

English Learning Engagement of Non-English Majors under the Background of Digital Empowerment: An Empirical Analysis Based on Questionnaire Survey

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ABSTRACT

This study investigates the English learning engagement of non-English major undergraduates in the context of digital empowerment, taking 111 students from a local university as the research sample. Using a questionnaire survey, the study examines the overall status of learning engagement and the influence of digital factors. The results indicate that students' English learning engagement is generally at a moderately high level ($M = 3.78/5$), with emotional engagement ranking highest, followed by behavioral engagement, while cognitive engagement is relatively weak. The vast majority of students utilize school online platforms, English learning apps, and AI tools, perceiving that digital technologies effectively enhance their learning interest and comprehension depth. AI tools and blended teaching show positive effects on learning motivation and perceived control over learning; however, learners' autonomy and awareness of deep learning still require further development. Based on these findings, this study proposes recommendations for instructional design, student learning strategies, and university digital support systems.

KEYWORDS

Digital empowerment; Learning engagement; Non-English majors; College English teaching; AI tools

1 Introduction

Against the background of the ongoing implementation of educational digitalization strategies, technologies such as artificial intelligence (AI), big data, and learning analytics have gradually been integrated into foreign language teaching in higher education. This integration has led to profound changes in teaching models, learning approaches, and the roles of learners. Learning engagement, as a critical factor influencing learning outcomes, has received increasing attention in the field of foreign language education. With the comprehensive implementation of the Educational Digitalization Strategy, higher education is entering a new stage characterized by data-driven and intelligence-supported practices. This transformation is particularly evident in foreign language education, where intelligent learning platforms, AI-assisted oral assessment systems (e.g. ChatGPT), and smart teaching platforms (e.g. Rain Classroom, Chaoxing Learning Platform) are widely applied in college English courses.

Teaching practices have gradually shifted from a teacher-centered to a learner-centered approach, rendering students' learning processes more open, autonomous, and traceable. In this context, learning engagement has emerged as an important indicator for evaluating teaching effectiveness. It not only reflects students' participation in classroom activities but also indicates their self-regulation and depth of learning in a digitalized environment. Extensive research has shown that high levels of learning engagement can significantly enhance learning outcomes, motivation, and satisfaction^[1]. Nevertheless, among non-English majors, challenges remain, including insufficient learning motivation, uneven use of digital resources, and relatively weak deep processing abilities. Therefore, it is necessary to systematically examine the current status of English learning engagement among non-English major undergraduates in the context of digital empowerment.

This study attempts to integrate the theory of learning engagement with the concept of digitally empowered education. It constructs an analytical framework from behavioral, emotional, and cognitive dimensions to explore the mechanisms through which AI and blended teaching influence learning engagement. Through an empirical survey, the study aims to identify the learning characteristics and challenges of non-English majors in a digitalized learning environment, thereby providing empirical support for college English curriculum reform, the design of digital learning platforms, and AI-assisted instructional practices.

2 Literature Review

This part focuses on the theoretical development of learning engagement and relevant study on digital empowerment

in education and learning engagement.

2.1 Theoretical Development of Learning Engagement

The concept of learning engagement was first proposed by Astin^[2], who emphasized the time and effort students invest in learning activities. Later, Fredricks, Blumenfeld, and Paris^[1] refined this concept into a three-dimensional framework: behavioral engagement, emotional engagement, and cognitive engagement. Behavioral engagement refers to learners' participation in classroom activities, completion of assignments, and overall effort in learning tasks. Emotional engagement denotes learners' affective responses to course content, instructors, and learning experiences, including interest, sense of belonging, and satisfaction. Cognitive engagement involves learners' deep learning strategies, self-reflection, and problem-solving capabilities. This three-dimensional model has been widely applied in educational research and is considered a critical framework for evaluating learning quality. In recent years, scholars have begun to introduce this model into the field of foreign language learning to examine the relationships among learning motivation, classroom interaction, and digital learning behaviors.

2.2 Digital Empowerment in Education and Learning Engagement

In the era of Education Informatization 2.0, digital empowerment has become a core driver of pedagogical transformation. International research indicates that information technologies can enhance learning engagement by increasing interaction and providing personalized feedback^[3]. Deng and Tavares^[4] found that online learning communities, such as Moodle and Facebook groups, can stimulate students' sustained learning motivation.

Domestic scholars have also focused on the interplay between smart classrooms and learning engagement. For instance, Guo Xiaorong, An Hongyu, and Gong Shaoying^[5] found that digital leisure motivation negatively predicts online learning engagement through self-depletion, while future time perspective mitigates the adverse effects of digital leisure motivation and self-depletion on engagement. Leslie Gure, Christina Campbell, and Lauren Clark^[6] emphasized that care and ethical consideration should be regarded as central to the development of digital education and the promotion of student learning engagement practices, especially in the post-COVID-19 context, providing implications for theory, research, policy, and practice. Hui Lianghong and Wang Boran^[7] reported that: (1) Chinese university students exhibit high levels of digital native characteristics; (2) students' engagement in online English learning is moderately high; (3) growing up with technology does not significantly affect online English learning engagement, while multitasking negatively affects engagement, and reliance on visual communication and the pursuit of instant gratification positively influence engagement. These findings informed recommendations for online English teaching and directions for future research.

Existing studies mainly focus on English majors or purely online learning contexts, with limited systematic empirical analysis of non-English majors' engagement in blended learning environments. This study addresses this gap by integrating the three-dimensional model of learning engagement with the perspective of digital empowerment, exploring the effects of AI tools and blended teaching on students' English learning engagement, and thus contributing novel insights to both theory and practice.

3 Research Design

Based on the research aim, this part introduces the participants, research instruments and data collection and analysis.

3.1 Participants

The participants of this study were 111 non-English major undergraduates enrolled at a local applied university in Hunan Province. Among the participants, 82 were male, accounting for 73.87% of the sample, while 29 were female, accounting for 26.13%. The overwhelming majority of the participants were first-year students ($n = 110$, 99.1%), with only a single third-year student (0.9%). This sample distribution reflects the demographic composition of the university's non-English major population, with first-year students forming the largest cohort due to the university's program enrollment structure. The gender and year-level composition were recorded to provide context for interpreting potential variations in learning engagement patterns across different student groups.

3.2 Research Instruments

The research instrument employed in this study was a structured questionnaire consisting of 17 items in total. Fifteen items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), while the

remaining two items were open-ended questions designed to capture qualitative insights into students' experiences and perceptions. The questionnaire was designed to assess three dimensions of learning engagement: behavioral engagement, emotional engagement, and cognitive engagement. Behavioral engagement focused on students' participation in classroom activities, completion of assignments, and general effort in learning tasks. Emotional engagement examined students' affective responses, such as interest, motivation, and satisfaction, while cognitive engagement assessed deeper learning processes, including self-reflection, problem-solving, and strategic learning. To ensure the validity and appropriateness of the instrument, the questionnaire was reviewed and revised by two experts in foreign language education, incorporating their suggestions to improve clarity and content relevance. The reliability of the scale was verified using Cronbach's α , which yielded a coefficient of 0.89, indicating high internal consistency and confirming that the instrument was suitable for measuring learning engagement in this context.

3.3 Data Collection and Analysis

Data were collected through the Wenjuanxing online survey platform, which enabled efficient distribution and management of the questionnaire. A total of 111 valid responses were obtained, representing the full sample of participants. The collected data were subsequently analyzed using SPSS 26.0, employing descriptive statistical methods to provide an overview of the participants' responses. Analyses included calculation of means, standard deviations, and frequency distributions for all quantitative items. The descriptive statistics provided a foundational understanding of the overall trends and patterns in students' learning engagement, while the open-ended responses offered additional qualitative insights to complement and contextualize the quantitative findings. This combination of quantitative and qualitative data allowed for a more comprehensive assessment of non-English major undergraduates' engagement in English learning under the context of digital empowerment.

4 Results and Analysis

According to the collected questionnaire, this part introduces the results, based on which, the author demonstrates the analysis.

4.1 Usage of Digital Learning Tools

The survey results indicate that non-English major undergraduates extensively utilize various digital learning tools in their English studies. Specifically, 87.39% of students reported using school-provided online learning platforms, such as Rain Classroom and Chaoxing Learning Platform. These platforms offer functionalities including course material browsing, assignment submission, online quizzes, and classroom interaction, greatly facilitating students' full-process management of pre-class preparation, in-class learning, and post-class review.

Meanwhile, 75.68% of students reported using English learning apps, such as Baicizhan and Shanbay English. These apps typically provide vocabulary memorization, oral practice, listening exercises, and adaptive testing, helping students maintain sustained and autonomous learning outside the classroom. In addition, 74.77% of students used AI-assisted tools, such as ChatGPT and Kimi, which demonstrated clear advantages in grammar analysis, vocabulary comprehension, writing revision, and oral communication practice. This indicates that AI tools are increasingly becoming an important supplementary resource in English learning, providing personalized, real-time, and intelligent support.

Notably, only 1.8% of students reported not using any digital learning resources, a very low proportion, suggesting that digital learning has become widespread among non-English majors and constitutes a significant part of their English learning activities. Overall, the extensive use of digital tools not only enriches students' learning methods but also partially transforms the traditional teacher-centered classroom model, promoting a shift toward more autonomous, personalized, and flexible learning approaches.

4.2 Overall Level of Learning Engagement

The overall mean score of students' English learning engagement was 3.78 (on a 5-point scale), indicating a moderately high level. This suggests that most students demonstrate a certain degree of initiative and active participation in English learning. Behavioral engagement had a mean score of 3.76, indicating that students generally complete assignments on time, actively participate in classroom interactions, and demonstrate responsibility and diligence in their learning process. This reflects a relatively high level of daily learning participation among non-English majors, as well as good adherence to study habits within the framework of teacher guidance and course requirements.

Cognitive engagement had a slightly lower mean score of 3.67, suggesting that students' performance in deep

learning, critical thinking, and self-reflection is relatively average. This implies that while students participate in various learning activities, they still exhibit limitations in knowledge processing and in-depth understanding. Emotional engagement scored highest at 3.79, showing that students possess strong interest in and satisfaction with English learning, maintaining positive emotions and intrinsic motivation during the learning process.

Overall, although behavioral and emotional engagement are relatively high, cognitive engagement remains comparatively weak. This may be related to the convenience of digital learning tools, which lower the threshold for learning and may encourage students to remain at a surface-level understanding without engaging in deep processing and reflection. Therefore, it is essential for teachers to design instructional tasks that guide students toward a “deep learning path,” shifting the focus from passive knowledge reception to active knowledge construction and autonomous exploration.

4.3 The Impact of Digital Empowerment on Learning Engagement

Analysis of the questionnaire data indicates that digital empowerment has a significant impact on non-English majors' learning engagement. First, AI tools show a particularly strong effect on cognitive engagement. For the item “AI tools help me better understand grammar or vocabulary,” the mean score reached 4.07, the highest among all survey items. This indicates that AI tools provide clear advantages in knowledge comprehension, real-time feedback, and personalized learning, enabling students to complete learning tasks more efficiently and accurately. Through AI assistance, students can promptly correct errors, reinforce knowledge internalization, and improve self-monitoring and autonomous learning capabilities to a certain extent.

Second, blended teaching positively influences students' perceived control over learning. Students rated the blended teaching model with an average score of 3.72, indicating that this approach enhances learning flexibility and autonomy. In a blended learning environment, students can select learning content and methods according to their own pace, and the complementarity of in-class and online resources allows them to better manage the learning process. Such autonomy further stimulates learning interest and motivation.

Finally, students demonstrate strong willingness to accept digital technologies. Most participants indicated that they would engage more actively if courses incorporated more digital tools, with an average score of 3.79. This suggests that students not only recognize the supportive value of digital technologies but are also willing to explore and adopt new learning methods, laying the foundation for the broader promotion of digitalized teaching models in the future.

In summary, digital empowerment enhances students' behavioral and emotional engagement and partially improves cognitive engagement. However, deep learning still requires further guidance through instructional strategies and carefully designed tasks.

5 Conclusion and Recommendation

This part concludes on the basis of the above questionnaire results and analysis, and also offers recommendation to instructors, students and institutions.

5.1 Conclusions

Based on the analysis of questionnaire data, this study draws the following conclusions. Firstly, non-English major undergraduates demonstrate generally good English learning engagement under the context of digital empowerment ($M = 3.78$), with emotional engagement ranking highest and cognitive engagement relatively weak. This suggests that while students show strong interest and active participation in classroom activities, there remains room for improvement in deep knowledge construction and reflective learning. Secondly, AI tools and blended teaching have significant positive effects on students' learning interest, autonomy, and satisfaction, contributing to enhanced knowledge comprehension, task completion, and learning feedback. Thirdly, although digital learning environments improve students' participation and convenience, they do not automatically foster deep learning abilities. Therefore, in a digitally empowered context, guiding students from surface-level engagement to deep cognitive processing remains a critical challenge for instructors and educational administrators.

5.2 Teaching Recommendations

Based on the above conclusions, teaching improvement strategies can be proposed at three levels: instructor, student, and institution.

As for instructors, they can integrate AI-assisted teaching and online resources into classroom instruction

appropriately, avoid purely tool-based use and ensure alignment between digital tools and learning objectives. They can employ formative assessment mechanisms to provide timely feedback on students' learning progress and strengthen self-monitoring abilities. In addition, they can encourage students to engage in collaborative and inquiry-based learning on digital platforms through group discussions, online assignments, and project-based tasks, fostering autonomous learning and problem-solving skills.

As for students, they should actively develop digital literacy and make effective use of AI tools and online resources to enhance learning efficiency and autonomy, strengthen reflective learning, focus on transferring and applying language knowledge, and avoid staying at the level of rote memorization or superficial task completion. They should also establish clear learning goals and plans to promote deep processing and critical thinking throughout the learning process.

As for institutions, they should build intelligent learning support systems to provide data analysis and personalized recommendations for both students and teachers, offer professional development training for instructors to enhance AI literacy and digital teaching competencies, so as to promote instructional innovation. At the same time, they should optimize the learning environment and resource allocation to ensure that digital technologies effectively support teaching objectives and improve overall teaching quality.

5.3 Research Limitations and Future Directions

The study sample primarily consisted of first-year undergraduates, and the generalizability of the findings requires verification across different grade levels, disciplines, and institutions. Furthermore, the cross-sectional survey design used in this study did not capture the dynamic nature of learning engagement over time. Future research could expand the sample size and adopt longitudinal or mixed approaches to further investigate the dynamic relationships among digital empowerment, learning motivation, and learning outcomes. Special attention could be given to the development of deep learning capabilities and their influencing factors, providing empirically grounded strategies and policy recommendations to support English learning among non-English major undergraduates.

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