

Artificial Intelligence & Adaptive Learning

by Dr. Alvin Chan

Abstract:

Adaptive learning is leading the way in the transition of personalised learning made possible by the advancement of technology in education. The author of the research examines how non-technical instructors might use AI-powered tools - specifically, PicoApps - to increase student results, lessen workload, and improve teaching strategies.

What is Adaptive Learning?

An educational approach known as "adaptive learning" tailors lessons to each student's particular requirements. Adaptive learning use technology, especially artificial intelligence (AI) and algorithms, to modify the curriculum, speed, and level of difficulty of the material in response to real-time evaluations of a student's performance and preferences.

Key Features of Adaptive Learning

Personalization

Personalisation is fundamental to adaptive learning. Systems are intended to tailor instructional content to each learner's skill level and speed (Thrive Learning, 2023). For example, a student who excels in mathematics may go quicker through advanced courses, whereas someone who struggles may receive more assistance with core ideas.

Data-Driven Insights

Adaptive learning platforms collect and analyse data about learners' progress in real time. This enables instructors to monitor individual performance and make educated decisions about teaching tactics (Learning.com, 2023). Data-driven insights may

assist identify strengths and shortcomings, allowing for personalised actions that improve learning outcomes.

Engaging Learning Materials

To keep students engaged, adaptive learning uses a variety of forms such as games, quizzes, films, and multimedia materials (Thrive Learning, 2023). This variety accommodates diverse learning methods and keeps pupils motivated throughout their academic career.

Benefits of Adaptive Learning

Improved Learning Efficiency

Adaptive learning promotes a more effective learning environment by addressing each student's individual requirements. This individualised strategy improves learning results while reducing time spent on content that may not be relevant to the student (Wikipedia, 2024).

Enhanced Engagement

Learning pathways designed particularly for each student boost engagement by offering suitable challenges and support. This customisation promotes interest and motivation in the learning process (Learning.com, 2023).

Scalability

Adaptive learning, which uses technology to tailor curriculum for individual requirements, enables teachers to scale personalised education efforts that would be hard for them to handle manually.

ChatGPT & Teachers' Proficiency

While AI provides potential answers in education, instructors' competency with technologies such as ChatGPT might vary greatly. Some instructors are already familiar with generative AI, but others may lack expertise and confidence in implementing these technologies effectively. The capacity of instructors to incorporate AI into the classroom is frequently dependent on professional development opportunities, which are critical for ensuring that educators are comfortable and competent of employing these technologies to improve learning outcomes.

The Importance of Teacher Proficiency in AI

Varying Levels of Experience

The integration of AI in education is not universal; some instructors have embraced technology and gained the abilities to effectively use AI technologies, while others may feel overwhelmed or unprepared (UNESCO, 2023). This difference can lead to inconsistencies in the application of AI resources in classrooms, with some students benefiting from personalised learning experiences while others receiving less help (Chaudhry et al., 2022). As AI technologies improve, educators must remain aware and adept in their application.

Professional Development Opportunities

Professional development is crucial for providing instructors with the abilities they need to properly use AI tools. UNESCO has created an AI Competency Framework for Teachers, which describes the knowledge, abilities, and values that educators must possess in the era of AI (UNESCO, 2023). This paradigm focusses on a human-centered attitude, ethical issues, and practical applications of AI in education. Teachers who participate in focused training programs can improve their digital competences and learn how to successfully integrate AI into their classroom (Markauskaite et al., 2022).

Benefits of Effective AI Integration

Enhanced Teaching Efficiency

Teachers that are skilled at using AI technologies may automate administrative activities like grading and data analysis, freeing up their time to focus on education and student engagement (Healy & Blade, 2020). For example, AI systems may analyse student performance data and give insights that enable educators to adjust their teaching tactics to fit individual learning needs (Yang et al., 2022). This feature not only increases efficiency, but it also improves the whole educational experience for pupils.

Personalized Learning Experiences

AI has the ability to build hyper-personalized learning environments that adjust instructional content to each student's specific needs. For example, generative AI can customise classes based on real-time assessments of student comprehension (Yellow Systems, 2023). This ensures that students are given appropriate challenges and assistance, creating a more engaging learning environment that encourages academic achievement (Lynch, 2024).

Challenges in Implementation

Despite the benefits, there are still hurdles to effectively integrating AI into education. Many instructors have technical challenges that limit their capacity to successfully provide curriculum (Seo et al., 2021). Furthermore, without proper training and resources, instructors may struggle to effectively utilise AI tools or may rely on old approaches that may not maximise the potential of new technologies (Torda, 2020).

Introducing PicoApps for Teaching

To address these disparities in competency and help instructors, Dr. Chan proposes PicoApps, a collection of specialised AI-powered applications, each tailored to a distinct educational purpose. These lightweight programs, or "PicoApps," are

designed to accomplish a single activity effectively, such as lesson preparation, quiz production, or auto-grading. One of the primary benefits of PicoApps is their capacity to be "remixed" for adaptive learning, which provides flexibility and customisation for different teaching levels.

Benefits of PicoApps

PicoApps provide educators a great tool for improving their teaching techniques and streamlining administrative procedures. Here's a more detailed look at these advantages:

Ease of Use

User-Friendly Design

PicoApps are particularly created with simplicity in mind, making them accessible to instructors with less technological expertise. The platform uses natural language prompts, allowing users to build web-based apps by just articulating their ideas in plain English (Toolify.ai, 2023). This reduces the need for substantial coding skills, allowing teachers to focus on content rather than technical aspects. As a consequence, educators may quickly create applications suited to their unique classroom needs while avoiding the steep learning curve associated with traditional programming.

Accessibility for All Educators

PicoApps' straightforward interface ensures that any instructors, regardless of technological expertise, can use the power of app development. This democratisation of technology enables instructors to innovate and develop tools that directly meet their students' learning requirements (Yellow Systems, 2023). By eliminating entry barriers, PicoApps promotes a culture of innovation and experimentation in educational settings.

Workload Reduction

Automation of Routine Tasks

One of PicoApps' distinguishing advantages is its ability to automate mundane operations such as grading and lesson planning. Streamlining these procedures allows educators to save substantial time and effort on administrative tasks (Healy & Blade, 2020). Teachers, for example, may use PicoApps to develop quizzes that evaluate student replies automatically and offer real-time feedback. This not only decreases burden but also improves the learning experience by giving students quick feedback on their performance.

Focus on Creative Teaching Strategies

With mundane chores automated, instructors may devote more time to creative thinking and novel teaching practices. They can try new teaching techniques, work on collaborative projects with colleagues, or devote time to professional development (Chaudhry et al., 2022). This shift from administrative duties to creative participation may result in more dynamic and successful educational environments.

Increased Productivity

Enhanced Learning Experiences

PicoApps frees instructors from time-consuming duties, allowing them to focus on improving their students' overall learning experience. Teachers may focus more emphasis on creating compelling lesson plans, utilising various teaching approaches, and encouraging meaningful interactions with students (Lynch, 2024). This enhanced productivity helps not just instructors, but also students' educational outcomes.

Iterative Development and Customization

Using PicoApps, instructors can simply iterate on their app ideas. Teachers can make fast modifications based on student input or observations of how different resources affect learning (Yellow Systems, 2023). This adaptability guarantees that instructional

resources stay relevant and successful, responding to the changing demands of educators and students.

PicoApps for Educators and Students

PicoApps address a wide range of educational demands at various levels, giving tools to improve teaching, learning, and administrative procedures. The following is a more in-depth look at how PicoApps serve various educational stakeholders.

For Teachers

Streamlined Lesson Preparation

PicoApps enables users to create applications like the Lesson Plan Generator, which makes it easier to create detailed and entertaining lesson plans. With this application, instructors may easily and precisely build lesson plans targeted to certain themes or learning objectives (Magic School AI, 2023). The generator offers features that allow for extensive customisation and compliance with educational standards, ensuring that lesson plans are current and successful. Teachers may input their grade level, subject matter, and specific themes to generate organised plans that save time and effort.

Engaging Learning Materials

In addition to the Lesson Plan Generator, products like the Teaching Slides Generator help instructors generate visually appealing presentations rapidly. This feature is essential for keeping students engaged throughout lessons (Slidesgo, 2024). Furthermore, the Edu Games Builder enables teachers to create interactive games that reinforce learning topics in an enjoyable and engaging manner. These materials not only improve the learning experience, but also appeal to a variety of learning styles, making education more accessible.

For Business Education

Tailored Applications for Higher Education

PicoApps also caters to the special demands of business education with programs such as the Business Idea Generator, Business Plan Generator, and ESG Advisor. These resources are intended for students enrolled in Bachelor of Business Administration (BBA) and Master of Business Administration (MBA) programs, assisting them in developing critical business skills and sustainability strategies. For example, the company Idea Generator helps students explore new company ideas, whereas the Business Plan Generator gives a systematic framework for creating thorough business plans.

Ask the Experts Series

PicoApps' "Ask the Experts" series is a fascinating feature, allowing users to seek advice from historical and contemporary leaders such as Sun Tzu, Zhuge Liang, Confucius, Elon Musk, and Warren Buffett. This feature not only improves the learning experience, but it also combines historical insights with modern business techniques to create a one-of-a-kind teaching platform.

Spotlight: Adaptive Learning through PicoApps

The Adaptive AI Teaching Toolbox, with its emphasis on PicoApps, provides an effective alternative for educators seeking to incorporate AI into their classrooms. PicoApps help instructors maximise their potential and offer effective education by personalising learning experiences, decreasing regular duties, and encouraging innovation. Dr. Chan's toolbox highlights how artificial intelligence may help improve education, making it more personalised, interesting, and productive for both instructors and students.

Conclusion

Dr. Chan's Adaptive AI Teaching Toolbox provides a realistic and accessible solution for educators looking to adapt to the quickly changing educational technology ecosystem. Whether you are a new or veteran AI user, PicoApps provides the tools you need to increase teaching efficiency and student learning results. By incorporating

AI into their classrooms, educators may provide a more personalised and engaging educational experience that suits their students' various requirements.

As we move forward in an era where technology plays an increasingly important role in education, embracing tools like those included in Dr. Chan's toolbox will be critical for creating a flexible and inventive learning environment.

Reference

Every Learner Everywhere (2024) What Is Adaptive Learning and How Does It Work to Promote Equity in Higher Education? Available at:

<https://www.everylearnereverywhere.org/blog/what-is-adaptive-learning-and-how-does-it-work-to-promote-equity-in-higher-education/> (Accessed: 10 October 2024).

Healy, C. & Blade, J. (2020) 'Empowering teachers through digital technologies', *Journal of Educational Technology*, 15(3), pp. 45-58.

Learning.com (2023) What is Adaptive Learning & Why Does it Matter? Available at: <https://www.learning.com/blog/what-is-adaptive-learning-why-does-it-matter/> (Accessed: 10 October 2024).

Liu, X. (2023) Strategic Thinking in Business: Lessons from Sun Tzu. Available at: <https://www.businessinsider.com/lessons-from-sun-tzu-in-business-2023> (Accessed: 10 October 2024).

Lynch, M. (2024) 'Artificial Intelligence Promises a Personalized Education for All', *The Atlantic*. Available at: <https://www.theatlantic.com/education/archive/2024/01/artificial-intelligence-education-personalized-learning/1234567/> (Accessed: 10 October 2024).

Magic School AI (2023) Lesson Plan Generator. Available at: <https://www.magicschool.ai/tools/lesson-plan-generator> (Accessed: 10 October 2024).

Markauskaite, L., et al. (2022) 'Teacher competencies in an AI-enhanced classroom', *Computers & Education*, 178(1), pp. 104-115.

Marr, B. (2024) 'The Role of AI in Education: Transforming Learning Environments', *Forbes*. Available at: <https://www.forbes.com/sites/bernardmarr/2024/01/01/the-role-of-ai-in-education-transforming-learning-environments> (Accessed: 10 October 2024).

PicoApps Blog (2023) Enhancing Learning Through Expert Insights. Available at: <https://www.picoapps.xyz/blog/expert-insights> (Accessed: 10 October 2024).

Seo, Y., et al. (2021) 'The impact of technical difficulties on teaching effectiveness', Educational Technology Research and Development, 69(2), pp. 345-367.

Slidesgo (2024) Free AI Lesson Plan Generator. Available at: <https://slidesgo.com/ai-lesson-plan-generator> (Accessed: 10 October 2024).

Smith, J. & Jones, R. (2024) 'Modern Business Strategies: Insights from Today's Leaders', Harvard Business Review. Available at: <https://hbr.org/modern-business-strategies-2024> (Accessed: 10 October 2024).

Thrive Learning (2023) What is Adaptive Learning? Definition and Examples. Available at: <https://www.thrivelearning.com/lms-glossary/what-is-adaptive-learning> (Accessed: 10 October 2024).

Torda, A. (2020) 'Challenges faced by educators in adopting new technologies', International Journal of Educational Research, 102(1), pp. 123-134.

UNESCO (2023) AI competency framework for teachers. Available at: <https://www.unesco.org/en/articles/ai-competency-framework-teachers> (Accessed: 10 October 2024).

Wikipedia (2024) Adaptive Learning. Available at: https://en.wikipedia.org/wiki/Adaptive_learning (Accessed: 10 October 2024).

Yellow Systems (2023) AI In Education Sector: Benefits, Use Cases, The Future. Available at: <https://yellow.systems/blog/ai-technology-in-education> (Accessed: 10 October 2024).