THE EFFECT OF AI-BLENDED LEARNING ON EFL COLLEGE STUDENTS' MOTIVATION AND ENGLISH ACADEMIC ACHIEVEMENT IN HUNAN, CHINA

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LIST OF ABBREVIATIONS

AI	Artificial Intelligence
AWE	Automated Writing Evaluation
ASR	Automated Speech Recognition
CLT	Communicative Language Teaching
EAA	English Academic Achievement
EFL	English as a Foreign Language
ESL	English as a Second Language
ELT	English Language Teaching
EAT	English Achievement Test
GTM	Grammar Translation Method
GO	Goal Orientation
IS	Instructional Support
LMS	Learning Management System
MQ	Motivation Questionnaire
SE	Self-efficacy
SRJ	Students Reflective Journal
SSA on LMS	Statistics of Student Activity on the Learning Management System
TBLT	Task-Based Language Teaching
TELL	Technology-Enhanced Language Learning

LIST OF APPENDICES

KESAN PEMBELAJARAN TERADUN KECERDASAN BUATAN TERHADAP MOTIVASI DAN PENCAPAIAN AKADEMIK BAHASA INGGERIS BAGI PELAJAR KOLEJ YANG MENGGUNAKAN BAHASA INGGERIS SEBAGAI BAHASA ASING DI HUNAN, CHINA

ABSTRAK

Penggunaan pendekatan pengajaran berpusatkan guru di universiti-universiti di China telah menyumbang kepada motivasi pelajar yang rendah dengan orientasi matlamat yang lemah, kecekapan kendiri yang rendah, dan kekurangan kebolehan dalam pembelajaran Bahasa Inggeris, telah membawa kepada penglibatan yang terhad dan tahap penguasaan bahasa yang rendah. Dalam Pengajaran Bahasa Inggeris (ELT), pendekatan pengajaran yang berkesan adalah penting untuk memupuk pembelajaran yang bermakna. Walaupun pendekatan pengajaran konvensional dan teradun masih lazim digunakan, integrasi kecerdasan buatan (AI) ke dalam pembelajaran teradun (iaitu pembelajaran teradun berasaskan AI) semakin mendapat perhatian. Kajian ini menyiasat kesan pendekatan pengajaran konvensional, teradun, dan teradun berasaskan AI terhadap pembinaan motivasi pelajar (iaitu orientasi matlamat, efikasi diri, dan sokongan pengajaran yang dirasai), serta pencapaian akademik Bahasa Inggeris mereka. Kajian ini turut meneroka bagaimana faktor-faktor motivasi ini berkait dengan pencapaian akademik dan membandingkan kekuatan serta kelemahan pendekatan pengajaran teradun dan teradun berasaskan AI. Reka bentuk kaedah campuran secara dalam subjek telah digunakan melibatkan 43 pelajar universiti yang melalui ketiga-tiga pendekatan pengajaran secara berurutan. Data kuantitatif dikumpul melalui Soal Selidik Motivasi (MQ), Ujian Pencapaian Bahasa Inggeris (EAT), dan Statistik Aktiviti Pelajar di Sistem Pengurusan Pembelajaran (LMS). Dapatan

kualitatif diperoleh daripada Jurnal Reflektif Pelajar. Kajian ini menggunakan analisis ukuran berulang dan regresi berganda untuk menilai kesan dan hubungan, serta analisis tematik induktif untuk meneroka kekuatan dan kelemahan pendekatan pengajaran teradun dan teradun berasaskan AI. Keputusan menunjukkan bahawa pendekatan pengajaran teardun berasaskan AI adalah paling berkesan dalam meningkatkan motivasi dan pencapaian akademik pelajar. Berbanding dua pendekatan lain, ia telah meningkatkan secara signifikan orientasi matlamat pelajar, efikasi diri, sokongan pengajaran, dan prestasi akademik. Tambahan pula, di bawah pendekatan pembelajaran teradun berasaskan AI, ketiga-tiga konstruk motivasi adalah berkait dengan pencapaian akademik secara signifikan, manakala di bawah pendekatan teradun biasa, hanya orientasi matlamat yang berkait secara signifikan. Analisis tematik telah mengenal pasti lapan dimensi utama yang mempengaruhi pengalaman pelajar: kemahiran bahasa, proses kognitif, faktor afektif, faktor motivasi, strategi pembelajaran, persekitaran luar talian, peranan pengajar, dan teknologi pendidikan. Lebih utama, pelajar telah mengenal pasti lebih banyak kekuatan dalam pendekatan pengajaran teradun berasaskan AI.

THE EFFECT OF AI-BLENDED LEARNING ON EFL COLLEGE STUDENTS' MOTIVATION AND ENGLISH ACADEMIC ACHIEVEMENT IN HUNAN, CHINA

ABSTRACT

The persistence of teacher-centered instruction in Chinese universities has been shown to diminish students' goal orientation, self-efficacy, and perceived instructional support in English learning, which constrains their motivation and hinders language performance. In English Language Teaching (ELT), effective instructional approaches are essential to fostering meaningful learning. While conventional and blended instructional approaches remain common, the integration of artificial intelligence (AI) into blended learning (i.e., AI-blended) is gaining popularity. This study investigates the impact of conventional, blended, and AI-blended instructional approaches on students' motivational constructs (i.e., goal orientation, self-efficacy, and perceived instructional support), and their English academic achievement. It also explores how these motivational factors influence English academic achievement and compares the strengths and weaknesses of blended and AI-blended instructional approaches. A mixed-methods within-subject design was adopted with 43 university students who sequentially experienced all three instructional approaches. Quantitative data were collected through the Motivation Questionnaire (MQ), English Achievement Test (EAT), and Statistics of Student Activity on the Learning Management System (SSA on LMS). Qualitative insights were drawn from Students Reflective Journals (SRJ). This study employed repeated measures analysis and multiple regression to assess the effects and relationships, and applied inductive thematic analysis to explore the strengths and weaknesses of the blended and AI-blended instructional approaches.

Results show that the AI-blended instructional approach was the most effective in enhancing both motivation and English academic achievement. Compared to the other two approaches, it significantly improved students' goal orientation, self-efficacy, instructional support, and academic performance. Moreover, under the AI-blended instructional approach, all three motivational constructs significantly influenced English academic achievement, whereas under the blended approach, only goal orientation was a significant factor. Thematic analysis revealed eight key dimensions influencing students' experiences: language skills, cognitive processes, affective factors, motivational factors, learning strategies, offline environments, instructor roles, and educational technologies. Notably, students identified more strengths in the AI-blended instructional approach.

CHAPTER 1

INTRODUCTION

1.1 Introduction

An effective instructional approach in English Language Teaching (ELT) is fundamental to fostering meaningful learning. Instructional design must take into account students' motivation, their English language achievement, and the evolving technological environment that supports teaching. Over time, ELT has witnessed a significant shift from traditional teacher-centred towards more student-centred instructional approaches that actively involve learners in the educational process and encourage meaningful engagement (Rezai et al., 2025).

In the Chinese English as a Foreign/Second Language (EFL/ESL) context, researchers have compared conventional face-to-face instructional approaches with various potentially student-centred instructional approaches, including online learning (Li et al., 2025), blended learning supported by learning management systems (Teng & Zeng, 2022; Yang et al., 2022), and more recently AI-assisted learning (Chen, 2024; Teng, 2024; Zhang, 2023). These studies generally report that learners in experimental groups exposed to the new instructional approaches tend to outperform others in control groups, suggesting the effectiveness of innovative pedagogical designs in enhancing language learning.

However, despite the adoption of newer instructional approaches, Chinese EFL learners continue to face challenges in sustaining motivation and achieving satisfactory academic performance. For example, Ye and Sun (2023) reported that fewer than half of the students could identify their learning goals, and Li (2022) noted that many students lacked confidence and self-efficacy in learning English. In addition,

Chinese college students continue to demonstrate relatively low levels of academic English proficiency (Wang & Chen, 2024).

Additionally, some Chinese university English teachers cannot timely change the concept of education even when implementing blended instructions, so the students' subjectivity is difficult to enhance because of the lack of intrinsic motivation to learn and a serious blow to the autonomy of students to learn and enthusiasm (Ma, 2023; Xia, 2023). Similarly, Liang (2021) indicated that in mainland China, despite the increasing use of technology in education, the integration of technology by university teachers in ELT remains underexplored.

Currently, artificial intelligence (AI) has become increasingly pervasive in education, including the field of ELT. As Artificial Intelligence in Education (AIED) technologies gain growing attention and adoption, their effectiveness is being recognized in various aspects such as generating educational content, enhancing student engagement and interaction, and personalizing learning experiences (Ng et al., 2023; Kasneci et al., 2023). In this context, teachers are increasingly encouraged to utilize network resources or AI to design and regulate the learning process, obtaining each student's learning information to ensure effective learning (Kang & Kang, 2022).

In the context of adopting AI in ELT, numerous studies have identified its benefits in assisting English learning. For example, AI has been shown to effectively tailor learning content based on learners' individual needs and progress (Jokhan et al., 2022), enrich learning activities and intensify learning experiences (Yang & Kyun, 2022), and contribute to the improvement of both language skills (Bailey et al., 2021) and learners' emotional engagement (Huang & Zou, 2024). Beyond its impact on students, AI has also significantly influenced instructional approaches. Teachers' instructional design has been increasingly supported by intelligent tools such as

intelligent tutoring systems, automated feedback and correction mechanisms, and conversational agents. These tools offer more efficient and flexible ways for instructors to plan, deliver, and adjust their teaching.

The Ministry of Education of the People's Republic of China (PRC) vigorously implemented the national education digitalization strategic action, stressing the need to build the national smart education platform (Ministry of Education, 2023). This initiative, driven by advancements in AI and big data technologies, aims to promote educational equity, realize lifelong learning, and innovate the teaching process and evaluation methods, thereby fostering a more dynamic and responsive educational ecosystem. These transformations not only reshape instructional approaches but also create more engaging learning environments.

An engaging learning environment supported by appropriate instructional approaches is widely recognized as a key factor in enhancing students' learning motivation and academic achievement. Students are more likely to develop motivation and actively engage in learning tasks when fulfilling their basic psychological needs according to Self-Determination Theory (Ryan & Deci, 2017; Ryan & Deci, 2022). Recent studies have shown that AI-integrated instructional approaches can help create such supportive and stimulating learning environments. For instance, AI-powered tools have been found to capture students' attention and sustain their interest, thereby promoting more active participation in the learning process (Yuan & Liu, 2025). Similarly, Wang and Xue (2024) revealed that AI-driven chatbots played a crucial role in fostering engagement among Chinese EFL students. This enhanced motivation, in turn, has been found to significantly influence students' academic achievement (Teng, 2024).

However, despite the growing body of research affirming the benefits of AI in enhancing learning motivation and academic achievement in the Chinese EFL learning context, empirical studies focusing on the integration of AI into blended learning environments remain limited. More specifically, comparative studies that explore differences in students' motivation and English academic achievement across conventional, blended, and AI-integrated blended instructional approaches are also scarce. Therefore, this study intends to design and implement an instructional approach that integrates AI into blended learning (i.e., AI-blended), and to compare the effects of conventional, blended, and AI-blended instructional approaches on students' learning motivation and English academic achievement among Chinese university students.

1.2 Background of the Study

In China, students generally go through three stages in their formal education. The first stage is the nine-year compulsory education, which includes six years of primary school and three years of junior secondary school. Upon completing this stage, students take the high school entrance examination to progress to the second stage, three years of high school education. Finally, the third stage is tertiary education, which requires students to sit for the National College Entrance Examination (Gaokao), with university admission based on examination scores.

China's higher education system consists primarily of undergraduate institutions and higher vocational colleges, offering programs across four academic levels: associate, undergraduate, master's, and doctoral degrees. Academic disciplines are categorized into twelve main fields, including philosophy, economics, law, education, literature, history, science, engineering, agriculture, medicine, management,

and art. This structured progression lays the foundation for students to enter higher education, where English learning becomes a compulsory and significant part of their academic development.

College English is one of the required courses for all students in regular higher education, regardless of their major. According to the Guidelines on College English Teaching (GCET) issued in 2015 and officially released in 2017 (Ministry of Education, 2017b), College English plays an important role in the broader framework of humanistic education. It carries both instrumental and humanistic functions. The instrumental function emphasizes the practical use of English in real-life and professional contexts, while the humanistic function focuses on expanding students' global perspectives, fostering cross-cultural awareness, and developing their values.

As one of the core components of the College English curriculum, the general English course is designed to promote learning motivation and independent learning skills, both of which are essential for cultivating lifelong learning awareness among university students. The course encourages learners to become autonomous and reflective, enabling them to identify their learning goals, plan learning paths, and regulate their own progress. This emphasis on autonomy is aligned with the strategic vision of Education Modernization 2035 (Ministry of Education, 2019), which underscores the need to equip students with the ability and motivation for lifelong learning. According to this national plan, education should not end with graduation but continue throughout life, with learners continuously updating their knowledge and adapting to evolving societal and professional demands.

Many scholars have pointed out that the development of students' autonomy and lifelong learning habits is closely linked to their learning motivation. Learners who are actively engaged in the learning process are more likely to perceive higher levels

of autonomy in their English learning (Melvina et al., 2023; Raman et al., 2023). For example, Cheng (2020) found that a stronger desire to study was associated with increased self-confidence among Taiwanese university students. These findings highlight that motivation not only enhances learning engagement, but also acts as a driving force behind students' academic achievement and personal growth.

In addition to developing motivation and independent learning skills, College English also serves an important role in improving students' comprehensive English language skills. In recent years, growing attention has been paid to the development of students' academic English competence (Ministry of Education, 2001). English learning at the tertiary level has evolved to support students in academic listening, oral presentations, critical reading, academic writing, and translation. According to College English Teaching Guidelines (Ministry of Education, 2017b), more academic lectures are recommended as listening materials to help learners extract key ideas and details, apply effective listening strategies, and develop sustainable listening habits. For speaking, students are encouraged to engage in academic presentations and cross-cultural exchanges, with a shift of focus from pronunciation accuracy to content relevance and communicative competence. In reading, the ability to recognize argumentative structures and evaluate textual logic is emphasized to enhance comprehension of academic texts. Academic writing is expected to integrate clear claims and supporting evidence, which are essential for cultivating critical thinking. In translation, students are trained to go beyond literal translation by considering cultural context and pragmatic equivalence. These skills are directly tied to students' academic achievement and reflect the broader educational goal of cultivating globally competent talents who can participate in academic, professional, and cross-cultural communication.

To achieve the goals proposed by the Ministry of Education in China, it is necessary to understand the underlying psychological factors that influence students' English learning. Dweck's motivational theory suggests that goal orientation is a relatively stable dispositional trait that co-varies with an individual's implicit theory of ability (Bempechat et al., 1991; Dweck, 1986; Dweck & Henderson, 1989), demonstrating that learning goal and performance goal orientations are related to learners' beliefs about their abilities. Learning goal orientation promotes the development of language competence by encouraging students to focus on mastering skills and improving their understanding. In contrast, performance goal orientation drives students to demonstrate their abilities and achieve favourable academic outcomes. Both types of goal orientation are essential for maintaining sustained motivation and are closely aligned with the broader aim of cultivating lifelong learning, as emphasized in educational strategies such as China's Education Modernization 2035 plan (Ministry of Education, 2019).

In addition, students' beliefs in their efficacy to regulate their own learning and to master academic activities (i.e., self-efficacy) have a significant influence on their aspirations, motivational levels, and academic achievement (Bandura, 1993). Bandura (1977) further emphasized that self-efficacy develops through cognitive processes such as goal setting and self-evaluative reactions. Therefore, fostering a strong sense of self-efficacy is critical for sustaining students' motivation and supporting their long-term academic success. In alignment with China's national education agenda to cultivate globally competitive talents, enhancing students' self-efficacy in English learning is not merely advantageous, but essential. Encouraging students to become more autonomous learners is deeply rooted in self-efficacy. When students perceive themselves as capable learners, they are more likely to engage confidently in

classroom activities, persist in independent study, and experience reduced anxiety in the face of academic challenges.

Another factor influencing students' motivation is instructional support, which refers to the extent to which students feel guided, encouraged, and supported by their learning environment (Fowler, 2018). When students feel adequately supported through teacher guidance, peer collaboration, or well-structured learning materials, they are more likely to take initiative, persist through difficulties, and engage in self-regulated learning, which is particularly critical in fostering autonomous learning. Without such support, students may experience anxiety, confusion, or lack of confidence, all of which can undermine motivation and hinder academic progress.

In light of the importance of learning motivation, developing students' English language proficiency as a foundation for academic success has also become particularly important. In the context of Chinese higher education, students are required to take English courses and receive academic evaluations each semester, which are often tied to graduation requirements. Moreover, the results of standardized English proficiency tests, such as the College English Test Band 4 and Band 6 (CET-4 and CET-6), are frequently used as criteria for awarding scholarships and determining eligibility for further academic opportunities. English academic achievement serves not only as a formal graduation requirement, but also as a key indicator of students' ability to engage with professional knowledge. Consequently, students' performance in English courses is closely linked to their overall academic achievement, making it a central concern of institutional design.

A Chinese scholar pointed out that in today's education, whether it's online or offline teaching and learning, it's hard to get students and parents' approval for after-school homework assignments and in-class learning content assignments without the

support of AI technologies (Wu, 2019). Unlike the conventional instructional approach, which relies heavily on standardized textbooks and adopts one-size-fits-all instruction resulting in teacher-centred classrooms (Umida et al., 2020), or even the blended instructional approach, which is more flexible than the conventional instructional approach but may still fall short in allowing learners to fully customize their learning paths based on individual needs and preferences (Boelens et al., 2017), AI-assisted instruction enables more adaptive content delivery, data-informed feedback, and learner-centred design (Park & Doo, 2024).

With the use of intelligent instructional content and assessment, AI enables a stronger focus on individual learners' needs (Lesia Viktorivna et al., 2022). This personalized approach not only holds great potential for enhancing students' learning motivation, but also contributes to the improvement of language proficiency by providing diverse and adaptive learning resources. Both learning motivation and language proficiency are essential determinants of the effectiveness of English language learning at the tertiary level.

On the one hand, AI offers increased opportunities to make language learning more engaging and effective for students (Kasneci et al., 2023). A noticeable rise in student interest and motivation was observed when AI technologies are integrated into the learning process. For example, Huang et al. (2023) found that AI-driven personalized learning resources significantly enhanced students' motivation and engagement in a flipped classroom setting, demonstrating the positive impact of adaptive technology on learner involvement.

On the other hand, AI can provide a wide range of learning resources specifically designed to target various language skills. Through adaptive practice tasks, learners are able to improve their listening, speaking, reading, writing, and translation

abilities more effectively. For example, automated writing evaluation (AWE) and automated speech recognition (ASR) are two widely adopted AI tools in many EFL learning contexts (Wei et al., 2023; Zhang, W., et al., 2023). These technologies offer immediate feedback on writing and pronunciation, enabling learners to identify errors, track progress, and engage in repeated practice. Students have found such tools beneficial for both formative and summative assessments, as they facilitate self-directed learning and reinforce skill development.

Given the recognized importance of students' motivation, including goal orientation, self-efficacy, and instructional support, and their English academic achievement, it is crucial to investigate effective instructional approaches for Chinese university students. Therefore, the researcher intends to explore the different effectiveness of three instructional approaches, including the conventional, blended and AI-blended, on students' goal orientation, self-efficacy, instructional support, and English academic achievement, in the Chinese tertiary EFL context.

1.3 Problem Statement

From an overall perspective, Zhong and Zhan (2024) highlighted that the exam-oriented learning environment in China constrains EFL learning. As early as 1997, the director of the foreign language education division in the Department of Higher Education in the Ministry of Education criticized college English teaching as "only keen on cramming teaching to the test and deviating from the healthy development of college English teaching". However, this call for reform has not been effectively implemented in the decades because such advocacy has often been met with scepticism, with some dismissing it as impractical or inefficient, and labelling it

as uninformed leadership. This deeply exam-driven system fails to support the development of long-term learning desire (Zhang et al., 2020b).

In addition, structural constraints must also be acknowledged. For instance, many universities have removed English certification as a graduation requirement, and English classes in Chinese universities are still characterized by more than 40 students in a class, a wide range of teaching content, and a limited number of teaching hours (Zhu, 2023). The average number of credits allocated to College English courses is limited to only 8-10 out of approximately 140 credits required for graduation, which makes it nearly impossible for students to achieve comprehensive English proficiency (Cai, 2020).

As a result, limited instructional innovation and outdated pedagogies continue to constrain the development of effective teaching. In many Chinese EFL classrooms, the conventional teacher-centred instructional approach remains dominant. Many students accustomed to traditional face-to-face instruction have faced multiple challenges when transitioning to online learning (Dewaele et al., 2024). Yu (2022) reported that many students continue to rely on a rote learning system even at the college level, largely due to the persistence of teacher-centred instructional approaches. As a result, in College English courses, most students are not accustomed to independently asking questions or clearly identifying what they are learning. Instead, they tend to reproduce knowledge mechanically based on course content and teachers' instructions. This indicates that their engagement in questioning, discussion, collaboration, and sharing remains confined to surface-level knowledge transmission, making it difficult for them to develop creative thinking. Huang (2020) further noted that outside the classroom, most students struggle to explore questions autonomously

and are unable to effectively utilize online resources to access, analyse, and synthesize information.

As for online learning, Mehrotra (2019) pointed out that Chinese students have long faced difficulty with pedagogical reform. Instead of looking forward to learning through technology, many students hoped that their teachers would be more familiar with effective ways of teaching English content, as they encountered frequent technical problems during online instruction (Li et al., 2025). Similarly, Wang and Zhang (2022) concluded that online learning may hinder systematic knowledge and autonomous learning in language teaching, while passive teaching in a face-to-face learning environment can hinder student enthusiasm and engagement.

In addition, the blended instructional approach contains some limitations to some extent. For example, Boelens et al. (2017) systematic review identified four major threats in the blended instructional approach, including the need to incorporate flexibility and autonomy, to stimulate social interaction, to facilitate learning processes and to foster an affective learning climate. Empirical studies also stated the difficulties in the blended instructional approach, such as the limitation of interaction, more distractions, and lack of self-regulation (Yu et al., 2022; Sun et al., 2024). Students sometimes find it difficult to solve problems they encounter when instructors shift learning tasks to pre-class activities (Pham et al., 2023), although such an approach is intended to foster independent learning skills (Yang et al., 2022). Without guidance and scaffolding from instructors, students may experience confusion or frustration.

These problems impede sustained learning motivation and overall academic performance. The number of Chinese students dissatisfied with College English instruction exceeds those who express satisfaction by demonstrating their lack of willingness and passive learning (Cai, 2012). This is further supported by the findings

of Yuan et al. (2023), in a study involving 1,659 students, who found that learners' overall engagement and motivation in blended learning environments remained low, particularly in terms of cognitive engagement. Similarly, Ye and Sun (2023) reported that fewer than 50% of students were able to clearly articulate their learning goals, indicating a lack of goal orientation. Wang (2018) identified several inhibiting factors contributing to low motivation among 370 college students, including perceived laziness, lack of innate language ability, difficulty in English courses, anxiety about future prospects, and poor English foundations. Notably, sophomore and senior students were found to exhibit lower levels of motivation compared to other year groups. Cui and Meng (2023) also emphasized that many students lack self-efficacy and confidence in their English learning, with some even believing that they are inherently incapable of mastering the language.

On the other hand, many university students lack the ability to use English effectively even at a basic level and demonstrate low overall proficiency. In terms of listening and speaking, although an increasing number of Chinese EFL learners have accepted the concept of "China English", many remain highly self-conscious about their accents and are reluctant to be identified as Chinese when speaking English (Pan et al., 2021). Moreover, Shi (2011) reported that former director of the Foreign Language Department at Tsinghua University observed that even though Chinese students passed the College English Test Band 4 and 6, they were still unable to read academic literature in English or write academic papers. Yang (2019) further argued that there is no scientific basis to assume that students who pass English proficiency exams can actually comprehend authentic academic texts. Her data revealed that Chinese students' reading speed was significantly lower than the lowest reading speed of British and American college students (170-200 words per minute). Writing

proficiency also remains a major concern. For example, an evaluation of 70 English writing test papers found that only 13.05% of students passed (Chang, 2019).

In addition to the existing problems in Chinese students' motivation and academic achievement, studies examining the relationship between students' motivation and academic achievement have focused on a single aspect of English language skills. For instance, research primarily focused on writing by analysing students' self-efficacy during the writing process, such as their confidence in their writing ability and the degree of anxiety when facing writing tasks, and exploring the relationship by combining their specific scores in writing tests (Liu, C., et al., 2023; Ruwe & Mayweg-Paus, 2023). Similarly, other studies have concentrated on speaking, assessing students' self-perceived oral fluency, nervousness in communication, and their correlations with scores in oral language tests (Ebadi & Amini, 2022; Zhang & Han, 2021). These studies tend to focus on short-term learning experiences, rather than tracking students' long-term motivational and academic development. Moreover, He et al. (2023) noted that within the Chinese educational context, empirical research on AI-integrated blended instruction remains scarce.

Given that general English courses are compulsory for non-English major students during the first two years of university in China and that students from second-batch universities make up a significant proportion of this population, this study was conducted at a second-batch Chinese university, with participants being non-English major freshmen. The primary objective of this research is to design an AI-integrated blended learning (i.e., AI-blended) instructional approach and to compare the differential effectiveness of conventional, blended, and AI-blended instructional approaches on students' goal orientation, self-efficacy, instructional support, and English academic achievement through a longitudinal study.

1.4 Research Objectives

The main objective of this study is to explore how well the conventional, blended and AI-blended instructional approaches improve student's goal orientation (GO), self-efficacy (SE), instructional support (IS), and English academic achievement (EAA).

Specifically, this study intends to achieve the following objectives:

1. To determine the extent of the effect of conventional, blended and AI-blended instructional approaches on students' Goal Orientation, Self-Efficacy, and Instructional Support.
2. To determine the extent of the effect of conventional, blended and AI-blended instructional approaches on students' English Academic Achievement.
3. To examine the influence of Goal Orientation, Self-Efficacy and Instructional Support on students' English Academic Achievement under conventional, blended and AI-blended instructional approaches.
4. To identify the strengths and weaknesses of the blended and AI-blended instructional approaches respectively.

1.5 Research Questions

The following research questions guided the study.

1. To what extent do conventional, blended and AI-blended instructional approaches lead to significant changes in students' perceptions of Goal Orientation, Self-Efficacy and Instructional Support, and are there any significant differences across these instructional approaches?
2. To what extent do the conventional, blended, and AI-blended instructional approaches impact students' English Academic Achievement?

3. To what extent do students' perceptions of Goal Orientation, Self-Efficacy and Instructional Support influence their English Academic Achievement under conventional, blended and AI-blended instructional approaches?
4. What are the strengths and weaknesses of the blended and the AI-blended instructional approaches, as perceived by students through qualitative reflections and corroborated by statistics on the learning management system?

1.6 Research Hypothesis

A hypothesis must present a testable prediction, which can be empirically examined through data collection and analysis (Marczyk et al., 2005). However, a hypothesis is never definitively proven beyond a reasonable doubt. Instead, it is evaluated by testing the null hypothesis. The null hypothesis (H_0) typically posits that there is no relationship between the variables under investigation (Christensen et al., 2014). When sufficient empirical evidence is found, the null hypothesis may be rejected in favour of the alternative hypothesis (H_a). Rejecting the null hypothesis is a critical step in assessing the influence of the independent variable (Graziano & Raulin, 1993).

Accordingly, the following null hypotheses were tested at the 0.05 level of confidence to address Research Questions 1, 2, and 3.

Table 1.1 Hypotheses in Research Question 1

$H_0$1	1a	There is no significant difference in students' perceptions of goal orientation, self-efficacy, and instructional support between the pre-test and the post-tests conducted following the conventional, blended, and AI-blended instructional approaches.
	1a.1	There is no significant difference in students' goal orientation between the pre-test and the post-test following the conventional instructional approach.
	1a.2	There is no significant difference in students' self-efficacy between the pre-test and the post-test following the conventional instructional approach.

Table 1.1 Continued

1a.3	There is no significant difference in students' perceptions of instructional support between the pre-test and the post-test following the conventional instructional approach.
1a.4	There is no significant difference in students' goal orientation between the pre-test and the post-test following the blended instructional approach.
1a.5	There is no significant difference in students' self-efficacy between the pre-test and the post-test following the blended instructional approach.
1a.6	There is no significant difference in students' perceptions of instructional support between the pre-test and the post-test following the blended instructional approach.
1a.7	There is no significant difference in students' goal orientation between the pre-test and the post-test following the AI-blended instructional approach.
1a.8	There is no significant difference in students' self-efficacy between the pre-test and the post-test following the AI-blended instructional approach.
1a.9	There is no significant difference in students' perceptions of instructional support between the pre-test and the post-test following the AI-blended instructional approach.
1b	There is no significant difference in students' perceptions of goal orientation, self-efficacy, and instructional support across the post-tests conducted following the conventional, blended, and AI-blended instructional approaches.
1b.1	There is no significant difference in students' goal orientation between the conventional and blended instructional approaches.
1b.2	There is no significant difference in students' self-efficacy between the conventional and blended instructional approaches.
1b.3	There is no significant difference in students' perceptions of instructional support between the conventional and blended instructional approaches.
1b.4	There is no significant difference in students' goal orientation between the conventional and AI-blended instructional approaches.
1b.5	There is no significant difference in students' self-efficacy between the conventional and AI-blended instructional approaches.
1b.6	There is no significant difference in students' perceptions of instructional support between the conventional and AI-blended instructional approaches.
1b.7	There is no significant difference in students' goal orientation between the blended and AI-blended instructional approaches.
1b.8	There is no significant difference in students' self-efficacy between the blended and AI-blended instructional approaches.
1b.9	There is no significant difference in students' perceptions of instructional support between the blended and AI-blended instructional approaches.

Table 1.2 Hypotheses in Research Question 2

H_o2	There is no significant difference in students' English academic achievement across the post-tests conducted following the conventional, blended, and AI-blended instructional approaches.
$H_o2.1$	There is no significant difference in students' English academic achievement between the conventional and blended instructional approaches.
$H_o2.2$	There is no significant difference in students' English academic achievement between the conventional and AI-blended instructional approaches.
$H_o2.3$	There is no significant difference in students' English academic achievement between the blended and AI-blended instructional approaches.

Table 1.3 Hypotheses in Research Question 3

H_o3	There is no significant predictive effect of students' perception of goal orientation, self-efficacy, and instructional support on their English academic achievement across conventional, blended and AI-blended instructional approaches.
$H_o3.1$	There is no significant predictive effect of students' perception of goal orientation, self-efficacy, and instructional support on their English academic achievement in conventional instructional approaches.
$H_o3.2$	There is no significant predictive effect of students' perception of goal orientation, self-efficacy, and instructional support on their English academic achievement in blended instructional approaches.
$H_o3.3$	There is no significant predictive effect of students' perception of goal orientation, self-efficacy, and instructional support on their English academic achievement in AI-blended instructional approaches.

1.7 Research Scope

Drawing upon the problem statements and research objectives, this study aimed to assess the effectiveness of conventional, blended and AI-blended instructional approaches on university students' perception of goal orientation, self-efficacy, instructional support, and their English academic achievement in general English courses.

This research adopted a longitudinal within-subject design, in which the same group of students experienced three instructional approaches across three consecutive semesters. The entire study spanned approximately one and a half years, with each semester lasting around four months, separated by 1 to 2 months of holiday breaks. In the first semester from September 2023 to January 2024 (i.e., 2023–2024–1), students

were taught under a conventional instructional approach. In the second semester from March 2024 to July 2024 (i.e., 2023–2024–2), they experienced a blended instructional approach. In the third semester from September 2024 to January 2025 (i.e., 2024–2025–1), an AI-blended instructional approach was implemented.

The instructional timeline and data collection schedule are illustrated in Figure 1.1. To address Research Questions 1 and 3, the Motivation Questionnaire (MQ) was administered four times across the three semesters to track changes in students' perceptions of goal orientation, self-efficacy and instructional support. For Research Questions 2 and 3, English Achievement Test (EAT) were administered three times, at the end of each instructional period, to measure their English academic achievement. To address Research Question 4, both Statistics of Student Activity on the Learning Management System (SSA on LMS) and Students Reflective Journal (SRJ) were collected during and after the blended and AI-blended instructional approaches.

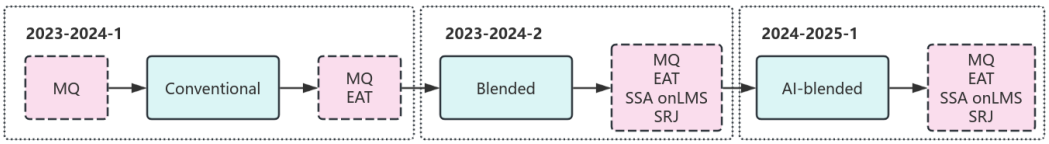

Figure 1.1 Timeline of Instructional Approaches and Data Collection Procedures

1.8 Conceptual Framework

The study compared conventional, blended and AI-blended instructional approaches among non-English major university students in tertiary education. It also aimed to examine the differential effects of these instructional approaches on students' perceptions of goal orientation, self-efficacy, and instructional support, as well as on their English academic achievement.

As shown in Figure 1.2, the hypothesized conceptual framework illustrates the logical relationships between the independent variables (i.e., conventional, blended

and AI-blended instructional approaches) and the dependent variables (i.e., goal orientation, self-efficacy, instructional support, and English academic achievement).

The framework is based on the assumption that each instructional approach has distinct effects on students' motivation (i.e., goal orientation, self-efficacy and instructional support) and their English academic achievement. Additionally, it posits that goal orientation, self-efficacy, and instructional support each exert predictive influence on students' English academic achievement under different instructional approaches.

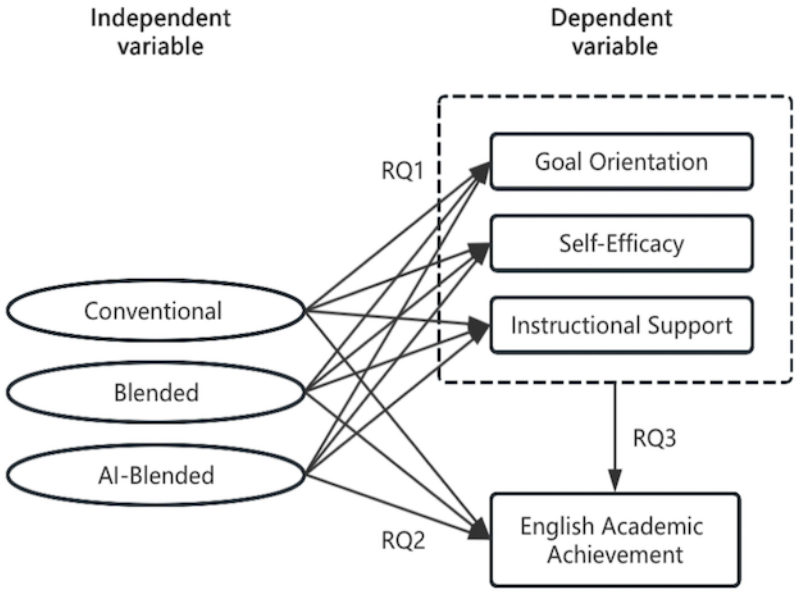

Figure 1.2 Conceptual Framework

1.9 Significance of the Study

This study holds potential significance for a wide range of stakeholders in the Chinese educational context, including researchers, educators, students, policymakers, curriculum designers, high-tech companies, and other relevant institutions. It may offer valuable insights into how students' motivation and academic achievement can

be enhanced through different instructional approaches, particularly in relation to the effective integration of AI technologies in English education.

The findings of this study may offer empirical evidence to inform and support the Ministry of Education in China in the reformation and enhancement of College English courses within the context of general higher education. Furthermore, the results may assist educators in fostering a more comprehensive and student-centred learning environment, in which students are more likely to develop learning motivation, language skills, technological literacy and awareness of lifelong learning.

From a pedagogical perspective, this study carries significant implications for the professional development of teachers and the evolution of instructional approaches in higher education. The teaching designs and lesson plans generated through the research may assist teachers in China in understanding, implementing, and continuously refining blended and AI-blended instructional approaches. By applying these approaches, teachers may be better equipped to enhance students' motivation and academic outcomes, thereby enriching teaching strategies and improving learning performance in college English education. Furthermore, the findings may encourage teachers to engage in critical reflection on the use of educational technologies, examining both their strengths and limitations.

From the learner's perspective, this study highlights the potential of AI-integrated blended learning to cultivate independent learning skills and promote a deeper understanding of learning strategies. Through thoughtfully designed instruction that combines pre-class preparation and in-class engagement, students are guided not only in mastering course content but also in learning how to learn. Rather than being impressed by the novelty of AI tools, students are encouraged to engage with suitable AI technologies and curated learning resources in a way that supports their individual

learning needs. Moreover, becoming more familiar with self-directed and self-regulated learning helps them identify learning barriers and take initiative to address learning challenges. Over time, this process fosters the development of lifelong learning awareness and the ability to utilize digital resources strategically.

From a technology ethics perspective, the integration of AI into blended learning in this study is not intended to replace teachers, but rather to enhance the synergy between pedagogy and technology. The purpose is to leverage AI as a supportive tool that augments instructional effectiveness while maintaining the irreplaceable role of teachers. Rather than promoting the indiscriminate use of advanced technologies, it encourages both teachers and students to engage with AI tools in a critical, informed, and pedagogically grounded manner. The emphasis lies in coordinated interaction between educators and technology.

From the perspective of educational stakeholders such as technology development companies, educational consultants, non-governmental organizations, and curriculum and instructional designers, the findings of this study are both useful and instructive. By comparing the effects of conventional, blended, and AI-blended instructional approaches on students' motivation and English academic achievement, the study provides evidence-based guidance for improving and updating related educational products, digital content, instructional approaches, and learning applications. Moreover, the instructional approaches developed in this study offer valuable references for complementing educational technology policies and ethical guidelines. These insights can support institutions and organizations in identifying strategies for technology integration into education, ensuring alignment with local educational backgrounds and policy environments.

This study makes significant theoretical contributions to the fields of educational psychology and AI instruction. It deepens the understanding of how AI-supported instruction influences motivation, including goal orientation, self-efficacy, and instructional support, thereby extending existing motivational theories within technology-enhanced learning environments. Additionally, the study contributes to theoretical contributions on the relationship between AI integration and academic achievement, particularly in the context of college English education and other tertiary-level language learning.

1.10 Limitation of the Study

This study has several limitations that may constrain the generalizability and applicability of its findings. First, the research was conducted exclusively at the Hunan University of Information and Technology in Changsha, Hunan Province, with data collected from a single class of first-year students majoring in Visual Communication Design. The results from the present study were limited to this population. Second, the longitudinal nature of the experiment, which spanned 1.5 years across three semesters, introduces potential confounding factors related to students' natural emotional and academic development. Changes in motivation and English academic achievement observed during the period may have been influenced not only by the instructional approaches but also by students' personal growth.

1.11 Definition of Terms

Some of the terms used in this study may carry connotative meanings. To ensure clarity, the following key terms are defined: motivation, conventional instructional approach, blended instructional approach, AI-blended instructional approach, learning management system, automated writing evaluation, automated

speech recognition, AI Doubao, and second-batch university. The following terms have been defined.

1.11.1 Motivation

Motivation refers to students' psychological foundation for English learning, operationalized through goal orientation, self-efficacy, and perceived instructional support. Measurement items were adapted from three well-established instruments: the Motivated Strategies for Learning Questionnaire (Pintrich et al., 1993), the Motivation to Learn Online Questionnaire (Fowler, 2018), and the Academic Self-Efficacy Scale (Byrne et al., 2014). A total of 33 items were employed, comprising 9 items for goal orientation, 16 items for self-efficacy, and 8 items for instructional support. All items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating stronger levels of the respective motivational construct.

1.11.2 Conventional Instructional Approach

The conventional instructional approach, also referred to as traditional or face-to-face instruction, is characterized by a classroom setting where knowledge is primarily transmitted from teacher to student through direct instruction. Such instruction is typically a one-person show with uninvolved learners and is based on the assumption of a fixed body of knowledge that learners must learn (Umida et al., 2020).

Operationally, in this study, the conventional instructional approach refers to a face-to-face "blackboard and talk" teaching, supplemented only by PowerPoint. Instruction is based on traditional materials and teaching designs, emphasizing teacher-led questioning and student responses. Classroom activities include sentence translation, word reading, and dialogue practice, with exercises drawn primarily from textbook content. It is worth mentioning that although it is a conventional instructional