



Factors Impacting Higher Education Students' Academic Performance in English Course: A Case Study in a University in Kunming, China

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Abstract

Background and Aim: Higher education students' academic performance in English is crucial as it enhances their communication skills, which are vital for global competitiveness. Strong English proficiency also supports success in other academic areas and future career opportunities. This study investigates the impact of Extrinsic Motivation (EM), Intrinsic Motivation (IM), Self-efficacy (Se), Study Engagement (SE), and Teaching Style (TS) on the Academic Performance (AP) of university students in an English course in Kunming, China. It also examines the effect of a 14-week cooperative learning intervention on these variables.

Materials and Methods: The questionnaire's validity was assessed using the Index of Item-Objective Congruence (IOC), and reliability was determined using Cronbach's Alpha in a pilot test (n=30). Multiple linear regression was used to analyze data from 140 students to identify relationships between the variables. A paired-sample t-test was then used to compare pre- and post-intervention data from 30 students.

Results: Multiple linear regression revealed that Intrinsic Motivation (IM), Self-efficacy (Se), and Teaching Style (TS) significantly impacted Academic Performance (AP). While Extrinsic Motivation (EM) and Study Engagement (SE) did not show significant direct effects. The paired-sample t-test indicated significant improvements in Academic Performance following the cooperative learning intervention.

Conclusions: The study suggests that Intrinsic Motivation, Self-efficacy, and Teaching Style are key factors influencing English Academic Performance. Cooperative learning interventions can lead to significant improvements in student performance. These findings offer practical implications for enhancing teaching strategies in similar contexts.

Keywords: Extrinsic Motivation; Intrinsic Motivation; Self-efficacy; Study Engagement; Teaching Style; Academic Performance; Cooperative Learning

Introduction

In today's globalized world, English has become the primary medium for disseminating crucial academic resources, research findings, and business documentation. The ability to master English enables individuals to access cutting-edge information and remain competitive in the modern era (Yang et al., 2024). As an indispensable competency in international communication, English proficiency plays a vital role in personal growth and national development. For university students, their English capabilities significantly influence academic achievement, career prospects, and overall personal advancement. Proficiency in English facilitates the transcendence of geographical boundaries, enabling individuals to engage with a global community, expand their worldview, and delve into the rich tapestry of international cultures and traditions. Presently, a plethora of significant scholarly works, research findings, and business documents are disseminated in English. Mastery of the language ensures prompt access to cutting-edge knowledge, aligning individuals with the evolving currents of the modern era.

In the globalized landscape, English transcends its status as a mere language to become a vital skill and a form of literacy, pivotal for personal advancement and the bolstering of national strength. For the current generation of university students, proficiency in English is a linchpin in academic pursuits, career opportunities, and personal growth. Academically, a plethora of textbooks and scholarly resources for specialized courses are in English, necessitating a robust English foundation for the comprehension and assimilation of specialized knowledge. Moreover, the prevalence of English-medium instruction in higher education demands that students possess competent English skills to stay abreast of academic demands. Professionally, many organizations, particularly multinational and joint ventures, prioritize English proficiency in their hiring processes. Exceptional English communication abilities and cultural adaptability can provide graduates with an edge in the competitive job market. As globalization intensifies, the demand for multifaceted talents by global corporations and international entities escalates. Command of the English



language has thus become a critical instrument for students to realize their developmental aspirations and career goals.

This investigation focuses on examining how Extrinsic Motivation (EM), Intrinsic Motivation (IM), Self-efficacy (Se), Study Engagement (SE), and Teaching Style (TS) influence English Academic Performance among students at a public university in southwestern China. As highlighted by previous research, motivation, both intrinsic and extrinsic, plays a vital role in students' engagement and success in academic settings (Ryan & Deci, 2000). Moreover, self-efficacy has been shown to significantly impact students' academic outcomes by influencing their confidence in tackling academic challenges (Zimmerman, 2010). Teaching style also contributes to the effectiveness of learning by shaping the learning environment and influencing students' academic behaviors (Grasha, 1996).

This study aims to fill a gap in comprehensive research that examines the interplay between motivation, self-efficacy, study engagement, and teaching style in shaping English academic performance in a Chinese university context. By exploring the relationships between these factors and academic performance, the research seeks to provide actionable insights that can inform the development of more effective teaching strategies. The findings are expected to contribute to enhancing the quality of English education at Kunming University and similar institutions.

Objectives

The overall objective of this study is to investigate the impact of Extrinsic Motivation (EM), Intrinsic Motivation (IM), Self-efficacy (Se), Study Engagement (SE), and Teaching Style (TS) on the Academic Performance (AP) of university students in an English course at Kunming University in Yunnan Province, China. The specific objectives are:

1. To assess the levels of extrinsic motivation, intrinsic motivation, self-efficacy, study engagement, teaching style, and academic performance of the students before the intervention.
2. To investigate the impact of extrinsic motivation on students' academic performance in English courses.
3. To investigate the impact of intrinsic motivation on students' academic performance in English courses.
4. To investigate the impact of self-efficacy on students' academic performance in English courses.
5. To investigate the impact of study engagement on students' academic performance in English courses.
6. To investigate the impact of teaching style on students' academic performance in English courses.
7. To design and implement a cooperative learning intervention (IDI) to enhance students' motivation, self-efficacy, study engagement, and teaching style.
8. To determine the differences in extrinsic and intrinsic motivation, self-efficacy, study engagement, teaching style, and academic performance between the pre- and post-intervention phases."

This research sought to answer the following questions:

- 1) Is there a significant impact of extrinsic motivation on academic performance?
- 2) Is intrinsic motivation significantly impacted by academic performance?
- 3) Is self-efficacy significantly impacted by academic performance?
- 4) Is there a significant impact of study engagement on academic performance?
- 5) Is there a significant impact of teaching style on academic performance?
- 6) What are the current levels of extrinsic motivation, intrinsic motivation, self-efficacy, study engagement, teaching style, and academic performance?
- 7) What is the appropriate Intervention Design and implementation (IDI) for extrinsic motivation, intrinsic motivation, self-efficacy, study engagement, teaching style, and academic performance?
- 8) Are there any significant differences in extrinsic motivation, intrinsic motivation, self-efficacy, study engagement, teaching style, and academic performance between the pre- and post-intervention Design and implementation (IDI)phases?

Literature Review

1. Extrinsic Motivation (EM)

Extrinsic motivation is driven by external rewards and influences, often from authority figures or external control over tasks (Goodman et al., 2011). These external factors set clear goals or expectations for students. When students perceive these rewards or influences as meaningful for their immediate or future objectives, they are more likely to engage in and complete related tasks. While such externally induced motivation may initially be short-lived, it can gradually evolve into intrinsic motivation (Thongsri et al., 2021). Studies (Liu & Zainuddin, 2021; Thongsri et al., 2021) have strongly linked extrinsic motivation and academic achievement. Extrinsic motivation is defined as any drive that originates outside the activity (Deci & Ryan, 2000). This concept has led to various categorizations of extrinsic motivation (X. Liu et al., 2020). For instance, Amabile et al. (1994) identified two forms: compensatory orientation and extrinsic orientation. It encompasses behaviors driven by external factors such as organizational demands, environmental pressures, peer influence, societal norms, the pursuit of rewards, financial obligations, or family responsibilities. Thus, extrinsic motivation centers on the practical benefits of an activity rather than the activity's inherent enjoyment or satisfaction (Deci & Ryan, 1985; Legault, 2016).

H1: Extrinsic Motivation (EM) has a significant impact on student academic performance in English courses.

2. Intrinsic Motivation (IM)

Intrinsic motivation is characterized as an internal drive that arises within an individual and is tied directly to the activity itself (Deci, 1971). Key components of intrinsic motivation in learning include active participation in tasks, a desire to explore new experiences, striving for mastery, seeking understanding, and working toward meaningful goals (Fredricks et al., 2004). As outlined by self-determination theory (Deci & Ryan, 2000), this type of motivation stems from a genuine interest in the activity. Unlike extrinsic motivation, intrinsic motivation is often seen as more closely linked to an individual's personality (Tziner et al., 2012). Importantly, intrinsic and extrinsic motivations operate independently of one another (Rockmann & Ballinger, 2017). Intrinsic motivation typically emerges when individuals willingly participate in an activity without external coercion (Deci & Ryan, 2000). It is driven by personal interest or enjoyment in the task itself rather than external pressures. This form of motivation encompasses feelings of accomplishment, challenge, excitement, personal fulfillment, and joy derived from the activity's process and outcomes (Legault, 2016). Individuals are intrinsically motivated to learn simply because they find the process enjoyable and fulfilling, and it aligns with their personal goals, such as self-improvement or skill development (Frey & Osterloh, 2002). When students engage in activities to satisfy curiosity, express themselves, or pursue personal challenges, they demonstrate intrinsic motivation (Liu et al., 2020).

H2: Intrinsic Motivation (IM) has a significant impact on student academic performance in the English course.

3. Self-efficacy (Se)

Self-efficacy refers to an individual's belief in their ability to execute tasks and achieve specific performance outcomes, serving as a fundamental component of personal agency within Social Cognitive Theory (Bandura, 1977). High self-efficacy is associated with increased independence, autonomy, and confidence in learning, as well as greater motivation and active participation in the educational process (Zimmerman, 2010). Individuals with strong self-efficacy demonstrate higher levels of effort, perseverance, and resilience, which contribute to improved academic performance and the ability to overcome challenges (Bandura, 1997). Additionally, self-efficacy enhances socialization in new environments and is influenced by both personal traits and situational factors (Saks, 1995; Latham & Pinder, 2005). Research consistently highlights the pivotal role of self-efficacy in educational success. For

educators, self-efficacy is shaped by accumulated experiences and reflective practices, which foster professional development and openness to diverse perspectives. Teachers with high self-efficacy positively influence student engagement and reduce feelings of tedium and disenchantment, whereas those with lower self-efficacy may inadvertently contribute to negative student experiences (Amirian et al., 2022). Furthermore, there is a significant correlation between teachers' emotional intelligence and their self-efficacy, which in turn affects their attitudes, dedication, motivation, preparedness, and overall teaching proficiency.

***H3:** Self-efficacy (Se) has a significant impact on student academic performance in the English course.*

4. Study Engagement (SE)

Study engagement refers to the active participation of students in their learning tasks and activities, which is crucial for achieving high-quality educational outcomes (Zepke, 2016). It involves not only the time and effort students invest in academic activities but also their interactions with teachers, peers, and the broader educational environment (Hu & Kuh, 2001). Effective student engagement is fostered by active learning strategies, such as case-based teaching, that encourage students to immerse themselves in the learning process (Robinson & Hullinger, 2008). Behavioral engagement is marked by students' proactive efforts in their educational pursuits, including collaboration with peers and seeking instructional support (Handelsman et al., 2005). This engagement is deeply tied to emotional investment and a sense of community, which are essential for thriving in both in-person and online collaborative learning settings (Molinillo et al., 2018). The relationship between emotional investment, motivation, and academic performance is complex, with each factor reinforcing the others (Kahu et al., 2015). Researchers have explored various dimensions of engagement—cognitive, emotional, and behavioral—to better understand how to effectively involve students in scientific learning and other disciplines. The importance of engagement has been particularly highlighted during challenging times, such as the COVID-19 pandemic, where both positive and negative emotional responses have been shown to influence students' focus and participation (Chiu, 2021). Cognitive engagement, which involves the intellectual effort invested in learning, is critical for deep learning and is closely linked to motivation (McCormick et al., 2015). Meanwhile, emotional engagement examines students' feelings and attitudes toward their studies, which can significantly impact their overall academic experience (Wang et al., 2016).

***H4:** Study Engagement (SE) has a significant impact on student academic performance in the English course.*

5. Teaching Style (TS)

Teaching style refers to the consistent approaches and behaviors that educators use to facilitate learning, regardless of changes in content or instructional subjects. It involves the methods and strategies teachers employ to engage students and achieve specific learning objectives. Grasha's (2000) classification system of teaching styles, widely recognized in educational research, underscores the importance of aligning teaching methods with students' learning preferences to enhance engagement and learning outcomes. Successful teaching styles are characterized by fostering student-teacher engagement, cooperation, and active learning, while also recognizing the diversity of learning styles among students (Spoon & Schell, 1998). Research indicates that active, engaging teaching methods significantly influence student academic performance, often yielding better outcomes than passive instructional strategies. The alignment of instructional methods with student learning preferences has been shown to improve academic performance, motivation, and grades. Studies have also found that transformational teaching methods, particularly in the context of environmental education, can enhance students' understanding and knowledge retention. Additionally, the literature on adult education supports the effectiveness of collaborative teaching methods, especially for adult learners.

H5: *Teaching Style (TS) has a significant impact on student academic performance in the English course.*

Research Methods and Materials

1. Conceptual Framework

The theoretical framework provides a foundation for the research by establishing the basic theories and constructing variables. It illustrates the correlation between factors, facilitating the understanding of the research field and aiding in the generalization of findings. This section presents and modifies four theoretical frameworks to develop the conceptual framework for this study.

The first theoretical model, developed by Meng and Hu (2022), explores the impact of extrinsic and intrinsic motivation on students' academic performance in a blended learning environment during the COVID-19 pandemic. The study highlights the mediating role of online learning engagement in linking motivation to academic success, emphasizing that intrinsic motivation primarily influences academic performance through its effect on online learning behaviors.

The second model, proposed by Aarti and Ravin Kadian (2022), examines the relationship between personality traits, self-efficacy, and academic achievement among students. The study found that traits like agreeableness and conscientiousness positively correlate with self-efficacy, thereby enhancing academic performance, while also reducing levels of dissatisfaction.

The third theoretical model, presented by Slåtten et al. (2021), investigates the influence of psychological capital (PsyCap), emotional states, and student engagement on academic outcomes. The study found that while a positive educational environment does not directly impact academic performance, it exerts an indirect effect through PsyCap, positive emotions, and engagement.

The fourth model, developed by Yousef (2017), focuses on the impact of instructional methods, English proficiency, and communication skills on the academic performance of business students in quantitative courses. The study emphasizes the importance of teaching style and communication strategies in facilitating student comprehension and academic success.

These theoretical models provide a comprehensive basis for constructing the conceptual framework of this study, which seeks to explore the influence of motivation, self-efficacy, engagement, and teaching style on academic performance. All four theoretical frameworks mentioned above supported and developed conceptual framework in Figure 1.

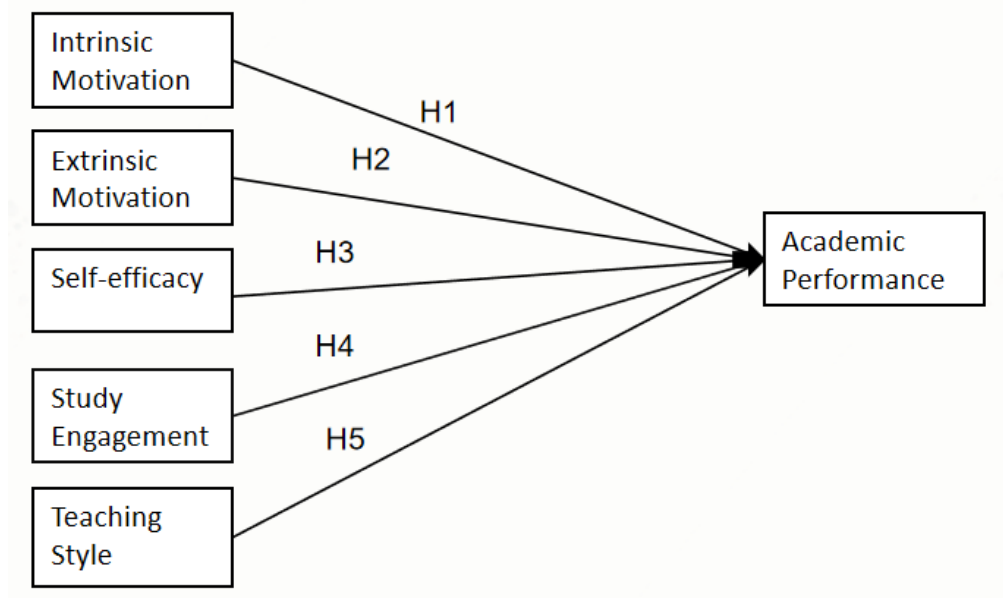


Figure 1 Conceptual Framework

H1: Extrinsic Motivation (EM) has a significant impact on student academic performance in the English course.

H2: Intrinsic Motivation (IM) has a significant impact on student academic performance in the English course.

H3: Self-efficacy (Se) has a significant impact on student academic performance in the English course.

H4: Study Engagement (SE) has a significant impact on student academic performance in the English course.

H5: Teaching Style (TS) has a significant impact on student academic performance in the English course.

2. Methodology

The research process consisted of four distinct stages. Initially, a survey was administered to the entire research population (n=140) to gather data for the proposed conceptual framework. This survey focused on assessing the impact of extrinsic motivation, intrinsic motivation, self-efficacy, study engagement, and teaching style on academic performance. In the second stage, all hypotheses were tested using multiple linear regression to determine their significance, with a p-value threshold set at < 0.05 . Hypotheses that were supported by the data were retained, while those that did not meet the criteria were excluded.

The third stage involved conducting pre-intervention Design Implementation (IDI) surveys with the remaining 140 students, focusing on the variables that were supported in the previous analysis. Following this, the IDI was introduced and implemented with a specific group of 30 participants. The final stage involved administering a post-IDI survey to the same 30 participants, which provided the data necessary for conducting a paired-sample t-test analysis. This analysis compared the results from the pre-IDI and post-IDI stages, allowing for a comprehensive evaluation of the research objectives and hypotheses.

This methodological approach ensured a thorough examination of the factors influencing academic performance and provided robust data to support the study's conclusions.

3. Research Population, Sample Size, and Sampling Procedures

3.1 Research Population

The research population for this study consisted of freshmen and sophomores from an applied public university in Southwest China. These students have studied English for over 10 years, yet many, particularly those from rural areas, have a weaker foundation in English, especially in listening and speaking skills. The English courses are delivered in mixed classes comprising students from various majors across the university.

3.2 Sample Size

Researchers typically recommend a sample size of 30 to 500 for most studies. For this study, a pilot survey was initially conducted with 30 students to validate the reliability of the questionnaire. Following the pilot test, the main research population of 140 students was surveyed using questionnaires. The data collected from these students were analyzed using multiple linear regression to explore the relationships between the independent and dependent variables.

In the subsequent stages, 30 students were selected to participate in the Intervention Design Implementation (IDI) phase. These students completed both pre-IDI and post-IDI questionnaires, and interviews were conducted with 6 of the participants to provide feedback and refine the intervention process.

3.3 Sampling Procedures

The researcher conducted several sampling procedures as follows:

Sampling 1: Sampling for Pilot Survey and Pilot Test

The researcher randomly sampled 30 students by asking them to fill out the survey questionnaire

and provide feedback for the pilot survey and pilot test. This step was crucial for validating the reliability of the survey instrument.

Sampling 2: Sampling for Main Survey

The researcher sampled 140 first-year students from an applied public university in Southwest China by distributing the survey questionnaire. These students were randomly selected to ensure a representative sample of the broader student population. All responses were carefully reviewed, and the valid responses were used for subsequent analysis.

Sampling 3: Sampling for IDI

The researcher randomly selected 30 students from the research population to implement the Intervention Design Implementation (IDI). These students participated in both pre-IDI and post-IDI stages, providing essential data for evaluating the impact of the intervention.

4. Research Instruments

4.1 Design of Questionnaire

The researcher designed the survey questionnaire by following three systematic steps:

Step 1: Identifying Questionnaire Sources

The questionnaire was developed based on established sources from five openly published articles. These sources provided a solid theoretical foundation for the questionnaire items, ensuring that they were grounded in validated research.

Step 2: Adjusting and Presenting Survey Questionnaires for the Chinese University Context

The questionnaire was then adapted to fit the context of Chinese university students. This involved modifying the language, cultural references, and content to ensure relevance and clarity for the target population, making the questionnaire more applicable to the specific educational environment.

Step 3: Implementing IOC (Index of Item-Objective Congruence)

Finally, the Index of Item-Objective Congruence (IOC) was applied to evaluate the content validity of the questionnaire items. This step was crucial to ensure that each question accurately measured the intended constructs, resulting in a reliable and valid instrument for data collection.

Table 1 Design of Questionnaire

Variable	Number of items	Items	Reference
Extrinsic Motivation (EM)	3	EM1. Education is important for getting a job later on.	Adapted from Meng and Hu (2023).
		EM2. Good English grades are important to me because they might influence master's program admission.	
		EM3. Good English grades are important to me because they might affect employment opportunities.	
Intrinsic Motivation (IM)	3	IM1. I get a sense of satisfaction from this English course.	Adapted from Meng and Hu (2023).
		IM2. I have tried very hard in this English course.	
		IM3. Compared to other courses, this English course is interesting.	
Self-efficacy (Se)	4	Se1. I believe in myself.	Adapted from Aarti and Kadian (2022).
		Se2. I am capable of learning new things.	
		Se3. I feel I am efficient.	
		Se4. I feel I can do any task assigned to me.	
Study Engagement (SE)	6	SE1. I am enthusiastic about studying English.	Adapted from Slåtten et al. (2021).
		SE2. I find it meaningful to study English.	
		SE3. Studying English gives me energy.	

Variable	Number of items	Items	Reference
		SE4. I like to work intensively on my English studies.	
		SE5. When I get up in the morning, I look forward to starting to study English.	
		SE6. I often become absorbed when I am studying English.	
Teaching Style (TS)	4	TS1. The way the lecturer speaks is important in understanding the English lecture.	Adapted from Yousef (2017).
		TS2. The pace of delivery of English teaching is reasonable.	
		TS3. The instructor creates a group to work in after class.	
		TS4. The instructor creates a group to discuss class matters and finish the assignments.	
Academic Performance (AP)	4	AP1. I achieved good assessment results.	Adapted from Bee et al. (2022).
		AP2. I improved my overall understanding and knowledge of the English subject.	
		AP3. I acquired the English skills needed to achieve good learning performance.	
		AP4. Overall, I achieved good learning performance.	

4.2 Components of Questionnaire

The survey questionnaire was composed of two main parts:

Part 1: Basic Information Questions

This part gathered basic demographic information from the respondents, including gender, major, and other relevant background details. This information was essential for understanding the characteristics of the research population and for conducting demographic-based analyses.

Part 2: Pre-survey Questions

The final section of the questionnaire focused on assessing the current levels of the independent variables (IV) and dependent variables (DV) among the selected 140 students. These questions were designed to capture data on Extrinsic Motivation, Intrinsic Motivation, Self-efficacy, Study Engagement, and Teaching Style, as well as their impact on academic performance. The responses from this section provided the foundation for the study's main analysis.

4.3 IOC Results

The researcher invited five independent experts, comprising one Thai professor and four Chinese professors, to implement the Index of Item-Objective Congruence (IOC). During the IOC process, these independent experts assessed each questionnaire item by marking +1 for Congruent, 0 for Questionable, and -1 for Incongruent. In this study, all questionnaire items achieved an IOC score greater than 0.67, indicating a high level of congruence. As a result, the researcher retained all the questionnaire items for the final survey.

4.4 Pilot Survey and Pilot Test Results

The researcher conducted a pilot survey with 30 randomly selected students by asking them to fill out the survey questionnaire and provide feedback. Following the pilot survey, the researcher implemented Cronbach's Alpha to assess the internal consistency reliability of the questionnaire, with the acceptable threshold set at 0.6 or higher. Cronbach (1951) first proposed a reliability analysis pilot test called Cronbach's Alpha. The results demonstrated high reliability for each construct, as shown in the table below.

Table 2 Pilot Test Result

Variable	No. of Items	Sources	Cronbach's Alpha	Strength of association
Extrinsic Motivation (EM)	3	Adapted from Meng and Hu (2023).	0.908	Excellent
Intrinsic Motivation (IM)	3	Adapted from Meng and Hu (2023).	0.841	Good

Variable	No. of Items	Sources	Cronbach's Alpha	Strength of association
Self-efficacy (Se)	4	Adapted from Aarti and Kadian (2022).	0.865	Good
Study Engagement (SE)	6	Adapted from Slåtten et al. (2021).	0.951	Excellent
Teaching Style (TS)	4	Adapted from Yousef (2017).	0.928	Excellent
Academic Performance (AP)	4	Adapted from Bee et al. (2022).	0.938	Excellent

Results

1. Demographic Profile

For this study, three first-year classes were randomly selected from the entire school. The total number of students in these classes was 150. Out of this, a research population of 140 students was chosen, with 47 students each from Class 1 and Class 2, and 46 students from Class 3. This selection provided a representative sample for analyzing the factors influencing academic performance in English courses.

Table 3 Demographic Profile

First-year students	The total number of current students	The research population was randomly selected
Class 1	50	47
Class 2	50	47
Class 3	50	46
Total	150	140

2. Results of multiple linear regression

The researcher conducted Multiple Linear Regression (MLR) analysis on the survey data from 140 students to determine the significance of each hypothesis. The results indicated that intrinsic motivation, self-efficacy, and teaching style had a significant impact on academic performance, with p-values less than 0.05. In contrast, extrinsic motivation and study engagement did not show a significant effect on academic performance, as their p-values were greater than 0.05.

The R-squared (R^2) value of 0.722 suggests that 72.2% of the variability in academic performance can be explained by the five independent variables included in the model. Among these variables, self-efficacy and teaching style had the highest standardized estimates, 0.2643 and 0.4471 respectively, indicating that they have a greater impact on academic performance compared to other factors.

Table 4 The MLR Results on Students' Academic Performance (n=140)

Variables	t-value	p-value	Stand. Estimate (β)	R2
Extrinsic Motivation	-1.0803	0.282	-0.0701	0.722
Intrinsic Motivation	2.0619	0.041	0.1903	
Self-efficacy	3.4069	<.001	0.2643	
Study Engagement	1.4620	0.146	0.1399	
Teaching Style	6.6789	<.001	0.4471	

In sum, intrinsic motivation (IM), self-efficacy (Se), and teaching style (TS) had a significant impact on students' academic performance, while extrinsic motivation (EM) and study engagement (SE) did not show significant effects. Specifically, the hypotheses related to intrinsic motivation, self-efficacy, and teaching style were supported, while those related to extrinsic motivation and study engagement were not supported. As a result, extrinsic motivation and study engagement, as independent variables, were considered for further exploration or potential adjustments in future studies. The hypotheses were developed in stages of IDI (Intervention Design and Implementation), guiding subsequent research interventions and analysis.

Afterwards, IDI was conducted to follow the following hypotheses:

H6: There is a significant difference in Extrinsic Motivation and Academic Performance Pre-IDI and Post-IDI.

H7: There is a significant difference in Intrinsic Motivation and Academic Performance Pre-IDI and

Post-IDI.

H8: There is a significant difference in Self-efficacy and Academic Performance pre-IDI and post-IDI.

H9: There is a significant difference in Study Engagement and Academic Performance Pre-IDI and Post-IDI.

H10: There is a significant difference in Teaching Style and Academic Performance Pre-IDI and Post-IDI.

H11: There is a significant difference in Academic Performance between pre-IDI and post-IDI.

3. IDI Intervention Stage

This research primarily employed collaborative learning as its instructional intervention approach. Originating in the United States during the early 1970s, collaborative learning experienced significant development between the mid-1970s and mid-1980s (Espey, 2018). Recognized as an innovative and impactful pedagogical framework, this approach has gained global recognition for improving classroom dynamics, enhancing academic outcomes, and fostering cognitive development (Gopalan et al., 2018). Widely regarded as one of the most influential educational innovations of recent decades, it has been described as "the most significant and successful teaching reform in modern education" (Sahoo & Mohammed, 2018).

The intervention focused on cooperative learning, impacting on Extrinsic Motivation, Intrinsic Motivation, Self-efficacy, Study Engagement, and Teaching Style. The entire intervention will be divided into 14 weeks and three stages, with group cooperative learning as the main intervention method. The first stage mainly involves intervening in extrinsic and intrinsic motivation for learning through the teacher's encouragement of the importance of English learning and classmates' sharing of English learning methods. In the second stage, the teacher mainly adopts the teaching style of group cooperative learning to intervene in students' self-efficacy and study engagement. In the final stage, the teacher asked students to present their presentation tasks in the form of group cooperative learning, and conducted internal evaluations within the group. At the same time, the teacher provided timely feedback and recorded the academic performance of each group as illustrated in Figure 2.

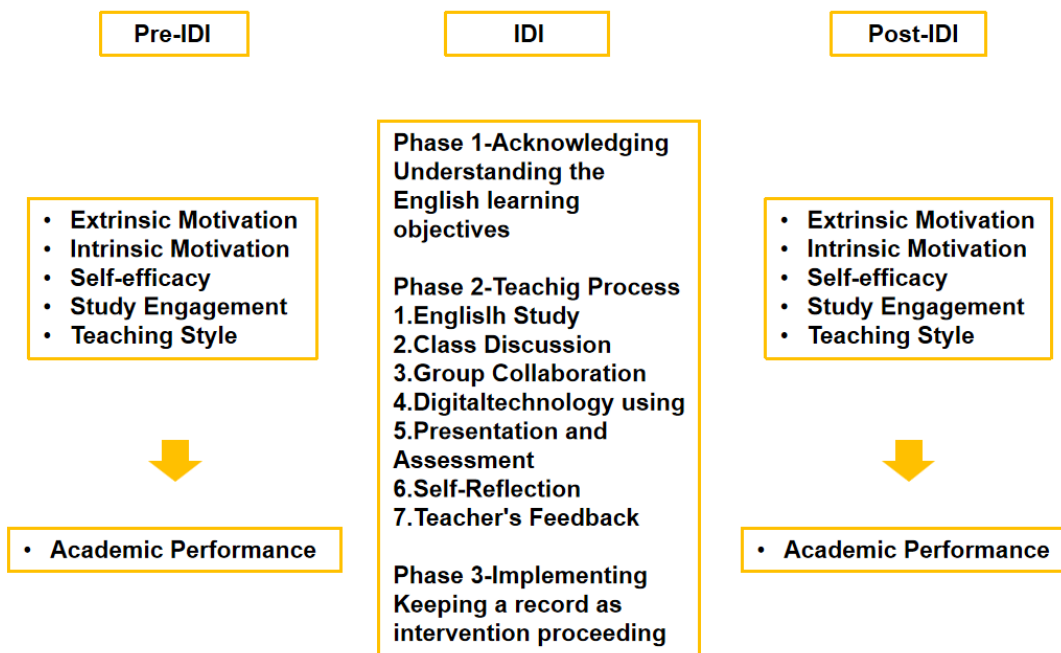


Figure 2 IDI Activities

4. Results Comparison between Pre-IDI and Post-IDI

The researcher implemented a paired-sample t-test analysis on cooperative learning impacting Extrinsic Motivation, Intrinsic Motivation, Self-efficacy, Study Engagement, Teaching Style, and

Academic Performance to identify whether there were any significant differences between the pre-IDI and post-IDI phases. The following tables illustrate the paired-sample t-test analysis for these six variables, highlighting the changes in students' academic performance as a result of the IDI intervention.

Table 5 Paired-Sample T-Test Results

	Variables	N	Mean	Std. Deviation	t-value	df	p-value
Pair 1	Pre-EM	30	4.13	0.578	-1.25	29.0	0.220
	Post-EM	30	4.31	0.553			
Pair 2	Pre-IM	30	3.51	0.516	-3.15	29.0	0.004
	Post-IM	30	3.87	0.522			
Pair 3	Pre-Se	30	3.62	0.532	-3.20	29.0	0.003
	Post-Se	30	4.05	0.589			
Pair 4	Pre-SE	30	3.42	0.500	-3.57	29.0	0.001
	Post-SE	30	3.80	0.474			
Pair 5	Pre-TS	30	3.84	0.457	-2.71	29.0	0.011
	Post-TS	30	4.17	0.447			
Pair 6	Pre-AP	30	3.76	0.582	-3.78	29.0	<.001
	Post-AP	30	4.02	0.365			

Table 5 illustrates the results of the paired-sample t-test analysis of pre-IDI and post-IDI comparison as follows:

It can be seen that there is no significant difference in **Extrinsic motivation** between pre-IDI (M=4.13, SD=0.578) and post-IDI (M=4.31, SD=0.553); $t(29) = -1.25$, $p = 0.220$ (>0.05). The average difference is -0.178. Therefore, H6 was supported, that there is **no** significant difference in **Extrinsic**

Motivation between pre-IDI and post-IDI.

There was a significant increase in **Intrinsic Motivation** between post-IDI ($M=3.87$, $SD=0.522$) stage and pre-IDI stage ($M=3.51$, $SD=0.516$), while $P<0.05$, and the mean value difference between post-IDI stage and pre-IDI stage was 0.356. Therefore, H7 was supported, that there is a significant difference in **Intrinsic Motivation** between pre-IDI and post-IDI.

There was a significant increase in **Self-efficacy** between post-IDI ($M=4.05$, $SD=0.589$) stage and pre-IDI stage ($M=3.62$, $SD=0.532$), while $P<0.05$, and the mean value difference between post-IDI stage and pre-IDI stage was 0.433. Therefore, H8 was supported, that there is a significant difference in **Self-efficacy** between pre-IDI and post-IDI.

There is a significant difference in **Study Engagement** between pre-IDI ($M=3.42$, $SD=0.500$) and post-IDI ($M=3.80$, $SD=0.474$); $t(29) = -3.57$, $p=0.001$ (<0.05). The average difference is -0.378. Therefore, H9 was supported, that there is a significant difference in **Study Engagement** between pre-IDI and post-IDI.

There was a significant increase in **Teaching Style** between post-IDI ($M=4.17$, $SD=0.447$) stage and pre-IDI stage ($M=3.84$, $SD=0.457$), while $P<0.05$, and the mean value difference between post-IDI stage and pre-IDI stage was 0.325. Therefore, H10 was supported that there is a significant difference in **Teaching Style** between pre-IDI and post-IDI.

There is a significant difference in **Academic Performance** between pre-IDI ($M=3.76$, $SD=0.582$) and post-IDI ($M=4.02$, $SD=0.365$); $t(29) = -3.78$, $p<0.001$ (<0.05). The average difference is -0.258. H11 was supported that there is a significant difference in **Academic Performance** between pre-IDI and post-IDI.

According to the paired-sample t-test results demonstrated above, the researcher came up with the following conclusions. First, all six variables had a significant mean difference between the post-IDI stage and the pre-IDI stage. Second, researchers found out that there was a significant increase in students' intrinsic motivation, self-efficacy, study engagement, teaching style, and academic performance between the pre-IDI and post-IDI phases.

Conclusions, Discussion, Recommendations, and Limitations

1. Conclusions

Cooperative learning, as an innovative teaching strategy, has demonstrated significant advantages in the field of education. Its benefits are mainly reflected in the following aspects:

1) Improving Academic Performance

Through group discussions and mutual assistance, students can gain a deeper understanding of complex concepts and consolidate their learned knowledge. In the process of cooperative learning, students need to explain their viewpoints to their peers, which can help them organize their thinking, discover knowledge blind spots, and deepen their understanding of knowledge.

2) Enhancing Learning Motivation

Collaborative learning creates a positive and interactive learning environment, stimulating students' interest in learning and enthusiasm for participation. Compared with traditional lecture based teaching, cooperative learning places more emphasis on students' active participation. Students are no longer passive recipients of knowledge, but active participants in the learning process. This sense of participation can stimulate students' interest in learning and improve their learning motivation.

3) Improve Learning Engagement and Self-efficacy

Cooperative learning requires students to actively participate in the learning process, rather than passively receiving knowledge. This proactive participation can increase students' learning engagement and make them more focused on learning tasks. For example, in a discussion class, students need to actively speak up and participate in the discussion, which can improve their classroom participation.

4) Cultivating Critical Thinking

Students need to analyze different perspectives, evaluate the reliability of information, and engage in critical thinking. In cooperative learning, students need to face different perspectives and opinions, which prompts them to analyze and evaluate, thereby cultivating their critical thinking skills.

5) Developing Social Skills

Students need to express their ideas clearly and listen to others' perspectives in order to improve communication skills. Collaborative learning provides students with an opportunity to practice communication skills, where they need to express their views clearly in group discussions and listen carefully to others' opinions.

6) Promoting Inclusion and Understanding

Collaborative learning encourages students to respect and understand different perspectives and cultural backgrounds, promoting the formation of an inclusive learning environment. In cooperative

learning, students need to collaborate with classmates from different backgrounds, which helps them learn to respect and understand differences.

In summary, cooperative learning teaching strategies can not only improve students' academic performance but also promote their development in social skills, critical thinking, learning motivation, and social emotions, laying a solid foundation for their comprehensive development.

2. Discussion

Although cooperative learning has many benefits, it still faces some challenges in practical applications. These challenges are mainly reflected in the following aspects:

1) Increased Difficulty in Classroom Management

Collaborative learning requires teachers to transform from traditional knowledge instructors to guides and facilitators of learning. This requires teachers to change their teaching philosophy and master new teaching skills. Collaborative learning classrooms are more open and dynamic, and teachers need to have stronger classroom control abilities to respond to various unexpected situations promptly. For example, in group discussions, there may be situations where students deviate from the topic, the discussion is too intense, or the discussion is off topic. Teachers need to intervene promptly to guide the discussion back on track.

2) Unequal Student Participation

In group activities, it is common for individual students to lead discussions while other members passively participate. This not only affects the fairness of learning outcomes, but may also lead to some students losing interest in learning. For example, in group discussions, students with outgoing personalities and strong expressive abilities may dominate, while students with introverted personalities and poor verbal skills may be marginalized.

3) Difficulties in Evaluating Individual Contributions

Because learning outcomes are the result of collective efforts by the group, fairly evaluating the contributions of each member has become a challenge faced by teachers. Inappropriate evaluation methods may undermine students' motivation and even trigger conflicts within the group.

4) Challenges of Individual Differences among Students

Different students have different learning styles, such as visual, auditory, and kinesthetic. Teachers need to consider individual differences among students and design diverse collaborative learning activities to meet the learning needs of different students. For visual learners, teachers can provide visual materials such as charts and images; For auditory learners, teachers can organize activities such as group discussions and debates; For kinesthetic learners, teachers can design hands-on activities and experiments.

In summary, the implementation of cooperative learning teaching strategies faces various challenges, requiring teachers to possess corresponding teaching skills and management abilities, and take effective measures to cope with them.

3. Recommendations

To overcome the challenges faced in the implementation of cooperative learning teaching strategies and fully leverage their advantages, this article proposes the following suggestions:

1) Clarify Learning Objectives and Role Allocation

Before the activity begins, teachers should clearly explain the learning objectives and expected outcomes, ensure that each student is clear about their tasks and responsibilities, and provide relevant learning materials.

2) Reasonable Grouping and Establishing Positive Interdependence Relationships

Heterogeneity grouping is based on students' abilities, interests, and personality traits to ensure that each group has students from different backgrounds and strengths, promoting mutual learning. For example, teachers can group students with strong learning abilities and students with weaker learning abilities together, allowing stronger students to help weaker students and progress together.

3) Establish Effective Evaluation and Feedback Mechanisms

Adopting diversified evaluation methods, such as peer assessment, self-reflection, and teacher observation, to comprehensively evaluate students' performance. Teachers can organize students to reflect and summarize after group activities, and provide targeted feedback to help students recognize their strengths and weaknesses.

4) Strengthen Teacher Training and Professional Development

Provide theoretical training on cooperative learning for teachers to help them understand the principles and methods of cooperative learning. For example, schools can organize teachers to participate in special lectures and seminars on cooperative learning to learn relevant theoretical knowledge.

5) Creating a Supportive Learning Environment

Create a physical environment suitable for collaborative learning, such as flexible seating arrangements and ample learning space. Teachers can arrange the classroom in a form suitable for group discussions, such as circular or U-shaped seating, to facilitate communication and discussion among students.

In summary, the successful implementation of cooperative learning teaching strategies requires teachers to carefully design activities, group them reasonably, provide effective guidance, and establish a scientific evaluation mechanism. By clarifying learning objectives, reasonable grouping, establishing effective evaluation mechanisms, strengthening teacher training, and creating supportive learning environments, measures can be taken to effectively overcome the challenges faced in the implementation of cooperative learning, fully leverage its advantages, and achieve the best teaching results. Teachers need to constantly learn and practice, explore cooperative learning models that are suitable for their students, and exchange experiences with other teachers to jointly improve the teaching effectiveness of cooperative learning.

4. Limitations

This study used English as the main medium in the development and arrangement of the questionnaire. Although the survey tools, including questionnaire surveys and interviews, were designed with a large amount of literature and combined with prior understanding of the actual situation, and continuously improved and perfected, there are still limitations in the dimensions they contain, which affect the depth of the research. Due to English not being the primary language of the participants, there may be errors in understanding the project and interpreting statements. The questionnaire is slightly long, and students' tendency not to read the items carefully may affect their answers. Moreover, as the questionnaire is a self-reported measure, participants' reliance on memory when answering questions may also affect the objectivity of their responses. They may not have expressed their thoughts and feelings truthfully. Secondly, due to the limited number of students studied and the limited number of interviewees, this also affects the depth of learning. This study only involves first and second-year students from Kunming University; Therefore, these results cannot be generalized to Chinese undergraduate students in other regions. It is necessary to replicate or expand research using different student grades, geographic locations, or other countries to improve the generalizability of research results. In the questionnaire survey, the entire paper systematically analyzed the influencing factors on English learning, but did not delve into a specific population or major. Therefore, no high-quality teaching strategies suitable for student learning and teacher teaching were developed, resulting in insufficient refinement and comprehensiveness of factor correlation analysis. The analysis of individual differences among students, including gender, grade level, interest in learning English, and learning initiative, is not thorough enough.

In future research, we hope to comprehensively consider and analyze the above factors. Adding self-assessment methods to measure academic achievement may improve the accuracy of academic performance evaluation. Perhaps, GPA and subject grades can also be used as indicators of academic achievement for academic achievement measurement. Moreover, the majority of participants in this study were mixed gender students, and the research subjects were mixed-class students from various majors. If future research can be conducted by gender and major, the data may be more accurate, and the research conclusions may be more targeted. In future research, the author will enhance their continuous learning ability and conduct more in-depth research on the factors that affect English learning from various perspectives, to better assist college English in achieving its curriculum development goals and help students in improving their English grades.

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