

PERSONALIZED AI TUTORING AS A SOCIAL ACTIVITY: PARADOX OR POSSIBILITY?

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Can the paradox between individual tutoring and social learning be reconciled through the possibility of AI?

DR. RON OWSTON
RESEARCH ASSOCIATE,
AI IN HIGHER EDUCATION
CONTACT NORTH | CONTACT NORD

For decades, the paradox between group learning and individual tutoring has been evident. In 1977, Albert Bandura introduced the idea that learning is a social endeavor.¹ Through observation, imitation, and interactions with peers, students learn better and retain more than they would otherwise. This theory supports currently popular instructional approaches such as online discussion groups, peer learning, and active learning. In 1984, the educational psychologist Benjamin Bloom found that individual tutoring yielded superior performance when compared with traditional classroom instructional methods.² Bloom acknowledged that individually tutoring all students was unrealistic, so he proposed that researchers look for classroom instruction methods that can approach the efficacy of tutoring.

Fast-forward to 2024: tutoring systems based on generative AI (GenAI) now make large-scale personalized tutoring not only possible but also accessible to all. However, the important social aspects of learning will be missing if all students study independently. Does AI offer the possibility of combining the effectiveness of tutoring with the beneficial social aspects of learning? I believe the answer is yes: the chasm between these approaches can be bridged through the thoughtful use of GenAI tutors in both classroom and online settings. The key lies in intentionally designing GenAI tutors and structuring learning activities to take advantage of social interaction with peers.

GENAI TUTORS

To illustrate my belief in the possibility represented by AI tutors, I will focus here on a specific app. Numerous GenAI tutors are currently available, with more being released almost every day.³ Some are subject specific, while others provide tutoring and homework help on all subjects. Some are available at no charge, while others require a subscription or donation for access. Moreover, some are restricted to students geographically or

1 Albert Bandura, *Social Learning Theory* (Englewood Cliffs, NJ: Prentice Hall, 1977).

2 Benjamin S. Bloom, "[The 2 Sigma Problem: The Search for Methods of Group Instruction as Effective as One-To-One Tutoring.](#)" *Educational Researcher* 13, no. 6 (June 1984).

3 See, for example, "[70 Top AI Tutor Tools.](#)" TopAI.tools (website), accessed June 4, 2024.

institutionally. [AI Tutor Pro](#) is a freely available, ChatGPT-based tutor.⁴ AI Tutor Pro personalizes learning about any topic, at any level, in thirty languages. The app illustrates how a GenAI tutor can be used to foster social interaction and learning.

Learning is supported by two distinctly different functions in AI Tutor Pro: the “Check my knowledge and skills on any topic” tool and the “Grow my knowledge and skills on any topic” tool. After a learner enters a topic, the “Check” tool asks questions about the topic in a friendly, interactive chat session. Users can enter their answers in free-form text or simply say they don’t know the answer. AI Tutor Pro responds in a supportive way by praising the learner for a correct answer or providing a hint for an incorrect answer to encourage trying again. The interactive chat session continues until the learner decides to end the session. At that point, a summary table of all questions asked by AI Tutor Pro, the correct answers, and the learner’s answers is produced. This entire session and the summary table can be copied for future reference, or the summary table can be shared on social media.

With the AI Tutor Pro “Grow” tool, the learner enters a Socratic-style dialogue. AI Tutor Pro begins by asking a thought-provoking question such as “Have you ever wondered why...?” Unlike with the “Check” tool, learners aren’t given the correct answer. Their learning is scaffolded, and details about the topic are revealed layer by layer through exploration and interaction with the chatbot. The session continues until the learner decides to end it or chooses to learn about another, related aspect of the topic.

Common to both the “Check” and the “Grow” tools is the ability for the learner to copy and paste text as the subject to interact with the chatbot or upload a file. This allows learners to improve their understanding of assigned readings or lecture transcripts, for example, by interacting with this text. In lieu of copying and pasting or uploading, mobile users can scan text to use as the subject of a session.

⁴ Contact North | Contact Nord, a not-for-profit organization based in Ontario, Canada, released AI Tutor Pro in November 2023.

Three features of AI Tutor Pro are designed to support a variety of learner characteristics. One feature allows learners to select the language complexity of a session by choosing whether they want to interact using language on the elementary school, high school, undergraduate, or professional level. This is not to suggest that AI Tutor Pro is recommended for use by young learners; rather, it allows concepts and interactions to be carried out at a reading level with which learners are most comfortable.⁵

A second feature allows learners to talk with the chatbot in thirty different languages. Contact North | Contact Nord added this feature after discovering that many users tried using foreign languages even though nothing suggested they could. The interface remains in English (there is also a French version of AI Tutor Pro), but the dialogue is presented in the chosen language. This feature makes learning more accessible to users whose first language is not English. A bonus of this function is that it can support international language learners to carry on a conversation in their target language.

A third feature allows AI Tutor Pro's responses to be read aloud. This supports auditory learners and also learners with low vision. When the app is used on a mobile device, learners can choose the voice input feature of their device so that they can have an entirely oral conversation with the chatbot. The language feature works with this option as well, which means that users can learn a language in the context of any subject.

AI AS A SOCIAL LEARNING TOOL

All the features of AI Tutor Pro noted above point to its use as a personalized learning tool. While this is certainly one of its aspects, the app can also bridge the gap between individualized and social learning. Listed below are ten suggestions for how faculty can apply the app for social learning in classroom settings and, with adaptation, in online environments. Whereas

5 AI Tutor Pro was created for postsecondary students. OpenAI recommends adult supervision for ChatGPT use by students between 13 and 18 years of age, and it advises against ChatGPT being used by children under 13 years old. See "Is ChatGPT Safe for All Ages?" OpenAI (website), accessed June 4, 2024.

some suggestions are unique to AI Tutor Pro, others are applicable to most other AI tutors as well.

1

Ten Questions

Group students into pairs or small teams and assign them a topic. Then ask them to use the “Check” tool to respond, within a set time limit, to ten questions generated by AI Tutor Pro. Since the questions are AI generated, they won’t always be the same, but they will be equivalent in complexity. Once the questions are completed, summary tables of answers can be shared on social media as described above or copied and pasted into a class-shared workspace. After working through several topics, the instructor leads a class discussion on the questions, focusing on topics causing students to struggle.

2

Blended Learning

Identify online activities for groups. When assigned a blended or fully online course to teach, faculty often struggle about what kind of activities to use online. As a result, the online activities may end up being meaningless, unproductive, and not motivating for students. The “Ten Questions” approach described above can easily be used online. Virtual teams can compete in Zoom breakout rooms, for example, and return to the main room when finished to share their findings. Or students can use the “Grow” component of AI Tutor Pro and write about and share online what they learned on a given topic.

3

Foreign Language Learning

Use the AI Tutor Pro “Grow” tool in a foreign language course to develop and reinforce basic listening, speaking, reading, and writing skills. This activity is best done if students have their own mobile device, preferably one with earbuds or a headphone. Ask students to research an aspect of the history, culture, geography, or politics of the country whose language they are studying. In pairs, students enter the topic and select the target language and language level (e.g., elementary, high school, undergraduate, or professional).

Next, they take turns responding to AI Tutor Pro in writing or orally, and they listen to or read AI Tutor Pro's response. Students should be encouraged to discuss their responses before entering them and to help each other understand AI Tutor Pro's output.

4

Collaborative Problem-Solving

Divide students into small groups, either online or in class, and assign them complex problems or projects related to the subject matter. Ask them to explore the topic with AI Tutor Pro to provide initial guidance and understanding. Groups can then work together to solve the problems, using the AI Tutor Pro "Check" tool as a resource for hints or explanations when they get stuck.

5

Peer Teaching

Pair students, and give each partner a different but related topic to explore using the AI Tutor Pro "Grow" tool. At an appropriate point, partners teach each other what they have learned. To enhance the experience, the partner being taught can take notes. These notes are then combined and pasted into the "Check" tool. Students next work individually and are queried on the notes to reinforce their learning of the topics.

6

Role-Playing

Ask students to play the roles of famous contemporary or historical people who have different ideas, positions, or discoveries on a given topic. Groups of students are assigned to research the topic from the differing perspectives of those individuals using the AI Tutor Pro "Grow" tool. After groups research the topic, the whole class comes together to share, compare, and reconcile the perspectives on the topic. For example, suppose the topic under study is "how people learn" in an introductory psychology course. One group could take the perspective of the American psychologist William James, while another plays B. F. Skinner, and so on. Instead of just entering the person's name for the "Grow" tool topic, learners can give the chatbot a more effective prompt such as, "You are [person], and I want you to teach me about [topic]."

7

Project-Based Learning

Assign a long-term project that requires research, problem-solving, and application of knowledge. Groups can use AI Tutor Pro to learn about the project topic, delve deeper into the topic as needed, and guide their learning process. Different group members can research and share different aspects of the topic. The project can culminate in a presentation or report that synthesizes their findings and, importantly, their learning journey.

8

Customized Learning Pathways

Create customized learning pathways for groups of students on topics of a particular unit of a course. The activity is best suited for optional or supplementary topics in a course. The pathways consist of a sequence of key topics that the instructor has tested in advance. These pathways may include specific topics and subtopics that the group works through together with the AI tutor, supporting each other along the way. If the class is large, multiple groups can work on the same pathways.

9

Discussion and Reflection

After using AI Tutor Pro individually or in groups on any of the above or other activities, hold sessions in which students discuss what they learned, challenges they faced, and how the AI tutor helped them overcome these challenges. This can include reflection on how AI technology impacts learning, any inaccuracies or hallucinations found in the AI-generated content, and potential future applications of AI.

10

Mashups

Combine several of the above activities. For example, “Discussion and Reflection” can follow any of the other activities. “Customized Learning Pathways” can be created for “Collaborative Problem-Solving” activities. Any of the activities can be carried out in a foreign language.

FUTURE OF AI AND SOCIAL LEARNING

We need to shift our thinking about GenAI tutors serving only as personal learning tools. The above activities illustrate how these tools can be integrated into contemporary classroom instruction. The activities should not be seen as prescriptive but merely suggestive of how GenAI can be used to promote social learning. Although I specifically mention only one online activity (“Blended Learning”), all can be adapted to work well in online or blended classes to promote social interaction.

Moreover, we should start designing more features into GenAI tutors to take advantage of social learning. The capability of AI Tutor Pro to allow summary tables to be copied or be directly posted to social media is an example of this. Another feature that could be added to tutors is to enable multiple logins for teams of students to learn together. The addition of a tracking tool to record individual and team activity would be valuable as well. Uploading content to the AI tutors so that all students can work with the same materials would also be a helpful addition.

GenAI tutors will continue to evolve to become even more powerful than they are today. Through thoughtful design and integration into classroom and online learning, they will rapidly become indispensable tools for both personalized and social learning.



Ron Owston is Professor Emeritus at York University and Research Associate, AI in Higher Education, for Contact North | Contact Nord.

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