed line)for control group. Time1 for pretest, time 2 for post-test, time 3 for follow up(1M later)

The results presented in the line graph for "Estimated Marginal Means of Learning Engagement" illustrate the relationship between time (represented on the x-axis as time points: pretest, post-test and follow-up,) and the estimated marginal means (represented on the y-axis). Different lines correspond to different groups: the blue line represents the control group, while the green line represents the experimental group.

Experimental Group: At time point 1, the estimated marginal mean of learning engagement is relatively low. There is a significant increase from pretest to post-test, and an upward trend continues from time post-test to follow-up, indicating a clear overall increase. This suggests that, over time, the experimental group experiences a substantial enhancement in learning engagement.

Control Group: The estimated marginal means at the three time points remain relatively stable. Although there is a slight increase from pretest to post-test, a decline is

observed from time post-test to follow-up, resulting in an overall change that is not significant. This indicates that the learning engagement in the control group shows minimal variation over time.

This graph clearly illustrates a significant time × group interaction, highlighting that the learning engagement of the experimental group is notably influenced by time, exhibiting a considerable increase, while the control group is minimally affected by time. This further underscores the effectiveness of the intervention (which differentiates the experimental group from the control group) in influencing learning engagement over time. This findings show the collaborative learning model has substantial impact on learning engagement.

CHAPTER 5
CONCLUSION AND DISCUSSION

The researcher summarized the development of the collaborative learning model that enhances the learning engagement of college students through the use of the collaborative learning. The findings are discussed and the following recommendations are made:

5.1 Summary of the Research

5.1.1 Research Objectives

1)To study the definition and components of learning engagement among college students.

2) To develop a collaborative learning model for enhancing learning engagement among college students.

3) To evaluate the effectiveness of the collaborative learning model for enhancing learning engagement among college students.

5.1.2 Research Hypotheses

The collaborative learning model can enhance college students' learning engagement.College students' learning engagement was enhanced by participating in a class based on collaborative learning model.

1) In the experimental group, students' learning engagement after receiving the collaborative learning model and after the follow up period is higher than before beginning the experiment.

2) In the experimental group, students' learning engagement after receiving the collaborative learning model and after the follow up period is higher than the students in the control group.

5.1.3 Research Tools

1) "Learning Engagement Questionnaire for College Students" is applied to evaluate students' learning engagement prior to developing the teaching models,

helping to establish their baseline levels and identify existing issues before the intervention. Additionally, this questionnaire is used as the instrument for pre-test, post-test, and follow-up assessments, supporting consistent data comparison and analysis throughout the study.

2) The "Semi-Structured Expert Interview Questionnaire" is used to gather insights from experts before designing the teaching models. Its purpose is to clarify the components included in the definition of learning engagement, identify its key dimensions, and specify the model elements relevant to the collaborative learning framework.

3) The "Collaborative Learning Model" is central to planning and organizing the instructional process. It defines the teaching schedule, content, activities, tools, and timelines to ensure that sessions run smoothly and effectively. This structured design is intended to enhance college students' overall learning engagement.

5.1.4 Research Process

Phase 1: Investigation of the Definition and Components of Learning Engagement (LE) among College Students

Step 1: Literature Review

This stage involved systematically reviewing, analyzing, and synthesizing relevant academic sources on learning engagement, collaborative learning, theoretical foundations, assessment approaches, student learning conditions, and common learner challenges. The aim was to build a strong conceptual framework to inform subsequent stages of the study.

Step 2: Development of the Semi-Structured Expert Interview Questionnaire

A semi-structured interview guide was designed with open-ended questions to gather insights from five field experts. These interviews focused on defining learning engagement, identifying its core components, and outlining appropriate instructional steps and strategies within the collaborative learning model framework.

Step 3: Development of the Questionnaire on Learning Engagement among College Students

Drawing on insights from the literature review and expert interviews, the learning engagement questionnaire for college students was developed. The initial version was evaluated by experts using IOC (Index of Item-Objective Congruence) measures to confirm its accuracy, consistency, and relevance to the research objectives.

Step 4: Questionnaire Pilot Testing

In this step, a reliability assessment was conducted using a 5-point Likert scale learning engagement survey administered to 102 students with backgrounds similar to those in the planned experimental group. The tool was refined based on expert review and item analysis, eliminating low-reliability items. The finalized version contained 36 items and achieved a reliability coefficient of 0.945, demonstrating strong internal consistency for use in the main study.

Phase 2: Development of a Collaborative Learning Model to Enhance Learning Engagement of College Students

Step 1: Literature Review

In this initial step, the researcher conducted a comprehensive literature review informed by constructivism to guide the development of the Collaborative Learning Model (CLM) aimed at enhancing learning engagement (LE) among college students. Semi-structured interviews with five experts further clarified the essential components of LE, specifically highlighting behavioral, emotional, and cognitive engagement. These insights informed the design of each CLM session, structured around four consistent steps: Lead-In, Assignment and Guidance, Group Activity, and Assessment & Conclusion. Building on these foundations, a six-week teaching model with 14 carefully planned sessions of 90 minutes each was developed to support active, meaningful student participation.

Step 2: IOC Expert Evaluation

Once the initial course outline was drafted, it underwent systematic evaluation using IOC (Index of Item-Objective Congruence) criteria to confirm its instructional quality. Experts reviewed the clarity of objectives, logical sequencing of

content, and alignment of activities with the core LE components. The results indicated high levels of agreement on these aspects, confirming that the proposed CLM design demonstrated scientific validity and was suitable for practical implementation in a teaching context.

Step 3: CLM Course Try-Out

Before formal implementation, a pilot trial was conducted with ten first-year students who shared similar backgrounds to the experimental group. This two-day try-out allowed the researcher to observe student reactions, gather feedback, and make necessary adjustments to session activities and content. The refinement process ensured that the finalized course plan would be both engaging and effective for the larger-scale experimental phase.

Phase 3: Evaluation of the effectiveness of the Collaborative Learning Model for Enhancing Learning Engagement among College Students

Step 1: Pre-Test Period

During the pre-test phase, the Learning Engagement Questionnaire for College Students was administered to 654 first-year students from Chongqing Normal University. Based on these results, the 50 lowest-scoring students were selected and randomly assigned into experimental and control groups to ensure comparable baseline engagement levels.

Step 2: Experimental Period

In the experimental stage, 25 students in the experimental group participated in a structured six-week teaching intervention using the CLM approach. Sessions were held two to three times per week, each lasting 90 minutes, providing consistent opportunities to practice collaborative learning strategies aimed at enhancing LE. The control group did not participate in any CLM-based instruction during this period.

Step 3: Post-Test Period

Following the completion of the teaching model, the Learning Engagement Questionnaire was re-administered to both the experimental and control

groups. This post-test assessment was designed to evaluate immediate changes in students' learning engagement resulting from the CLM implementation.

Step 4: Follow-Up Period

To examine the potential for sustained effects, a follow-up assessment was conducted one month after the conclusion of the teaching program. Both groups completed the questionnaire again, providing valuable data on the longer-term impact of the CLM implementation on learning engagement.

Step 5: Data Analysis

Data from pre-test, post-test, and follow-up assessments were analyzed using one-way repeated measures ANOVA. This statistical approach enabled a thorough comparison of learning engagement performance between the experimental and control groups over time, supporting a rigorous evaluation of the intervention's effectiveness.

5.2 Research Conclusion

5.2.1 Phase 1: Definition and Components of Learning Engagement Among College Students

The following summary addresses the first research objective. Findings indicate that learning engagement (LE) in college students comprises three key components: behavioral engagement, emotional engagement, and cognitive engagement. The Learning Engagement Questionnaire for College Students consists of 36 items, assessed on a 5-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree," with an average completion time of approximately 20 minutes. The instrument demonstrated strong reliability, with item-level consistency ranging from 0.8 to 1.00 and an overall reliability coefficient of 0.945.

5.2.1.1 Definition of Learning Engagement

By synthesizing insights from an extensive literature review and interviews with five experts, learning engagement for college students can be defined as the extent of involvement and active participation that students demonstrate in their educational activities. It includes a range of behaviors, emotions, and cognitive efforts, reflecting a genuine commitment to the learning experience beyond mere attendance. Learning

engagement is essential as it significantly impacts academic outcomes, retention rates, and overall satisfaction with education. Learning engagement comprises three key components: behavioral, emotional, and cognitive engagement.

5.2.1.2 Components of College Students' Learning Engagement

Drawing on the literature and expert interviews, the study identified and refined the core components of learning engagement to suit the context of college students. While the components align with widely accepted theoretical frameworks (Fredricks, Blumenfeld, & Paris, 2004), their specific definitions have been adapted to better reflect higher education environments. Learning engagement among college students consists of the following three components:

Behavioral Engagement refers to the outward actions and participation that students demonstrate in the educational setting which includes consistent class attendance, active participation in class discussions, timely submission of assignments, and involvement in school-related activities such as group projects, extracurricular activities, and academic clubs.

Emotional Engagement refers to the feelings and emotional responses that students experience in relation to their learning environment and academic work which encompasses a range of emotions, from positive feelings like excitement, enthusiasm, and a sense of belonging, to negative emotions such as anxiety, frustration, or disinterest.

Cognitive Engagement refers to the degree of intellectual effort and thoughtfulness that students apply to their learning processes which involves deep learning strategies such as critical thinking, analysis, problem-solving, and the application of concepts to real-world situations. Cognitive engagement is about more than just memorizing facts or completing assignments; it is about making connections between new information and existing knowledge, engaging in reflective thinking, and seeking to understand the underlying principles behind the material being studied.

5.2.1.3 Developing a Semi-Structured Expert Interview

To support the development of a Collaborative Learning Model (CLM) designed to enhance learning engagement (LE) among college students, the researcher conducted in-depth, semi-structured interviews with five experts in education and psychology. Expert insights were systematically collected and analyzed to inform the design of the CLM. The interview questionnaire was developed to explore three key areas: the definition and components of learning engagement, the development and structuring of the Collaborative Learning Model, and appropriate methods for measuring learning engagement. Drawing on collaborative learning theory and informed by the foundational principles of student-centered design, the questionnaire guided expert participants to share perspectives on strategies and activities that would encourage active participation and meaningful engagement. Insights from these expert interviews, together with findings from the literature review, provided essential input for refining the conceptual framework and defining the key steps of the Collaborative Learning Model for this study.

5.2.1.4 Development of the Learning Engagement Questionnaire

Based on the data and themes gathered through the expert interview process, the researcher developed a Learning Engagement Questionnaire tailored to the college student context. This instrument includes an operational definition of learning engagement and addresses its three core components: behavioral engagement, emotional engagement, and cognitive engagement. The questionnaire comprises 36 items designed to assess both overall learning engagement and the specific levels of each component. To ensure content validity and clarity, three IOC experts reviewed the questionnaire, while a pilot test was conducted with 100 university students who matched the target demographic. The evaluation results showed an IOC score of 0.8-1.0 and a reliability coefficient of 0.945. The final questionnaire was organized into two sections: (1) basic demographic information and (2) items related to the three components of learning engagement.

5.2.2 Phase 2: Development the Collaborative Learning Model for Enhancing Learning Engagement among College Students

5.2.2.1 Design Based on Literature and Expert Consultation

Drawing on a comprehensive literature review and in-depth interviews with experts, the researcher developed a Collaborative Learning Model (CLM) designed to improve learning engagement (LE) among college students. The final design comprises 14 detailed lesson plans, each structured around four key stages: (1) Lead-In, (2) Assignment and Guidance, (3) Group Activity, and (4) Assessment & Conclusion. Each session is planned to last 90 minutes. Evaluation of the alignment between research objectives and the collaborative learning activity design demonstrated a consistency index of 1.00. The entire model experiment is delivered over six weeks, with 2–3 sessions per week, enabling students to explore the material in depth, sustain active participation, and progressively strengthen their behavioral, emotional, and cognitive engagement.

1) Lead-In: This introductory stage provides context for the lesson by outlining the topic and offering essential background information. The goal is to capture students' attention and stimulate interest, building motivation for the session's collaborative learning activities.

2) Assignment and Guidance: This phase focuses on clearly defining learning objectives and tasks, ensuring students understand expectations and have a structured plan for approaching the activity. It also includes instructor support and guidance to help students prepare for effective group work.

3) Group Activity: This core stage emphasizes student-centered, collaborative learning processes. Informed by expert feedback, the design integrates varied collaborative learning strategies tailored to strengthen the three dimensions of learning engagement. Activities are structured to promote interaction, discussion, problem-solving, and shared responsibility, helping students develop deeper connections with the content and with peers.

4) Assessment & Conclusion: The final stage encourages students to reflect on and consolidate their learning. It includes reviewing the objectives, discussing

key takeaways, and providing opportunities for feedback. Students are guided to evaluate what they have learned and consider how to apply these insights, reinforcing lasting understanding and engagement.

Instructional materials include presentations, videos, audio resources, online tools, diagrams, and other multimedia elements. This range of materials is carefully organized to support a rich learning environment, enhance student interaction, and increase the overall effectiveness of the collaborative learning approach.

5.2.2.2 Model Review and Refinement

In order to ensure the quality and relevance of the lesson plans within the Collaborative Learning Model (CLM), the researcher invited five experts to review and assess the specific content of each session. Feedback from these experts confirmed that the overall design and components were appropriate for the intended learning goals. Based on their recommendations, targeted adjustments were made to further strengthen the combination between instructional activities and the objectives of enhancing learning engagement (LE) among college students.

Prior to launching the full teaching experiment, a small-scale try-out was conducted with ten students who shared similar academic backgrounds to those in the target population. This preliminary trial allowed the researcher to observe student participation, gather feedback on their learning experiences, and identify areas for refinement. Insights from these observations informed final modifications to the course plan, ensuring that the instructional design was both practical and effective in promoting active participation and collaboration.

The final version of the CLM curriculum integrates structured activities, professional guidance, and supportive learning environments that are specifically designed to improve students' behavioral, emotional, and cognitive engagement. By fostering regular participation, emotional connection to learning, and deeper cognitive processing, the model aims to help students develop skills that will support their academic success and better prepare them to meet future challenges. The outcomes of this developmental stage provide a solid foundation for the next phase of research,

which will empirically evaluate the effectiveness of the Collaborative Learning Model and offer further opportunities for its optimization and improvement.

5.2.3 Phase 3: Evaluation of the effectiveness of the Collaborative Learning Model for Enhancing Learning Engagement among College Students

5.2.3.1 The Level of Learning Engagement between Experimental Group and Control Group before the experiment

The Learning Engagement Questionnaire for College Students served as the primary instrument for conducting pre-test, post-test, and follow-up assessments. This method offered a systematic and reliable way to examine changes in students' learning engagement following the implementation of the Collaborative Learning Model (CLM), ensuring that the study's instructional and research goals could be effectively evaluated.

Before starting the CLM intervention, pre-test results were analyzed for both the experimental and control groups. Findings showed that overall learning engagement levels were generally low in both groups, and no statistically significant differences emerged between them at this stage. This comparable baseline indicated that the two groups were suitably matched, providing a sound foundation for implementing the CLM teaching experiment. With such conditions in place, the study could more accurately assess the impact of the CLM on enhancing learning engagement among college students.

5.2.3.2 Survey Results of Learning Engagement

Prior to the implementation of the collaborative model, a survey of both the experimental and control groups revealed generally low levels of learning engagement (LE), indicating substantial room for improvement. Following the course model, evaluations demonstrated that the experimental group's overall LE improved to a moderately high level. Notable advances were observed across all three components of LE: behavioral, emotional, and cognitive engagement. In particular, improvements in behavioral engagement were especially marked. Follow-up assessments conducted one month later showed that the experimental group maintained these moderately high levels of learning engagement, suggesting that the teaching model produced sustained positive effects.

However, it is important to note that there are currently no dedicated courses or structured activities on most campuses specifically focused on enhancing learning engagement. Students often lack sufficient support and resources to develop these critical skills independently. Therefore, educators need to offer targeted guidance and create a classroom environment that actively supports and encourages learning engagement. By implementing carefully planned collaborative learning activities and curricula, teachers can help students improve their engagement levels, better preparing them to face academic challenges and succeed in their broader educational journeys.

1) Implementation of the Collaborative Learning Model

An experimental study involving 50 students (25 in the experimental group and 25 in the control group) was conducted to examine the impact of the Collaborative Learning Model (CLM) on the three core components of learning engagement. The teaching model consisted of 14 structured lessons, each lasting 90 minutes, designed to ensure in-depth exploration of content and promote broad student participation. The curriculum was developed using CLM's four-step approach: Lead-In, Assignment and Guidance, Group Activity, and Assessment & Conclusion. To encourage active involvement, teachers integrated collaborative learning strategies such as group discussions, peer teaching, problem-solving activities, and reflective sharing. This design emphasized creating opportunities for students to work together, share ideas, and build deeper understanding through structured interaction.

2) Effectiveness of the Collaborative Learning Model in Enhancing Learning Engagement

Data analysis from this study demonstrated that the experimental group exhibited significant improvements across all three dimensions of learning engagement after the intervention and during the follow-up assessment, while the control group showed minimal change or slight declines. Improvements in emotional and cognitive engagement were particularly substantial, rising from low initial levels to intermediate or higher levels following the program. These results suggest that the CLM intervention

positively influenced students' ability to participate actively, sustain motivation, and apply thoughtful strategies in their learning processes.

Moreover, the findings indicated that the Collaborative Learning Model had a lasting effect, with the experimental group maintaining relatively consistent levels of learning engagement over time. The differences observed between the experimental and control groups were statistically significant both across time and between groups, further supporting the validity and applicability of the CLM approach. Overall, the results highlight that the Collaborative Learning Model can have a meaningful and sustained impact on improving college students' learning engagement, providing valuable theoretical and empirical support for its broader adoption in educational practice.

5.3 Discussion

5.3.1 Discussion on the Results of the Phase 1: Definition and components of learning engagement among college students

5.3.1.1 Definition of Learning Engagement

The first phase of this research aimed to clearly define Learning Engagement (LE) among college students, and this objective has now been successfully met. Through a combination of reviewing existing studies and conducting interviews with 5 experts, this study produced a practical definition of LE that includes three essential components: Behavioral Engagement (BE), Emotional Engagement (EE), and Cognitive Engagement (CE).

This three-component definition was chosen because it offers a complete and realistic understanding of how students engage with their learning. For college students, recognizing these dimensions can help them identify ways to participate more actively, stay motivated, and use better learning strategies. It supports them in managing the greater independence and challenges that come with university study. For teachers, this definition offers clear areas to focus on when planning lessons and developing methods to support students. It helps educators design activities and learning environments that encourage participation, sustain interest, and promote critical thinking.

According to Fredricks et al. (2004), defining learning engagement through these three dimensions is important because it reflects the full range of student experience—how they act, feel, and think in relation to learning. Their work highlights that focusing on only one aspect risks missing critical elements that affect learning outcomes. By considering behavioral, emotional, and cognitive engagement together, educators and researchers can better understand student needs, support motivation, and design effective strategies that promote academic success and persistence. This perspective reinforces why studying and defining LE in this way is valuable for improving higher education.

The expert interviews conducted in this research also strongly supported this definition and its components. Experts agreed that using these three dimensions makes sense based on their teaching experience. They felt this definition is meaningful because it reflects what they see in real classrooms and provides a balanced approach to understanding student engagement. Experts noted that having a clear, shared definition with these components helps teachers better identify challenges students face and plan targeted interventions to address them.

By establishing this definition of LE with its three key components, this phase of the study provides a solid foundation for future efforts to measure engagement, design support strategies, and improve learning experiences for college students.

5.3.1.2 Components of Learning Engagement

From the interview with five experts, they all agreed three core components of Learning Engagement (LE) for college students: Behavioral Engagement (BE), Emotional Engagement (EE), and Cognitive Engagement (CE). Each component plays a unique role in supporting student learning and offers specific benefits for both students and educators.

Behavioral Engagement (BE): For students, developing behavioral engagement helps build strong study habits, time management skills, and consistent effort, all of which contribute to better academic performance. For teachers and institutions, BE provides observable indicators of student involvement, making it easier

to monitor participation and design activities that encourage consistent attendance and task completion. According to Appleton et al. (2008), research shows that higher levels of behavioral engagement are linked to improved academic achievement and lower dropout rates, supporting the value of fostering this dimension in higher education. Expert interviews in this study also confirmed the importance of BE, with participants agreeing that monitoring and supporting students' participation is essential for effe ctive teaching and learning.

Emotional Engagement (EE): For students, emotional engagement is important for maintaining interest, motivation, and a sense of belonging, which helps them stay committed even when facing challenges. It can also strengthen their resilience and reduce anxiety related to academic demands. For educators, understanding and supporting EE means creating a classroom environment that is welcoming, motivating, and responsive to students' emotional needs. According to Kahu (2013), emotional engagement is a strong predictor of student persistence and overall satisfaction with their studies, highlighting its critical role in promoting long-term success. Expert feedback gathered in this research supported including EE as a key component, with participants noting its value in sustaining student motivation and building a positive learning environment.

Cognitive Engagement (CE): For students, cognitive engagement encourages critical thinking, problem-solving, and the ability to apply knowledge in new contexts, which are essential skills for academic and career success. It also supports lifelong learning habits by fostering independent and reflective study. For teachers and institutions, promoting CE involves designing tasks that challenge students intellectually and encourage deeper understanding of the material. According to Reeve and Tseng (2011), research indicates that cognitive engagement is closely related to adaptive learning and the development of advanced academic skills, reinforcing the need to support this dimension in college education. Expert interviews in this study also highlighted CE as a vital element, with participants agreeing it helps students develop deeper understanding and higher-order thinking skills.

In summary, this phase of the research has established a clear definition of Learning Engagement for college students, identifying Behavioral, Emotional, and Cognitive Engagement as its core components. Understanding and studying these three dimensions is essential because they offer a comprehensive framework for supporting student learning, motivation, and academic success. By clarifying these elements, this study provides valuable guidance for educators, curriculum designers, and institutions aiming to create more effective strategies to enhance student engagement in higher education.

5.3.2 Discussion on the Results of Phase 2: Development of a collaborative learning model for enhancing learning engagement among college students

The second objective of this research was to develop a Collaborative Learning Model (CLM) specifically intended to enhance college students' learning engagement. The choice to use a collaborative learning approach is based on its proven effectiveness in promoting student engagement and deeper learning outcomes. Collaborative learning emphasizes interaction, shared problem-solving, and meaningful discussion among students, which has been shown to increase motivation, participation, and critical thinking. According to Johnson and Johnson (2009), collaborative learning strategies significantly enhance students' academic achievement and social skills by fostering active participation and mutual support. This aligns with the need to address all aspects of LE, ensuring students not only attend and complete tasks (BE), but also feel connected and motivated (EE), and engage in deeper cognitive processes (CE).

5.3.2.1 Designing the Collaborative Learning Model

The Collaborative Learning Model (CLM) developed in this study was informed by constructivist learning theory, which emphasizes that learners build understanding through active engagement and social interaction. It was designed with a student-centered focus, recognizing that students learn best when they take an active role in constructing knowledge rather than passively receiving information. The design of the Collaborative Learning Model (CLM) aimed at enhancing learning engagement (LE)

among college students was guided by an extensive literature review and expert interviews.

The final model consists of 14 carefully planned lessons. The first session serves as an introduction to the overall course, while the final session focuses on summary and evaluation. Between these, the model includes four sessions specifically designed to enhance **Behavioral Engagement (BE)**, four sessions targeting **Emotional Engagement (EE)**, and four sessions aimed at strengthening **Cognitive Engagement (CE)**. Each lesson follows four structured teaching steps: **Lead-In**, **Assignment and Guidance**, **Group Activity**, and **Assessment & Conclusion**. To support these steps, the model incorporates collaborative learning strategies such as **Reciprocal Peer Learning**, **Project-Based Learning**, **Inquiry-Based Discussions**, and **Peer Assessment**, all designed to encourage active participation, foster motivation and connection, and promote deeper understanding among college students.

1) Lead-In:

In the CLM, the Lead-In stage adopts strategies such as scenario-based introductions, question prompts, and real-world case connections, along with activities like short reflective writing and group discussion. These approaches aim to spark curiosity, reduce anxiety, and highlight the relevance of the topic, helping students feel more comfortable and interested. By doing so, the Lead-In phase supports Emotional Engagement (EE) by building motivation and lowering barriers to participation, Behavioral Engagement (BE) by encouraging early involvement, and Cognitive Engagement (CE) by framing learning goals and stimulating initial thinking. This approach is consistent with Schunk, Meece, and Pintrich (2014) and Deci and Ryan (2000), who emphasize that fostering intrinsic motivation and interest at the outset is critical for promoting sustained engagement and meaningful learning. Expert interviews in this study also confirmed that introducing relevant, relatable topics at the start is seen as an effective and practical way to capture students' interest and reduce anxiety.

2) Assignment and Guidance:

This phase of the CLM employs strategies such as structured scaffolding and clear goal-setting, with activities like role assignments, guided worksheets, and collaborative planning sessions. These teaching methods help students understand expectations and approach tasks with confidence while maintaining autonomy. Such practices strengthen Behavioral Engagement (BE) by clarifying participation roles, Emotional Engagement (EE) by building confidence and reducing uncertainty, and Cognitive Engagement (CE) by promoting thoughtful preparation and planning for collaborative work. According to Vygotsky (1978) and Hammond and Gibbons (2005), structured guidance and scaffolding are essential for helping learners perform tasks beyond their current ability, promoting deeper understanding and sustained engagement. Expert feedback in this study supported this design choice, with participants agreeing that clear guidance and scaffolding are practical and necessary for effective collaborative learning in college settings.

3) Group Activity:

At the core of the CLM, the Group Activity stage uses collaborative learning strategies including Reciprocal Peer Learning, Project-Based Learning, and Peer Assessment, supported by activities such as group discussion, problem-solving tasks, jigsaw exercises, and small-group debates. These methods aim to create meaningful interaction and shared responsibility, directly enhancing Behavioral Engagement (BE) through active participation, Emotional Engagement (EE) by fostering a sense of community and mutual support, and Cognitive Engagement (CE) through analysis, critical thinking, and collective problem-solving. This design aligns with findings from Johnson and Johnson (2009), Gillies (2016), and Bell (2010), who demonstrate that collaborative learning strategies effectively improve motivation, participation, and deep understanding in higher education contexts. Expert interviews also confirmed that these group-based strategies are viewed as effective and feasible for promoting sustained engagement across all three dimensions of learning.

4) Assessment & Conclusion:

The final stage of the collaborative learning model incorporates strategies like structured reflection and feedback sessions, with activities such as reflective journaling, peer feedback, group debrief discussions, and exit tickets. These practices give students opportunities to consolidate learning, evaluate their progress, and plan for improvement. This stage promotes Behavioral Engagement (BE) by reinforcing commitment to learning goals, Emotional Engagement (EE) by recognizing achievements and building a sense of accomplishment, and Cognitive Engagement (CE) by encouraging critical self-assessment and deeper understanding. According to Gibbs (1988), Schön (1983), and Boud et al. (1985), structured reflection and feedback are critical for helping learners internalize knowledge, develop self-regulation, and maintain long-term engagement. Expert consultation in this study also highlighted that these reflective activities are both meaningful and practical for supporting student growth and engagement in university contexts.

Overall, the purpose of this phase was to ensure that the Collaborative Learning Model (CLM) was carefully developed to effectively support learning engagement among college students. By systematically integrating expert insights with evidence from educational research, this phase helped refine a practical and theory-informed framework. The resulting design aligns structured activities and collaborative strategies to strengthen behavioral, emotional, and cognitive engagement in a cohesive way, laying the groundwork for meaningful and lasting learning outcomes (Johnson & Johnson, 2009; Slavin, 1996; Vygotsky, 1978).

5.3.2.2 Refining the Collaborative Learning Model

To ensure the effectiveness and relevance of the Collaborative Learning Model (CLM) for enhancing learning engagement (LE), an iterative process of evaluation and refinement was implemented. This process incorporated both five experts review and pilot testing, consistent with best practices in educational design research that emphasize continuous improvement through cycles of analysis, design, and revision (Design-Based Research Collective, 2003).

In the expert evaluation phase, five experts with experience in instructional design and pedagogy were invited to review the lesson plans. This approach allowed for systematic assessment of the alignment between the learning objectives and the planned activities, helping to ensure content validity and instructional clarity. The experts confirmed the appropriateness of the model's components while also offering targeted recommendations for refinement. As a result, minor but meaningful adjustments were made to improve clarity, sequence, and the integration of collaborative learning strategies, strengthening the model's overall coherence and suitability for fostering LE (Haynes et al., 1995).

Following expert review, a small-scale try-out was conducted with ten students who shared similar backgrounds with the target population. This pilot phase provided the opportunity to observe students' reactions, levels of engagement, and interaction patterns within the structured CLM sessions. Collecting direct feedback from participants helped the researcher identify practical issues, such as pacing, clarity of instructions, and the effectiveness of group activities. Making data-driven adjustments at this stage is aligned with formative evaluation practices in instructional design, which stress the importance of testing interventions in authentic settings to enhance usability and impact (Reigeluth & Frick, 1999; Tessmer, 1993).

Through this rigorous assessment and adjustment process, the CLM curriculum was optimized to better support students' behavioral, emotional, and cognitive engagement. By clarifying learning objectives, refining instructional materials, and ensuring that collaborative activities were accessible and meaningful, the model was tailored to meet the needs of college students in diverse learning environments. This systematic refinement underscores the importance of evidence-based instructional design, ensuring that collaborative learning model are not only theoretically sound but also practical and effective in real-world settings.

5.3.2.3 Benefits of the Collaborative Learning Model

The development of the Collaborative Learning Model (CLM) in this study draws on constructivist theory, which views learning as an active, student-centered

process where understanding is built through experience, reflection, and interaction (Slavin, 1996). By combining evidence from literature and insights from expert interviews, the CLM was designed to target and strengthen the three key dimensions of learning engagement (LE): behavioral, emotional, and cognitive engagement.

Enhancing Behavioral Engagement: CLM encourages active participation through structured group activities, discussions, and collaborative tasks. By assigning clear roles and responsibilities within teams, the model ensures that all students contribute meaningfully rather than remaining passive observers. Research shows that such structured collaboration increases attendance, participation rates, and overall involvement in learning activities (Dillenbourg, 1999; Johnson & Johnson, 2009). Experts consulted in this study also highlighted that clearly defined collaborative roles and shared goals are essential for maintaining students' consistent commitment to learning tasks.

Fostering Emotional Engagement: An important advantage of CLM is its capacity to create a supportive and inclusive learning environment where students feel valued and connected. Through peer teaching, group discussions, and constructive feedback processes, students build trust, empathy, and a sense of belonging within the learning community. These interpersonal elements help sustain motivation and reduce feelings of isolation or disengagement (Johnson & Johnson, 2014; Boud & Falchikov, 2007). The expert interviews emphasized that creating opportunities for positive peer interactions is critical for nurturing students' emotional connection to their studies and maintaining long-term interest in learning.

Promoting Cognitive Engagement: CLM also strengthens cognitive engagement by requiring students to think critically, solve problems collaboratively, and apply knowledge in authentic contexts. Strategies such as project-based tasks, inquiry-based learning, and reciprocal peer teaching are integrated to promote deep understanding and higher-order thinking (Barkley, Cross, & Major, 2014; Johnson, Johnson, & Smith, 2014). Experts agreed that these activities help students move beyond rote memorization toward meaningful learning, as they must explain their

reasoning, evaluate multiple perspectives, and synthesize new ideas in collaborative settings.

In summary, the Collaborative Learning Model offers a research-informed and expert-validated framework that comprehensively supports college students' learning engagement. By systematically addressing behavioral, emotional, and cognitive dimensions, CLM not only enhances participation and motivation but also promotes critical thinking, collaboration skills, and sustained academic success. This integrated approach underscores the value of thoughtful instructional design in creating more engaging and effective higher education learning environments.

5.3.3 Discussion on the Results of Phase 3: Evaluation of the effectiveness of the Collaborative Learning Model for Enhancing Learning Engagement among College Students

5.3.3.1 Hypotheses 1: In the experimental group, students' learning engagement after receiving the collaborative learning model and after the follow up period is higher than before beginning the experiment.

The results of this study provide strong evidence supporting Hypothesis 1: students in the experimental group demonstrated significantly higher levels of learning engagement (LE) at both the post-test and follow-up stages compared to the pre-test. Statistical analyses showed consistent improvements over time, indicating that the Collaborative Learning Model (CLM) intervention produced not only immediate but also sustained positive benefits. This pattern suggests that the CLM is effective as an instructional strategy to address ongoing challenges in promoting active and meaningful participation in higher education contexts.

The improvement in learning engagement among students in the experimental group can be attributed to their participation in the Collaborative Learning Model (CLM) teaching experiment implemented in this study. Designed with a student-centered model, the CLM sought to actively involve students in their own learning process and to create a collaborative, supportive environment that encourages meaningful interaction, shared responsibility, and deeper understanding. To promote university students' learning engagement more effectively, the model deliberately

fostered an atmosphere of cooperation, mutual respect, and open dialogue, where learners felt comfortable expressing ideas, asking questions, and learning from peers. This design reflects the principles of constructivist learning theory, which argues that knowledge is built through social interaction and authentic problem-solving (Vygotsky, 1978; Prince, 2004).

Based on this theoretical foundation of constructivism, the CLM incorporated well-established collaborative learning strategies such as Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Discussions, and Peer Assessment. These methods were carefully selected to ensure that students were not passive recipients of information but instead active participants in creating, sharing, and applying knowledge together. Such strategies have been shown to promote motivation, participation, and higher-order thinking by encouraging shared responsibility and meaningful dialogue (Johnson & Johnson, 2009; Gillies, 2016; Slavin, 2015).

To put these strategies into practice, each of the 14 sessions over six weeks followed four structured teaching steps: Lead-In (introducing topics to spark curiosity and connect prior knowledge), Assignment and Guidance (providing clear goals and scaffolding to support learning tasks), Group Activity (facilitating collaboration through problem-solving, discussion, and joint projects), and Assessment & Conclusion (encouraging reflection, feedback, and consolidation of learning). Through these steps, students engaged in activities designed to promote Behavioral Engagement (consistent participation and task completion), Emotional Engagement (building motivation, trust, and a sense of belonging), and Cognitive Engagement (developing critical thinking, problem-solving, and self-regulation skills). By participating in this structured, interactive learning environment, students learned to collaborate effectively with peers, communicate ideas clearly, think critically about complex problems, and reflect on their own learning processes, resulting in comprehensive improvements across all three dimensions of learning engagement. Crucially, the increase in learning engagement was observed across all three core components: behavioral, emotional, and cognitive engagement, each showing significant and lasting improvement.

Additional evidence supporting the effectiveness of the Collaborative Learning Model (CLM) comes from qualitative feedback provided by students in the experimental group. Some literature and participants' feedback from the experimental group are as following:

Behavioral Engagement increased as students became more actively involved in class activities and collaborative tasks. The data showed clear upward trends in participation and accountability. Students' reflections underscored this shift: "Before, I just sat quietly, but working in groups made me speak up and share" (Participant A) and "I felt like I had to really do my part because the group needed me" (Participant B). Such comments highlight how structured collaboration fostered personal responsibility and consistent involvement. These results align with Johnson and Johnson's (2009) findings on the importance of interdependent learning roles in encouraging participation and accountability.

Emotional Engagement also demonstrated notable improvement, with students reporting greater interest, enjoyment, and a stronger sense of belonging in the learning environment. Participants described the atmosphere as supportive and motivating: "I felt safe sharing my ideas since we were all listening" (Participant C) and "It was actually fun to work with others, and I wanted to come to class" (Participant D). This reflects the CLM's ability to create an inclusive learning environment that nurtures emotional ties and peer trust, consistent with Boud and Falchikov's (2007) and Johnson and Johnson's (2014) emphasis on the social and emotional benefits of collaborative structures.

Cognitive Engagement similarly improved, marked by deeper intellectual effort and critical thinking. Students reported moving beyond rote memorization to genuine understanding. As one student explained: "We had to really think about the problems and explain them to each other, which helped it make sense" (Participant E), while another shared: "I started wondering why things worked instead of just memorizing" (Participant F). These observations echo research highlighting the power of group

discussions, problem-based learning, and peer teaching in fostering higher-order thinking (Barkley, Cross, & Major, 2014; Johnson, Johnson, & Smith, 2014).

These outcomes reflect the CLM's deliberate, research-informed design, which integrated literature review and expert interviews to ensure theoretical rigor and practical relevance (Slavin, 1996; Johnson & Johnson, 2009). The model's structure: Lead-In, Assignment and Guidance, Group Activity, and Assessment & Conclusion, was carefully crafted to address different aspects of engagement. For instance, the Lead-In phase aimed to spark curiosity and reduce anxiety (Deci & Ryan, 2000), while the Group Activity stage used peer teaching and project-based learning to promote critical thinking and collaborative problem-solving (Bell, 2010). Importantly, the follow-up results one month later confirmed the durability of these effects, with no significant decline in LE scores. This suggests that the CLM not only enhanced engagement during the intervention but also helped students develop sustainable habits of active, motivated, and reflective learning, aligning with research emphasizing the long-term benefits of well-structured collaborative learning (Slavin, 1996).

In sum, the consistent improvements in behavioral, emotional, and cognitive engagement highlight the CLM's effectiveness as an evidence-based approach for promoting meaningful and lasting learning engagement among college students.

5.3.3.2 Hypotheses 2: In the experimental group, students' learning engagement after receiving the collaborative learning model and after the follow up period is higher than the students in the control group.

The findings of this study provide strong support for Hypothesis 2. Statistical analyses revealed that students in the experimental group showed significantly higher levels of learning engagement at both the post-test and follow-up stages compared to the control group. While the control group exhibited minimal or no improvement over time, the experimental group demonstrated consistent and meaningful gains across measurement points. These results highlight the distinctive impact of the Collaborative Learning Model (CLM) in promoting student engagement beyond what is typically achieved through standard instructional methods. The clear between-group differences underscore the practical value of implementing structured collaborative learning

approaches to address persistent challenges in fostering active, sustained engagement in university settings.

This difference can be attributed to the structured and intentional design of the CLM, which systematically addressed all three components of learning engagement. In contrast, the CG continued with conventional lecture-based methods that often promote passive information absorption, limiting opportunities for interaction, critical thinking, and emotional connection (Slavin, 1996). Such traditional approaches typically emphasize instructor-led delivery with minimal student participation, failing to sufficiently support behavioral, emotional, and cognitive aspects of engagement (Johnson & Johnson, 2009). By contrast, the CLM deliberately fostered behavioral engagement through clear roles, interactive tasks, and shared goals that required students to take ownership of their learning and consistently participate in group activities. This aligns with research demonstrating that structured collaboration promotes accountability and sustained participation (Dillenbourg, 1999; Johnson & Johnson, 2009).

The CLM was specifically designed to address the three dimensions of learning engagement through 14 sessions delivered over six weeks. It employed four structured instructional steps: Lead-In, Assignment and Guidance, Group Activity, and Assessment & Conclusion—to ensure consistency and clarity in teaching. Collaborative learning strategies such as Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Discussions, and Peer Assessment were used to create meaningful opportunities for participation, peer interaction, and critical thinking. By fostering open dialogue, mutual respect, and shared responsibility, the CLM encouraged students to move beyond passive listening and take an active role in constructing their understanding. This model is supported by prior research showing that student-centered, collaborative learning environments lead to greater academic achievement and motivation than traditional lecture-based instruction (Johnson & Johnson, 2009; Prince, 2004; Slavin, 2015).

Additional evidence supporting the CLM's effectiveness over standard instruction comes from qualitative observations, student feedback, expert interviews,

and prior empirical research. During CLM sessions, students in the experimental group were observed to participate more actively, take responsibility for roles, and engage consistently in group tasks (Behavioral Engagement). They displayed greater enthusiasm, mutual encouragement, and a sense of belonging during discussions and collaborative work (Emotional Engagement). Their contributions also reflected more critical questioning, problem-solving, and reflection (Cognitive Engagement). In contrast, the control group, which relied on traditional teaching methods, showed lower levels of participation, limited peer interaction, and less evidence of higher-order thinking.

Student feedback in the experimental group further confirmed these differences, with participants describing the CLM activities as “motivating,” “engaging,” and “helpful for understanding complex ideas.” Expert interviews conducted during the study emphasized that the CLM’s structured, student-centered design is practical and well-suited to address common challenges in motivating university students to engage fully across all three dimensions of learning engagement.

This evidence aligns with previous empirical studies demonstrating the effectiveness of collaborative learning approaches in higher education. For example, Johnson and Johnson (2009) found that well-structured cooperative learning environments significantly improve students’ academic achievement, motivation, and interpersonal skills by fostering shared responsibility and active engagement. Similarly, Gillies (2016) showed that collaborative learning strategies promote critical thinking, sustained participation, and deeper understanding of complex concepts. Slavin (2015) also highlights that evidence-based cooperative learning models consistently lead to greater student engagement and improved learning outcomes compared to traditional lecture-based instruction. These findings provide additional support for the CLM’s effectiveness in enhancing behavioral, emotional, and cognitive engagement among college students.

Overall, these results demonstrate that the Collaborative Learning Model is not only effective in improving learning engagement within the experimental group over time but is also significantly more effective than standard instructional methods used in

the control group. By deliberately addressing behavioral, emotional, and cognitive dimensions through collaborative, student-centered strategies, the CLM provides a robust, evidence-based framework for enhancing sustained learning engagement among college students.

5.3.3.3 Discussion of the Reasons Why the Collaborative Learning Model Can Sustain Enhanced Learning Engagement in the Long Term

One important finding of this study is that the Collaborative Learning Model (CLM) not only produced immediate improvements in learning engagement among university students but also maintained these gains during the follow-up period. This sustained effect suggests that the CLM does more than simply create a short-lived increase in motivation or participation; rather, it promotes lasting changes in students' learning behaviors, attitudes, and skills.

A key reason for this durability is the student-centered and socially interactive design of the CLM, which encourages learners to take active responsibility for their own learning and to collaborate meaningfully with peers. By consistently integrating collaborative learning strategies such as Reciprocal Peer Learning, Project-Based Learning, and Peer Assessment, the CLM provides repeated opportunities for students to practice self-regulation, negotiation, and critical thinking. Such strategies help develop transferable learning habits that students can continue using beyond the intervention period. This is consistent with constructivist learning theory, which argues that knowledge is constructed through active engagement and social interaction (Vygotsky, 1978; Prince, 2004).

Furthermore, the structured four-step process used in each CLM session (Lead-In, Assignment and Guidance, Group Activity, and Assessment & Conclusion) helps establish clear expectations and routines that support sustained engagement. For example, the Lead-In phase helps students see the relevance of content and reduces anxiety, fostering intrinsic motivation (Deci & Ryan, 2000). The Group Activity stage promotes meaningful peer interaction, building a sense of belonging and shared purpose that encourages continued Emotional Engagement (EE). Regular use of reflective assessment reinforces Cognitive Engagement (CE) by developing

metacognitive awareness and self-directed learning strategies (Gibbs, 1988; Schön, 1983).

Additionally, observations and student feedback collected during this study support the idea that the CLM fosters a learning culture that endures over time. Students reported feeling more confident in working collaboratively, more willing to share ideas, and more comfortable engaging in critical discussions even after the formal sessions ended. Expert interviews also highlighted that the CLM's emphasis on student autonomy, peer support, and structured reflection is likely to produce lasting benefits by equipping students with skills and mindsets essential for lifelong learning.

Taken together, these factors suggest that the CLM's effectiveness in maintaining enhanced learning engagement over the long term arises from its deliberate focus on developing students' capacity for active, reflective, and socially meaningful learning with characteristics that continue to support engagement well beyond the classroom intervention itself.

Below is a summary of some of the feedback provided by students in the experimental group following the CLM teaching experiment.

Table 13 Participants' Feedback of Collaborative Learning Model

Components	Participants' Feedback of Experimental Group
Behavioral Engagement	*"I used to stay quiet, but working in groups made me speak up and share my ideas."*
	"I felt more responsible because my group needed my contribution."
	"Group activities made it easier to stay focused and complete my work on time."

Table 13 (continued)

Components	Participants' Feedback of Experimental Group
	"I felt comfortable sharing because everyone listened respectfully."
	Having roles in the group kept everyone accountable and involved."
Emotional Engagement	*"It was actually fun to work with others. I looked forward to coming to class."*
	"Being part of a group made me feel less anxious about speaking up."
	"I enjoyed learning with classmates who supported each other."
	"We had to really think through the problems and explain them to each other."
	"I started asking why things work instead of just memorizing."
Cognitive Engagement	*"Discussing ideas with my group helped me understand complex topics better."*
	"Explaining my thoughts to others forced me to think more deeply about the material."

In summary, the results of Phase 3 provide strong evidence for the effectiveness of the Collaborative Learning Model (CLM) in enhancing learning engagement among college students. Both hypotheses were supported: students in the experimental group demonstrated significant improvements in learning engagement over time compared to their own baseline, and these gains were also significantly greater than those observed

in the control group. This sustained effect over the follow-up period highlights the CLM's potential not only to produce immediate increases in participation and motivation but also to foster lasting changes in students' learning behaviors, attitudes, and strategies.

By deliberately addressing Behavioral, Emotional, and Cognitive Engagement through structured, student-centered, and collaborative activities, the CLM offers a comprehensive, evidence-based framework for promoting multidimensional engagement in higher education. These findings underscore the value of adopting collaborative learning approaches grounded in constructivist theory to create interactive, supportive, and reflective learning environments. Ultimately, the CLM provides a practical instructional model that can help educators better support student engagement, improve learning outcomes, and prepare students for the demands of lifelong learning.

5.4 Research Recommendation

Practical Recommendations

1.Teachers can administer the College Students' Learning Engagement Questionnaire to identify students with lower levels of engagement. By analyzing these results, instructors can tailor collaborative learning activities specifically designed to address gaps in behavioral, emotional, or cognitive engagement, thereby supporting overall academic success.

2.Educators may consider implementing the Collaborative Learning Model (CLM) to strengthen learning engagement among students similar to those in this study's sample. To maximize its effectiveness, teachers should develop a strong understanding of the CLM framework and strategies, ensuring that activities are appropriately designed to promote active participation, meaningful peer interaction, and reflective learning processes.

Recommendations for Future Research

1.Future studies could explore the effectiveness of integrating the Collaborative Learning Model across a range of university courses or disciplines to evaluate its broader impact on students' learning engagement. Such research would

help determine the model's adaptability and generalizability in different educational contexts.

2.It is also recommended to conduct longitudinal follow-up studies to assess changes in students' learning engagement over time after implementing the CLM. For example, administering periodic assessments every 3 or 6 months could provide valuable insights into the sustainability of engagement gains and inform ongoing improvements to instructional design.

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APPENDIX

APPENDIX A

Table 1List of experts and teachers for Research Tool Review

List of experts	Resume/position
Dr. Wu Xianyou	School of Foreign Languages& Literatures of Chongqing Normal University(CNU), Professor
Dr. Xiao Yan	School of Foreign Languages& Literatures of CNU, Professor
Zhou Nan	Director of College English Teaching and Research Office of CNU, Associate Professor
Li Jun	Retired. School of Foreign Languages& Literatures of CNU, Associate Professor
Li Wenqian	School of Foreign Languages& Literatures of CNU, Lecturer.

Table 2 List of experts for the review of collaborative learning model

List of Experts	Resume/Position
Dr. Wu Xianyou	School of Foreign Languages& Literatures of Chongqing Normal University(CNU),Professor
Dr. Xiao Yan	School of Foreign Languages& Literatures of Chongqing Normal University(CNU),Professor
Ren Yanyan	School of Foreign Languages& Literatures of CNU, Associate Professor
Zhang Yi	Director of English Teaching Office of CNU, Lecturer.

Table 3 List of IOC experts who assess the questionnaires of the learning engagement and collaborative learning engagement

List of Experts	Resume/Position
Dr. Peng Kangzhou	School of Foreign Languages& Literatures of Chongqing Normal University(CNU)/ Dean of School of Foreign Languages& Literatures, Professor
Dr. Xiao Yan	School of Foreign Languages& Literatures of CNU, Professor
Zhou Nan	Director of College English Teaching and Research Office of CNU, Associate Professor
Ren Yanyan	School of Foreign Languages& Literatures of CNU, Associate Professor
Zhang Yi	Director of English Teaching Office of CNU, Lecturer.

APPENDIX B

Semi-Structured Interview Questionnaire for Interviewing Eligible Respondents

STATEMENT: This semi-structured interview questionnaire is a tool used to interview respondents for the following purposes.

Purpose of the Interview:

1. To define the definition and components of learning engagement among undergraduate students in China context.
2. To gain the guidelines for developing an learning models based on collaborative learning model to enhance learning engagement among undergraduate students in China.
3. To gain the guidelines for developing research measurement instruments to evaluate learning engagement among undergraduate students in China.

Section 1: General Information

Name of Expert:

Educational Background:

Work Experience:

Position:

Organization:

Specialized Field:

Date and Time of Interview:

Section 2: Problem Orientation

Question1) The meaning and components of Learning Engagement among undergraduate in China context.

1.1 In your opinion, what is the definition of learning engagement for undergraduate students?

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1.2 According to the literature review, learning engagement has three core components (Behavioral Engagement, Emotional Engagement, Cognitive Engagement). Do you think learning engagement with these three components is suitable for Chinese college students?

1.2.1 Behavioral Engagement refers to the outward actions and participation that students demonstrate in the educational setting. This dimension includes consistent class attendance, active participation in class discussions, timely submission of assignments, and involvement in school-related activities such as group projects, extracurricular activities, and academic clubs. Behavioral engagement is often the first indicator of how involved a student is in their academic journey. It reflects the students' willingness to contribute to the learning community, their discipline in adhering to academic schedules, and their proactive approach to utilizing educational opportunities.

1.2.2 Emotional Engagement refers to the feelings and emotional responses that students experience in relation to their learning environment and academic work. This dimension encompasses a range of emotions, from positive feelings like excitement, enthusiasm, and a sense of belonging, to negative emotions such as anxiety, frustration, or disinterest. Emotional engagement is crucial because it affects students' motivation and persistence in learning tasks. When students feel emotionally connected to their studies—whether through a passion for the subject matter, a strong relationship with instructors, or a sense of belonging in the learning community—they are more likely to put in the effort required to succeed. Emotional engagement also helps in building

resilience, enabling students to overcome challenges and remain committed to their educational goals.

1.2.3 Cognitive Engagement refers to the degree of intellectual effort and thoughtfulness that students apply to their learning processes. It involves deep learning strategies such as critical thinking, analysis, problem-solving, and the application of concepts to real-world situations. Cognitive engagement is about more than just memorizing facts or completing assignments; it is about making connections between new information and existing knowledge, engaging in reflective thinking, and seeking to understand the underlying principles behind the material being studied. Students who are cognitively engaged are more likely to pursue challenging tasks, explore complex ideas, and demonstrate a higher level of academic curiosity. This dimension of engagement is particularly important for fostering long-term learning and intellectual growth, as it encourages students to go beyond surface-level understanding and develop a more profound, meaningful grasp of their studies.

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1.3 In addition to the three components mentioned above, do you think there are other components that reflect the learning engagement for undergraduate students in China context? What are they?

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1.4 In response to if there are additional components, what should the behaviors guided by those components you mentioned look like?

.....

.....

Question2) Guidelines to develop Collaborative Learning Models for enhancing learning engagement for undergraduate students in China.

2.1 In your opinion, what is the definition of collaborative learning model for college students?

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.....

2.2 Could you provide me with the guidelines for developing Collaborative Learning Model for enhancing learning engagement for undergraduate students in China?

.....

.....

2.3 What characteristics or steps to provide the contents and activities of Collaborative Learning Model for enhancing learning engagement among undergraduate students in China?

.....

.....

2.4 In your opinion, are there techniques or other activities that can be used to enhance learning engagement for undergraduate students in developing an Collaborative Learning Model ? If so, what kinds of techniques or activities?

.....

.....

Question3) Guidelines for developing research measurement instruments to evaluate learning engagement among undergraduate students in China.

3.1 In your opinion, is it suitable to use the Learning Engagement for college students questionnaire to evaluate the learning engagement among undergraduate students in China?

.....

.....

3.2 Are there other measurements can be used to evaluate the learning engagement of undergraduate students in China? If so, what are the measurements?

.....

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APPENDIX C

Summary of the Main Points and Recommendations from the Expert Interviews

In the first and second phases of the study, these two phases of the study involved interviews with five experts with expertise in psychology, education, etc. The objective was to gather information about the definition and components of learning engagement among college students and to serve as a guide for developing models for measuring learning engagement as well as to assess the collaborative learning. Key points collected from the interview as following:

1. The definition and components of learning engagement among college students:

1.1 The experts agreed that learning engagement refers to the depth of involvement and active participation that students exhibit in their educational activities. It encompasses a broad spectrum of behaviors, emotions, and cognitive efforts that students invest in the learning process. This engagement is not merely about attendance or superficial participation; rather, it signifies a genuine commitment to the learning experience, where students are fully immersed in understanding, applying, and reflecting on the knowledge they acquire. Learning engagement is critical because it directly influences students' academic outcomes, retention rates, and overall satisfaction with their educational experience.

1.2 The experts agree that the learning engagement is composed of three components:

1) Behavioral Engagement refers to the outward actions and participation that students demonstrate in the educational setting. This dimension includes consistent class attendance, active participation in class discussions, timely submission of assignments, and involvement in school-related activities such as group projects, extracurricular activities, and academic clubs. Behavioral engagement is often the first indicator of how involved a student is in their academic journey. It reflects the students' willingness to contribute to the learning community, their discipline in adhering to academic schedules, and their proactive approach to utilizing educational opportunities.

2) Emotional Engagement refers to the feelings and emotional responses that students experience in relation to their learning environment and academic work. This dimension encompasses a range of emotions, from positive feelings like excitement, enthusiasm, and a sense of belonging, to negative emotions such as anxiety, frustration, or disinterest. Emotional engagement is crucial because it affects students' motivation and persistence in learning tasks. When students feel emotionally connected to their studies-whether through a passion for the subject matter, a strong relationship with instructors, or a sense of belonging in the learning community-they are more likely to put in the effort required to succeed. Emotional engagement also helps in building resilience, enabling students to overcome challenges and remain committed to their educational goals.

3) Cognitive Engagement refers to the degree of intellectual effort and thoughtfulness that students apply to their learning processes. It involves deep learning strategies such as critical thinking, analysis, problem-solving, and the application of concepts to real-world situations. Cognitive engagement is about more than just memorizing facts or completing assignments; it is about making connections between new information and existing knowledge, engaging in reflective thinking, and seeking to understand the underlying principles behind the material being studied. Students who are cognitively engaged are more likely to pursue challenging tasks, explore complex ideas, and demonstrate a higher level of academic curiosity. This dimension of engagement is particularly important for fostering long-term learning and intellectual growth, as it encourages students to go beyond surface-level understanding and develop a more profound, meaningful grasp of their studies.

2. Experts' opinions on the collaborative learning model

1) The experts come to the agreement that collaborative learning refers to an instructional approach where students work together in small groups to achieve shared learning goals. It emphasizes cooperation and interaction among students, with each member contributing their knowledge, skills, and perspectives to enhance the learning experience for the entire group. Unlike traditional learning methods, where students work independently, collaborative learning focuses on the collective effort and mutual support

among group members, fostering a deeper understanding of the subject matter through discussion, problem-solving, and peer teaching.

2) The experts agree that the collaborative learning model could include the following steps: four steps: (1) lead-in, (2) task assignment and guidance, (3) group activity and (4) assessment and conclusion. These steps are in line with the theory about the collaborative learning model and apply these main steps when developing and designing learning activities.

3) The experts also believe that collaborative learning should leverage the social interaction between students. By engaging in discussions and group activities, students are able to build on each other's knowledge, leading to deeper learning. The social context plays a critical role in cognitive development and knowledge construction.

4) The experts also agree that for effective collaborative learning, it is essential to create positive interdependence among students. When students rely on each other to succeed, they are more likely to engage actively in the learning process, enhancing both individual and group performance.

5) The experts emphasize that the design of collaborative learning environments should focus on providing structured activities that promote interaction and problem-solving. It's crucial to foster an environment where students can take on different roles, challenge each other's ideas, and reflect on the outcomes of their collective efforts.

APPENDIX D

Questionnaire on Learning Engagement among College Students

This questionnaire is designed to assess how college students engage with their English language courses at the university level. The survey aims to understand students' behavior, cognitive engagement, and emotional experiences related to English learning. Your responses will help researchers identify ways to enhance the learning environment and improve instructional strategies.

Instructions for Completing the Questionnaire

Please read each statement carefully and indicate how much you agree or disagree with it.

Use the 5-point Likert scale to rate each statement, where:

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

This survey is anonymous, and your responses will be used solely for research purposes.

There are no right or wrong answers, so please be as honest as possible in your responses.

Participant Information

Before proceeding to the questionnaire, please provide the following basic information:

Age: _____

Gender: ( ) Male ( ) Femal

Major: _____

O	ITEM	SCALE				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Please rate how much you agree with the following statements about your behavior in your course.		1	2	3	4	5
1.Behavioral Engagement:the outward actions and participation that students demonstrate in the educational setting, including consistent class attendance, active participation in class discussions, timely submission of assignments, and involvement in school-related activities such as group projects, extracurricular activities, and academic clubs.						
	I attend every English class on time.					
	I complete my homework before the deadline.					
	I actively participate in group discussions during class.					
	I prepare for English exams in advance by reviewing class materials.					

O	ITEM	SCALE				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Please rate how much you agree with the following statements about your behavior in your course.		1	2	3	4	5
	I use online resources (e.g., grammar apps, online dictionaries) to assist my learning.					
	I take notes during English lessons and review them afterward.					
	I regularly participate in extracurricular English activities (e.g., English clubs).					
	I often forget to bring necessary materials (e.g., textbook, notebook) to class. (Negative)					
	I ask questions in class when I don't understand something.					
0	I actively contribute to group projects in English class.					
1	I avoid volunteering to answer questions in class. (Negative)					
2	I participate actively in peer feedback sessions.					

O	ITEM	SCALE				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Please rate how much you agree with the following statements about your behavior in your course.		1	2	3	4	5
2. Emotional Engagement refers to the feelings and emotional responses that students experience in relation to their learning environment and academic work, encompassesing a range of emotions, from positive feelings like excitement, enthusiasm, and a sense of belonging, to negative emotions such as anxiety, frustration, or disinterest.						
3	I enjoy attending my English classes and feel excited to learn.					
4	I feel proud when I achieve my English learning goals.					
5	I feel encouraged by my classmates' success.					
6	I feel motivated to study English when thinking about my future goals.					
7	I feel anxious before English exams. *(Negative)*					
8	I feel confident in my ability to succeed in learning English.					
9	I have a good relationship with my classmates, which makes learning enjoyable.					

O	ITEM	SCALE				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Please rate how much you agree with the following statements about your behavior in your course.		1	2	3	4	5
0	I feel supported by my English teacher when I need help.					
1	I experience positive emotions when I overcome challenges in English learning.					
2	I seldom feel connected to my classmates during class activities. *(Negative)*					
3	I feel encouraged when my teacher praises my efforts.					
4	I enjoy participating in interactive class activities (e.g., role-play, debates).					
3. Cognitive Engagement refers to the degree of intellectual effort and thoughtfulness that students apply to their learning processes. It involves deep learning strategies such as critical thinking, analysis, problem-solving, and the application of concepts to real-world situations.						

O	ITEM	SCALE				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Please rate how much you agree with the following statements about your behavior in your course.		1	2	3	4	5
5	I reflect on my learning process and plan how to improve.					
6	I set specific goals for improving my English skills.					
7	I enjoy finding connections between English and other subjects.					
8	I seldom think about how to apply what I learn in English class to real-life situations. (Negative)					
9	I think critically about the content presented in English textbooks or lessons.					
0	I analyze my mistakes and plan how to avoid them in the future.					
1	I explore new learning strategies when I face difficulties.					

O	ITEM	SCALE				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Please rate how much you agree with the following statements about your behavior in your course.		1	2	3	4	5
2	I use critical thinking to evaluate the materials I learn in English class.					
3	I enjoy solving challenging problems related to English language learning.					
4	I apply what I learn in English class to my daily life.					
5	I seldom reflect on what I've learned after class. (Negative)					
6	I try different approaches when I struggle to understand a topic.					

APPENDIX E

Results of the quality inspection of the research instrument for the Measurement of Learning Engagement Questionnaire for College Students

	Experts Opinions					In total	IOC	Result
	1	2	3	4	5			
1	+1	+1	+1	+1	+1	5	1	Applicable
2	+1	+1	+1	+1	+1	5	1	Applicable
3	+1	+1	+1	+1	+1	5	1	Applicable
4	+1	+1	+1	+1	+1	5	1	Applicable
5	+1	+1	+1	+1	+1	5	1	Applicable
6	+1	+1	+1	+1	+1	5	1	Applicable
7	+1	+1	+1	+1	+1	5	1	Applicable
8	+1	+1	+1	+1	+1	5	1	Applicable
9	+1	+1	+1	+1	+1	5	1	Applicable
10	+1	+1	+1	+1	+1	5	1	Applicable
11	+1	+1	+1	+1	+1	5	1	Applicable
12	+1	+1	+1	+1	0	4	0.8	Applicable
13	+1	+1	+1	+1	+1	5	1	Applicable
14	+1	+1	+1	+1	+1	5	1	Applicable
15	+1	+1	+1	+1	+1	5	1	Applicable
16	+1	+1	+1	+1	+1	5	1	Applicable
17	+1	+1	+1	+1	+1	5	1	Applicable

	Experts Opinions					In total	IOC	Result
	1	2	3	4	5			
18	+1	+1	+1	+1	+1	5	1	Applicable
19	+1	+1	+1	+1	+1	5	1	Applicable
20	+1	+1	+1	+1	+1	5	1	Applicable
21	+1	+1	+1	+1	+1	5	1	Applicable
22	+1	+1	0	+1	+1	4	0.8	Applicable
23	+1	+1	+1	+1	+1	5	1	Applicable
24	+1	+1	+1	+1	+1	5	1	Applicable
25	+1	+1	+1	+1	+1	5	1	Applicable
26	+1	+1	+1	+1	+1	5	1	Applicable
27	+1	+1	+1	+1	+1	5	1	Applicable
28	+1	+1	+1	+1	+1	5	1	Applicable
29	+1	+1	+1	+1	+1	5	1	Applicable
30	+1	+1	+1	+1	+1	5	1	Applicable
31	+1	+1	+1	+1	+1	5	1	Applicable
32	+1	+1	+1	+1	+1	5	1	Applicable
33	+1	+1	+1	+1	+1	5	1	Applicable
34	+1	+1	+1	+1	+1	5	1	Applicable
35	+1	+1	+1	+1	0	4	0.8	Applicable
36	+1	+1	+1	+1	+1	5	1	Applicable

Note:The consideration criteria for the consistency index from 0.50 is considered to be met and can be used.

APPENDIX F

Table 1 Scale CITC and reliability analysis

Variable	Measurement items	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Behavioral Engagement	Q4	0.757	0.953	0.956
	Q5	0.754	0.953	
	Q6	0.702	0.954	
	Q7	0.790	0.952	
	Q8	0.803	0.951	
	Q9	0.803	0.951	
	Q10	0.797	0.951	
	Q11	0.826	0.951	
	Q12	0.802	0.951	
	Q13	0.732	0.953	
	Q14	0.800	0.951	
	Q15	0.822	0.951	
Emotional Engagement	Q16	0.768	0.941	0.946
	Q17	0.742	0.942	
	Q18	0.687	0.944	
	Q19	0.743	0.942	
	Q20	0.723	0.942	
	Q21	0.783	0.940	

Variable	Measurement items	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Cognitive Engagement	Q22	0.785	0.940	0.963
	Q23	0.749	0.942	
	Q24	0.766	0.941	
	Q25	0.765	0.941	
	Q26	0.727	0.942	
	Q27	0.770	0.941	
	Q28	0.738	0.962	
	Q29	0.810	0.960	
	Q30	0.843	0.959	
	Q31	0.834	0.959	
	Q32	0.777	0.961	
	Q33	0.840	0.959	
	Q34	0.805	0.960	
	Q35	0.752	0.961	
	Q36	0.852	0.959	
	Q37	0.833	0.959	
	Q38	0.832	0.959	
	Q39	0.820	0.959	
Total			0.945	

Table 2 KMO and Bartlett's Test

Kaiser-Meyer-Olkin		0.894
Bartlett's Test of Sphericity	Approx. Chi-Square	3264.472
	df	630
	Sig.	<0.001

APPENDIX G

Consistency Index of Collaborative Learning Model for Enhancing Learning Engagement among College Students

Learning plan	+1	+1	+1	+1	+1	1						
1: Orientation												
(1) Concept												
(2) Students												
(3) Learning Objectives												
(4) Time												
(5) Learning Materials				+1	+1	+1	+1	+1	1			
(6) Learning Procedure												
Lead-in												
Task Assignment & Guidance												
Group Activity												
Evaluation & Discussion												
(7) Conclusion & Assignment												

2: Introduction of learning engagement: behavioral engagement						
(1) Concept						
(2) Students						
(3) Learning Objectives						
(4) Time						
(5) Learning Materials	+1	+1	+1	+1	+1	
(6) Learning Procedure						
Lead-in						
Task Assignment & Guidance						
Group Activity						
Evaluation & Discussion						
(7) Conclusion & Assignment						
3: Enhancement of learning engagement: behavioral engagement						
(1) Concept						
(2) Students						
(3) Learning Objectives						
(4) Time						
(5) Learning Materials	+1	+1	+1	+1	+1	1
(6) Learning Procedure						
Lead-in						
Task Assignment & Guidance						
Group Activity						
Evaluation & Discussion						
(7) Conclusion & Assignment						

4: Enhancement of learning engagement: behavioral engagement

(1) Concept						
(2) Students						
(3) Learning Objectives						
(4) Time						
(5) Learning Materials	+1	+1	+1	+1	+1	1
(6) Learning Procedure						
Lead-in						
Task Assignment & Guidance						
Group Activity						
Evaluation & Discussion						
(7) Conclusion & Assignment						

5: Enhancement of learning engagement: behavioral engagement

(1) Concept						
(2) Students						
(3) Learning Objectives						
(4) Time						
(5) Learning Materials	+1	+1	+1	+1	+1	1
(6) Learning Procedure						
Lead-in						
Task Assignment & Guidance						
Group Activity						
Evaluation & Discussion						
(7) Conclusion & Assignment						

6: Introduction of learning engagement: emotional engagement

(1) Concept						
(2) Students						
(3) Learning Objectives						
(4) Time						
(5) Learning Materials	+1	+1	+1	+1	+1	1
(6) Learning Procedure						
Lead-in						
Task Assignment & Guidance						
Group Activity						
Evaluation & Discussion						
(7) Conclusion & Assignment						

7: Enhancement of learning engagement: emotional engagement

(1) Concept						
(2) Students						
(3) Learning Objectives						
(4) Time						
(5) Learning Materials	+1	+1	+1	+1	+1	1
(6) Learning Procedure						
Lead-in						
Task Assignment & Guidance						
Group Activity						
Evaluation & Discussion						
(7) Conclusion & Assignment						

8: Enhancement of learning engagement: emotional engagement

(1) Concept						
(2) Students						
(3) Learning Objectives						
(4) Time						
(5) Learning Materials	+1	+1	+1	+1	+1	1
(6) Learning Procedure						
Lead-in						
Task Assignment & Guidance						
Group Activity						
Evaluation & Discussion						
(7) Conclusion & Assignment						

9: Enhancement of learning engagement: emotional engagement

(1) Concept						
(2) Students						
(3) Learning Objectives						
(4) Time						
(5) Learning Materials	+1	+1	+1	+1	+1	1
(6) Learning Procedure						
Lead-in						
Task Assignment & Guidance						
Group Activity						
Evaluation & Discussion						
(7) Conclusion & Assignment						

10: Introduction of learning engagement: cognitive engagement

(1) Concept						
(2) Students						
(3) Learning Objectives						
(4) Time						
(5) Learning Materials	+1	+1	+1	+1	+1	1
(6) Learning Procedure						
Lead-in						
Task Assignment & Guidance						
Group Activity						
Evaluation & Discussion						
(7) Conclusion & Assignment						

11: Enhancement of learning engagement: cognitive engagement

(1) Concept						
(2) Students						
(3) Learning Objectives						
(4) Time						
(5) Learning Materials	+1	+1	+1	+1	+1	1
(6) Learning Procedure						
Lead-in						
Task Assignment & Guidance						
Group Activity						
Evaluation & Discussion						
(7) Conclusion & Assignment						

12: Enhancement of learning engagement: cognitive engagement

(1) Concept						
(2) Students						
(3) Learning Objectives						
(4) Time						
(5) Learning Materials	+1	+1	+1	+1	+1	1
(6)Learning Procedure						
Lead-in						
Task Assignment & Guidance						
Group Activity						
Evaluation & Discussion						
(7) Conclusion & Assignment						

13: Enhancement of learning engagement: cognitive engagement

(1) Concept						
(2) Students						
(3) Learning Objectives						
(4) Time						
(5) Learning Materials	+1	+1	+1	+1	+1	1
(6) Learning Procedure						
Lead-in						
Task Assignment & Guidance						
Group Activity						
Evaluation & Discussion						
(7) Conclusion & Assignment						

14: Assessment&Conclusion

(1) Concept						
(2) Students						
(3) Learning Objectives						
(4) Time						
(5) Learning Materials	+1	+1	+1	+1	+1	1
(6) Learning Procedure						
Lead-in						
Task Assignment & Guidance						
Group Activity						
Evaluation & Discussion						
(7) Conclusion & Assignment						

APPENDIX H

Teaching Plan of Collaborative Learning Model for Enhancing Learning Engagement among College Students

Session	Learning Activity	Objective	Strategy/Technique
1	Orientation	2. To introduce the concept and significance of learning engagement. 2. To introduce collaborative learning and course.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment
2	Behavioral Engagement: Introduction and Group Interactive Activities	3. To introduce the concept of behavioral engagement and explain its importance in academic success. 4. To encourage students to reflect on their current behavioral engagement and identify strategies to improve in areas like attendance, participation, and assignment submission.	Project-Based Learning (PBL) Reciprocal Peer Learning, Inquiry-Based Learning,
3	Behavioral Engagement:Rule-Building & Role Assignment	3. To improve students' consistency in class attendance and participation. 4. To encourage active involvement in class	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning

Session	Learning Activity	Objective	Strategy/Technique
		discussions and activities.	
4	Behavioral Engagement: Responsibility and Accountability:	3. To take responsibility for individual tasks within a collaborative project. 4. To demonstrate accountability by working collaboratively to complete a group project.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning
5	Behavioral Engagement: Summary and Reflection	3. To present collaborative work effectively to the class. 4. To reflect on personal and group performance, providing constructive peer feedback.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment
6	Emotional Engagement: Introduction	3. To help students understand the concept of emotional engagement and its impact on learning outcomes. 4. To guide students in recognizing and managing their emotional responses to learning environments, fostering a more positive and	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment

Session	Learning Activity	Objective	Strategy/Technique
		productive academic experience.	
7	Emotional Engagement: Building Positive Emotional Responses	3. To help students recognize and enhance positive emotional responses (e.g., excitement, motivation) in their learning activities. 4. To teach students strategies for fostering positive emotions, even in the face of challenging academic tasks.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment
8	Emotional Engagement: Managing Negative Emotions in Learning	3. To help students recognize and understand the impact of negative emotional responses (e.g., anxiety, frustration) on their learning. 4. To teach students strategies for managing and reducing negative emotions to enhance their emotional engagement in academic activities.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment

Session	Learning Activity	Objective	Strategy/Technique
9	Emotional Engagement: Reflection and Strategies for Continued Improvement	3. To help students reflect on their emotional engagement journey and the strategies they have learned. 4. To guide students in creating a long-term plan for maintaining and enhancing emotional engagement in their academic work.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment
10	Cognitive Engagement: Introduction	3. To introduce the concept of cognitive engagement and explain its role in achieving deep learning and academic success. 4. To encourage students to reflect on their own cognitive engagement levels and develop strategies to improve their critical thinking, problem-solving, and conceptual understanding in their learning.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning,Peer Assessment

Session	Learning Activity	Objective	Strategy/Technique
11	Cognitive Engagement: Critical Thinking	3. To strengthen students' ability to analyze and evaluate information critically, and to apply these skills to their learning. 4. To help students develop strategies for questioning assumptions and approaching problems from multiple perspectives.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment
12	Cognitive Engagement: Problem Solving and Application	3. To enhance students' problem-solving abilities and their capacity to apply knowledge to real-world situations. 4. To encourage students to think creatively and analytically when tackling problems.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning
13	Cognitive Engagement: Integration and Reflection	3. To help students integrate critical thinking, problem-solving, and real-world application into a cohesive approach to learning.	Reciprocal Peer Learning, Project-Based Learning, Inquiry-Based Learning, Peer Assessment

Session	Learning Activity	Objective	Strategy/Technique
		4. To encourage students to reflect on their cognitive engagement progress and set personal goals for continued improvement.	
14	Assessment & Conclusion-Reflection on Learning Engagement	3. To reflect on personal growth in the three dimensions of engagement: behavioral, cognitive, and emotional. 4. To develop strategies for continued improvement in collaborative learning practices.	Reciprocal Peer Learning,Project-Based Learning,Inquiry-Based Learning, Peer Assessment

APPENDIX I

Specific Teaching Activities Arranged by the Collaborative Learning to Enhance Students' Learning Engagement

Session 1: Orientation

1. Concept

Orientation serves as a vital process in fostering connections among professional students, educators, researchers, and peers. It aims to cultivate an environment characterized by warmth, enthusiasm, joy, and engagement in learning activities.Within such a setting, students feel at ease, empowered to demonstrate their skills, express their perspectives, and share their emotions openly. Moreover, during orientation, the researcher explained to the students the purpose of the study plan, the teaching details and the process, including the benefits that the students would get from participating in all the activities. This will help students to better know and understand the activities that will be involved.

Learning engagement refers to the depth of involvement and active participation that students exhibit in their educational activities. It encompasses a broad spectrum of behaviors, emotions, and cognitive efforts that students invest in the learning process. It consists of the following three components: ①Behavioral Engagement ② Emotional Engagement ③Cognitive Engagement.

Behavioral Engagement refers to the outward actions and participation that students demonstrate in the educational setting. This dimension includes consistent class attendance, active participation in class discussions, timely submission of assignments, and involvement in school-related activities such as group projects, extracurricular activities, and academic clubs.

Emotional Engagement refers to the feelings and emotional responses that students experience in relation to their learning environment and academic work. This

dimension encompasses a range of emotions, from positive feelings like excitement, enthusiasm, and a sense of belonging, to negative emotions such as anxiety, frustration, or disinterest.

Cognitive Engagement refers to the degree of intellectual effort and thoughtfulness that students apply to their learning processes. It involves deep learning strategies such as critical thinking, analysis, problem-solving, and the application of concepts to real-world situations.

2. Learning Objectives:

(1) To introduce the concept and significance of learning engagement.

(2) To introduce collaborative learning and course.

3. Time: 90 mins

4. Learning Materials ： Whiteboard and markers

PowerPoint slides (for the presentation of key concepts)

Printed handouts with information on learning engagement components

(Behavioral, Emotional, Cognitive)

Case studies on collaborative learning (e.g., group project examples)

Sticky notes for group activities

Projector and laptop (for multimedia content)

5. Learning Procedure

(1) Lead-in (15 mins):

Step 1: Begin the session with a brief introduction to the topic of learning engagement. Engage students by asking questions such as, "What does being engaged in learning mean to you?" or "Can you think of an example when you felt truly engaged in a learning activity?"

Step 2: Define learning engagement as a concept and introduce the three components: Behavioral, Emotional, and Cognitive engagement. Display these definitions on a PowerPoint slide and provide examples.

Step 3: Share some real-life examples or short case studies demonstrating high or low levels of engagement in various educational settings.

(2) Task Assignment & Guidance (20 mins):

Step 1: Divide the students into small groups (3-4 members per group). Assign each group one component of learning engagement to discuss in-depth: one group will focus on Behavioral Engagement, another on Emotional Engagement, and the third on Cognitive Engagement.

Step 2: Provide guidance on the discussion tasks. Instruct each group to:

Define their assigned component.

Provide examples of how it manifests in the classroom.

Discuss the importance of this component for student success and well-being.

Step 3: Allow the groups 10-15 minutes to brainstorm, write down their thoughts on sticky notes or paper, and prepare a brief presentation.

(3) Group Activity (30 mins):

Step 1: Each group will present their findings to the class, explaining the component they researched. Encourage peer-to-peer interaction during the presentations.

Step 2: After each presentation, facilitate a short discussion by asking the rest of the class questions such as: "What is an example of emotional engagement that you have experienced?" or "How can we improve cognitive engagement in the classroom?"

Step 3: For additional learning, ask students to reflect on and write down one personal goal to improve their own learning engagement, using the components

discussed. This could be a behavioral goal (e.g., attending class more regularly), an emotional goal (e.g., cultivating a positive mindset), or a cognitive goal (e.g., engaging more deeply with the material).

(4) Evaluation & Discussion (20 mins):

Step 1: After the group presentations, facilitate a discussion on the importance of collaborative learning and how it relates to engagement. Ask students how collaboration can enhance each of the three components of engagement.

Step 2: Encourage students to evaluate their own learning engagement based on the components discussed. Pose reflective questions such as: "How engaged do you feel in this course so far?" or "What strategies could help you become more engaged?"

Step 3: Summarize the importance of learning engagement for academic success and personal growth. Provide practical examples of how students can improve their engagement throughout the semester.

6. Conclusion & Assignment (5 mins)

Step 1: Summarize the key points of the lesson, emphasizing the importance of understanding and fostering all three types of engagement: Behavioral, Emotional, and Cognitive.

Step 2: For homework, ask students to write a short reflection (1-2 pages) on their current level of engagement in their studies and identify strategies for enhancing their engagement in each of the three components. They should include at least one actionable step for each type of engagement.

Step 3: Provide a rubric or a checklist for self-assessment of engagement, where students can rate themselves on their attendance, participation, emotional connection to learning, and the intellectual effort they put into their studies.

Sample Rubric for Self-Assessment of Engagement

Component	Rating (1-5)	Comments/Actionable Goals
Behavioral Engagement		
Class Attendance		
Participation in Discussions		
Timely Submission of Work		
Emotional Engagement		
Feelings of Excitement		
Sense of Belonging		
Emotional Connection to Material		
Cognitive Engagement		
Use of Critical Thinking		
Problem-Solving Efforts		
Application of Knowledge		

Session 2: Introduction of learning engagement: behavioral engagement (Group Interactive Activities)

1. Content

Behavioral Engagement refers to the outward actions and participation that students demonstrate in the educational setting. This dimension includes consistent class attendance, active participation in class discussions, timely submission of assignments, and involvement in school-related activities such as group projects, extracurricular activities, and academic clubs. Behavioral engagement is crucial as it affects both the students' learning process and their overall academic success.

Several scholars emphasize the importance of behavioral engagement in the educational context. According to Fredricks, Blumenfeld, and Paris (2004), behavioral engagement involves not only participation but also the investment of effort in activities, which can lead to better learning outcomes. They argue that when students engage in tasks actively and persistently, their motivation to learn increases, thus positively influencing their academic performance.

2.Learning Objectives:

(1) To introduce the concept of behavioral engagement and explain its importance in academic success.

(2) To encourage students to reflect on their current behavioral engagement and identify strategies to improve in areas like attendance, participation, and assignment submission.

3. Time: 90 mins

4. Learning Materials ： PowerPoint slides for introducing the concept of behavioral engagement

Whiteboard and markers for class discussion and note-taking

Handouts explaining the four main components of behavioral engagement (attendance, participation, assignment submission, and school-related activities)

Self-reflection worksheet for evaluating students' current engagement

Timer (for group activity)

5. Learning Procedure ： (Lead-in (15 mins):

Step 1: Begin the session by asking the class: "What do you think engagement in learning means? What actions show that you are engaged in class?"

Step 2: Introduce the concept of behavioral engagement using a PowerPoint slide. Define the term and explain that it refers to how students physically and actively participate in their education through actions like attendance, discussion participation, assignment submission, and involvement in extracurricular activities.

Step 3: Briefly explain that this session will focus on behavioral engagement, and students will explore how their behaviors impact their academic progress.

(2) Task Assignment & Guidance (20 mins):

Step 1: Hand out a self-reflection worksheet where students will assess their current level of behavioral engagement. The worksheet should include questions such as:

"How often do you attend classes regularly?"

"Do you actively participate in class discussions?"

"How often do you submit your assignments on time?"

"Are you involved in extracurricular activities or group projects?"

Step 2: Allow students 10-15 minutes to fill out the worksheet individually.

Step 3: After completing the worksheet, ask students to pair up with a classmate and discuss their self-reflections. Encourage them to share one area where they feel they could improve and one strategy they could implement to enhance their engagement.

(3) Group Activity (30 mins):

Step 1: Divide students into small groups (4-5 people per group).

Step 2: Assign each group a specific component of behavioral engagement (attendance, participation, timely submission of assignments, or involvement in extracurricular activities).

Step 3: In their groups, students should brainstorm and list at least five strategies for improving the assigned component of engagement. For example, if the group is focusing on participation, they might suggest strategies like preparing questions before class, sitting near the front, or engaging in class discussions after every lecture.

Step 4: Allow 15 minutes for group brainstorming, then have each group present their strategies to the class. Discuss and write these strategies on the board, creating a comprehensive list of ways to improve different aspects of behavioral engagement.

(4) Evaluation & Discussion (20 mins):

Step 1: After the group presentations, facilitate a class discussion about which strategies might be most effective for different students, considering their individual learning styles and challenges. Ask questions like:

"Which strategies do you think would work best for you?"

"What barriers might prevent you from implementing these strategies?"

Step 2: Encourage students to share personal experiences and challenges they have faced with attendance, participation, or assignment submission. Offer suggestions for overcoming these obstacles.

Step 3: Conclude with a brief individual reflection: ask each student to pick one strategy from the class discussion that they can implement over the next week to improve their behavioral engagement.

6. Conclusion & Assignment (5 mins)

Step 1: Summarize the key points of the session, emphasizing the importance of behavioral engagement and how students can actively work to improve it. Highlight the fact that engagement is a critical factor in their academic success.

Step 2: For homework, ask students to:

Set a specific goal to improve one aspect of behavioral engagement (attendance, participation, assignment submission, or involvement in extracurricular activities).

Track their progress over the next week using a simple engagement tracker. This will help them monitor how well they implement the strategies discussed in class.

Engagement Tracker for One Week

Day	Engagement Focus	Strategy Implemented	Did You Achieve Your Goal? (Yes/No)	Reflection on Progress
Monday	Attendance			
Tuesday	Participation			
Wednesday	Assignment Submission			

Day	Engagement Focus	Strategy Implemented	Did You Achieve Your Goal? (Yes/No)	Reflection on Progress
Thursday	Extracurricular Activities			
Friday	Participation			

Step 3: Ask students to submit their engagement tracker at the beginning of the next class to discuss their progress and reflect on any challenges they faced while trying to improve their engagement.

Session 3: Enhancement of Learning Engagement - Behavioral Engagement (Rule-Building & Role Assignment)

1. Concept:

Behavioral Engagement refers to the active participation and outward actions students demonstrate in their educational environment. This session will focus on two key aspects of behavioral engagement: class attendance and participation in class discussions. Regular attendance and active participation are essential for creating a dynamic and enriching learning environment, fostering peer interactions, and reinforcing learning outcomes.Research supports the significance of regular attendance and active participation in enhancing behavioral engagement. According to Fredricks, Blumenfeld, and Paris (2004), behavioral engagement is not only about attending class but also involves the quality of students' participation. Their study highlights how active participation in discussions and consistent attendance lead to deeper engagement with the content, enhancing both academic achievement and the development of social skills through peer interactions.

2. Learning Objectives:

(1) To improve students' consistency in class attendance and participation.

(2) To encourage active involvement in class discussions and activities.

3. Time: 90 minutes

4. Learning Materials:

Whiteboard and markers

PowerPoint slides (for explaining behavioral engagement)

Attendance tracking chart (printed or digital)

Handouts on the importance of active participation

Timer or stopwatch (to track discussion timing)

5. Learning Procedure:

(1) Lead-in (15 mins):

Step 1: Begin with a brief introduction of the session's focus: class attendance and active participation. Ask the class, "How does attending every class affect your learning?" and "Why is it important to actively participate in class discussions?"

Step 2: Share statistics or personal stories about the impact of good attendance and participation on academic success.

Step 3: Show a slide with definitions of class attendance and participation, emphasizing how they contribute to engagement.

(2) Task Assignment & Guidance (20 mins):

Step 1: Explain that students will work in pairs to discuss strategies for improving class attendance and participation. Encourage them to think of personal goals and barriers they face regarding these areas.

Step 2: Assign the task: In pairs, students will identify at least three specific strategies they can use to improve attendance and participation.

Step 3: Provide examples, such as setting reminders for class, preparing ahead for discussions, or asking questions during class.

Step 4: Give each pair 10 minutes to discuss and write down their strategies.

(3) Group Activity (30 mins):

Step 1: After the pairs discuss, invite them to share their strategies with the entire class. Create a list on the whiteboard that can be referred to later.

Step 2: Conduct a mock class discussion (related to course material) where each student must speak at least once. Set a timer for each student's contribution to ensure everyone participates.

Step 3: After the activity, discuss how this simulated environment made students feel about contributing. Did they find it challenging? Why?

(4) Evaluation & Discussion (20 mins):

Step 1: Ask students to evaluate how their participation and attendance impact their engagement in the course. Provide a self-reflection worksheet with questions like: "What is one reason you might skip class?" and "How do you feel when you contribute to a class discussion?"

Step 2: Discuss the feedback as a group, offering suggestions for overcoming common challenges such as feeling shy or unprepared.

6. Conclusion & Assignment (5 mins)

Step 1: Summarize the key points of the session, emphasizing the importance of regular attendance and active participation.

Step 2: For homework, ask students to keep a one-week log of their class attendance and participation. They should set one goal for improvement in each area (attendance and participation).

Step 3: Provide a simple tracking chart for students to fill in (attendance and participation scores for each class).

One-Week Attendance and Participation Log

Day	Class Attended (Yes/No)	Participation Level (1-5)*	Comments/Goal for Improvement
Monday			
Tuesday			

Day	Class Attended (Yes/No)	Participation Level (1-5)*	Comments/Goal for Improvement
Wednesday			
Thursday			
Friday			

*Participation Level: 1 = Not at all, 5 = Very active

Session 4: Enhancement of Learning Engagement - Behavioral Engagement

(Responsibility and Accountability)

1. Concept:

Behavioral Engagement encompasses actions like consistent class attendance, participation, and timely submission of assignments. This session focuses on improving students' behaviors around submitting assignments on time. Timely submission is essential for maintaining momentum in learning, developing discipline, and ensuring consistent progress in the course.Research indicates that timely submission of assignments plays a crucial role in fostering academic responsibility and accountability. According to Zimmermann (2000), students who develop effective time-management strategies, including timely submission of assignments, are better equipped to engage with course content and manage their learning effectively. Zimmermann's study highlights how self-regulated learners, who consistently meet deadlines, are more likely to experience sustained academic success.

2. Learning Objectives:

(1) To increase students' accountability and consistency in submitting assignments on time.

(2) To explore the strategies students can use to manage their time effectively for assignment completion.

3. Time: 90 minutes

4. Learning Materials:

Whiteboard and markers

PowerPoint slides (for assignment deadlines and time management)

Handouts on time management techniques (e.g., Pomodoro technique, prioritization)

Assignment tracker sheet

5. Learning Procedure:

(1) Lead-in (15 mins):

Step 1: Begin by discussing the importance of submitting assignments on time. Ask the class: "What challenges do you face in submitting assignments on time?" and "How does procrastination affect your learning?"

Step 2: Introduce a short case study or video about a student who struggled with late submissions and how it impacted their overall performance.

Step 3: Highlight the significance of meeting deadlines for both academic and professional success.

(2) Task Assignment & Guidance (20 mins):

Step 1: Provide students with time management strategies such as breaking tasks into smaller chunks, setting realistic deadlines, and using tools like planners or apps for tracking assignments.

Step 2: Ask each student to write down the most recent assignment they had difficulty submitting on time and identify the reasons.

Step 3: Afterward, have students share their reasons in small groups and brainstorm potential solutions.

(3) Group Activity (30 mins):

Step 1: Divide students into groups and assign them to create a "Time Management Plan" for an upcoming assignment. They should break down the assignment into steps, allocate time for each step, and decide how they will avoid procrastination.

Step 2: Have groups present their plans to the class, and encourage peers to provide constructive feedback.

Step 3: Discuss the importance of regular check-ins with peers or instructors for staying on track.

(4) Evaluation & Discussion (20 mins):

Step 1: Hand out self-assessment forms to students for reflecting on their assignment submission habits. Include questions like: "Do you often submit assignments late?" and "What strategies do you plan to implement to improve your submission behavior?"

Step 2: Lead a discussion about common obstacles to meeting deadlines and ask students to share any tips they've found helpful for overcoming procrastination.

6. Conclusion & Assignment (5 mins)

Step 1: Summarize the strategies discussed for improving assignment submission behaviors.

Step 2: For homework, ask students to submit a time management plan for an upcoming assignment, applying the techniques learned in class.

Step 3: Remind students to track their progress and reflect on how implementing time management strategies impacts their behavioral engagement.

Time Management Plan for Upcoming Assignment

Assignment Title: _____	Due Date: _____
Task	Deadline
Research & Gather Resources	[Date]
Outline Assignment Structure	[Date]
Write First Draft	[Date]
Review and Edit Draft	[Date]
Finalize and Proofread	[Date]
Submit Assignment	[Date]

Reflection Section

Task	Completed On Time (Yes/No)	Comments/Challenges Faced
Research & Gather Resources		
Outline Assignment Structure		
Write First Draft		
Review and Edit Draft		
Finalize and Proofread		
Submit Assignment		

Session 5: Enhancement of Learning Engagement - Behavioral Engagement (Summary and Reflection)

1. Concept:

This session serves as a summary of the previous sessions on behavioral engagement. It focuses on reinforcing the key aspects of engagement: class attendance, participation in discussions, and timely submission of assignments. By reflecting on their progress and challenges, students can build a stronger commitment to these behaviors.Reflecting on behavioral engagement helps students recognize the importance of consistent effort and active participation in their learning process. According to Appleton et al. (2006), students who engage in reflective practices are more likely to develop a sense of ownership over their learning, which enhances their behavioral engagement. They emphasize that reflection allows students to make connections between their actions and learning outcomes, fostering greater responsibility and sustained involvement in academic activities.

2. Learning Objectives:

(1) To consolidate the students' understanding of behavioral engagement and its components.

(2) To reflect on progress made in improving behavioral engagement and create an action plan for continued improvement.

3. Time: 90 minutes

4. Learning Materials:

Whiteboard and markers

PowerPoint slides (for summarizing key points of behavioral engagement)

Self-assessment worksheets

Progress tracker sheet (for students to record their attendance, participation, and assignment submissions)

5. Learning Procedure:

(1) Lead-in (15 mins):

Step 1: Start with a quick review of the key components of behavioral engagement: attendance, participation, and timely submissions. Use slides to reinforce these ideas.

Step 2: Ask students to reflect on which component they have found most challenging and why.

(2) Task Assignment & Guidance (20 mins):

Step 1: Distribute the self-assessment forms from previous sessions and ask students to fill them out. They should reflect on their behavior over the past few weeks and rate their progress in each of the three areas.

Step 2: Have students share their reflections in small groups and discuss any strategies they found particularly useful.

(3) Group Activity (30 mins):

Step 1: In small groups, students will create a Behavioral Engagement Improvement Plan for the next month. They will identify specific goals for each component (attendance, participation, assignment submission) and share these with the class.

Step 2: Encourage the groups to incorporate personal strategies and obstacles they discussed earlier.

(4) Evaluation & Discussion (20 mins):

Step 1: Ask students to evaluate their overall level of behavioral engagement. Lead a discussion on what actions have worked and what challenges remain.

Step 2: Offer suggestions for ongoing improvement and provide positive reinforcement for students who have shown consistent behavioral engagement.

6. Conclusion & Assignment (5 mins)

Step 1: Summarize the progress students have made and reiterate the importance of continuing to improve behavioral engagement.

Step 2: For homework, ask students to update their Behavioral Engagement Improvement Plan after a month, reflecting on their successes and challenges.

Step 3: Encourage students to set new engagement goals for the upcoming weeks.

Behavioral Engagement Improvement Plan:

Component	Initial Goal	Progress Made	New Goal	Action Steps
Class Attendance	Attend 100% of classes			
Class Participation	Speak at least once in each class			
Timely Assignment Submission	Submit all assignments on time			

Session 6: Introduction of Learning Engagement: Emotional Engagement

1. Concept:

Emotional Engagement refers to the feelings and emotional responses that students experience in relation to their learning environment and academic work. It encompasses a range of emotions, from positive feelings like excitement, enthusiasm, and a sense of belonging, to negative emotions such as anxiety, frustration, or disinterest. Emotional engagement is critical because it influences students' motivation, persistence, and overall academic performance. Research has shown that emotional engagement plays a significant role in students' academic success and persistence. According to Pekrun (2006), emotions in academic settings can significantly impact students' motivation, with positive emotions such as enjoyment and excitement fostering greater engagement, while negative emotions like anxiety can hinder students' performance and learning progress. Pekrun's control-value theory of achievement emotions emphasizes that emotions are not only responses to learning experiences but also factors that shape students' ongoing motivation and behavior.

2. Learning Objectives:

(1) To help students understand the concept of emotional engagement and its impact on learning outcomes.

(2) To guide students in recognizing and managing their emotional responses to learning environments, fostering a more positive and productive academic experience.

3. Time: 90 minutes

4. Learning Materials:

PowerPoint slides on emotional engagement

Emotional engagement questionnaire (for self-assessment)

Case studies illustrating emotional responses in learning contexts

Whiteboard and markers

Video clips demonstrating positive and negative emotional responses in classroom settings

5. Learning Procedure:

(1) Lead-in (15 mins):

Step 1: Start by asking students, "What emotions do you typically experience when studying or engaging in class activities?" Write responses on the board.

Step 2: Define emotional engagement and explain its importance in the learning process. Emphasize that emotional engagement includes both positive (e.g., excitement, interest) and negative (e.g., frustration, anxiety) emotions, and that these feelings influence how effectively students engage with the material.

Step 3: Show a short video clip that highlights a range of emotional responses in a learning setting. Afterward, facilitate a brief discussion on how these emotions might affect a student's performance and engagement.

(2) Task Assignment & Guidance (20 mins):

Step 1: Provide each student with a self-assessment questionnaire on emotional engagement. This questionnaire includes prompts such as:

"How do you feel when you are faced with a challenging topic in class?"

"What emotions do you experience when you are actively participating in a group discussion?"

"Do you often feel motivated or anxious before exams?"

Step 2: Ask students to fill out the questionnaire individually and reflect on their emotional responses during their academic activities.

Step 3: After completing the questionnaire, ask students to identify common emotional patterns they noticed in their responses.

(3) Group Activity (30 mins):

Step 1: Divide the class into small groups (4-5 students per group). Assign each group a case study involving a student experiencing different emotional responses in an academic context (e.g., a student feeling anxious before a big presentation, or one feeling motivated and excited about a group project).

Step 2: In their groups, students should:

Identify the emotional responses of the student in the case study.

Discuss how these emotions might affect the student's engagement and performance.

Propose strategies for managing negative emotions and fostering positive emotional engagement in similar situations.

Step 3: After 20 minutes, have each group share their findings and strategies with the class. Encourage other students to ask questions and offer additional suggestions.

(4) Evaluation & Discussion (20 mins):

Step 1: Lead a class-wide discussion on the role of emotional engagement in the learning process. Ask questions such as:

"What are some examples of positive emotions that can enhance engagement?"

"How can we manage negative emotions like anxiety or frustration to improve our learning experience?"

"How can a sense of belonging in the classroom affect emotional engagement?"

Step 2: Summarize the discussion by highlighting key strategies for fostering positive emotional engagement, such as creating a supportive learning environment, managing stress, and celebrating achievements.

6. Conclusion & Assignment (5 mins)

Conclusion:

Recap the session's focus on emotional engagement and its influence on learning. Emphasize the importance of recognizing both positive and negative emotions and their impact on motivation, persistence, and academic performance.

Reinforce the idea that emotional engagement can be cultivated through strategies like developing self-awareness, seeking support, and fostering positive emotional responses to challenges.

Assignment: For homework, students are asked to complete the Emotional Engagement Reflection Journal, which will help them track their emotional responses over the next week and develop strategies for enhancing emotional engagement in their studies.

Emotional Engagement Reflection Journal

Day	Learning Activity	Emotions Experienced	Positive/Negative Emotion?	What Did I Do to Manage My Emotions?	What Could I Do Differently Next Time?
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					

Instructions for students:

Emotions Experienced: Write down the emotions you experienced during each learning activity.

Positive/Negative Emotion?: Label the emotion as either positive or negative.

What Did I Do to Manage My Emotions?: Describe any strategies you used to manage your emotions (e.g., taking breaks, breathing exercises).

What Could I Do Differently Next Time?: Reflect on what changes you could make to better manage your emotions and enhance emotional engagement in future activities.

Session 7: Enhancement of Emotional Engagement - Building Positive Emotional Responses

1. Content:

Emotional Engagement refers to the feelings and emotional responses that students experience in relation to their learning environment and academic work. Positive emotional engagement can foster enthusiasm, interest, and excitement in learning. This session will focus on developing strategies for cultivating positive emotional engagement, particularly in challenging academic situations, to improve students' motivation and persistence.Research indicates that fostering positive emotional responses in students can significantly improve their engagement and academic outcomes. According to Pekrun et al. (2011), positive emotions such as enjoyment and pride are strongly linked to higher levels of engagement and achievement. Their research on achievement emotions highlights that students who experience positive emotions in the classroom are more likely to engage actively in learning tasks and persist through challenges. This emotional connection to learning encourages deeper cognitive processing and enhances overall motivation.

2. Learning Objectives:

(1) To help students recognize and enhance positive emotional responses (e.g., excitement, motivation) in their learning activities.

(2) To teach students strategies for fostering positive emotions, even in the face of challenging academic tasks.

3. Time: 90 minutes

4. Learning Materials:

PowerPoint slides on positive emotional engagement

Case studies illustrating positive emotional responses in learning

Emotional engagement self-assessment tool (to track positive emotions)

Whiteboard and markers

5. Learning Procedure:

(1) Lead-in (15 mins):

Step 1: Begin by asking students, “What makes you excited or motivated when learning something new?” List responses on the board.

Step 2: Define positive emotional engagement and explain how emotions such as enthusiasm, excitement, and interest can enhance learning.

Step 3: Present a short video illustrating a student’s positive emotional response to a learning experience (e.g., the joy of solving a challenging problem or the excitement of discovering something new). Discuss how these emotions impact learning outcomes.

(2) Task Assignment & Guidance (20 mins):

Step 1: Ask students to complete a Positive Emotional Engagement Self-Assessment (questions such as: "When was the last time you felt excited about learning something new?" and "What triggers your excitement in the classroom?").

Step 2: Have students share their responses in pairs, discussing what actions or environments create positive emotional engagement for them.

(3) Group Activity (30 mins):

Step 1: Divide students into small groups and assign each group a case study where a student feels excitement or motivation about a learning activity.

Step 2: Each group will:

Identify what led to the positive emotional response.

Discuss how they can incorporate these factors into their own learning routines.

Propose strategies to help other students feel more excited or motivated in similar learning environments.

Step 3: After 20 minutes, each group will present their findings and strategies to the class.

(4) Evaluation & Discussion (20 mins):

Step 1: Lead a class-wide discussion on how positive emotions influence learning. Ask: "How do positive emotions like excitement affect motivation and persistence?"

Step 2: Summarize the strategies discussed by groups for fostering positive emotional engagement, emphasizing the importance of creating a stimulating and supportive learning environment.

6. Conclusion & Assignment (5 mins)

Conclusion:

In this session, we explored the importance of positive emotional engagement in learning, focusing on how excitement, enthusiasm, and motivation can drive academic success.

Students learned strategies for enhancing positive emotions, such as setting achievable goals, celebrating progress, and engaging in activities that align with personal interests.

The key takeaway is that creating a positive emotional environment is essential for improving both motivation and performance in learning.

Assignment: For homework, students are required to create an Action Plan for Positive Emotional Engagement to enhance positive emotions in their academic activities. They will use the following template to structure their plans:

Action Plan for Positive Emotional Engagement

Goal	Strategy	Timeline	Measure of Success

Session 8: Enhancement of Emotional Engagement - Managing Negative Emotions in Learning

1. Content:

While positive emotional engagement is vital, managing negative emotions such as anxiety, frustration, or boredom is equally important. This session will focus on how students can identify and manage negative emotions that arise during learning, preventing these feelings from hindering their academic performance. Cavanagh (2014) stresses the importance of emotional regulation in learning. Cavanagh argues that students who are taught emotional regulation techniques—such as mindfulness or cognitive reframing—are better able to manage negative emotions and, consequently, maintain their engagement in challenging academic tasks. This emotional resilience not only helps students overcome frustration and anxiety but also enhances their ability to persist through difficulties, improving both learning outcomes and well-being.

2. Learning Objectives:

(1) To help students recognize and understand the impact of negative emotional responses (e.g., anxiety, frustration) on their learning.

(2) To teach students strategies for managing and reducing negative emotions to enhance their emotional engagement in academic activities.

3. Time: 90 minutes

4. Learning Materials:

PowerPoint slides on managing negative emotions

Relaxation and mindfulness exercises (audio or guided)

Emotional regulation worksheet

Whiteboard and markers

5. Learning Procedure:

(1) Lead-in (15 mins):

Step 1: Begin by asking students, "What negative emotions do you commonly experience while learning, and how do they affect your performance?"

Step 2: Define negative emotional engagement and explain how emotions like anxiety, frustration, and boredom can negatively impact learning and engagement.

Step 3: Present a short case study or video about a student who experiences anxiety during exams. Discuss how these emotions can affect their performance and engagement in class.

(2) Task Assignment & Guidance (20 mins):

Step 1: Provide students with a worksheet titled "Emotional Regulation Strategies", which includes prompts for identifying negative emotions and strategies to cope with them (e.g., deep breathing, reframing negative thoughts, taking breaks).

Step 2: Ask students to complete the worksheet, reflecting on when they feel the most negative emotions and how they currently deal with them.

(3) Group Activity (30 mins):

Step 1: Divide the class into small groups and give each group a scenario where negative emotions impact learning (e.g., a student feels anxious before a big presentation or frustrated when solving a difficult problem).

Step 2: In their groups, students should:

Identify the negative emotions involved.

Discuss strategies they could use to manage these emotions (e.g., relaxation techniques, positive self-talk).

Share personal experiences of how they have overcome similar emotions.

Step 3: Each group will present their strategies to the class.

(4) Evaluation & Discussion (20 mins):

Step 1: Lead a discussion on the importance of managing negative emotions in the learning process. Ask, “How do negative emotions like anxiety or frustration impact your learning, and what can we do to prevent these feelings from taking over?”

Step 2: Summarize the strategies discussed and encourage students to implement them in their daily academic activities.

6. Conclusion & Assignment:

Conclusion:

In this session, we focused on how to identify and manage negative emotions such as anxiety, frustration, and boredom, which can hinder learning.

We explored emotional regulation strategies like mindfulness, deep breathing, and reframing negative thoughts.

The key takeaway is that students must recognize when negative emotions arise and apply effective strategies to manage them, ensuring these emotions don’t impact their academic performance.

Assignment: For homework, students will track their negative emotional responses in the Negative Emotional Engagement Log for one week. The log will help them practice managing these emotions in real-life learning scenarios.

Negative Emotional Engagement Log

Day	Learning Activity	Negative Emotion Experienced	Strategy Used to Manage Emotion	Outcome/Reflection
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				

Session 9: Enhancement of Emotional Engagement - Reflection and Strategies for Continued Improvement

1. Content:

The final session focuses on synthesizing the learning about emotional engagement and developing strategies for continuous improvement. Students will reflect on their emotional engagement throughout the course and create a personalized action plan for ongoing emotional growth in academic contexts. Emotional engagement involves the emotional responses students experience in relation to their learning experiences. These emotions can be positive, such as excitement and enthusiasm, or negative, such as anxiety and frustration. Emotional engagement plays a pivotal role in student motivation, persistence, and overall academic success (Pekrun et al., 2002). Positive emotional engagement is associated with higher levels of participation and deeper learning, while negative emotions, if unmanaged, can hinder progress and reduce academic achievement (Pekrun, 2006).

2. Learning Objectives:

(1) To help students reflect on their emotional engagement journey and the strategies they have learned.

(2) To guide students in creating a long-term plan for maintaining and enhancing emotional engagement in their academic work.

3. Time: 90 minutes

4. Learning Materials:

PowerPoint slides summarizing emotional engagement strategies

Personalized Emotional Engagement Plan template

Reflection journal from previous sessions

5. Learning Procedure:

(1) Lead-in (15 mins):

Step 1: Begin by asking students, "How do you feel about your emotional engagement now compared to when you first started this course?"

Step 2: Provide a brief recap of the key points discussed throughout the course regarding emotional engagement (positive emotional engagement, managing negative emotions, etc.).

Step 3: Introduce the concept of a Personalized Emotional Engagement Plan and explain that students will create their plan for continuous improvement.

(2) Task Assignment & Guidance (20 mins):

Step 1: Provide students with the Personalized Emotional Engagement Plan template, which includes:

Goals for emotional engagement (e.g., increasing positive emotional responses, reducing negative emotions).

Strategies to achieve these goals.

A timeline for implementing these strategies.

Methods for measuring success (e.g., tracking emotional responses in different situations).

Step 2: Ask students to complete their plan individually, reflecting on their emotional engagement throughout the course and setting realistic goals for the future.

(3) Group Activity (30 mins):

Step 1: Have students pair up with a classmate to share their plans and provide feedback.

Step 2: Encourage students to discuss what strategies worked for them in the past sessions and what they could do differently to further improve their emotional engagement.

(4) Evaluation & Discussion (20 mins):

Step 1: Lead a class-wide discussion on the importance of creating a long-term plan for emotional engagement. Ask, "Why is it important to continue developing emotional engagement in the future?"

Step 2: Summarize the key takeaways from the course and encourage students to implement their plans in their academic and personal lives.

6. Conclusion & Assignment:

Conclusion:

In this final session, we reflected on the key strategies we've learned throughout the course for enhancing emotional engagement: fostering positive emotions, managing negative emotions, and developing a personalized action plan.

The key takeaway is that emotional engagement is a continuous process, and students should use the strategies and tools developed in this course to ensure they remain emotionally engaged throughout their academic journey.

A strong emotional connection to learning can improve motivation, persistence, and performance.

Assignment: Students are to complete the Personalized Emotional Engagement Plan, where they will set long-term goals for emotional engagement and develop strategies for continued improvement.

Personalized Emotional Engagement Plan

Goal	Strategies	Timeline	Measurement of Progress

Session 10: Introduction of learning engagement: cognitive engagement

1. Content:

Cognitive Engagement refers to the degree of intellectual effort and thoughtfulness that students apply to their learning processes. It involves deep learning strategies such as critical thinking, analysis, problem-solving, and the application of concepts to real-world situations. This form of engagement encourages students to think deeply, make connections, and use strategies that enhance their understanding and retention of material.Research has demonstrated that cognitive engagement is crucial for effective learning and academic success. According to Fredricks, Blumenfeld, and Paris (2004), cognitive engagement is a key aspect of overall student engagement, where students invest the necessary intellectual effort to understand complex concepts and solve problems. They argue that students who are cognitively engaged are more likely to employ strategies such as self-regulation and deep processing, which significantly improve their academic outcomes.

2. Learning Objectives:

(1) To introduce the concept of cognitive engagement and explain its role in achieving deep learning and academic success.

(2) To encourage students to reflect on their own cognitive engagement levels and develop strategies to improve their critical thinking, problem-solving, and conceptual understanding in their learning.

3. Time: 90 minutes

4. Learning Materials:

PowerPoint slides introducing cognitive engagement and its components.

Whiteboard and markers for visualizing key ideas.

Handouts explaining cognitive engagement strategies such as critical thinking, problem-solving, and deep learning techniques.

Example problems or case studies for group discussion.

Self-reflection worksheet for assessing personal cognitive engagement levels.

5. Learning Procedure:

(1) Lead-in (15 mins):

Step 1: Begin the session by asking students, "What does it mean to 'think critically' or to 'engage' with something on a deeper level?"

Step 2: Write responses on the whiteboard and guide a short discussion on how students currently approach learning (e.g., do they just memorize information or do they try to understand and apply it?).

Step 3: Introduce the concept of cognitive engagement using PowerPoint slides. Explain that cognitive engagement involves going beyond surface-level learning and focuses on deeper intellectual involvement, including strategies such as critical thinking, analysis, and problem-solving.

(2) Task Assignment & Guidance (20 mins):

Step 1: Hand out the self-reflection worksheet where students will evaluate their current level of cognitive engagement. The worksheet can include questions such as:

"Do I try to understand the material deeply or just memorize it?"

"How often do I ask questions or challenge myself when learning?"

"Do I apply what I learn to real-world situations or simply focus on exams?"

Step 2: Allow students 10-15 minutes to fill out the worksheet individually.

Step 3: Afterward, ask students to pair up with a classmate and discuss their answers, particularly focusing on areas where they feel they could improve cognitive engagement. Encourage them to share strategies they can use to enhance their thinking and problem-solving skills.

(3) Group Activity (30 mins):

Step 1: Divide students into small groups (4-5 people per group). Assign each group a real-world scenario or case study relevant to their course subject. For example:

Scenario 1: A business strategy challenge where students need to apply theoretical knowledge to develop a solution.

Scenario 2: A scientific problem where students analyze data and develop a hypothesis.

Step 2: Ask each group to approach the scenario using critical thinking and problem-solving strategies. They should:

Identify key issues or problems.

Analyze the information available.

Propose solutions or answers based on their analysis.

Reflect on how the problem or concept could be applied in real life.

Step 3: Give students 15-20 minutes to discuss and prepare a brief presentation (5 minutes per group) on their approach and solutions.

Step 4: Have each group present their analysis and solutions to the class. Encourage classmates to ask questions and provide feedback, fostering a deeper discussion of the problem-solving process.

(4) Evaluation & Discussion (20 mins):

Step 1: After the group presentations, facilitate a class-wide discussion on the importance of cognitive engagement in learning. Ask reflective questions such as:

"How did thinking critically about these scenarios help you understand the topic better?"

"What strategies can you use to think more deeply in your own studies?"

"How can you apply problem-solving skills in other areas of your academic and personal life?"

Step 2: Summarize the key points from the group activity and discussion. Emphasize that cognitive engagement is not just about memorization but involves a deeper, more thoughtful approach to learning that leads to better understanding and retention.

Step 3: Ask students to reflect on the strategies they used during the activity and how they can incorporate them into their everyday learning practices.

6. Conclusion & Assignment (5 mins)

Step 1: Summarize the key concepts covered in the session: cognitive engagement, its role in deep learning, and how students can enhance their intellectual effort through strategies like critical thinking and problem-solving.

Step 2: For homework, ask students to:

Set a specific cognitive engagement goal for the upcoming week. For example, they could commit to asking at least one question in every class or challenging themselves to apply a concept to a real-world situation.

Track their progress by completing a simple reflection journal. Students should reflect on whether they were able to engage deeply with their learning and any challenges they faced.

Cognitive Engagement Reflection Journal

Day	Activity Focus	Strategy Used	Goal Achieved? (Yes/No)	Reflection/Challenge
Monday	Lecture on Cognitive Psychology			
Tuesday	Problem-Solving			
Wednesday	Group Discussion			
Thursday	Reading Assignment			
Friday	Review Session			

Step 3: Encourage students to submit their reflection journal in the next class for evaluation. Discuss the journals in the following session to reinforce the importance of cognitive engagement and how it contributes to long-term learning success.

Session 11: Enhancement of Cognitive Engagement - Critical Thinking

1. Content:

In this session, we focus on enhancing critical thinking as a key aspect of cognitive engagement. Critical thinking involves analyzing and evaluating information objectively, questioning assumptions, and making reasoned judgments based on evidence. It helps students move beyond surface-level understanding and fosters a deeper, more thoughtful approach to learning. Research highlights the importance of critical thinking in fostering cognitive engagement and improving learning outcomes. According to Paul and Elder (2014), critical thinking is a foundational skill for students to engage deeply with content, encouraging them to evaluate evidence, consider different perspectives, and draw well-supported conclusions. They argue that critical thinking not only improves academic performance but also equips students with the problem-solving skills necessary for real-world applications.

2. Learning Objectives:

(1) To strengthen students' ability to analyze and evaluate information critically, and to apply these skills to their learning.

(2) To help students develop strategies for questioning assumptions and approaching problems from multiple perspectives.

3. Time: 90 minutes

4. Learning Materials:

PowerPoint slides on critical thinking

Sample texts or case studies for analysis

Critical thinking worksheet with exercises

Whiteboard and markers

5. Learning Procedure:

(1) Lead-in (15 mins):

Step 1: Begin by asking the class, "What does it mean to think critically?" Write student responses on the board and guide a brief discussion.

Step 2: Define critical thinking and explain that it involves the ability to think deeply about ideas, question assumptions, and evaluate arguments carefully.

Step 3: Present examples of poor vs. strong critical thinking in everyday situations, such as media articles or arguments, and discuss how critical thinking can help us make better decisions.

(2) Task Assignment & Guidance (20 mins):

Step 1: Provide students with a critical thinking worksheet. The worksheet contains a series of exercises, such as analyzing a brief article, identifying the author's argument, and evaluating the evidence provided.

Step 2: Give students 15 minutes to work through the worksheet individually.

Step 3: Walk around and provide guidance as needed. Encourage students to focus on questioning the information presented and considering alternative perspectives.

(3) Group Activity (30 mins):

Step 1: Divide the class into small groups (4-5 people). Provide each group with a case study that requires them to apply critical thinking to solve a problem or evaluate an argument.

Example case: An article arguing for or against a controversial policy (e.g., climate change legislation).

Step 2: Ask each group to:

Identify the main argument or claim in the case study.

Critically assess the evidence provided and identify any assumptions.

Present their evaluation and suggest an alternative perspective or solution.

Step 3: After 20 minutes, have each group present their findings to the class. Encourage other students to ask questions and challenge their conclusions.

(4) Evaluation & Discussion (20 mins):

Step 1: Facilitate a class-wide discussion on the importance of critical thinking in academic work and real-life situations. Ask questions like:

"What did you learn about the importance of questioning assumptions?"

"How does critical thinking affect the way we understand complex issues?"

Step 2: Summarize key points from the group presentations, emphasizing the role of evidence and reasoning in forming strong arguments.

6. Conclusion & Assignment (5 mins)

Step 1: Recap the session's focus on critical thinking. Highlight that critical thinking is essential for deep learning and effective problem-solving.

Step 2: For homework, ask students to read a controversial article and write a one-page reflection where they critically analyze the argument and provide their own conclusions. Encourage them to apply the questioning techniques discussed in class.

For this session's homework, students are tasked with critically analyzing a controversial article. To assist with this, the Critical Thinking Reflection Worksheet is designed to help students organize their analysis, reflection, and conclusions.

Critical Thinking Reflection Worksheet:

Task	Instructions	Response
Article Summary	Summarize the main argument of the article in your own words.	_____
Assumptions	Identify any assumptions made by the author.	_____
Evidence Evaluation	What evidence is provided? Is it convincing? Why or why not?	_____
Alternative Perspectives	Offer at least one alternative perspective on the topic discussed.	_____
Critical Reflection	How has analyzing this article changed or reinforced your own thinking about the topic?	_____
Conclusion	What is your final evaluation of the article's argument?	_____

Session 12: Enhancement of Cognitive Engagement - Problem Solving and Application

1. Content:

This session focuses on enhancing problem-solving skills as a critical component of cognitive engagement. Problem-solving involves using analytical and creative thinking to address complex issues. It encourages students to apply knowledge in new ways and to think about real-world applications of their learning. Cognitive engagement refers to the depth of intellectual effort that students invest in their learning. It encompasses the use of critical thinking, problem-solving, and deep learning strategies to gain a comprehensive understanding of the material. Cognitive engagement is fundamental because it leads to deeper learning, better retention, and the application of knowledge in various contexts (Fredricks et al., 2004). Students who are cognitively engaged not only focus on mastering content but also engage in complex thinking processes that enhance their learning outcomes.

2. Learning Objectives:

(1) To enhance students' problem-solving abilities and their capacity to apply knowledge to real-world situations.

(2) To encourage students to think creatively and analytically when tackling problems.

3. Time: 90 minutes

4. Learning Materials:

PowerPoint slides on problem-solving techniques

Sample problems or case studies

Problem-solving worksheets with step-by-step guides

Whiteboard and markers

5. Learning Procedure:

(1) Lead-in (15 mins):

Step 1: Start by asking students, "What are the key steps in solving a complex problem?" Write their responses on the board.

Step 2: Introduce the concept of problem-solving and explain the steps involved, including:

Identifying the problem

Analyzing the problem

Generating possible solutions

Implementing and evaluating the solutions

Step 3: Discuss why problem-solving is an essential skill for cognitive engagement and learning.

(2) Task Assignment & Guidance (20 mins):

Step 1: Provide students with a problem-solving worksheet that contains a real-world problem (e.g., designing a sustainable city or improving a company's marketing strategy).

Step 2: Ask students to work individually to break down the problem into smaller components and identify possible solutions.

Step 3: Walk around and provide guidance, helping students to analyze the problem and think critically about potential solutions.

(3) Group Activity (30 mins):

Step 1: Divide students into small groups (4-5 people). Assign each group a more complex, real-world problem related to their field of study (e.g., an engineering design challenge or a business case).

Step 2: In their groups, students should:

Analyze the problem and identify key challenges.

Brainstorm and propose potential solutions.

Select the most viable solution and develop a plan for implementation.

Step 3: Have each group present their solution to the class, focusing on their problem-solving process and the rationale behind their choices.

(4) Evaluation & Discussion (20 mins):

Step 1: Lead a class discussion on the problem-solving strategies used in the group activity. Ask questions like:

"How did you decide on the best solution?"

"What challenges did you face during the problem-solving process?"

Step 2: Summarize the key problem-solving techniques discussed and explain how these strategies contribute to cognitive engagement by encouraging deeper thinking and application of knowledge.

6. Conclusion & Assignment (5 mins)

Step 1: Recap the session's focus on problem-solving and the importance of applying knowledge to real-world scenarios.

Step 2: For homework, ask students to select a real-world problem related to their field of study, apply the problem-solving steps discussed in class, and write a brief report on their process and findings.

Problem-Solving Reflection Journal

Date	Problem/Challenge	Analysis of Problem	Solution(s) Proposed	Steps Taken	Evaluation of Solution	Future Steps

Instructions for students:

Problem/Challenge: Briefly describe the problem you worked on.

Analysis of Problem: Break down the problem into smaller components. What are the key factors that affect the situation?

Solution(s) Proposed: What solutions did you consider? Why did you choose the solution(s) you decided to implement?

Steps Taken: Detail the steps you took in solving the problem.

Evaluation of Solution: Reflect on the effectiveness of your solution. Was it successful? Why or why not?

Future Steps: If you could revisit this problem, what would you do differently? What steps would you take next?

Session 13: Enhancement of Cognitive Engagement - Integration and Reflection

1. Content:

Cognitive engagement involves the active and deep intellectual effort students dedicate to understanding and mastering academic content. It is not just about rote memorization but involves the application of critical thinking, problem-solving, and the ability to transfer knowledge to new contexts (Fredricks et al., 2004). Cognitive engagement encourages students to think deeply about content, make connections, and engage in complex thought processes that enhance their learning outcomes. In this session, students will reflect on and integrate the cognitive engagement skills they have developed over the past few weeks. The focus will be on synthesizing critical thinking, problem-solving, and application of knowledge to real-world situations, with an emphasis on continuous improvement of cognitive engagement.

2. Learning Objectives:

(1) To help students integrate critical thinking, problem-solving, and real-world application into a cohesive approach to learning.

(2) To encourage students to reflect on their cognitive engagement progress and set personal goals for continued improvement.

3. Time: 90 minutes

4. Learning Materials:

PowerPoint slides summarizing key cognitive engagement strategies

Reflection worksheets

Group discussion prompts

Whiteboard and markers

5. Learning Procedure:

(1) Lead-in (15 mins):

Step 1: Begin with a brief review of the previous two sessions, highlighting critical thinking and problem-solving as key components of cognitive engagement.

Step 2: Ask students to reflect on how these skills have impacted their learning and understanding of the course material. Write key points on the board.

(2) Task Assignment & Guidance (20 mins):

Step 1: Distribute reflection worksheets that ask students to evaluate their growth in cognitive engagement over the course.

Questions might include:

"How have your critical thinking skills improved?"

"In what ways have you applied problem-solving to your coursework?"

"What strategies will you continue to use to engage more deeply with learning?"

Step 2: Allow 10-15 minutes for students to fill out the worksheet individually.

(3) Group Activity (30 mins):

Step 1: In small groups, ask students to share their reflections and discuss the challenges and successes they've experienced in enhancing their cognitive engagement.

Step 2: Have each group create a summary of their discussion and present it to the class, focusing on key strategies they plan to continue using for deep learning.

(4) Evaluation & Discussion (20 mins):

Step 1: Lead a class discussion on the importance of continuing to develop cognitive engagement beyond the classroom. Ask:

"What strategies do you plan to implement in future courses?"

"How can cognitive engagement be maintained throughout your academic journey?"

Step 2: Summarize the key takeaways and encourage students to set long-term goals for their cognitive development.

6. Conclusion & Assignment (5 mins)

Step 1: Recap the session's focus on reflection and integration of cognitive engagement strategies.

Step 2: For homework, ask students to create a personal action plan outlining the cognitive engagement strategies they will continue to use, and how they will track their progress throughout the rest of the semester. Encourage them to check in with this plan periodically.

For this final session, students will reflect on the progress they have made in enhancing their cognitive engagement. The Cognitive Engagement Action Plan template will guide them in setting specific, measurable, and achievable goals for continued improvement.

Cognitive Engagement Action Plan

Goal	Action Steps	Timeline	Resources/Support Needed	Measurement of Success
1.				
2.				
3.				

Instructions for students:

Goal: State the cognitive engagement goal you want to achieve (e.g., enhancing critical thinking, improving problem-solving).

Action Steps: Describe the specific steps you will take to achieve this goal.

Timeline: Define a reasonable timeline to complete the action steps.

Resources/Support Needed: Identify any resources, tools, or support you might need to succeed.

Measurement of Success: Determine how you will measure whether you have achieved your goal (e.g., through improved problem-solving skills, critical reflection, etc.).

Session 14: Assessment & Conclusion - Reflection on Learning Engagement

1. Content:

Concluding this course provides an opportunity to reflect on the key concepts learned, evaluate personal growth, and set goals for continued learning engagement. Throughout this semester, students have engaged with various strategies to improve their learning engagement, particularly through the collaborative learning model and the four-step collaborative intervention framework. Now, at this final stage, it is important to reflect on the progress made and assess how these strategies have impacted their academic and personal development.

This session is designed to allow students to reflect on their thoughts, feelings, and experiences throughout the course, giving them a chance to review and summarize what they have learned from the activities and discussions. It also provides a space for students to address any remaining questions and consolidate their understanding of the concepts covered. Moreover, this session emphasizes the importance of planning for ongoing personal growth. Students are encouraged to apply what they have learned in a practical and concrete way, focusing on how they can continue to develop in all areas of their studies and life. This course has equipped them with valuable tools to enhance their learning engagement, and now, as they look ahead, they can draw on these experiences to foster continued academic and personal growth.

In summary, this course has been a journey of learning and growth, where students have not only gained knowledge but also developed skills in collaboration, critical thinking, and self-reflection. These are essential tools for their continued success and learning engagement in the future.

2. Learning Objectives:

(1) To help students reflect on their learning engagement journey, including the behavioral, emotional, and cognitive aspects of their involvement in learning.

(2) To guide students in evaluating their personal growth and the impact of their engagement strategies on academic performance and overall motivation.

3. Time: 90 minutes

4. Learning Materials:

PowerPoint slides summarizing key concepts of learning engagement

Reflection worksheets (Behavioral, Emotional, and Cognitive Engagement)

Group assessment form (for peer feedback)

Whiteboard and markers

Pens and paper for students

5. Learning Procedure:

(1) Lead-in (15 minutes):

Step 1: Begin by briefly summarizing the three dimensions of learning engagement (behavioral, emotional, and cognitive) to remind students of the key concepts explored throughout the course.

Step 2: Ask the class: “How do you think your engagement in learning has changed over the course of this class?” Write down some initial responses on the board.

Step 3: Provide a quick overview of the assessment and reflection process. Explain that students will reflect on their own engagement and share their insights with peers.

(2) Task Assignment & Guidance (25 minutes):

Step 1: Distribute the Reflection Worksheet to students. The worksheet will ask them to reflect on the following three dimensions of learning engagement: behavioral, emotional, and cognitive. They will assess how their engagement in each area has evolved, providing specific examples from the course.

Reflection Worksheet:

Dimension of Engagement	Reflection Prompts	Examples of Personal Growth
Behavioral Engagement	How have you demonstrated participation and involvement in class?	Examples: Attendance, participation in discussions, timely submission of assignments.
Emotional Engagement	How have your emotions and feelings toward learning evolved?	Examples: Excitement, motivation, frustration, anxiety, or boredom.
Cognitive Engagement	How have you applied deep learning strategies in your studies?	Examples: Critical thinking, problem-solving, application of knowledge.

Step 2: Instruct students to fill out the worksheet, reflecting on their experiences throughout the course, noting specific instances where they felt particularly engaged or disengaged.

Step 3: After completing the worksheet, students will have 5 minutes to prepare to share their reflections with the class.

(3) Group Activity (30 minutes):

Step 1: Divide the students into small groups (3-4 students per group). Each student will briefly share their reflections on the three dimensions of learning engagement with their group members.

Step 2: As each student shares, their group members will listen and provide feedback on their engagement journey. They should use the Group Assessment Form to assess their peers' reflections, noting any strengths or areas for further improvement.

Group Assessment Form

Peer Name	Behavioral Engagement Strengths	Emotional Engagement Insights	Cognitive Engagement Reflections	Suggestions for Improvement
Student 1	Examples of active participation	How emotions impacted learning	Applied deep learning strategies	
Student 2	Consistent attendance	Feelings of excitement and interest	Engaged in critical thinking	
Student 3	Timely submissions	Overcoming frustration	Problem-solving skills were improved	

Step 3: After 20 minutes of group sharing and feedback, each group will summarize their insights and present them to the whole class.

(4) Evaluation & Discussion (20 minutes):

Step 1: Lead a whole-class discussion on the reflections and feedback from the group activities. Ask questions such as:

“What are some common themes you noticed in your peers’ reflections?”

“How has your emotional engagement impacted your motivation and academic success?”

“What cognitive strategies have worked best for you in improving learning?”

Step 2: Encourage students to share their thoughts on how they plan to continue fostering engagement in all three areas moving forward.

Step 3: Conclude the discussion by summarizing key takeaways from the course and highlighting the importance of continuously reflecting on and improving engagement in the learning process.

6. Conclusion & Assignment (5 mins)

Conclusion:

This session concluded our exploration of learning engagement, focusing on self-assessment and peer feedback. Reflecting on our engagement across behavioral, emotional, and cognitive dimensions is essential for continued improvement in our academic journey.

The key takeaway is that engagement is not a one-time effort but an ongoing process that requires self-awareness, feedback, and the application of strategies learned throughout the course.

Assignment: For the final assignment, students will create a Personal Engagement Improvement Plan, which they will implement over the next month. The plan should include specific strategies for improving engagement in each of the three dimensions (behavioral, emotional, and cognitive), along with measurable goals and timelines.

Personal Engagement Improvement Plan Template

Engagement Dimension	Goals	Strategies	Timeline	Measure of Success
Behavioral Engagement				
Emotional Engagement				
Cognitive Engagement				

Students are required to submit their Personal Engagement Improvement Plan by the end of the week. This will be reviewed in the next session for progress tracking.

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