What Makes the Ideal AI Collaborator? Exploring Student and Teacher Perspectives on Roles, Support, and Challenges

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Abstract: *The application of artificial intelligence (AI) in collaborative learning situations has much potential to disrupt education, but it is still an understudied field. This study investigated the anticipated roles, benefits, and challenges of AI in group learning as perceived by 15 students and 12 teachers. Students viewed AI as a collaborator in their learning process (to think of ideas, to work on a task, and to engage socially), as well as a tutor who patiently met their needs while completing tasks. Teachers saw AI as a way to augment human instruction, making it more flexible, collaborative, and personalized. Both groups identified challenges, such as lack of curriculum guidance, socio-emotional support, and frustration with the mechanical and emotional limitations of AI. The study reveals both the exciting possibilities and key limitations of using AI for group learning and provides guidance on how to effectively integrate AI into learning environments.*

Keywords: Artificial Intelligence (AI), Group Learning, AI Collaborator, Teachers' and Students' Expectations

1. Introduction

The incorporation of AI in group learning has introduced fresh opportunities for collaborative education, however, its complete capabilities are yet to be fully investigated. Past research has primarily examined the role of AI as an aid to educators, as well as to enrich student learning experiences and promote group dynamics through tools such as chatbots and social robots that foster cognitive and emotional growth (Mavrikis et al., 2021). AI is now often seen as a partner in collaboration alongside individuals in capacities, like teaching support and peer interaction. However, we do not yet know how teachers and students perceive AI in group learning environments. This study bridges the gap by investigating their perceptions of AI in group learning (AIGL) with the goal of identifying effective integration strategies.

AI technology in the field of education is commonly perceived either as a tool or a facilitator for learning enhancement purposes. When viewed as a tool AI is utilized to provide organized information to support students in reaching their objectives (Kovari,2025). Nonetheless this perspective fails to acknowledge the exchange between students and AI, and the influence of AI on behavior and self-perception. Post humanist ideas like Actor Network Theory (ANT) consider both humans and AI on an equal footing (Latour, 2005). Recent research underscores the capacity of AI to function as an interactive collaborator that can handle information processing and support cognitive development (Holmes, Bialik, & Fadel, 2019). For instance, AI has been demonstrated to aid in generating ideas (Ji, Han & Ko, 2022) self-assessment (Echeverria et al., 2018) and enhancing teamwork dynamics via visualizing information (Han et al., 2021).

AI has the potential to strengthen the connection between students and AI entities. The effectiveness of this relationship, however, depends on how it is put into practice. This study aims to delve deeper into the perceptions of

university students and educators on the role of AI, shed light on the barriers encountered, and provide recommendations to improve teamwork dynamics and overall team performance.

2. Research Methods

2.1. Participants

This study used a purposeful sampling strategy to recruit 27 participants - 15 undergraduate students and 12 university instructors. In order to obtain a representative overview of students regarding AIGL, participants were selected from a range of academic disciplines, performance backgrounds, and attitudes regarding AI. For instructors, a minimum of one year of experience teaching AI was needed. They were involved via embedding AI functionalities (e.g., GPT-based chatbots, AI dashboards, virtual tutors, AI-powered speech/writing assistants) into the instruction (Holmes, Bialik, & Fadel, 2019). The research received ethical approval from the university's Institutional Review Board, and informed consent was obtained from all participants before their participation in the study.

2.2. Data Collection and Analysis

Each participant took in a semi-structured face-to-face interview lasting between 30 and 50 minutes. Data were examined with a reflective theme approach (Braun & Clarke, 2006) to generate themes aligned with the research questions. After multiple readings of the transcripts, three researchers independently coded the significant statements, grouping them into 20 potential themes. Through iterative review and consensus, these were distilled into two themes each related to AI's expected roles, AIGL advantages, and AIGL barriers. Trustworthiness was ensured by the use of respondent validation and moderation (Golafshani, 2003).

3. Findings and Discussion

3.1. Participants' Perceptions of AI's Expected Roles in AIGL

3.1.1. AI as Co-Learning Partners

Students saw AI as a teammate in learning together. They looked forward to its involvement in group activities. AI was imagined as a source of inspiration, support in generating ideas (S2) and fostering creativity (S9). Despite acknowledging that AI cannot replicate human actions entirely, like expressing emotions or empathy (S3, S15), students saw this distinction as a chance to embrace different viewpoints and outlooks (S15).

Moreover, students believed that AI might function as an ally. It could enhance the social interactions within group study sessions. They compared this phenomenon to teamwork among humans. In human teams, each person's distinct traits enhance collaboration and make it a richer experience. In this scenario, students viewed AI as a digital counterpart with its own special abilities. They separated AI from those of human team members. As an illustration one student observed, "While chatting with peers about challenges we frequently stray from the main subject. I believe having an AI companion could assist in maintaining the focus of the conversation" (S13).

3.1.2. AI as an Instructional Tutor

Students were looking forward to using AI as a tutor. In their learning process, AI would patiently guide them through tasks. It offers explanations and suggestions when they needed. Students clearly expressed that they wanted AI to guide them to enhance learning experience, like giving them suitable hints (S5) or effective learning strategies (S8).

Teachers envisioned a teaching approach involving both AI and human educators sharing duties and switching roles. For instance, teachers presenting ideas while AI expands on them or guides hands on activities (T4). They recognized AI's expertise in conveying theoretical information. But teachers highlighted the unique ability of human educators to offer emotional and social assistance (T2) nurturing students' intellectual growth and emotional well-being simultaneously (T10).

3.2. Participants' Perceived Supports of AIGL

3.2.1. Improved Task Performance

Students mentioned that working with AI helped them express their thoughts better. They appreciated how AI could analyze their drafts and offer polished recommendations. Some students especially thanks AI for refining their ideas (S7) and enhancing the overall development process (S11). Although a few students observed that AI's language appeared mechanical compared to human expression preferences (S2, S9, S10), they valued its role in subtly guiding their thought processes towards improvement (S9).

AI was seen as a tool that made tasks easier, by assigning roles and fostering teamwork. A few students noticed that projects took time when using AI because they took into account its recommendations (S9). Individuals who saw AI as an aide often viewed themselves as "leaders" with AI playing a supporting "follower" position (S4, S11).

Additionally, AI has enhanced creativity by providing recommendations (S2) inspiring fresh thoughts (S5) and connecting various ideas (S13). This has empowered learners to delve into methods and create inventive answers.

3.2.2. Increased Teaching Flexibility

Teachers recognized that utilizing AI in the classroom provided chances for stimulating activities. AI creates technology-driven environments. Educators could use these lively environments, like replicating real life situations to tackle intricate issues (T6). Furthermore, teachers saw how AI had the potential to elevate the teaching of subject related material. It enhanced students' comprehension, through exercises on giving presentations (T9), conducting research, and solving problems (T1).

AI also offered flexibility in arranging students into groups. It examined student information to assist teachers in creating groups according to their readiness (T4) passion (T7) or hobbies (T11). This approach reduced the number of teachers required. It allowed personalized support for students with different learning requirements.

A teacher mentioned that AI has the ability to oversee group conversations at once. It spot things like, off topic chats or exceptionally rapid advancements in the discussions. This feature helped lessen the teachers' tasks and enabled them to offer more personalized assistance (T5).

3.3. Participants' Perceived Challenges to AIGL

3.3.1. Absence of Systematic Curriculum Design

A key challenge was the lack of adequate pedagogical support from AI. This hindered its ability to effectively facilitate student learning process. Students wanted AI to automatically care their learning stage, then provide tailored guidance. They called for step-by-step instructions (S2), timely feedback (S5), and detailed material classification (S8). In contrast, excellent students preferred open-ended tasks (S3) and creative brainstorming (S11).

Teachers were also not satisfied with AI's structured course resources. In the current teaching approaches, such as integrating AI into ICT/STEM activities (T11) or interdisciplinary frameworks (T4), these materials often prioritize AI technology over its pedagogical integration. They argued that this limitation might narrow the scope of AIGL and reduce its effectiveness across different disciplines (T4, T9).

3.3.2. Insufficient Socio-Emotional Support

Students complained about AI's limited social and emotional capabilities. They observed that AI rigidly followed basic communication norms, such as starting with "Hi" and ending with "Bye" (S9) or adhering strictly to turn-taking (S4), meanwhile lacked flexibility and humor (S4, S5). This rigidity disrupted the natural social flow of group learning. Unlike human peers, it was hard for AI to express empathy or provide motivational encouragement. However, students perceived these qualities as essential to fostering a supportive and effective collaborative environment.

Teachers had similar concerns. They emphasized that a lack of emotional support from AI could negatively impact students' development. Areas such as empathy (T7) and social communication skills (T3, T9) were specifically mentioned. They warned that excessive interaction with emotionally neutral AI might reduce students' emotional awareness (T2) and impair their ability to form meaningful connections in the real world (T12).

4. Conclusion

This study categorized the expected roles of AIGL, its perceived advantages, and difficulties through interviews with students and teachers. It raises an all-too-familiar question, especially to non-academic audiences: “Should AI replace human teachers?” The findings indicate that AI will not replace human instructors but rather supplement their work. Its function will differ based on the context. Be students sometimes, and learn along with fellow students (Kovari,2025). Other times act as a mentor, offering tailored support beyond the physical classroom (e.g., providing language support for students who are not fluent in English) (Ji, Han & Ko, 2022). These applications are specifically effective in personalized and online learning environments. But, incorporating AI also brings up some ethical issues.

One of the biggest worries is bias in AI-generated content. It can stimulate stereotypes or misinformation if datasets are not adequately managed. To guarantee that AI-assisted learning maintains equity, we must constantly oversee and modify our algorithms. AI systems also gather student information, so data privacy and security are top concerns. Policies and safeguards are needed to build trust and protect data. Another major concern is the long-term effects of AI on students’ independence and critical thinking ability. Though AI can facilitate learning tasks, over-reliance on its suggestions may undermine students’ independent ability to look at problems from multiple perspectives and come up with solutions. A balance must be struck between leveraging AI capabilities and preserving human essential cognitive skills.

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