# **Differentiating and Personalising Learning with AI**

*"New AI tools are enabling teachers to understand the strengths and gaps in a student’s knowledge with greater precision, allowing us to individualise instruction in ways not previously possible."*

Jal Mehta, Professor at Harvard Graduate School of Education

One of the most promising applications of AI in education is its potential to enable personalised and differentiated learning tailored to each student's distinct needs, abilities, interests and learning styles. This chapter explores various approaches for leveraging AI to provide customised and self-directed learning pathways for every learner.

## Using AI to Tailor Teaching and Learning

Teachers face a major challenge in trying to meet the diverse learning needs of their students. AI systems can help teachers to differentiate learning in powerful ways. This can be accomplished by writing explicit prompts for AI or using the features of an available AI tool or platform that is designed for this purpose. Here are some ways AI can help:

* AI-enhanced lesson planning tools can offer a variety of learning activities, project ideas, and discussion questions that cater to diverse learning needs within a classroom. These tools are designed to adapt to different age groups or achievement levels.
* Diagnostic assessments powered by machine learning algorithms can evaluate each student’s work in real-time to pinpoint individual strengths, gaps in knowledge and areas for growth. This enables teachers to target precisely their support to align with each student’s learning potential.
* Intelligent tutoring systems and educational apps powered by AI can modify teaching strategies and how feedback is provided based on real-time interactions with each learner. This approach can provide engaging and individualised learning experiences.
* Natural language processing enables conversations to take place between students and AI tutors. This enhances the personalisation of learning through responsive, interactive questioning.
* Learning management systems integrated with AI can send automated alerts to teachers in real-time. This lets teachers know whether individual students need additional support or more challenging activities.
* AI algorithms can assess student profiles and provide evidence-based recommendations for groupings, pairings and assignments. This assists teachers in organising their classes and fostering more effective peer learning opportunities.

Clearly, AI has the potential to differentiate learning by continually processing individual student data and helping the teacher provide individualised support and challenge.

## Adaptive Learning Platforms

Adaptive learning platforms (ALPs) are dedicated software programs that use AI to tailor learning experiences to the individual needs of each student. ALPs are designed to provide personalised instruction, real-time feedback, and data-driven insights into student progress.

In the USA, ALPs are being used in various school districts, including New York City, Los Angeles, and Chicago. One example is Matific by DreamBox Learning. This is an adaptive maths platform, that is available in many languages and used by over 4 million students globally. In several studies, DreamBox Learning has been shown to be effective in improving student achievement in maths. Knewton, an adaptive learning platform used in the USA, claims to be effective in improving student achievement in various subjects, including maths, science, and the English language.

ALPs are also being used in a growing number of international schools. For example, Century Tech has been used successfully by several international schools in Dubai as a means of providing individualised homework for students. Khan Academy, an online learning platform, offers a variety of learning courses and has developed its own AI tutor (Khanmigo) to provide intelligent support to students. Another example is Coursera, an online learning provider that has developed a virtual coach (Coursera Coach) that can answer learner’s questions and share personalised feedback in real-time. This AI coach can communicate in different languages at different education levels. Thus, creating a more inclusive and engaging experience for globally diverse learners.

## Personalised Learning Recommendations

In addition to differentiating teaching, AI systems can use data and converse with learners to provide personalised learning recommendations tailored to each individual's needs. It can provide:

* Curated lists of online practice problems, interactive tutorials, and hands-on exercises tailored to build each learner’s knowledge and skills from their current level.
* Recommendations for specific multimedia content like videos, podcasts, and self-paced modules targeted to individual students' developing capabilities and learning preferences.
* Personalised reading and resource recommendations to enrich student knowledge around their unique passions and interests linked to their current work.
* Carefully select pairs or groups of students for peer learning projects and study sessions based on complementary knowledge, skill sets and learning styles.
* Suggest real-world projects, hands-on maker challenges, field trip ideas, and workplace visits that will resonate with an individual student’s strengths and goals.
* Generate customised practice assessments and formative quizzes designed to address knowledge gaps, with gradually increasing difficulty based on the student's progress.

By aligning additional learning opportunities with each student’s passions, needs and demonstrated capabilities, AI systems can optimise motivation, enrichment and growth.

## Conclusion

AI can adapt like a personal tutor to help students progress from their current level to the edge of their potential through tailoring teaching and learning, providing dedicated adaptive learning platforms, and making personalised learning recommendations. However, using AI in these ways is not a ‘silver bullet’ or substitute for a varied, rich learning programme.

[Callout 9: AI personalisation promises to humanise learning while making it more student-centred, efficient and impactful.]

AI does not replace whole-class and peer learning. Student privacy, agency and social-emotional development must remain priorities. Schools must also customise AI tools to avoid potential bias. With thoughtful implementation, AI personalisation promises to humanise learning while making it more student-centred, efficient and impactful. This can help schools and teachers unlock the potential in every student.

## References

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