Collaborative learning in the digital space: AI-powered Platforms

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Abstract

The abstract investigates how AI-powered systems can revolutionize online collaborative learning. As part of the educational approach known as cooperative education, teams of students work together to resolve solve an issue, finish a job, or produce a product. These systems use artificial intelligence to tailor and improve learning experiences as technology advances. Digital collaborative learning is a dynamic educational strategy that uses online platforms to enable people to share learning experiences. This abstract highlights the transformative power of digital collaborative learning on education while delving into its many facets. In this sense, technology acts as a spark to create dynamic and stimulating learning settings. Participants can engage synchronously or asynchronously through virtual classrooms, discussion boards, and collaborative papers, which dissolve geographical boundaries and promote a global learning community. With the use of digital tools, students can collaborate to solve problems, share resources, and communicate ideas, all of which contribute to the development of collective intelligence. AI-powered collaborative platforms also enable real-time feedback and assessment tools that evaluate both individual and group contributions and provide quick insights into areas of strength and improvement. This simplifies the assessment procedure and makes it possible for teachers to offer prompt interventions and advice. To summarize, the abstract highlights the

revolutionary nature of AI-powered platforms for collaborative learning, which promote flexibility, effectiveness, and involvement in the dynamic realm of digital education.

Keywords: AI-powered collaborative learning, Digital collaborative learning, Cooperative education, Virtual classrooms

INTRODUCTION

Collaborative learning is based on the core tenet that group members should make decisions collaboratively rather than competitively. CL professionals use the idea to engage and coexist with others in a variety of contexts, including committee meetings, classrooms, community organizations, and families (Panitz, 1996). According to Johnsons (2009), who was referenced by Brown & Lara (2011), people might react to the deeds of others in three different methods. One's actions can either make someone else successful or unsuccessful, or they can have no effect at all on the success or failure of others. Put differently, individuals can be: competing with one another to accomplish a task that only a select few can complete working independently (individualistically) to achieve objectives unconnected to those of others. More pleasant and diverse relationships are fostered by collaborative learning (CL) and variety awareness Swing & Peterson (1982).

CL fosters a natural inclination to interact professionally with the students. Pupils frequently struggle outside of the classroom. By opening them, the instructor and student can have a non-threatening conversation about these issues, and further assistance from other student services departments in related fields may result in a positive outcome (Kessler & McCleod, 1985). The 21st century's trend toward collaboration holds potential for fostering human interaction. It is now more Collaboration on significant challenges is more crucial than ever (Austin, 2000; Welch, 1998), which has led to an emphasis on shifting away from independence and toward cooperation in (Leonard & Leonard, 2001). Pupils take responsibility regarding both their own and one another's learning. As a result, when one student succeeds, it benefits other students (Gokhale, 1995). As learning and instruction are given top priority in CL, and students assume more responsibility for their education. (Lowman, 1987). Students' oral communication abilities are enhanced by Johnson, (1985).

Students often serve as mentors, they must understand the subject matter sufficiently to explain to their significant others. (Neer, 1987).Many software programs and instructional methods have been created recently to assist and facilitate students' learning of how to argue (Scheuer et al., 2010). Indeed, it is becoming more typical for students to engage in synchronous online discussions, debates, and disagreements with one another on topics discussed in the computer-based learning environment (Lingnau et al., 2007). From Andriessen & Schwarz (2009), the purpose of these tools is to assist students in the development of rational, deliberate, and well-reasoned discussion and argumentation skills.

Objectives

1. To discuss the concept of Collaborative learning in the digital space.
2. To explore different Social benefits of CL.
3. To explore different Psychological benefit of CL.
4. To explore the different Academic benefit of CL.
5. To explore ways how CL foster active participation and sustained interest through AI-powered features.
6. To explore how AI –driven assessment tools to offer instant feedback, enabling learners to address gaps in understanding promptly and fostering continuous improvement.
7. To explore various challenges in CL while using AI- driven assessment tools.

Definition and notion of internet-based collaborative learning

When students actively participate they are more likely to become motivated to study and take part in the process of learning if the class, which promotes student maintenance in a CL setting. Neer (1987) states that students who mentor one another must comprehend the material well enough to explain it verbally to their partners. Learning and instruction are given priority in CL since it is student-centered, and students take more responsibility for their considering education Lowman (1987). Students learn strategies for self-management via cooperative learning (Resnick, 1987). The content that learners are going to offer to their group should be understood by them. Get ready to complete tasks and work in groups with others.

According to Kessler & colleagues (1985), CL helps students feel less nervous in the classroom when they come across unfamiliar and unexpected situations. They also have time to think about

group habits, such following up to ensure that homework assignments are understood and finished. These encounters help students develop their self-management abilities. Cooper et al., (1984) claim that CL provides teachers with multiple chances to see how students participate, explain their views, ask questions, and investigate issues. These assessment methods are far more thorough as opposed to depending only on written examinations (Cross, & Angelo, 1993). When using CL, there are lots of alternatives for substitute techniques for the evaluation of students (Panitz & Panitz, 1996). The concept of (CL) has several advantages. We might gain from this learning approach if we are aware of its advantages. Before forming a judgment of CL's attributes, it is imperative to fully understand it (Annett, 1997). Within the interactional philosophy and way of life referred to as collaboration, people acknowledge and cherish the abilities and contributions of their colleagues while accepting accountability for their own actions.

Pupils can do so when they actively participate in regular, directed interactions with one another, they will be able to understand one respect one another's differences and discover ways to settle any potential social conflicts (Johnson & Johnson, 1985). More robust social support systems are produced as a result (Cohen & Willis, 1985). Jigsaw methods—in which students do independent activities then afterwards inform the other group members on the outcomes. —are commonly used in cooperative learning which entails highly structured, diverse activity programs (Aronson et al., 1978). Independent Assignments are used in collaborative learning, which concentrates only regarding collaborative efforts as per Foot et al., (1990). The explicit objective of collaborative learning is usually shared comprehension, particularly in the case of actively participating senior students (Roschelle, et al., 2006).

It offers a way of interacting with others that acknowledges and emphasizes the skills and contributions of each member of the group in every circumstance when individuals come together in groups. Through CL, Pupils participate fully in the educational process (Slavin, 1980). Students can contribute to the curriculum and classroom rules development process throughout the cooperative learning process (Kort, 1992). Group members take ownership of the collective's choices and assign authority.

SOCIAL BENEFIT

"Go alone if you want to move quickly. Go together if you want to succeed. — African

Socially speaking, collaborating with and working with other learners is what makes collaborative learning beneficial. Among these advantages are:

- Assisting in the creation of a network of social support for students;
- Increasing staff and student understanding of diversity;
- Establishing a friendly atmosphere to showcase and implement teamwork, as well as cultivating educational communities.
- Assembling individuals to collaborate towards a common objective offers a disciplined and constructive setting for fostering social bonds.

We may grow socially and academically by creating a learning community and surrounding ourselves with others who can encourage and push us. Humans are social creatures after all.

PSYCHOLOGICAL BENEFIT

Proverb

Joining forces is the first step. Maintaining unity is progress. Collaboration is the key to success. — Henry Ford

Furthermore to its social advantages, collaboration can also have positive psychological effects on the participants, improving their mental and emotional well-being. These include advantages like:

- A rise in students' self-esteem as a result of instruction that is focused on them;
- Lowering anxiety as a consequence of collaboration;
- Fostering in kids a favorable attitude toward their professors.

The aforementioned benefits ultimately result in a better educational experience. Also, we are more likely to interact deeply and come back later because of the mind's capacity and the influence of our mental state on how we see the outside world. Additionally, when we're in the correct frame of mind, we're more likely to learn things. Promoting these mental states is aided by collaborative learning.

ACADEMIC BENEFIT

Any learning approach's primary objective should, at its foundation, be to facilitate learners' improved learning. It's what collaborative learning accomplishes.

In addition to its many social and psychological advantages, the interaction and engagement it fosters improve academic achievement and have the following advantages:

- Critical thinking abilities are fostered through collaborative learning;
- It actively engages pupils in the process of learning;
- Enhancement of academic outcomes;

All things considered, interactive learning offers several wonderful advantages over typical one-sided lecturer-student engagement. It is something that professionals in the office and students in the classroom may use.

Through AI-powered features, CL encourages continuous engagement and active participation

Deeper comprehension and memory retention are eventually made possible by these AI-powered features that improve the efficacy, efficiency, and engagement of collaborative learning experiences. Students need to be engaged in the educational process from a variety of angles in order to achieve in the twenty-first century.

Therefore, it's crucial to help kids develop the abilities they want to have, like communication and social interaction, in addition to getting them ready for academic success. Because of this, collaborative learning is crucial to helping kids improve their social skills. Because of its intrinsic educational benefits, collaborative learning is vital for more than just getting by in school and overcoming first-year challenges (gaining from a peer group's social advantages). To operate well in an initially unstructured environment without the direct supervision of an instructor or lecturer, students need to acquire time and priority management abilities. Students who work in initially unstructured environments without the assistance of an instructor or lecturer must learn time management and prioritization skills. In actuality, a lot of the skills acquired from this kind of experience are essential for promoting lifetime learning. This requires collaboration and communication abilities that extend far beyond a student's first year in college.

Nowadays, university graduates are discovering that general skills are becoming more and more valuable due to the industry and employment flexibility. One tool that both teachers and students can use to their advantage is cooperative education. But the conventional understanding of learning together as a "peer study group" that meets on a regular basis only emphasizes one kind of student collaboration concerning the knowledge they have learned. There are plenty other simpler exercises that go under the umbrella of group education, even if this one is perhaps one of the better representations of the concept. There are numerous ways to learn together. Getting assistance from a more seasoned student, exchanging lecture notes, assigning someone to locate and understand reference materials, using "free time" in the classroom to work on assignments rather than socializing with other students, and even casually bringing up academic work in public are just a few instances.(Foot, Morgan, & Shute 1990; Danon & Phelps 1989) identify the three main forms of group work in schools as cooperative learning, collaborative learning, and peer tutoring.

These stand out due to the students' increasing equality and active involvement in each group. Consequently, peer tutoring is not the same as cooperative and collaborative learning, which stresses student dialogue and idea sharing as an essential means of fostering advancement and diversity in the knowledge and skills that students possess within a horizontal group as opposed to a vertical one (Howe & Tolmie, 1998; Johnson & Johnson, 1979; Dillenbourg, 1999). Their substantial differences can be explained by the extent to which they promote transitive participation.

In cooperative learning, which usually entails highly structured, extensive activity programs, jigsaw methods—in which students complete independent activities and after that, impart results alongside additional group members —are frequently employed (Schaan, 1980; Cohen, 1994; Aronson et al., 1978). The characteristics of collaborative learning include independent assignments and an individual focus on cooperative behavior (Foot & associates, 1990). Establishing a common knowledge base is typically the explicit objective of involving older learners (Roschelle & Teasley, 1995; Schwartz, 1998; Summers, 2006).Disparities in the theoretical underpinning lead to this discrepancy in focus.

The field of cooperative learning research is based on social psychology studies of teams (May & Doob, 1937; Deutsch, 1949; Bales, 1950). Scholars including Summers & Svinicki (2007),

Cohen (1994), Slavin (1989), & Webb & Farivar (1999) have concentrated on the necessity of creating environments that support the integration of resources and information. The research on sociocognitive conflict serves as the foundation for collaborative learning, especially with younger students.

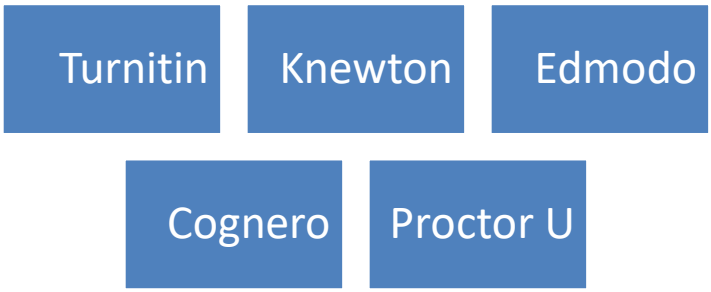
Divergent viewpoints can be a source of inspiration and a tool for conceptual change, as has been highlighted here (Howe & Tolmie, 1998; Nguyen-Jahiel, et al, 2000; Azmitia, 2000). Not with standing these variations, comparable assertions are made about the advantages that cooperative and collaborative learning can offer to both high school and college students as well as pupils in elementary and secondary education gains in conceptual proficiency and knowledge. More positive social linkages, such as participant application (Howe & Tolmie, 1998; Johnson & Johnson, 1979); Gillies & Ashman, 2003; Blatchford, et al,. 2000) are also mentioned. In a curriculum that is dense with content, group work is easier to justify due to its combined effects on academic success and social integration. There are important practical ramifications for this. AI –powered features in collaborative learning platforms can include:

1. **Personalized Recommendations:** Based on individual preferences, learning styles, and competency levels, AI algorithms evaluate user data to recommend pertinent courses, learning resources, or activities.
2. **Adaptive Learning:** On the basis of user performance and feedback, AI dynamically modifies the learning content's difficulty level and pace to provide each learner with the right amount of challenge and engagement.
3. **Natural Language Processing (NLP):** NLP techniques are utilized to enable chatbots and virtual assistants to communicate with students in real time, providing guidance, answers, and clarifications.
4. **Real –time Feedback:** AI offers immediate feedback on tasks, tests, or exercises, pointing out areas that need work and making tailored suggestions for additional reading or practice.
5. **Automated Grading:** AI saves teachers time by automating the marking of objective examinations, giving students instant feedback on their performance.

6. **Virtual Reality (VR) and Augmented Reality (AR):** Immersion-based learning is made possible by AI-driven VR and AR simulations, which provide students the opportunity to engage directly with difficult ideas and surroundings.

AI –driven assessment tools

Education can benefit from AI-driven assessment systems in a number of ways, such as effective grading, tailored feedback, and data-driven insights into students' performance. These programs evaluate several aspects of students' work, including understanding, writing quality, and problem-solving abilities, using machine learning algorithms. Intelligence (AI) solutions can help teachers handle areas of weakness more effectively by automating the assessment process and giving pupils feedback more quickly. This saves teacher's time. But issues like guaranteeing impartiality and openness in AI grading, correcting algorithmic biases, and protecting students' privacy must be well thought out and handled. Despite these obstacles, AI-driven assessment systems have the power to completely transform education by offering fairer, efficient, and effective ways to assess student performance. Certainly, here are some examples of AI-DRIVEN **ASSESSMENT TOOLS**



Turnitin: Turnitin, which is best recognized for its plagiarism detection capabilities, also uses artificial intelligence (AI) to offer writing quality, grammar, and style criticism. It gives teachers a more efficient way to assess student work and gives students tailored feedback on how to get better at writing.

Knewton: With the assistance of AI algorithms, this adaptive learning platform analyzes student performance data to customize learning materials based on each student's strengths and shortcomings. In order to support students in more efficiently mastering topics, it provides them with tailored recommendations for activities and content.

Edmodo: Edmodo was developed as a learning management system, but it now has AI capabilities for evaluation. Through data analytics, it gives teachers insights into how well their pupils are doing and engaging, enabling them to pinpoint problem areas and monitor long-term progress.

Cognero: Convero, an AI tool created by Pearson, uses AI to create tests and quizzes that are in line with predetermined learning goals. It has the ability to evaluate student replies instantly, giving teachers and students access to feedback right away.

Proctor U: By using AI technology to remotely proctor examinations, this solution ensures the validity of online assessments by keeping an eye on students through screen sharing and camera monitoring. It recognizes questionable conduct and notifies teachers of any possible infractions.

These AI-powered assessment systems show off the various ways that artificial intelligence is being used in education, from adaptive learning and exam proctoring to grading and feedback supply.

Various Challenges and Opportunities in Collaborative Learning

The "AI divide" refers to the variations in consumer acceptance and utilization of AI technologies. The "AI divide" highlights differences in consumer acceptance of AI technologies, impacting education. Virtual collaborative learning is crucial, especially amid the COVID-19 pandemic (Tadesse & Muluye, 2020). It fosters teamwork and problem-solving skills, essential for 21st-century learners (Chandra, 2015). However, implementing virtual collaborative learning faces challenges like internet connectivity and group participation (Tamrat & Teferra, 2020). Despite universities offering online courses, faculty struggle with effective teaching methods (Faja, 2013).

Challenges:

1. **Overreliance on Technology**: Over-reliance on AI tools runs the risk of impairing pupils' capacity for autonomous learning and critical thinking.
2. **Technical challenges**: Platforms for collaborative learning powered by AI may experience technical difficulties including device compatibility, connection, or software

bugs. To reduce disturbances to the learning process, it is imperative to provide strong technical assistance and troubleshooting mechanisms.

3. **Resistance to Change**: One prevalent issue is resistance to embracing new technologies (Harendita, 2013). Some educators could be concerned about the ostensible complexity of AI tools or worry that these tools will take the place of them in the classroom. Concerns about job stability and the possible disruption of conventional teaching methods are frequently the root causes of resistance to change. Teachers of languages who have found success with traditional methods might be hesitant to investigate AI-driven alternatives.
4. For instance, a seasoned language instructor with years of expertise with textbooks and whiteboards could be reluctant to include AI-powered language learning applications into their curricula out of concern that it would lessen their teaching role.
5. **Resource Constraints**: Not every educational institution has the financial means to invest in AI-powered language learning systems and the associated infrastructure. It could be challenging for schools with limited resources to set aside funds for the use of AI. Strict technological access, outdated technology, and inadequate internet connectivity can all be barriers to the effective use of AI approaches in language learning.
6. **Ethical Concerns**: Concerns among instructors may include data privacy, student monitoring, and potential biases in AI systems. When AI systems collect and process student performance data, privacy concerns can arise. Teachers may have concerns over the utilization of student data and whether AI systems are assessing student work fairly and impartially.
7. For instance, when AI is employed to keep an eye on students' writing assignments, a language instructor starts to doubt the transparency and impartiality of the grading system.

To overcome these challenges, instructors need skills in designing performance-based tasks (Bacon & MacKinnon, 2016). Further research is needed to address these challenges in various educational contexts (Weber et al., 2014; Muuro et al., 2014).

Opportunities

1. **Personalized Learning**: AI-powered systems are able to offer customized educational programs that adjust to the needs, advantages, and disadvantages of each learner. Language instruction could be completely transformed by personalized learning. An illustration of this would be a language learning app that employs AI to determine a student's language proficiency and creates a personalized curriculum that concentrates on the areas in which the learner most needs to improve.
2. **Efficiency and Automation**: Grading is one administrative process that AI can expedite, freeing up teachers' time to concentrate more on instruction and feedback. It can take a lot of time for language teachers to grade a lot of homework and tests. Grading technologies powered by artificial intelligence (AI) can evaluate student work quickly and accurately, freeing up teachers' time to interact with students and address their individual needs. As an illustration, an AI-powered grading tool evaluates student essays for grammar and vocabulary usage automatically, freeing up the teacher to focus on offering helpful criticism.
3. **Global Reach**: Educators of languages can interact with their pupils remotely by utilizing artificial intelligence (AI) technologies. Intercultural communication is facilitated through language exchange programs, online language education, and AI-powered collaborative learning settings. For example, an AI platform pairs students with native speakers from all around the world during virtual language exchange sessions led by a language teacher.
4. Language teachers have a special chance to employ AI to transform language teaching in a future where language and communication skills are vital. The gap can be reduced, if not completely eliminated, and instructors may realize the full potential of AI in language instruction by critically embracing AI while making sure that all educators have the resources and training necessary to do so. Our guiding principles in building the future of language education will be collaboration, innovation, and a dedication to equity as we traverse this revolutionary path**.**

CONCLUSION

As technology advances, the combination of AI and collaborative learning has the potential to transform education, creating a more productive and inclusive learning environment. In

comparison to competitive and individualistic efforts, community living (CL) provides numerous benefits, including increased productivity, achievement, and loving, devoted partnerships, enhanced social skills, psychological health, and self-worth. AI-powered digital platforms that support collaborative learning enable effective knowledge sharing, personalized experiences, and increased engagement. Real-time feedback, data-driven insights, and adaptive content delivery fueled by AI are combined to create a dynamic and engaging learning environment. The notion of CL, in which students collaborate in groups and couples to accomplish a learning objective has attracted a lot of interest and support. As part of the CL teaching approach, Students collaborate in pairs or trios to perform a shared activity, regardless of their individual ability levels.

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