Experts: Artificial intelligence provides students more individualized teaching

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Artificial intelligence makes teaching more efficient. Credit: Aino Huovio

There is constant discussion of using artificial intelligence and learning analytics to support teaching. New digital methods, platforms and tools are being introduced more and more, and the opportunities created by the development of artificial intelligence are to be harnessed to enhance teaching and provide students with increasingly individualized teaching. Jiri Lallimo (Project Manager, Teacher Services), Ville Kivimäki (Expert, Dean's Unit, School of Engineering), Thomas Bergström (Expert, IT Services) and Juha Martikainen (Systems Specialist, IT Services) from Aalto University have been studying the issue.

The key is to listen to the end users

The use of artificial [intelligence](#) in teaching and learning is still at a fairly early stage, but technology is constantly evolving, and new opportunities are being discovered. The key is to remember that services are developed for students and teachers and should be kept at the center of all development work. It is pointless to develop services and functions that do not serve end users as desired.

"Artificial intelligence and learning analytics are based on data collection, and it is important to look at it from a useful perspective, to look at how better and more useful services can be provided to students," says Ville Kivimäki. This includes, for example, a service that uses artificial intelligence to suggest courses to a [student](#) that he or she might be interested in or that might be useful to him or her in the future. Students have wanted this kind of [service](#) and it is now coming to fruition.

Artificial intelligence and analytics improve predictability and visibility

"Thanks to artificial intelligence, predictability can be improved effectively, and it can be done proactively, not just retrospectively," Jiri Lallimo says. This means that in the future, it will be possible to better predict the activities of a particular individual or group, what teaching methods and materials are suitable for each and who may be at risk of dropping out. Therefore, it would be possible to take proactive measures, which could change the outlook for the future.

Artificial intelligence can also be used to make learning and skills more visible to students. Course descriptions can be better linked to what is being taught in that course, and teachers can change their teaching based

on course feedback, even during the course. The collection and processing of feedback would be greatly facilitated by artificial intelligence and could be used more flexibly and proactively. Thus, students' opportunities to influence course content would be improved.

"There is much talk about artificial intelligence and machine learning, but more often than not there are no concrete solutions and benefits," Thomas Bergström says. He describes development work at Aalto as follows: "We have already applied artificial intelligence and machine learning in several cases of teaching and learning. Some examples include the analysis and classification of free-form student feedback, the creation of a student competence profile based on the content of courses and degree programs, and the comparison of competence with labor market needs. In addition, we are introducing a course recommendation solution to production, which will recommend courses suitable for the student, based on both the content of the courses and the course history of the students. We have developed a solution similar to that which is used in online shops."

"We are currently in the development phase for determining which types of learning analytics Aalto can provide to students and their teacher for activities during the course in the MyCourses learning environment," says Juha Martikainen. The aim is to produce analytical tools that will help students to better understand and guide their own learning. Analytics provides teachers with information on the situation of students, based on which measures can be taken such as offering students support or personalized learning paths. Analytics also offers teachers information on the effectiveness of course elements and timing.

Security is at the heart of data collection

"It is especially important to remember the risks associated with data collection as well. There are constantly issues with data retention and

ownership that need to be carefully considered," Jiri Lallimo says. "Students must have ownership of their own data, they must be able to see it in its entirety and be able to choose whether to show the data to others." The use of the data must be as transparent as possible and in cooperation with all those involved."

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