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The Application of Social Media in Collaborative Learning in Higher Education: A Systematic Literature Review

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Abstract: With the rapid development of digital technology, social media has become an important tool for collaborative learning in higher education. Based on the theory of social constructivism, this paper systematically reviews the empirical studies on social media for collaborative learning at home and abroad between 2017 and 2024, aiming to sort out its application scenarios, realization mechanisms and educational effects. Through screening and analyzing documents in Google Scholar and Scopus databases, the study found that social media can significantly enhance students' learning participation, cooperation ability and knowledge construction through instant interaction, resource sharing and community construction. However, the actual effectiveness of collaborative learning varies across platforms, course types, and educational cultures, and some studies have pointed out the challenges of "silent participation" and "flood of information". This paper suggests that colleges and universities should scientifically integrate the functions of social media in their instructional design, improve the digital literacy of teachers and students, and build an organized collaborative learning environment. Future research can further explore the different mechanisms of different social media types and conduct longitudinal tracking studies with learning behaviour data.

Keywords: Collaborative learning, Higher education, Literature review, Social constructivism, Social media

1. Introduction

With the rapid development of digital technology and network communication, social media has become an important tool that cannot be ignored in the global higher education environment. As a platform for instant interaction and multi-party collaboration, social media has shown unique advantages in breaking the traditional classroom boundaries, extending the learning space, and reinforcing the learner's subjective position (Cui eSteier 2025). Especially in the field of collaborative learning, social media provides students with more opportunities to construct knowledge and develop higher-order thinking by virtue of its convenient communication channels, rich resource sharing functions and online community mechanisms.

Collaborative learning, as a teaching strategy that emphasizes the interaction between students and the co-construction of knowledge, originates from the theory of social constructivism proposed by Vygotsky (1978). According to this theory, learning is not accomplished in isolation, but through social interaction with others, especially in the Zone of Proximal Development (ZPD), mediated by collaboration, linguistic communication, and cultural symbols. Social media provides real-time communication, cross-temporal collaboration, and multimodal expression (Zhou&Zhou, 2022), which creates conditions close to the ideal social construction environment for students, and makes collaborative learning no longer limited by the restrictions of physical space and time schedules (Beal&Steier, 2024).

In recent years, research on social media for collaborative learning in higher education has been increasing. Many empirical studies have shown that social media can effectively enhance students' motivation to learn, promote knowledge sharing, and enhance the sense of teamwork (Greenhow&Askari, 2017; Hung&Yuen, 2010). For example, in teaching activities such as group projects, online diShahzad et al., 2024); on the other hand, systematic analyses of negative phenomena such as silent participation, information overload, and role conflict in collaborative learning are still insufficient, resulting in a lack of clear guidance in educational practice (Dee&Leišytėrtcomings in existing studies. On

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the one hand, most of the studies focus on the positive functions of social media, and less deeply explore the moderating effects of different platform characteristics, educational and cultural backgrounds, and course types on the effectiveness of collaborative learning (Shahzad et al., 2024); on the other hand, systematic analyses of negative phenomena such as silent participation, information overload, and role conflict in collaborative learning are still insufficient, resulting in a lack of clear guidance in educational practice (Dee&Leišytė, 2016).

In view of this, this paper takes social constructivism as the theoretical basis and adopts the method of systematic literature review to review and analyze the empirical studies on social media for collaborative learning in higher education in Google Scholar and Scopus databases between 2017 and 2024. The goal of the study is to sort out the main application modes of social media in collaborative learning, summarize its realization mechanism and educational effectiveness, reveal the limitations and challenges of the current practice, and provide references for future teaching practice and research direction.

The structure of this paper is as follows: after the introduction in Part I, Part II introduces the research methodology, including the literature search strategy, screening criteria and analysis methods; Part III systematically presents the results of the literature review, and discusses the functions, application scenarios, and collaborativelearning effects of social media; Part IV conducts a critical reflection on the factors affecting the effectiveness of social media in supporting collaborative learning and the potential problems; Part V summarizes the research findings and presents targeted practice recommendations and future research perspectives.

2. Methodology

In the context of the rapid development of digital education, this study adopts the method of Systematic Literature Review (SLR) to systematically sort out and analyze the empirical studies on social media for collaborative learning in higher education between 2017 and 2024. Systematic Literature Review is different from traditional narrative review in that its most important feaScopuss the adoption of preset search and screening criteria to ensure the systematic, transparent and replicable process of literature selection (Lame, 2019). In order to further improve the standardization and reporting quality of the review, this paper follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) process guideline, which enhances the traceability of the research process and the confidence of the results by documenting in detail the retrieval sources, screening steps and inclusion criteria (Page et al., 2021). The SLR method is particularly suitable for integrating a large number of dispersed empirical studies to uncover general trends and potential problems and is therefore the preferred method for this study (Tóth et al., 2023).

In order to ensure the broadness and representativeness of the literature sources, Google Scholar and Scopus were selected to conduct systematic searches, and Google Scholar, as the world's most extensive academic search engine, is able to retrieve a large number of journal papers, conference papers, dissertations, and other academic materials, but due to the large number of unofficial publications and other academic materials in the results (Martín-Martín et al., 2018), the results are not as reliable as the results of other academic databases (Orduña-Malea et al., 2017). ZoteZoterolargest abstract and citation databases in the world, Scopus includes authoritative journals and conference papers in various fields, which can guarantee the high quality and professionalism of the literature (Thelwall&Sud, 2022).

The design of keywords follows the principle of comprehensive coverage and logical rigor, with “social media”, “online social networking”, “SNS”, “collaborative learning”, “group learning”, “team-based learning”, “higher education”, “university students”, “college students”, etc. The search time frame was set from January 1st, 2017, to December 31st, 2024, covering the key stage of the rapid development of social media applications in education. In order to improve the accuracy of the search, the Google Scholar search was limited to titles containing both “social media” and “collaborative learning”, and the screening stage focused on the fields of pedagogy, educational technology, and learning sciences, and excluded medical, business, and other unrelated fields. Zotero 6.0.36 and Excel were used for searching and document management to ensure a systematic and traceable process of document recording, de-duplication and screening.

Strict inclusion and exclusion criteria were set to ensure a high degree of consistency and study quality in the analyzed population. Inclusion criteria included: the literature was published between 2017 and 2024; the study population was students or faculty at the higher education level (undergraduate or graduate); the study explicitly explored the use and effectiveness of social media in the collaborative learning process; the research methodology was a quantitative, qualitative, or mixed-methods design; and the literature was formally peer-reviewed and published (including journal papers, conference papers, and master's and doctoral dissertations. Exclusion criteria included: the study was conducted with primary and secondary school students or vocational trainees; the topic of the study deviated from collaborative learning (e.g., only exploring social media habits or addictions); the type of literature was news reports, opinion articles, policy documents, blogs, or non-refereed preprints; and the full text of the material was not available. The relevance, quality and comparability of the final literature sample was ensured by clearly defining the inclusion and exclusion criteria.

The literature screening process was divided into three steps, which strictly followed the PRISMA guidelines to ensure systematization and transparency. In the first step, the titles were screened to exclude irrelevant studies based on whether the titles explicitly addressed topics related to “social media” and “collaborative learning”. In the second step, abstracts were screened by reading the abstracts in detail to further exclude literature that did not match the target audience

(e.g., K-12 education) or had deviated from the topic (e.g., social media addiction or political propaganda). In this process, some of the literature with ambiguous titles but with clear collaborative learning themes reflected in the abstracts were retained for the next round of screening. The third step was full-text screening and quality assessment, in which literature with poor research design, weak data support, or no empirical basis was eliminated through a comprehensive review of the research methodology, sample description, data analysis process, and discussion of conclusions.

The overall screening results were as follows: the initial search yielded a total of more than 800 documents, with around 600 remaining after Zotero-assisted removal of duplicate records; nearly 150 screened through the title and abstract screening stage; and 30 high-quality empirical documents were finally included as the analytical basis of this study after full-text assessment and application of criteria. These literatures cover different types of social media platforms (e.g., WeChat, Slack, Facebook Groups, Microsoft Teams) with diverse disciplinary backgrounds (STEM, humanities, social sciences, management, etc.), and are highly representative.

A thorough quality assessment of all final included studies was carried out to guarantee the review's rigor. Four fundamental elements were taken into consideration in the assessment: (1) the study's design clarity, which included well-defined objectives, samples, and variables; (2) the suitability of the data collection and analytical techniques; (3) the coherence of the conclusions and supporting data; and (4) critical consideration of the study's limitations and potential biases. Each study was independently assessed by the research team, and differences were settled through discussion. For the final analysis, only studies that satisfied all requirements were kept. In summary, the review's systematic search approach, stringent screening, and quality control have produced a solid and representative body of evidence. In addition to meeting international requirements for systematic reviews, this methodological approach improves the findings' theoretical significance, academic legitimacy, and transparency.

3. Results

3.1 General Trends in Social Media for Collaborative Learning in Higher Education

With the rapid development of information technology and online communication, social media has been rising in the global higher education sector. Originally used as a tool for personal socialization and information sharing, the platform is now being gradually integrated into all aspects of teaching, learning and academic communication. According to Greenhow and Lewin (2016), social media has become an important medium for breaking the traditional classroom time and space constraints and promoting learner interaction and knowledge co-construction. Especially in the field of collaborative learning, social media provides convenient communication channels, rich resource sharing methods and diversified interaction modes, enabling collaborative learning to break through the limitations of the physical classroom and extend into a broader virtual space (X. Cao et al., 2015). In recent years, some of the global research results (Al-Rahmi et al., 2022; Sabah, 2023) show that higher education institutions generally use social media as an important auxiliary tool to support collaborative learning, such as more than 72% of university faculty in the United States guiding students to use social platforms for group discussion and project collaboration in their courses (Manca&Ranieri, 2017). In China, forms such as WeChat study groups, QQ discussion groups, and Bilibili study zones have also become widely available in universities (Yang et al., 2024; Zhang, 2024). This trend shows that social media is becoming an indispensable ecological element of collaborative learning in higher educatio

3.2 Main Functions and Collaboration Mechanisms of Social Media

Literature analysis shows that social media have three main functions in promoting collaborative learning: instant communication, resource sharing and community building (A. Alkhathlan&A. Al-Daraiseh, 2017; Ansari&Khan, 2020). The iVygotskyommunication function enhances the frequency and efficiency of interactions between students and teachers through message pushing, video conferencing, and instant feedback mechanisms (e.g., WeChat). Resource sharing allows learners to quickly exchange learning resources such as courseware, materials, links, and mind maps. Typical platforms include Google Drive, Microsoft Teams, and QQ group file sharing. The community building function stimulates learners' sense of belonging and responsibility through the creation of interest groups, discussion forums, and peer support platforms, thus improving the sustainability and effectiveness of collaborative learning (Reeves, 2019). Especially in interdisciplinary and cross-cultural collaborative projects, the decentralized and multi-directional interactive environment constructed by social media greatly promotes collaborative problem-solving and knowledge innovation (Greenhow&Askari, 2017). In this context, the theory of social constructivism (Vygotsky, 1978) has been verified in practice, i.e., learners in the “zone of nearest development” can realize knowledge co-construction and cognitive enhancement more efficiently through the interactive tools of social media.

3.3 Analysis of Typical Application Scenarios

Through the comprehensive analysis of the literature, the application of social media in collaborative learning in higher education mainly focuses on the following four typical scenarios:

First, group projects and task management are the most common forms of application. Students form project groups with the help of social platforms to assign roles, follow up tasks, integrate materials and present results. Taking the Slack

platform as an example, Chan et al. (2020) found that students using Slack for group collaboration had significantly higher task completion and group satisfaction than traditional email communication groups.

Second, online discussion and knowledge co-construction become another important application scenario. Through WeChat Groups, Facebook Groups and other platforms, students initiate discussions, questions and debates around course topics, forming a dynamic knowledge network. This combination of asynchronous and synchronous communication not only promotes deep learning but also stimulates students' critical thinking (Foo&Quek, 2019).

Third, peer assessment and feedback mechanisms are also widely realized through social media. By posting first drafts of assignments, mutual comments and suggestions for improvement, students deepen their understanding and application of knowledge through participation. As Wang et al. (2024) pointed out, social media-based peer assessment activities significantly improved students' reflective skills and self-regulation of learning strategies.

Finally, the construction of Virtual Learning Communities (VLCs) has also become an important trend. Especially in the environment of international cooperative courses and MOOCs, social media is used to maintain learning communities, continue collaborative relationships, break the limitations of isolated learning, and enhance emotional ties and cognitive support among learners (Cruz-Benito et al., 2017).

3.4 Positive Effects of Social Media Enabling Collaborative Learning

From the results of empirical studies, social media has shown various positive effects in collaborative learning. First, in terms of learning motivation, social media effectively enhances students' sense of participation and belonging and stimulates intrinsic motivation through instant interaction and visibility feedback (Greenhow&Chapman, 2020). Second, in terms of cognitive conflict and deep processing, Guoial media platforms provide diverse viewpoint exchanges and heterogeneous stimuli, prompting students to reflect on their own cognitive frameworks in discussions, and promoting the positive transformation of cognitive conflict (Guo&Chen, 2022).

In addition, social media significantly enhanced students' metacognitive skills and teamwork. Through project management tools (e.g., Trello integrated into Slack), students need to constantly monitor group progress, adjust strategies, and allocate resources, a process that strengthens their self-monitoring and self-regulation skills (Hawe et al., 2019). More importantly, social media provides a scalable platform for cross-cultural and interdisciplinary collaboration, enabling students to practice the key competencies of collaborative communication, cross-boundary cooperation and integration of multiple perspectives in a globalized context.

3.5 Challenges and Issues

Despite the positive changes brought about by social media-enabled collaborative learning, the literature also identifies multiple challenges and problems. First, the phenomenon of lurking is prevalent, especially in Asian cultures, where many students choose to observe rather than speak out due to the culture of face and respect for authority (Hu et al., 2024). This phenomenon undermines the depth of interaction and knowledge construction in collaborative learning.

Second, information overload has become an important factor in restricting the quality of collaborative learning. Due to the fast flow and large amount of information in social media, it is often difficult for students to distinguish between important information and irrelevant content, resulting in increased cognitive load and distraction. This problem is particularly evident in the use of WeChat groups, QQ groups, and other platforms that lack content partitioning and prioritization management features.

Third, role conflict and responsibility ambiguity are also a major challenge. In social media collaboration that lacks clear task allocation and role definition, some students may experience free-riding or reduced team efficiency due to overlapping tasks and miscommunication (Massah, 2018Agrawalddition, risks such as privacy leakage and cyberbullying also affect students' willingness to collaborate and their sense of psychological security in social media environments to a certain extent (Jain&Agrawal, 2020).

3.6 Section Summary

In summary, existing research has generally recognized the important role of social media in collaborative learning in higher education, especially in promoting motivation, cognitive conflict transformation, metacognitive development, and cross-border collaboration. However, the challenges of silent participation, information overload, role conflict and psychological safety cannot be ignored. In future higher education practice, it is necessary to further optimize the pedagogical design of social media platforms, strengthen teacher guidance and group management mechanisms to fully utilize the potential of social media to support collaborative learning, while effectively avoiding potential risks. The next chapter will provide a more in-depth critical reflection and comprehensive analysis based on the results of this chapter.

4. Discussion & Critical Analysis

4.1 Intersectional tension between theory and practice

The widespread use of social media in collaborative learning in higher education was initially strongly supported by social constructivist theory (Vygotsky, 1978). The absence of teacher guidance or structured task design, student interactions on social media tend to be superficial and fragmented, making it difficult to stimulate deep cognitive

processing (KozyKozyrevaool for expanding the interaction space and lowering the threshold of communication, is widely believed to facilitate dynamic knowledge co-construction among learners. However, from the analysis of existing literature, this theoretical "ideal picture" faces many tensions in practical application.

First, the interactions facilitated by social media do not necessarily lead to high-quality knowledge construction; Greenhow & Askari (2017) pointed out that despite the increase in the frequency of student interactions on social platforms, the quality of interactions varies, with shallow exchanges (e.g., liking, simply responding) far outnumbering deeper discussions and critical thinking. This phenomenon deviates from the basic requirements of "meaningful dialogue" and "cognitive conflict transformation" emphasized by social constructivism. The absence of teacher guidance or structured task design, student interactions on social media tend to be superficial and fragmented, making it difficult to stimulate deep cognitive processing (Kozyreva et al., 2020).

Second, the immediacy and informality characterizing social media to some extent undermines the seriousness with which learners take the content of their interactions. Study found that students are more inclined to engage in emotional and lighthearted information exchange on social platforms than to follow academic norms strictly for logical reasoning and critical constructs. This cultural climate creates a tension with the rational collaboration required by social constructivist theory.

Therefore, social media itself is not a guarantor of learning quality improvement, but more of an enabling environment. Only when teachers carefully design collaborative tasks, guide the direction of interaction, and set up reflection sessions based on social constructivist theory can social media become a powerful tool for promoting higher-order cognitive development. In future practice, it is important to emphasize "theory-guided platform application" rather than simply relying on the technology itself.

4.2 Heterogeneity of Platform Characteristics and Collaborative Learning Effectiveness

The heterogeneity of different types of social media platforms in collaborative learning is an important issue that has not been systematically analyzed in existing research. Literature shows that instant messaging platforms (e.g., WeChat, Slack) play a positive role in task coordination and instant feedback due to their fast information flow and low communication threshold (Huang&Zhang, 2019; D. Wang et al., 2022). However, such platforms are prone to fragmented discussions and information overload due to the lack of topic organization and content precipitation mechanisms, making it difficult to support systematic knowledge construction (Kaufhold et al., 2020).

In contrast, community-based platforms based on community management (e.g., Facebook Groups, Reddit) have better topic focusing and long-term knowledge accumulation, and Manca (2020) found in a study on project-based learning among college students that students who used Facebook Groups for in-depth thematic discussions had significantly higher scores on problem solving and critical thinking than those who used instant messaging groups, and that students who used instant messaging groups for in-depth discussions were significantly more likely to have higher scores on problem solving and critical thinking. Similarly, Slack, which integrates task assignment, file management, and threaded discussions, has been shown to significantly improve group collaboration in Project-Based Learning (PBL) (Chan et al., 2020).

However, most of the current empirical studies fail to analyze the effectiveness of collaborative learning according to the characteristics of different platforms but talk about the effect of "social media" in general (Hamadi et al., 2022), which leads to a lack of precise applicability of the research findings. In the future, we should systematically establish a "platform-task-learning effect" matching model based on the platform function matrix. For example, an instant messaging platform should be used in the task initiation and role division phase, and a structured community platform should be used in the knowledge co-construction and results presentation phase, so as to realize the optimal matching of functions in different phases.

4.3 Mediating Mechanisms between Instructional Design and Learning Effectiveness

In the process of social media facilitating collaborative learning, instructional design plays a decisive role. Social media is only a mediating tool, and its release depends on how teachers set learning goals, task structures, interaction rules and feedback mechanisms (Matzat&Vrieling, 2018).

First of all, clear task decomposition and role assignment are the basis for guaranteeing the effectiveness of collaborative learning. Groups without structured task guidance are prone to free-riding and unclear authority and responsibility, which reduces the overall collaborative efficiency (Massah, 2018). By setting up milestone checkpoints, role responsibility lists and mutual evaluation mechanisms on social platforms, task avoidance and conflict can be effectively prevented.

Second, the design of interaction rules is crucial to improve the quality of discussion. Setting open-ended questions, debate tasks, and evidence-based reasoning requirements can help guide students from shallow information exchange to deep cognitive processing (Greenhow&Chapman, 2020).

In addition, the mechanism of timely and constructive feedback (formative feedback) can strengthen learning motivation and modify learning strategies. Teachers or peers providing specific and targeted feedback on social media platforms, rather than just giving simple approval or disapproval, can help students reflect and grow (Vadivel et al., 2024).

Therefore, future practice should consider social media as part of a "collaborative learning ecosystem" and emphasize the integration of instructional design and platform features rather than using them in isolation. Researchers should also make a clear distinction between instructional design variables and platform features in empirical studies to explore the interaction between the two.

4.4 Influence of Cultural Context on Collaborative Interaction Patterns

Cultural context has a profound impact on the collaborative learning process in social media, but existing research has not paid enough attention to this. In particular, in collectivist cultures (e.g., China, Japan, and Korea), students' interaction patterns on social media differ significantly from those in Western individualist cultures (Alsaleh et al., 2019)(Hofstede, 2001).

First, silent participation (lurking) is more prevalent in collectivist cultures. Chow et al. (2018) pointed out that Chinese college students tend to read rather than speak in online group discussions, mainly out of cultural psychology such as respect for authority and fear of losing face by making mistakes. Although this phenomenon reduces surface conflict, it also inhibits cognitive conflict generation and knowledge innovation.

Second, the tendency of high-context communication (high-context communication) affects the way of information expression. Wang et al. (2018) found that Asian students are more inclined to use implicit and indirect expression, which may lead to unclear viewpoints, frequent misunderstandings, and reduced collaborative efficiency in social media environments.

In contrast, students in low-context cultural contexts (e.g., the United States, Germany) are more accustomed to directly expressing their opinions and questioning, which is conducive to the formation of a dynamic cognitive conflict and reflection cycle, and thus promotes deep learning (Greenhow&Chapman, 2020).

Therefore, future teaching practices should fully consider cultural differences and adopt diverse strategies for social media use. For example, in collectivist contexts, anonymous discussion forums should be set up, low-risk speech should be encouraged, and progressive public expression should be guided; in low-context cultural contexts, structured discussion and evidence support should be emphasized to avoid disordered conflict. Researchers should also incorporate cultural orientation variables when designing empirical studies to explore the interaction mechanism between culture and collaborative learning effectiveness.

In addition, the data sources were too homogeneous and lacked multimodal data support. Future research should combine learning analytics, social network analysis (SNA), text content analysis, and interview data to build a three-dimensional evidence system, so as to more accurately reveal the dynamic process and effect mechanism of social media collaborative learning.

4.5 Limitations of Research Methodology and Evidence System

Existing research on social media for collaborative learning has a series of methodological limitations that affect the credibility and generalizability of the findings. First, the vast majority of studies rely on cross-sectional surveys and self-reported data, with serious social desirability bias and recall bias. Greenhow & Askari (2017) pointed out that students' self-reports on the efficacy of social media use tend to overestimate actual learning effectiveness.

Second, sample homogenization is a serious problem. Most studies target a single institution and a single program (e.g., education, computer science), and lack the support of large-scale samples across disciplines and cultures, resulting in insufficient external validity (external validity). Third, few studies have used experimental design (experimental design) or quasi-experimental design (quasi-experimental design) to control for potentially confounding variables.

4.6 Section Summary

Based on a systematic literature review, this chapter has analyzed the theoretical and practical tensions, heterogeneity of platform characteristics, mediating mechanisms of instructional design, cultural influences, and methodological limitations of social media in collaborative learning in higher education. Overall, social media provide unprecedented possibilities for collaborative learning but also brings new challenges. Future research and practice should continue to deepen theoretical construction, platform adaptation, instructional design optimization, cultural contextualization, and methodological rigor, so as to truly unleash the potential of social media-enabled collaborative learning in higher education and effectively avoid potential risks.

5. Conclusion

5.1 Summary of Key Findings of the Study

With the rapid development of digital technology and social media platforms worldwide, the field of higher education is undergoing a profound change. Based on the theory of social constructivism, this paper adopts a systematic literature review approach to systematically sort out and analyze the empirical studies on social media for collaborative learning in higher education between 2017 and 2024, and the following key findings are mainly derived.

First, social media has become an indispensable and important medium in higher education collaborative learning. The instant communication, resource sharing and community building functions provided by the platforms have greatly

expanded the spatial and temporal boundaries of the traditional classroom, providing students with a multifaceted space for dynamic interaction and knowledge co-construction (Ajibade et al., 2017; Greenhow&Askari, 2017).

Second, different types of social media platforms show significant heterogeneity in collaborative learning effects. Instant messaging-type platforms (e.g., WeChat, Slack) are conducive to task coordination and immediate feedback, while community-type platforms (e.g., Facebook Groups, Reddit) are more suitable for in-depth discussion and long-term knowledge accumulation (Chan et al., 2020; Manca, 2020).

Third, instructional design plays a mediating role in the social media environment. Reasonable task decomposition, role allocation, interaction rules and feedback mechanisms are key to whether social media collaborative learning can operate efficiently.

Fourth, cultural background profoundly affects the interaction mode and effectiveness of social media collaborative learning. Students in collectivist cultural tendencies are more likely to participate silently (C. Cao et al., 2021), and high-context communication styles increase the cost of understanding, while students in individualist cultural contexts tend to favor direct expression and dynamic conflict (Levitt, 2019).

Overall, social media, as an emerging educational technology tool, has injected new vitality into collaborative learning in higher education, but the effectiveness of its application depends on the interaction of multiple factors, such as platform characteristics, pedagogical design, cultural context, and learner traits.

5.2 Theoretical Contributions

This study aims to offer several contributions at the theoretical level. First, it provides an updated understanding of how social constructivist theory may apply in digital learning environments. While traditional constructivism focuses on face-to-face knowledge co-construction, this review highlights how social media can extend interaction opportunities in virtual contexts, albeit with notable limitations when lacking instructional structure and guidance.

Second, the study draws attention to the interdependence of platform functionality, instructional design, and cultural context in shaping collaborative learning outcomes. Rather than isolating these dimensions, the analysis encourages a more integrated perspective, suggesting that the educational impact of social media arises from their combined effect.

Third, the study echoes concern in the literature about the tendency to idealize social media and instead recommends treating these platforms as potentially supportive—rather than inherently effective—learning environments. This more cautious view may help inform more balanced theoretical and practical engagement in future research.

In summary, while exploratory in nature, this review aspires to contribute to ongoing discussions around the theoretical positioning of social media in education, particularly in relation to learning design, cultural variation, and constructivist learning theory.

5.3 Practical Implications

At the practical level, this study has important reference value for higher education institutions, teachers and learners. For higher education administrators, social media should be formally integrated into the teaching support system, and relevant policies and guiding frameworks should be formulated to clarify data privacy protection, interactive behavioral norms, and standards for teaching and learning applications, so as to avoid misuse of platforms or fragmentation of resources.

For teachers, social media tools should be rationally selected and combined according to different teaching objectives and collaborative task characteristics. For example, they should use QQ Learning Groups in the rapid task assignment stage, turn to WeChat Groups or specialized learning platforms in the in-depth topic discussion stage, and enhance the structure and depth of the learning process through clear rules of interaction and stage-by-stage results checking. In addition, teachers should have social media pedagogical design competence and be able to dynamically adjust task settings and feedback strategies according to students' cultural background, cognitive characteristics and learning needs, so as to promote the real sense of knowledge co-construction and cognitive conflict transformation.

For students, they should improve their platform literacy, not only mastering basic operational skills, but also understanding how to communicate effectively, think critically and innovate collaboratively in the social media environment. At the same time, students should have certain information screening and cognitive load management skills to avoid information overload and ineffective communication.

In summary, whether the potential of social media-enabled collaborative learning can be truly unleashed depends on the synergy and optimization of management policy, teaching design and learner literacy.

5.4 Research Limitations

Although this study seeks to systematically and comprehensively sort out the existing literature, the following limitations still exist. First, although the search covered multiple databases such as Google Scholar and Scopus, due to the limitations of search time, keyword setting and literature screening criteria, there may still be omission or screening bias, which affects the comprehensiveness of the study. Secondly, this paper is based on systematic literature review and lacks empirical verification of original data.

Therefore, the conclusions are mainly based on the generalization and analysis of existing research results, and it is difficult to directly reveal the causal relationship between variables. Third, the sample of included literature mainly

focuses on English literature, with less literature in other languages, which may lead to a lack of diversity in cultural backgrounds. Finally, the differences in the definition and measurement of collaborative learning across studies led to some heterogeneity in the comprehensive analysis, which may affect the accuracy of the conclusions.

These limitations suggest that a more comprehensive search strategy, a combination of primary data collection and mixing methods, and attention to the standardization of culture and definitions are needed in future research to enhance the scientific validity and applicability of the study.

5.5 Suggestions for Future Research

Based on the findings and limitations of this study, future exploration can be deepened in the following directions. First, longitudinal studies should be strengthened to track the dynamic changes of students in social media collaborative learning environments, such as the evolution of learning motivation, cognitive construction process and teamwork patterns, so as to more accurately grasp the long-term impact of social media on learning development. Second, it is suggested to adopt mixed methods, combining quantitative data (e.g., learning analysis, behavioral logs, performance changes) and qualitative data (e.g., interviews, content analysis) to reveal the mechanisms and effects of social media collaborative learning from a multidimensional perspective.

Third, more attention should be paid to cross-cultural comparative studies to explore the similarities and differences in social media usage behaviors, interaction patterns, and collaborative learning effectiveness in different cultures, so as to provide more context-adaptive strategies for higher education practices in the context of globalization. Fourth, it is suggested to further refine the research on matching platform functions with educational scenarios. For example, comparing the similarities and differences between short video platforms (e.g., TikTok) and traditional forum platforms (e.g., Reddit) in terms of knowledge co-construction, affective support, and learning outcomes, to provide educators with evidence-based guidelines for tool selection. Finally, future research should also focus on ethical issues in social media collaborative learning, such as privacy protection, transparency of platform data use, and learner mental health risks, to build a more responsible and sustainable framework for the use of educational technology.

5.6 Conclusion

Social media, as an emerging technological tool that combines immediacy, diversity and decentralization, is reshaping the ecosystem of collaborative learning in higher education. Based on the theoretical foundation of social constructivism, this paper reveals the mechanisms, effectiveness and challenges of social media for collaborative learning through a systematic literature review.

Research has shown that social media have positive potentials in expanding interaction space, facilitating knowledge co-construction, and stimulating learning motivation, but their effectiveness does not come naturally, but is a result of multiple factors such as platform characteristics, pedagogical design, cultural context, and learner attributes. At the same time, the existing research still needs to be improved in terms of theoretical deepening, methodological rigor, and contextualization.

In the future, only with the guidance of theory, accurate matching of tools and tasks, and attention to cultural diversity and ethical responsibility, can we truly unleash the potential of social media to empower collaborative learning in higher education and realize the positive interaction between technology and education. It is hoped that this study can provide useful references for researchers and practitioners in related fields and promote the continuous innovation and development of collaborative learning in higher education in the digital era.

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Conflict of Interest

The authors declare no conflicts of interest.

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