Journal of Contemporary Educational Research, 2025, Volume 9, Issue 5
http://ojs.bbwpublisher.com/index.php/JCER
ISSN Online: 2208-8474
ISSN Print: 2208-8466

The Impact of an AI-Empowered Blended Teaching Model on Chinese EFL Students: A Case Study of Superstar Learning Platform

Ying Yi*

School of Foreign Language Studies, Wenzhou Medical University, Wenzhou 325000, Zhejiang, China

***Corresponding author:** Ying Yi, yiying@wmu.edu.cn

Abstract: While artificial intelligence (AI) shows promise in education, its real-world effectiveness in specific settings like blended English as a Foreign Language (EFL) learning needs closer examination. This study investigated the impact of a blended teaching model incorporating AI tools on the Superstar Learning Platform for Chinese university EFL students. Using a mixed-methods approach, 60 first-year students were randomized into an experimental group (using the AI-enhanced model) and a control group (traditional instruction) for 16 weeks. Data included test scores, learning behaviors (duration, task completion), satisfaction surveys, and interviews. Results showed the experimental group significantly outperformed the control group on post-tests and achieved larger learning gains. These students also demonstrated greater engagement through longer study times and higher task completion rates, and reported significantly higher satisfaction. Interviews confirmed these findings, with students attributing benefits to the model's personalized guidance, structured content presentation (knowledge graphs), immediate responses, flexibility, and varied interaction methods. However, limitations were noted, including areas where the platform's AI could be improved (e.g., for assessing speaking/translation) and ongoing challenges with student self-discipline. The study concludes that this AI-enhanced blended model significantly improved student performance, engagement, and satisfaction in this EFL context. The findings offer practical insights for educators and platform developers, suggesting AI integration holds significant potential while highlighting areas for refinement.

Keywords: AI-empowered blended learning; EFL education; Personalized learning; Learning outcomes; Superstar Learning Platform

Online publication: May 28, 2025

1. Introduction

Artificial intelligence (AI) is increasingly reshaping education globally. This trend highlights the academic community's growing belief in AI's potential to transform teaching methods and improve educational outcomes [1]. Around the world, educational policies and initiatives increasingly emphasize the integration of technologies

like AI to enhance learning experiences [2]. This policy emphasis translates into increased exploration and implementation of technology-enhanced teaching models, notably blended learning [3]. A key motivation for adopting these approaches is the belief that they can encourage more active, autonomous, and personalized learning for students [4].

The Superstar Learning Platform, a widely adopted smart learning system in Chinese higher education, introduced significant AI capabilities around 2024, including its AI Teaching Assistant, Knowledge Graph, and various AI Tools [5]. The Superstar platform incorporates several key AI components to support both teaching and learning activities. The AI Teaching Assistant provides interactive functionalities for both teachers (content management, voice commands) and students (intelligent Q&A, information search, application invocation). A central feature is the Knowledge Graph system, which involves dedicated tools and manuals for constructing and utilizing structured representations of course content. Furthermore, the platform offers a wide array of AI Tools, accessible through an AI Workbench, designed to assist with specific tasks. This set of tools assists with various tasks, including content creation, facilitating student interaction, assessment, learning analytics, and course management.

Despite the increasing adoption and potential advantages of blended teaching models using AI, their practical effectiveness is not yet well understood. Specifically, more empirical evidence is needed on how these models impact student learning outcomes, shape their learning behaviors, and affect their overall learning experiences. Furthermore, as Esakkiammal and Kasturi [6] highlighted, "many artificial intelligence models employ generalized datasets, which might not adequately reflect the many learning environments and student population." Addressing these research gaps is therefore essential.

Therefore, this study introduced and tested a blended teaching model incorporating AI features on the Superstar Learning Platform. The primary goal was to examine how effectively this model could enhance personalized learning for Chinese EFL students. The study focuses on the following research questions:

(1) How does the AI-empowered blended teaching model influence students' learning outcomes, behaviors, and experiences in tertiary EFL education?

(2) What limitations exist in the practical application of the AI-empowered blended teaching model, and how can its functionalities be optimized to better support teaching practices?

2. Literature review

Blended learning (BL), integrating face-to-face instruction with online learning environments, is a well-established pedagogical approach [7,8]. Within English as a Foreign Language (EFL) education, particularly in contexts like China, BL has seen significant adoption and study. Research demonstrates its potential to create efficient learning environments, enhance learner autonomy, and increase satisfaction [9], with specific implementations showing significant improvements in listening and speaking skills compared to traditional methods [10] and yielding higher post-test scores alongside positive student perceptions [11]. Models utilizing frameworks like the Community of Inquiry have also shown success in improving multiliteracies [12]. While generally effective, successful BL implementation faces persistent challenges, including integrating components seamlessly, ensuring adequate technical support, adapting pedagogy, and providing sufficient teacher training [13,14].

Building upon established BL models, the integration of AI represents a significant technological evolution, enhancing the online dimension. AI applications in BL often focus on asynchronous individual learning, where they can serve as mediators for student autonomy or supplementary assistants, leveraging

advanced learning analytics [3]. AI's core strength lies in analyzing learner data using techniques like machine learning [15] to enable unprecedented levels of personalization and adaptive feedback [16]. In the L2/EFL context, this translates into tools powered by natural language processing (NLP), such as automated writing evaluation (AWE) systems [17] and conversational agents, although learner factors remain important [18]. The goal is often to create individualized learning paths responsive to progress [19,20].

This AI-driven personalization resonates with learners [21], and emerging evidence indicates substantial potential benefits. For instance, studies show AI-driven personalized paths and gamification in blended settings significantly improve language acquisition, citing increases such as 25% in vocabulary learning and 30% in reading comprehension [22]. However, deploying these powerful tools introduces critical considerations. Significant ethical concerns around algorithmic bias [23] and data privacy [24] demand attention. Furthermore, successful implementation requires supportive measures, including management backing, enhanced training, reliable infrastructure, and improved internet connectivity [25], alongside thoughtful pedagogical integration aligned with language teaching principles [19] and adequate teacher support [26]. As AI technology advances, particularly generative AI, further research will be crucial to guide effective implementation.

Therefore, while BL provides a robust and demonstrably effective framework in the Chinese EFL context, and AI offers powerful tools for enhancement like personalization, their combined implementation requires careful scrutiny. There is a need for specific investigations into how integrated AI-enhanced BL models function in practice within particular educational contexts, considering potential benefits, student experiences, and inherent challenges. This study addresses this need by examining the impact of one such model, implemented via the Superstar Learning Platform, on the learning experiences and outcomes of Chinese EFL students.

3. Methods

3.1. Participants

The participants in this study were 60 first-year undergraduate students majoring in Clinical Medicine (Class of 2024) at Wenzhou Medical University, China. These students demonstrated a similar level of English proficiency upon entering university, with scores ranging from 120–135 on the National College Entrance Examination (*Gaokao*) English test and 65–75 (out of 100) on their university English placement test. All participants were new to university-level English (EFL) courses and had no prior experience with similar blended learning models. Participants were randomly assigned to either an experimental group (n = 30) or a control group (n = 30). Each group maintained a gender ratio of 8:7 (16 males, 14 females).

3.2. Research design

This study employed a mixed-methods research design, combining experimental research with interviews, to comprehensively evaluate the effectiveness of a university English blended learning model facilitated by the Superstar Learning Platform. Both the experimental and control groups used the New College English (4th Edition) textbook. Instruction comprised four 40-minute class sessions per week over a 16-week period.

3.2.1. Experimental group intervention

The experimental group participated in four weekly class sessions: one online session and three face-to-face sessions. The online session utilized the Superstar Learning Platform for completing preparatory assignments and personalized learning activities. Face-to-face sessions focused on instructor guidance and classroom interaction. The instructional process included:

(1) Pre-class: Instructors uploaded teaching materials (e.g., presentations, videos, exercises) and defined learning objectives on the Superstar Learning Platform. Students used the platform to complete assigned preparatory tasks, while an AI Teaching Assistant (AI TA), drawing on individual student progress and performance, offered personalized resource recommendations to enhance preparation efficiency.

(2) In-class: Instruction integrated teacher explanations with AI TA support, which included various interactions facilitated by AI tools. During text analysis, instructors used the AI platform to pose interactive questions. Students could respond instantly or share opinions using a real-time commenting feature (barrage). The AI TA offered immediate feedback on responses and generated data reports for instructor review. Instructors also utilized the AI TA's group discussion function to facilitate small group discussions on text themes, with the AI TA recording contributions and providing real-time language suggestions.

(3) Post-class: A personalized learning support system combined tasks assigned by both the AI TA and instructors. Based on student performance data, the AI TA automatically generated customized review materials and practice exercises, complete with detailed answer keys and learning advice. Instructors used AI TA-provided learning analytics to monitor student progress, identify areas needing reinforcement, assign targeted supplementary tasks, and dynamically adjust future teaching focus.

3.2.2. Control group intervention

The control group also attended four weekly class sessions, all conducted face-to-face using traditional teaching methods. Instruction covered grammar, vocabulary, reading, and listening skills, primarily through lectures, with students generally in a passive role of receiving information. The instructional process included:

(1) Pre-class: Instructors prepared lesson plans based on the syllabus and textbook, detailing learning objectives, key concepts, anticipated difficulties, and planned activities. Students completed assigned preparatory tasks independently, without the use of any AI tools.

(2) In-class: Classroom activities were predominantly instructor-led, following the textbook sequence. Instructors delivered explanations on grammar, vocabulary, and reading strategies using presentations or the blackboard, supplemented with examples. They guided students through analyzing the structure and language features of reading and listening materials. Limited in-class practice exercises were assigned for individual completion, followed by instructor explanations and Q&A sessions. Interaction primarily involved teacher-posed questions and student responses, with an emphasis on knowledge transmission and content coverage.

(3) Post-class: Students completed homework assigned by the instructor, typically consisting of textbook exercises or writing tasks. Instructors manually graded these assignments, providing detailed written feedback on errors. Common issues identified in the homework were addressed collectively during subsequent class meetings.

In essence, the experimental group's design integrated AI TA capabilities with traditional instruction to foster personalized support and diverse interactions. In contrast, the control group adhered to a conventional pedagogical approach centered on knowledge dissemination and comprehensive content coverage. Comparing these two instructional approaches allows this study to assess the specific impact of the blended learning model incorporating AI on student learning outcomes, behaviors, and overall experience.

3.2.3. Interview design

To gain deeper insights into the specific effects of the AI-empowered blended learning model on learning outcomes, behaviors, and experiences, as well as to gather feedback on potential weaknesses and suggestions for improvement, semi-structured interviews were conducted after the 16-week intervention. Participants included two university English instructors involved in teaching the experimental group and 10 students from the experimental group. The selected students had learning duration, task completion rates, and post-test scores that closely approximated the averages for the entire experimental group, ensuring the representativeness of the interview sample. Interview questions were structured into two main areas: (1) Learning outcomes, behaviors, and experiences, and (2) Model limitations and optimization suggestions, with 3–4 questions tailored for instructor and student perspectives within each area.

3.3. Data collection and analysis

3.3.1. Test scores

Both pre- and post-tests were administered using the Foreign Language Teaching and Research Press (FLTRP) iTest platform question bank, each with a maximum score of 100 points. The pre-test assessed baseline language proficiency (grammar, vocabulary, listening, and reading). The post-test, comprising exercises related to the course textbook, evaluated improvements in learning outcomes following the instructional period. Descriptive statistics and independent samples *t*-tests were employed to analyze differences in test scores between the experimental and control groups.

3.3.2. Learning duration and task completion rate

Data were gathered throughout the experimental period. For the experimental group, learning duration and task completion rates were automatically logged by the Superstar Learning Platform. For the control group, learning duration was compiled from student self-reported records of time spent on homework, while task completion rates were manually tracked by the instructors.

3.3.3. Questionnaire survey

A questionnaire was developed drawing upon Astin's Student Involvement Theory, the Technology Acceptance Model (TAM), and established instruments like the Student Learning Experience Questionnaire (SLEQ), adapted for the study's specific context. The instrument exhibited good content validity and reliability (Cronbach's $\alpha = 0.87$) [27–29]. The survey gathered student perspectives on the teaching model's effectiveness and their learning experiences, measuring constructs including learning interest, satisfaction with resources, classroom participation, perceived learning support, and overall satisfaction.

3.3.4. Interview data

Interviews were audio-recorded and transcribed verbatim. The textual data were analyzed using thematic analysis. Key ideas and viewpoints were extracted and coded, then organized into themes reflecting the core research questions (i.e., application effectiveness, learning behaviors and experiences, model shortcomings, and optimization suggestions). Within each theme, primary perspectives from both instructors and students were summarized, highlighting illustrative examples and concrete recommendations to ensure the findings were representative and logically structured.

4. Results

This section presents the findings from the quantitative (test scores, learning behaviors, satisfaction survey) and qualitative (interviews) data analyses comparing the blended learning group with AI support (experimental) and the traditional teaching group (control).

4.1. Comparative analysis of student learning outcomes

4.1.1. Descriptive statistics

Based on **Tables 1** and **2**, the pre-test mean scores for the experimental and control groups were 69.67 (SD = 3.527) and 69.37 (SD = 3.000), respectively. This indicates that the initial proficiency levels of the two groups were comparable, indicating that the groups were comparable at the outset. Post-test mean scores showed the experimental group (M = 82.53) performed significantly better than the control group (M = 72.57). Furthermore, the mean gain for the experimental group (12.86 points) was substantially greater than that of the control group (3.20 points). Additionally, both the minimum (80) and maximum (85) post-test scores in the experimental group exceeded those in the control group (Min = 70, Max = 75), suggesting widespread improvement within the experimental group.

Table 1. Experimental group pre- and post-test descriptive statistics

	n	Min	Max	Mean	Standard deviation
Pre-test score	30	65	75	69.67	3.527
Post-test score	30	80	85	82.53	1.833

Table 2. Control group pre- and post-test descriptive statistics

	n	Min	Max	Mean	Standard deviation
Pre-test score	30	65	75	69.37	3.000
Post-test score	30	70	75	72.57	1.716

4.1.2. Paired samples *t*-test

As shown in **Tables 3** and **4**, the mean difference between pre- and post-test scores for the experimental group was 12.867, $t(29) = 17.050$, $P < 0.001$, indicating a highly statistically significant improvement in scores. For the control group, the mean difference was 3.200, $t(29) = 4.969$, $P < 0.001$. While both groups showed statistically significant improvement, the magnitude of the gain was substantially smaller in the control group compared to the experimental group.

Table 3. Experimental group pre- and post-test paired samples *t*-test

		Mean difference	SD	SE mean	95% CI lower	95% CI upper	*t*	*df*	Significance (2-tailed)
Exp.	Post-test - Pre-test	12.867	4.133	0.755	11.323	14.410	17.050	29	0.000

Table 4. Control group pre- and post-test paired samples *t*-test

		Mean difference	SD	SE mean	95% CI lower	95% CI upper	*t*	*df*	Significance (2-tailed)
Ctrl.	Post-test - Pre-test	3.200	3.527	0.644	1.883	4.517	4.969	29	0.000

4.1.3. Post-test scores and independent samples *t*-test

An independent samples *t*-test was conducted to compare the post-test scores between the two groups (**Table 5**). The results indicated that the experimental group's mean post-test score (M = 82.53, SD = 1.833) was significantly higher than the control group's (M = 72.57, SD = 1.716), $t(58) = 21.741$, $P < 0.001$. The relatively small standard deviations in both groups suggest that scores were clustered closely around their respective means, suggesting a consistent performance gap favoring the experimental group.

Table 5. Group statistics for post-test scores

	Group	*n*	Mean	Standard deviation	Standard error mean
Post-test score	Exp.	30	82.53	1.833	0.335
	Ctrl.	30	72.57	1.716	0.313

4.2. Comparative analysis of student learning behaviors

Independent samples *t*-tests revealed significant differences in learning behaviors between the groups (**Table 6**). The average learning duration for the experimental group (M = 30.27, SD = 1.721) was significantly higher than the control group's (M = 22.27, SD = 1.639), $t(58) = 18.441$, $P < 0.001$. Similarly, the average task completion rate for the experimental group (M = 92.17, SD = 1.724) was significantly higher than the control group's (M = 82.63, SD = 1.866), $t(58) = 20.556$, $P < 0.001$. The data distributions for both groups were relatively concentrated (indicated by small standard deviations), with the experimental group demonstrating higher learning engagement in terms of both time spent and tasks completed.

Table 6. Descriptive statistics for learning duration and task completion rate

	Group	*n*	Mean	Standard deviation	Standard error mean
Learning duration (hours)	Exp.	30	30.27	1.721	0.299
	Ctrl.	30	22.27	1.639	0.314
Task completion rate (%)	Exp.	30	92.17	1.724	0.315
	Ctrl.	30	82.63	1.866	0.341

4.3. Comparative analysis of student learning experiences

An independent samples *t*-test compared student satisfaction scores, measured via questionnaire, between the groups (**Table 7**). The results showed that the mean satisfaction score for the experimental group (M = 4.43, SD = 0.504) was significantly higher than that of the control group (M = 3.47, SD = 0.507), $t(58) = 7.403$, $P < 0.001$. This indicates greater student satisfaction with the AI-enhanced blended teaching model. The similar standard deviations and small standard errors suggest relatively consistent satisfaction levels within each group and precise mean estimates.

Table 7. Group statistics for student satisfaction

	Group	*n*	Mean	Standard deviation	Standard error mean
Satisfaction	Exp.	30	4.43	0.504	0.092
	Ctrl.	30	3.47	0.507	0.093

4.4. Analysis of interview results

Semi-structured interviews with 10 students (S1 to S10) and two instructors (T1 and T2) from the experimental group provided qualitative insights into the model's impact and areas for improvement.

4.4.1. Impact of the AI-empowered blended teaching model on student learning outcomes, behaviors, and experiences

Interviewees linked improved learning outcomes to the model's precise feedback and personalized support. The knowledge graph was frequently cited as helpful for grasping concepts efficiently, particularly in writing, reading, and grammar. S1 stated, "*The AI feedback highlights the types of grammatical errors in my essays, provides explanatory examples, and pushes relevant practice exercises, which have been very effective for my error correction.*" S2 noted, "*The skill points structured in the knowledge graph are very useful. When I encounter a difficult sentence during translation, I check the knowledge graph and can easily find relevant information.*" Teachers valued the data-driven insights: T1 explained, "*The AI generates learning reports for each student. This clearly shows me common problems across the class, requiring pedagogical adjustments, as well as individual difficulties where targeted help is needed.*"

In terms of learning behaviors, instant feedback and reminders were seen as key drivers for improved self-management. S3 commented, "*Right after finishing exercises, I know immediately what I got wrong...so I can revisit that point for consolidation.*" S4 found the reminders helpful: "*The platform regularly reminds me to complete assignments...otherwise, I easily forget.*" Teachers observed increased motivation and participation, particularly through diverse interaction methods. T2 remarked, "*Some students are shy... However, they are very active using the platform's real-time commenting feature (barrage), and I can sense their learning engagement has increased.*"

Concerning the learning experience, flexibility and personalized interaction were highly valued. S5 appreciated the control over learning pace: "*The traditional classroom has a fixed learning pace, but with the online component, I can control my own time and progress. This is especially helpful when I have scheduling conflicts with school activities, allowing me to flexibly arrange my studies.*" S6 contrasted the richer interactions with previous experiences: "*Previously...peer interaction was quite monotonous...But the Superstar Learning Platform offers many interaction methods, like barrage comments and gamified quizzes, which are fun...*"

4.4.2. Limitations of the AI-empowered blended teaching model and suggestions for optimization

Limitations primarily involved platform functionality and AI capabilities. Students desired features currently unavailable, such as real-time AI feedback for speaking (S7: "*The platform lacks the real-time AI feedback for speaking practice...forcing me to use other applications.*") and automated grading for translation (S8: "*Translation feedback...relies on the teacher grading it...less efficient than getting direct feedback...*"). The AI TA's recommendations were sometimes perceived as lacking precision or prioritization (S9: "*The AI TA pushes many learning tasks, sometimes all at once...priority sorting...would be much better.*").

Teachers noted challenges with student self-discipline (T1: "*Despite repeated reminders, some students still fail to complete assignments on time...*"). Both students and teachers felt the platform's AI, while helpful, was "less intelligent" than contemporary generative AI tools like ChatGPT, particularly in the nuance of its recommendations.

An interpersonal concern was also raised (S3: "*With the AI TA, I feel the distance between me and the teacher has increased...*"). Teachers acknowledged the potential additional workload for managing less self-

directed students offline (T1: "*For students with weaker self-discipline...I still need to find extra time offline to talk with them.*").

Key optimization suggestions derived from the interviews include:

(1) Implementing learning checklists and progress visualization tools.

(2) Developing mock testing functions for international exams.

(3) Creating intelligent assessment tools for speaking and translation with real-time feedback.

5. Discussion

This study investigated the impact of an AI-enhanced blended teaching model, facilitated by the Superstar Learning Platform, on the learning outcomes, behaviors, and experiences of Chinese university EFL students. The findings provide empirical support for the model's effectiveness while also highlighting areas needing refinement.

5.1. Interpretation of findings in relation to existing literature

The significantly higher post-test scores achieved by the experimental group align with previous research demonstrating the effectiveness of blended learning in EFL contexts [9,11]. The substantial learning gain observed suggests an added benefit from integrating AI. Specifically, the qualitative data suggest that the AI TA's personalized feedback and resource recommendations, particularly through features like the knowledge graph and targeted exercises (as described by S1 and S2), were key contributors. This aligns with the theoretical view that AI can deliver personalized learning paths and adaptive feedback, as highlighted in the literature [16,19,20]. The observed improvements resonate with studies like Wu *et al.* [22], which reported significant gains in language acquisition through AI-driven personalized approaches in blended settings.

The increased learning duration and task completion rates in the experimental group indicate higher learning engagement, consistent with Astin's [27] Student Involvement Theory, which posits that greater involvement leads to better outcomes. The AI features, such as instant feedback (S3) and automated reminders (S4), likely fostered greater self-regulation and sustained effort, supporting the idea that AI can act as a mediator for student autonomy in blended environments [30]. The enhanced classroom participation noted by T2, facilitated by features like barrage commenting, suggests the model also improves social presence, a key component of effective online and blended learning within frameworks like the Community of Inquiry [8].

The significantly higher satisfaction scores in the experimental group suggest a positive reception of this particular teaching model. This aligns with the Technology Acceptance Model (TAM), where perceived usefulness (effectiveness in learning, personalized support) and perceived ease of use (flexibility, engaging interactions described by S5 and S6) likely contributed to positive attitudes and acceptance [28]. The finding also echoes Le Quang's [21] observation that AI-driven personalization resonates positively with learners.

5.2. Limitations of the implemented model and optimization needs

Despite the overall positive results, the interviews revealed specific limitations with the Superstar Learning Platform's current AI capabilities, reflecting broader challenges in AI educational tool development. The lack of sophisticated AI feedback for productive skills like speaking and translation (S7, S8) points to ongoing challenges in developing robust NLP capabilities for complex language assessment [17]. The perception that the AI was "less intelligent" than commercial generative AI highlights the rapid pace of AI technology and user expectations; educational platforms may struggle to keep pace with cutting-edge developments.

The persistent issue of student self-discipline (T1) reinforces that technology alone cannot overcome fundamental challenges in learner motivation and time management, a known difficulty in less structured blended learning environments [13,14]. Furthermore, the student's comment about increased distance from the teacher (S3) and the teacher's note on additional workload (T1) highlight the critical need to balance technological integration with human interaction and adequate support systems. This echoes concerns about maintaining social presence [8] and the necessity of teacher training and support for successful technology implementation [25,26].

5.3. Implications

The findings offer several practical and theoretical implications. For practitioners (educators and institutions), this study provides evidence that AI-supported blended learning like that implemented here can significantly benefit EFL learning, particularly through personalization and enhanced engagement. However, successful implementation requires careful consideration of platform features, student self-regulation support, and maintaining a strong teacher presence. The optimization suggestions (learning checklists, progress visualization, mock tests, enhanced AI assessment for speaking/translation) provide concrete directions for improving practice. For platform developers (like Chaoxing), the feedback highlights the need to enhance AI capabilities, particularly for productive skills, refine recommendation algorithms, and integrate features that support student planning and self-monitoring. Incorporating more advanced generative AI features while addressing ethical concerns [23,24] could also improve user experience.

Theoretically, the study reinforces the applicability of frameworks like TAM and Student Involvement Theory in understanding student responses to AI-enhanced learning environments. It also reveals a complex interplay between the AI features used (personalization, feedback), student behaviors (engagement, self-regulation), and their learning experiences (satisfaction, interaction, teacher connection) within a specific blended learning context.

5.4. Limitations of the study

This study has several limitations. First, the sample size was relatively small (n = 60) and drawn from a specific context (first-year clinical medicine majors at one Chinese university), which may limit the generalizability of the findings. Second, the 16-week duration may not be sufficient to capture the long-term effects of the model. Third, the study focused on the Superstar Learning Platform; results might differ with other platforms possessing different AI capabilities. Fourth, while efforts were made to ensure group comparability, subtle pre-existing differences could have influenced outcomes. Finally, the control group's learning duration relied on self-report, which may be less accurate than the platform-logged data for the experimental group.

5.5. Suggestions for future research

Future research should address these limitations. Larger-scale studies involving diverse student populations (different majors, proficiency levels, universities) are needed to validate the model's effectiveness more broadly. Longitudinal studies could track the long-term impact on learning habits, skills development, and student motivation. Comparative studies evaluating different AI platforms or specific AI features (e.g., comparing different types of feedback mechanisms) would also be valuable. Research exploring pedagogical strategies to enhance student self-discipline within AI-integrated blended learning settings is crucial. Finally, investigating the integration and impact of advanced generative AI tools within educational platforms represents a significant

and timely area for future inquiry.

6. Conclusion

This study investigated the effectiveness of an AI-empowered blended teaching model implemented via the Superstar Learning Platform within a Chinese university EFL context. By employing a mixed-methods approach, the research demonstrated that compared to traditional instruction, this model significantly enhanced students' academic performance (test scores), learning engagement (duration and task completion), and overall satisfaction. Qualitative data attributed these benefits primarily to the AI's capacity for personalized feedback, resource recommendation, flexible scheduling, and diverse interaction modes.

Despite these advantages, the study also identified functional limitations of the current platform, challenges related to student self-discipline, and the ongoing need to balance technological tools with human pedagogical guidance and connection. The findings provide valuable empirical evidence supporting the potential of AI to innovate EFL teaching practices within blended learning frameworks, while also offering concrete suggestions for optimizing such models. This research contributes to the understanding of AI's role in education and offers practical insights for educators, institutions, and technology developers striving to create more effective and engaging learning experiences in the digital age.

Acknowledgments

The author gratefully acknowledges the support and assistance of Chen Dandan, Zhuge Wenchan, and Jin Fanfan, members of the teaching team, during the implementation phase of the project's teaching activities. The author also sincerely thanks all the students in both the experimental and control groups for their cooperation and participation in this study.

Funding

This research was supported by the 2024 "Special Research Project on the Application of Artificial Intelligence in Empowering Teaching and Education" of Zhejiang Province Association of Higher Education (KT2024165).

Disclosure statement

The author declares no conflict of interest.

References

[1] Yu JH, Chauhan D, Iqbal RA, et al., 2024, Mapping Academic Perspectives on AI in Education: Trends, Challenges, and Sentiments in Educational Research (2018–2024). Educational Technology Research and Development, 73(1): 199–227.

[2] UNESCO, 2021, AI and Education: Guidance for Policy-Makers, UNESCO, France.

[3] Park Y, Doo MY, 2024, Role of AI in Blended Learning: A Systematic Literature Review. International Review of Research in Open and Distributed Learning, 25(1): 164–196.

[4] Castro GPB, Chiappe A, Ramírez-Montoya MS, et al., 2025, Key Barriers to Personalized Learning in Times of

Artificial Intelligence: A Literature Review. Applied Sciences-Basel, 15(6): 3103.

[5] Chaoxing, n.d., Superstar Fanya Platform, AI Teaching Assistant, and Knowledge Graph User Manual, viewed May 1, 2025, https://mooc1.chaoxing.com/course/243627456.html?edit=false&knowledgeId=undefined&module=2&v=1746089644461#content

[6] Esakkiammal S, Kasturi K, 2024, Advancing Educational Outcomes with Artificial Intelligence: Challenges, Opportunities, and Future Directions. International Journal of Computational and Experimental Science and Engineering, 10(4): 799.

[7] Graham C, 2006, Blended Learning Systems: Definition, Current Trends, and Future Directions, Handbook of Blended Learning: Global Perspectives, Local Designs, Pfeiffer Publishing, San Francisco, CA, 3–21.

[8] Garrison DR, Kanuka H, 2004, Blended Learning: Uncovering its Transformative Potential in Higher Education. The Internet and Higher Education, 7(2): 95–105.

[9] Wang N, Chen J, Tai M, et al., 2019, Blended Learning for Chinese University EFL Learners: Learning Environment and Learner Perceptions. Computer Assisted Language Learning, 34: 297–323.

[10] Cui G, 2014, An Experimental Research on Blended Learning in the Development of Listening and Speaking Skills in China. Southern African Linguistics and Applied Language Studies, 32: 447–460.

[11] Sun Z, Qiu X, 2017, Developing a Blended Learning Model in an EFL Class. International Journal of Continuing Engineering Education and Life-Long Learning, 27: 4.

[12] Zhang D, Zou Y, 2020, Fostering Multiliteracies Through Blended EFL Learning. International Journal of Linguistics, Literature and Translation, 3: 40–48.

[13] Alsaleem B, 2021, The Effect of Blended Learning on EFL Jordanian Tenth Grade Students' Oral Skills and Teachers' and Students' Perceptions of Its Utility and Their Suggestions for Improvement, dissertation, The World Islamic Sciences and Education University.

[14] Nusong K, Watanapokakul S, 2025, Evaluating the Effectiveness of Blended Learning in an EFL Undergraduate Classroom. LEARN Journal: Language Education and Acquisition Research Network, 18: 320–351.

[15] Rahmani A, Azhir E, Ali S, et al., 2021, Artificial Intelligence Approaches and Mechanisms for Big Data Analytics: A Systematic Study. PeerJ Computer Science, 7: e488.

[16] Hubballi R, Selvakumar P, Seenivasan R, et al., 2025, Overview of Current AI Technologies in Education, in Lydia Kyei-Blankson L, Ntuli E, (eds.), Transformative AI Practices for Personalized Learning Strategies, IGI Global, Hershey, PA, 1–26.

[17] Lim K, Song J, Park J, 2022, Neural Automated Writing Evaluation for Korean L2 Writing. Natural Language Engineering, 29: 1–23.

[18] Gholami A, Ahmadi S, 2025, Chatbots and Speaking Performance of EFL Learners with High and Low Levels of Learning Adaptability: Effects and Percepts. Journal of Modern Research in English Language Studies, 12(3): 179–212.

[19] Katonane Gyonyoru I, 2025, Adaptive Learning Systems and Artificial Intelligence in Language Learning. Gradus, 2025: 12.

[20] Sun H, Tan J, Lim M, 2025, AI and Early Language Learning: A Scoping Review. AI, Brain and Child, 1: 4.

[21] Le Quang D, 2025, From Generalization to Personalization: Designing a Personalized ESP Teaching Model in a Vietnamese Private University Context. Social Science and Humanities Journal, 9: 7498–7510.

[22] Wu Z, Halim H, Saad M, 2024, Artificial Intelligence (AI) and Gamification in Blended Learning: Enhancing Language and Literacy in Shanxi, China. Malaysian Journal of Social Sciences and Humanities (MJSSH), 9: e003159.

[23] Baker R, Hawn A, 2021, Algorithmic Bias in Education. International Journal of Artificial Intelligence in Education, 2021: 32.

[24] Amola M, 2025, Federated Learning in Data Management: Privacy-Preserving AI for Distributed Data Processing. https://www.researchgate.net/publication/389432875_Federated_Learning_in_Data_Management_Privacy-Preserving_AI_for_Distributed_Data_Processing

[25] Sanders DA, Mukhari SS, 2024, Lecturers' Perceptions of the Influence of AI on a Blended Learning Approach in a South African Higher Education Institution. Discover Education, 3: 135.

[26] Vivekanantharasa R, 2025, The Role of Artificial Intelligence (AI) in Professional Development of Teacher Educators—Opportunities and Challenges. V Traditional International Scientific and Practical Online Conference, Tashkent, Uzbekistan, 46–53.

[27] Astin AW, 1999, Student Involvement: A Developmental Theory for Higher Education. Journal of College Student Personnel, 25: 297–308.

[28] Venkatesh V, Davis FD, 2000, A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. Management Science, 46: 186–204.

[29] Gligorea I, Cioca M, Oancea R, et al., 2023, Adaptive Learning Using Artificial Intelligence in e-Learning: A Literature Review. Education Sciences, 13(12): 1216.

[30] Park YJ, Doo MY, 2024, Role of AI in Blended Learning: A Systematic Literature Review. The International Review of Research in Open and Distributed Learning, 25(1): 164–196.