Collaborative Learning in the Age of AI: Fostering Social Interaction and Co-Operation

By

Onyejele, Florence Okwuchi (Ph.D.),
drflorenceo@gmail.com (08038704806)
Department of Adult and Continuing Education,
College Of Education, Michael Okpara University of Agriculture, Umudike

Otigbuo, Patience (Ph.D.)
Departmental Of General Studies Foundation Schools
Ken Saro Wiwa Polytechnic Bori
Rivers State

&

Nwaokoma, Ijeoma Avaja (Ph.D.)
Ambassador College of Management Science and Technology; Port-Harcourt, Rivers State
Ijenwaoko@Yahoo.Com

Abstract

The concept of artificial intelligence (AI) is no longer seen as only a learning instrument but as an intelligent agent which can foster collaborative learning in the social interaction and cooperation among students. Collaborative with AI has gone beyond the traditional teacher-student dynamic, it has become an active participant in the learning process. This paper explores the challenges encountered in using AI in education. Role of teachers as facilitators in AI classroom, equity, and ethical implications of AI in education and transparency. In conclusion, artificial intelligence should be treated as a social media tool that can enhance social interaction and collaborative learning.

Keywords: Collaborative Learning, Artificial intelligence, AI in Education, Social Interaction and Co-operation.

Introduction

Collaborative learning is an important part of education because it encourages interaction and teamwork, which makes learning better. In the 21st century, we have seen fast changes due to digital technology and advancements in Artificial Intelligence (AI), which further enhance learning experiences.

"Collaborative learning" refers to different educational methods where students or students and teachers work together. This approach uses groups to help students learn by solving problems, understanding new ideas, and completing tasks together. It allows learners to access, understand, and combine information and ideas without just memorizing facts.

Collaborative Learning (CL) focuses on students and encourages them to actively participate and improve their skills. According to Newham (2023), this method is based on how groups work together and includes five key elements: positive interdependence, social skills, face-to-face interaction, individual responsibility, and group reflection. This means forming small, diverse groups of students based on factors like gender, race, ability, and socio-economic background to work together. When combined with Artificial Intelligence, collaborative learning creates a partnership between human creativity and machine intelligence, which improves the overall learning experience (HyperSpace, 2024)

Artificial intelligence (AI)

Artificial intelligence (AI) can be used to customize learning for students in collaborative environments. Scott (2024) describes AI as a field of computer science that focuses on making computers act intelligently, simulating human behavior, and even improving on it. This means educational content can be tailored to meet the individual needs of each student, allowing them to learn at their own pace and focus on areas where they need more help. In recent years, AI has played a big role in education, improving how students learn and shaping the future of learning. AI has also made a significant impact in areas like healthcare, communication, and agriculture. In science education, AI has been used to automatically assess students' written responses (Shin & Shim, 2021). Science teachers often use open-ended questions to understand students' thinking (Authors, 2020). Collaborative learning with AI can happen in pairs or larger groups. AI is a technology that creates systems capable of thinking and acting like humans, with the ability to achieve goals (Goplani, 2024). As students share their ideas, listen to others, and defend their points, they gain a deeper understanding as a group. AI in collaborative learning exposes students to different perspectives, gives instant feedback, improves critical thinking, and fills knowledge gaps by providing relevant information quickly. It offers personalized and creative learning experiences, preparing students for a future where working with machines is key (Hyperspace, 2024). AI has pushed education beyond just learning facts, encouraging creativity and diverse viewpoints

The Concept of Collaborative Learning with AI

Collaborative learning with AI goes beyond the usual teacher-student interaction. It changes the learning experience by allowing AI to actively participate, offering suggestions, ideas, and even creating content. This teamwork between human creativity and machine intelligence improves the learning process (Ryel, 2022). Collaborative learning with AI creates a strong

partnership between people and machines, making the learning experience better. Through AI-enhanced collaborative learning, Social Interaction is fostered, self-awareness is created, unity in diversity is promoted, improved academics, personal responsibility is shared. Students benefit from a wide range of perspectives which enables them develop to critical thinking skills and understanding. Collaborative learning can help students practice skills like conflict resolution, communication and or polite arguments. Collaboratively, students contribute collectively to this learning style, each handling a distinct task.

Social Interaction in Education.

This is an integral aspect of human development which plays a critical role in education and learning. Interacting with other people assists the learner to organize his thoughts, understanding and reasoning. Social interaction fosters collaboration, critical thinking, engagement, and lifelong learning. One way for students to shoulder the responsibility of learning is for them to be the readers, writers, speakers, listeners, and thinkers in the classroom through active engagement in social interaction with others (Alvermann & Phelps, 2015; Vacca & Mraz, 2021). Varied social interaction activities occur in educational settings, some of which are: group work, teacherstudent interactions, collaborative learning, peer interactions etc. collaborative learning and social interaction and AI put together, would influence students into developing their interpersonal skills, gain self-confidence, increase motivation, feel connected, develop a positive mindset towards school, overcome shyness.

Challenges of using AI in education

Artificial intelligence as good as it looks, is not without challenges in a changing world bedeviled with varied dynamics in teaching and learning. Various ethical concerns and challenges abound in the use of AI as a tool for social interaction and collaborative learning. Such challenges as seen in discrimination, ease of accessibility, addiction to technology, ethical issues, decrease in human interaction, reliance on technology, non-preparedness by teachers, laxity on the part of students and so on. As a result, the use of artificial intelligence in teaching, learning and interactions becomes questionable. Strategies for Fostering Collaborative Learning and Social Interaction in AI Infused Classroom In a classroom setting, where artificial intelligence forms the bedrock of learning, the teacher has a task of mapping out strategies to foster collaborative learning as well as improve social interaction among the students. To enhance these, such skills as the ones listed below readily come to mind. They are:

1. Peer to Peer feedback and reviews
2. Creation of Groups;
3. Group Projects and Activities
4. Virtual and augmented reality experiences;
5. human centered AI tools for collaboration,
6. Strategies in creating structures
7. Jigsaw techniques

The Role of Teachers as Facilitators in AI Classrooms

As facilitators, teachers play vital roles as guides and motivators. The teacher is responsible for forming diverse and balanced groups, considering factors such as students' abilities, interests and personalities. They channel and direct students' learning through learner-centered practices rather than sole lecturing. An effective teacher understands students' learning styles. As a facilitator, he creates meaningful learning contexts and environment; he creates room for students' for application of concepts through activities, interaction and collaboration. He identifies students as partners' and co-producers of knowledge he also values students' contributions. As a facilitator, the teacher creates learning tasks to encourage unity. He ensures that each group of learners have varied skills and perspectives, thereby, maximizing the potential for social interaction and collaborative learning. Adubal (2024) opined that to encourage the teacher as a facilitator, he should acquire certain skills like:

1. Creating an inclusive learning environment.
2. Awareness of group dynamics.
3. Moderation.
4. Trust and curiosity.
5. Agenda design.
6. Using facilitation tools
7. Facilitation techniques

Equity in AI Enhanced Collaborative Learning

In today's schools, Artificial Intelligence (AI) has become a helpful tool to promote fairness in collaborative learning and social interaction. AI can personalize learning and improve how students interact with each other. By analyzing a student's learning patterns, strengths, and weaknesses, AI platforms can adjust educational content to meet each student's unique needs. This ensures that all students, no matter where they start, have an equal chance to succeed (Roscoe et al., 2022).

In classrooms and society, different students face inequalities when it comes to collaborative learning. To support fairness in education and improve collaborative learning with AI, certain steps should be followed, as Hamilton (2024) suggests.

1. **Manage classroom behavior**: AI can help teachers better organize and manage student behavior, especially in large groups, but it's also helpful in smaller classes.
2. **Help students with special needs**: AI ensures that all students, including those with special needs, are included in the learning process and get the support they need, without taking attention away from other students.
3. **Plan lessons accurately**: AI can help teachers plan lessons more precisely, ensuring the curriculum is covered within the set time.
4. **Work with parents personally**: AI can help teachers build strong relationships with parents, allowing for more personal collaboration.
5. **Automate administrative tasks**: AI can automate tasks like scheduling and sending emails, making it easier to organize how schools and classrooms operate.In the words of Ali-Tizkar (2023), The potential of AI to revolutionize education is undeniable. However, the question of whether it can bring equality to this crucial domain is intricate, demanding a nuanced discussion that acknowledges both its promising possibilities and lurking pitfalls. Among these Promising Possibilities are:

- Personalized Learning
- Adaptive Systems
- Early Intervention
- Global Reach
- Lurking Pitfalls
- Bias and Discrimination
- Digital Divide
- Teacher Displacement
- Privacy Concerns
- Human Connection and Critical Thinking

To achieve equality in education through Artificial Intelligence, certain strategies need to be adopted. Some of which are:

1. Responsible Development: Developers must prioritize building AI systems that are fair, unbiased, and inclusive. Diversity in AI development teams and rigorous testing for bias are crucial.

2. Ethical Implementation: Clear ethical guidelines and regulations are needed to govern the use of AI in education, ensuring data privacy and protection against discrimination.
3. Teacher Training and Support: Educators need training on effectively using AI tools and integrating them into their teaching practices. This human-AI collaboration is crucial for success.
4. Equity-Focused Investments: Investments in AI technologies should prioritize providing access and resources to underserved communities to bridge the digital divide.
5. Continuous Monitoring and Evaluation: The impact of AI on education must be continuously monitored and evaluated to identify and address potential issues and ensure it truly promotes equality. (Ali Tizkar (2023).

Equity, Access and Inclusivity in Ai- Enhanced Collaborative Learning. Artificial Intelligence has made headlines in education in the year 2024, but mostly in a limited way: as a tool for individual use by students or teachers. Powerful teaching and learning however is not just individual, it is social. We have long understood that technologies make it easier for students to collaborate well. As we work towards AI support for collaborative learning, we are finding that issues of equity, access and inclusivity in AI-enhanced collaborative learning quickly comes to the fore. In collaborative learning, students should make their thinking visible by sharing their ideas with others. A simple proxy measure for equity in remote, collaborative learning could be the amount of talk time by each student. Another proxy measure often used in brain storming is the number of distinct ideas generated. Existing processing techniques could be computing these metrics. But a large body of computersupported collaborative learning research informs us that such metrics over-simplify social learning. More appropriate metrics emphasize how each student build upon each other ideas for example trans activity (Joshi &Rose, 2007). We have found that belonging and knowledge building are equity and inclusivity laden in AI collaborative learning. 4 9 AI collaborative learning have been reflecting on issues of NSF- Funded AI Institutes. Michael is a postdoc with the NSF institute for students- AI Teaming (iSAT) and is involved in building AI that supports small group that sports small group collaboration in K-12 classrooms and Jeremy is a CO-PI with the NSF engage. AI institute which is building on storyline-driven learning experiences. The researcher noticed that good ideas sometimes are left on the floor; although the ideas are generated the student group did not pay attention to or in some cases dismissed them outright- some fruit ideas. The reason includes equity considerations (e.g. race, gender) that influence why some students are better listened to than

others. Jeremy's team hosted, teachers who offered powerful examples of how AI technologies can give more "voice" to students with disabilities by offering them more inclusive ways to listen, and speak can be heard in a collaborative learning situation. Naïve designs for AI in collaborative learning might assume all students are like imagined "typical" students, but in realistic collaborative learning situations, learner variability is always present and important to inclusiveness. However, both institutes foresee collaborative learning environment in which AI support automatic adaptively. In Michaels workshop, researchers articulated ways in which AI could notice important yet neglected ideas and help students include those ideas as they build knowledge. At the same time, researchers pondered whether overlooking an idea might indicate a micro-aggression (Adams-Wiggins, 2020) and what to do if equity issues were blocking highquality collaborative learning. In Jeremy's workshop, teachers recognized they cannot be everywhere as students collaborate in small groups, and yet they insist teachers remain "in the loop" if collaborative learning stalls in a particular group. 10 The concern of both institutes is that they believe a teacher should be aware of what the AI is doing (e.g. inspectable, explainable interventions) and should have the power to override an automated response by the AI. On the other hand, both institutes recognize that giving teachers full transparency into the AI's actions might compromise youth's expectations of privacy in small group collaborations. Both institutes find equality, inclusiveness and access come to therefore as they contemplate tensions between automation and awareness.

The need ongoing research and evaluation to ensure effective integration of AI collaborative learning.

1. Use ethical and trustworthy AI tools.
2. Don't rely too much on AI in your work.
3. Always give credit to sources in your research.
4. Proofread and edit AI content to add a human touch**.**

For effective AI use in education, the following policies are recommended:

- Create teams focused on AI,
- Promote AI understanding,
- Set responsible AI guidelines and provide professional development,
- Support AI research and development.

Ethical implications of AI in education and transparency

It's important for AI to be understandable and clear when used ethically. Transparency helps build trust and responsibility among teachers, students, and stakeholders by making sure they know how AI works. However, AI can sometimes cause discrimination. Biases in AI systems can lead to unfair treatment of certain individuals or groups, which can reinforce negative stereotypes and limit their ability to participate fully in society.

What is Transparency in AI Ethics

AI transparency means understanding how AI systems make decisions, why they produce certain results, and what data they use. It's like giving people a view into how AI works, which helps them trust the system (www.zendesk.comblog, ai-transparency).

AI in education has brought big changes, offering better learning experiences, personalized teaching, and more efficient administration. However, it's important to balance innovation with responsibility. AI systems are not neutral—they reflect the values, biases, and data of their creators. Ethical issues in AI education include concerns about data privacy, fairness, bias in algorithms, learner independence, transparency, accountability, and making sure AI benefits are available to everyone equally.

Conclusion

Ethical issues in AI-enhanced education cover many areas, such as data privacy, security, bias, fairness, student independence, transparency, and accountability. AI is becoming more common and powerful in education, healthcare, and security. It can be a great tool for collaborative learning and social interaction in education, but for it to work well, we need to address the ethical concerns.

AI requires careful and ethical management to make sure it benefits everyone. However, not everyone has access to AI due to barriers like digital skills, disabilities, language, and cultural differences.

Suggestions

The following are suggestions for the effective deployment of AI by educator's, policy makers and researchers in the course of promoting collaborative learning in the age of AI

1. They must ensure that AI tools are used ethically, focusing in the student privacy and responsible usage.
2. They should provide guidance, ensuring that AI enhances learning experiences without comprising safety and privacy.

3. AI policy makers have a risk-based and tiered approach to regulating AI that builds on existing laws and standards and on accountable practices of organization.
4. Educators must ensure that they focus in teaching fundamental AI knowledge, encompassing machine learning natural language processing and data ethics. Teachers must also acquire practical skills in using AI-powered educational tools to enhance their teaching methodologies effectively.
5. Educators and policy makers should augment not replace human interaction and decision making in the classroom.
6. Leveraging AI's transformative power, human progress can be driven by revolutionizing education globally, democratizing access and preparing future generation.
7. Artificial Intelligence (AI) be treated as one of the social media tools that can foster interaction.
8. The teachers as facilitators in the classroom should encourage the use of AI as a way of improving relationships among students.
9. The government should train teachers periodically to improve their digital skills, to be able to use AI effectively in the classroom.

References

Adubal,. R.F., (2024) The 21st Century Teacher as A Facilitator of Learning AI-enhanced title and description (SCRIBD)

Akgun, S., Greenhow, C. Artificial intelligence in education: Addressing ethical challenges in K12 settings. AI Ethics 2, 431–440 (2022). https://doi.org/10.1007/s43681-021-00096-7

Ali Tizkar (2023) Can AI Bring Equality to Education? Linkedin (2023) Artificial intelligence in Education: The Future of Early Childhood Education.

Awofiranye, M, (2024) The Challenges 0f Using AI in Education; February 9, 2024 Collaborative Learning Strategies for Fostering Teamwork in the ESL Classroom. www.bridge.edu. The Bridge Universe.

Donna E. Alvermann, Stephen F. Phelps (2015) Content reading and literacy: Succeeding in Today's Diverse Classrooms. 3rd ed .xv, 447 p. : ill. ; 25 cm.

Ethics and Equity in AI for Collaborative Learning By Michael Alan Chang, Jeremy Roschelle, and iSAT Research Group (2023)

Gondola J., (2024) Ensuring Equity: The Role of AI in Education Ethics

Goplani, V., (2024).The Emergent Role of Artificial Intelligence (AI) in Fostering Collaborative Learning Experiences AI in Education

Hamilton., (2024) How to empower equity in education with the help of AI (Euro Science)

Hyperspace (2024) AI-Enhanced Collaborative Learning: Metarverse for learning. https://www.linkedin.com/pulse/collaborative-learning-ai-future-human-machine-mark https://www.filamentgames.com/blog/how-ai-enhances-collaborative-learning/ https://www.sci.pitt.edu/news/erin-walker-ai-collaborative-learning

Inclusion and Equity as a Paradigm Shift for Artificial Intelligence in Education By Rod D. Roscoe, Shima Salehi, Nia Nixon, Marcelo Worsley, Chris Piech, Rose Luckin (2022) in Artificial Intelligence in STEM Education 1st Edition, First Published2022. Imprint CRC Press, Pages16 eBook ISBN9781003181187

Ivan. A. (2022) Valamis: Linkedin March 2, 2022·updated April 5, 2024

Kondrat. F., (2023) EdTech Content writer Collaborative learning.

Marcos Augusto F. Borges and M. Cecilia C. Baranauskas (2003) Supporting the facilitator in a collaborative learning environment Published Online: January 1, 2003pp 39-56https://doi.org/10.1504/IJCEELL.2003.002152

Mujahid Naqvi & Noman Ali (2024). Ethical implications of AI in modern Education: balancing innovation and Responsibility –Research Gate

Newham, T., (2023) Think learning: 5 Key Benefits of Social Learning in L&D: employee engagement

Reading Horizons: A journal of literacy and Language Arts; Volume 52, Issue 4, Sept/October 2013. Article 5, 10-2013 The Impact of Social Interaction on Student Learning Beth Hurst Missouri State University, BethHurst@missouristate.edu Randall Wallace Missouri State University, RandyWallace@missouristate.edu Sarah B. Nixon Missouri State University, sarahnixon@missouristate.edu

Riel, S. Pedagogy (TESOL/TEFL Strategies & Methodology);

Scott, .G. (2024) What Is Artificial Intelligence (AI)THE INVESTOPEDIA TEAM Updated April 09, 2024 Smith, B, L.& MacGregor,.J. (2012) Collaborative Learning: A sourcebook for Higher Education, University Park, PA: National Center on Post-Secondary Teaching, Learning and Assessment (NCLTA) 2012 14

Sormunen, E.; Alamettala,.T. & Heinstrom, J (2013), The Teachers Role as Facilitator of Collaborative Learning in Information Literacy Assignments. DOI: 10.1007/978-3-319- 03919-0 67. Conference Paper Spark Generation: Academics, April 20,2022; © 2024 Spark Online School S.R.L All Rights Reserved

Walsh, T. (2021) Clickview “What is collaborative learning”? The Education Endowment

Xu, E., Wang, W. & Wang, Q. (2023) The effectiveness of collaborative problem solving in promoting students’ critical thinking: A meta-analysis based on empirical literature. Humanit Soc Sci Commun 10, 16. https://doi.org/10.1057/s41599-023-01508-1