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OPPORTUNITIES AND PROSPECTS FOR IMPROVING TUTORING PRACTICE THROUGH THE USE OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES

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In higher education, students' needs are becoming increasingly diverse, making it insufficient to support them solely through general recommendations and traditional monitoring methods. Some students experience difficulties understanding course content, while others struggle with time management, organising independent learning, or adapting to the university environment. An important task of tutoring is to recognise these differences, maintain regular communication with students, and help them manage their own learning pathways consciously.

The development of artificial intelligence (AI) tools is creating new opportunities for tutoring practice. Learning analytics, recommendation systems, intelligent tutoring systems, and generative AI tools can help organise large amounts of information, provide preliminary answers to students' questions, recommend learning resources, and reduce repetitive administrative tasks. In their review of AI use in higher education, Crompton and Burke show that these technologies are being applied in areas such as assessment, outcome prediction, student support, and educational management [1]. However, introducing technology does not automatically improve the quality of education. Outcomes depend on the tool's alignment with pedagogical objectives, the preparedness of the professionals using it, and the extent to which human oversight is maintained. Therefore, AI in tutoring should be viewed not merely as a technological innovation, but as a responsible practice that supports student development.

Key opportunities for using Artificial Intelligence in Tutoring:

One important area is strengthening individualised support. In traditional tutoring, students' needs are often identified through conversations and reviews of attendance and academic performance data. AI tools may help organise this information and identify recurring patterns. For example, if a learning management system shows repeated late submissions, recurring errors in particular topics, or a sharp change in platform engagement, a tutor may arrange an early conversation with the student. Such indicators do not, by themselves, prove that the student is experiencing difficulties; rather, they can signal the need for further clarification. A systematic review of personalised learning by Farhood and colleagues examines AI's potential to adapt learning content, recommend resources according to students' needs, and individualise the learning process [2]. These findings are relevant to tutoring: instead of giving every student identical advice, support can be planned in accordance with individual levels of preparation, goals, and challenges. Nevertheless, personalisation should not involve unnecessary collection of students' personal data, and algorithmic recommendations must be reviewed by a human.

A second area is making academic guidance more timely and accessible. Generative AI tools can help students develop study plans, explain complex concepts in simpler language, break assignments into manageable stages, or generate questions for independent study. Tutors can use these capabilities to encourage students' thinking, clarify learning objectives, and divide problems into smaller tasks. For instance, when a student is preparing for an examination, an AI tool may produce an initial weekly revision plan, which the tutor and student can then review together to ensure that it is realistic, achievable, and consistent with course requirements. In their systematic review of intelligent tutoring systems, Lin, Huang, and Lu note both the potential of AI-based systems to support learning and the need to evaluate outcomes accurately and test the effects of technology across different contexts [3].

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This is also important in tutoring: AI-generated responses should not be treated as unquestionable facts, but used as a starting point for discussion and reasoning with the student.

A third area is the early identification of academic difficulties and the coordination of support. Learning analytics can combine data from different sources and highlight situations that may require additional attention. For example, repeated failure to submit assignments alongside reduced participation in classes may prompt a tutor to initiate a conversation. However, an algorithmic signal must not become a final judgement about a student's ability, responsibility, or future performance. Social, family, health-related, or employment circumstances may not be reflected in the available data. Therefore, any alert should be checked through respectful communication with the student and a careful understanding of the situation.

A fourth area is reducing tutors' administrative workload. AI may assist with repetitive tasks such as scheduling meetings, preparing preliminary responses to frequently asked questions, organising general information, drafting questions for consultations, and producing initial versions of reports. This can allow tutors to devote more time to direct communication with students, understanding their difficulties in depth, and providing individual guidance. Such gains in efficiency are possible only when automated text is checked, corrected, and adapted to the student's circumstances.

Alongside the opportunities offered by AI, academic literature also highlights several challenges. Generative systems may produce inaccurate information in a confident tone, invent sources, or oversimplify complex situations. In their overview of different applications of AI in higher education, Crompton and Burke show that the value of technology depends on how it is aligned with educational tasks [1]. Tutors should therefore verify recommendations prepared for students and avoid making important decisions solely on the basis of automated conclusions.

A second concern is privacy. Tutoring may involve discussions of students' academic performance, personal circumstances, contact details, and other sensitive information. Entering such data into publicly available AI services may reduce control over how it is stored and subsequently used. Guidance prepared by Miao and Holmes for UNESCO emphasises the importance of putting human interests at the centre of generative AI use and paying attention to privacy and user preparedness [4]. In practice, tutors should avoid entering information that could identify a student, use tools approved by their institution, and understand the privacy conditions of the services they use.

A third concern is algorithmic fairness and digital equality. Students do not have equal access to devices and the internet, nor do they have the same language skills or levels of digital literacy. If tutoring services become convenient only for students who know how to use AI tools, existing disparities may widen. In addition, a system may misinterpret the characteristics of certain groups or generate recommendations based on insufficient data. AI support should therefore be understandable and, where appropriate, optional; access to human guidance must remain available, and the fairness of recommendations across different student groups should be evaluated.

A fourth issue is the importance of human relationships. Tutoring is not simply the transfer of information; it is based on trust, listening, encouragement, and an understanding of each student's circumstances. AI can draft text or suggest possible solutions, but responsibility for understanding a student's emotional state, building trust during difficult conversations, and referring the student to an appropriate specialist when necessary remains with a human professional. AI should therefore be regarded not as an autonomous decision-maker that replaces the tutor, but as an assistant that expands the tutor's professional capabilities.

Several complementary areas deserve attention if tutoring services in higher education are to be improved in the future. First, practical training in AI literacy should be provided for tutors. This should go beyond learning how to operate a tool and include the ability to formulate clear prompts, verify responses, identify errors, protect confidential information, and explain academic integrity to students.

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A further prospect is the careful integration of AI tools with existing digital learning systems. A dashboard designed for tutors could highlight important changes without reducing students to simple rankings. The basis for system recommendations should be understandable, and tutors should be able to reject them or reconsider them in light of additional information. This approach combines technological convenience with professional judgement. Another important prospect is evaluating effectiveness through small pilot projects. For example, one group could use AI-assisted study planning while another receives conventional guidance; changes in plan completion, satisfaction with guidance, and independent learning could then be compared. Final grades alone would not be sufficient for such an evaluation. Student feedback, tutors' observations, assignment-completion patterns, and longer-term outcomes should also be considered. Results should be assessed on the basis of evidence rather than assumed to be positive in advance.

It is also important to develop students' responsible practices when working with AI. Students should learn to verify AI-generated suggestions, compare reliable sources, form their own views independently, and appropriately acknowledge the use of AI tools where required. Tutors can support these skills through conversations and practical tasks. In this way, AI can become a resource for independent learning and critical thinking rather than a tool that makes students dependent on ready-made answers.

In conclusion, artificial intelligence technologies offer considerable opportunities to personalise tutoring, identify academic needs at an early stage, provide timely guidance, and reduce repetitive administrative tasks. The academic literature indicates that AI tools may be useful in adapting learning content and supporting the learning process; however, their effects depend on the context of use, pedagogical objectives, and human oversight. Consequently, the main criterion for introducing technology should not be its novelty, but whether it delivers genuine and verifiable benefits for students.

Responsible use of AI in tutoring requires improved digital literacy among professionals, protection of privacy, verification of automated recommendations, consideration of differences in digital access, and preservation of human communication. The most appropriate approach is a collaborative model in which technology assists with data analysis and the preparation of preliminary recommendations, while the tutor retains responsibility for final assessments, guidance, and decisions. In this way, AI does not replace the tutor; instead, it creates conditions for tutors to give students more attention and improve the quality of individual support.

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