Analyse this

How are data analytics improving education and how can you harness them most effectively? **Hazel Davis** *reports…*

Business has realised for a long time that a data–driven strategy can reap rewards for customer retention if done correctly. In education, large datasets of learners exist, yet schools and universities are only just beginning to understand how to use them to enhance the educational experience for their students. As personalised learning becomes more and more popular across the education sector, where do learning analytics fit in?

THE LEARNING JOURNEY

"Analysing the learner's journey can help retention," says Dave Kenworthy, director of digital services at CoSector, University of London, "Although learning analytics are still at a relatively early stage of development, there is enormous potential to improve the student experience at university. Data analytics can give students better information on how they are progressing and what they need to do to meet their educational goals."

As educational activity moves online and content accessed by students is increasingly digital in format, the data sources available to analyse learning are expanding. Continual developments, upgrades and the expansion of the technology means that students have come to expect first-class digital learning platforms when they begin university. Kenworthy adds: "The Virtual Learning Environment (VLE) is currently the main data source being used or planned for use by most UK institutions. Measurement of student participation through VLE accesses, submission of assessments and other data can be used for understanding a student cohort's learning progress (and by proxy likely academic success). This forms one of the key concepts of predictive learning analytics."

Elliot Gowans, senior vice president, international at cloud software company D2L thinks that data analytics is the answer to the increasing struggle faced by teachers and educational institutions to account for individuals' learning experience. "Teachers and tutors struggle to keep track of students' progress, as well as the strengths and weaknesses of individual learners," he says. "As such, one of the key uses for teachers is identifying struggling students more easily and earlier on in the course. With data-analytics, teachers can monitor every student's learning pathway and quickly see

early indicators of learner engagement.

"Real-time data tracking enables teachers to identify struggling students that feel lost or left behind in the classroom, proactively reach out to those in need of assistance and support them throughout each stage of the course."

Alice Duijser, managing director EMEA and APAC of digital textbook company VitalSource, agrees: "Data points such as, 'Which objectives are my students having difficulty with?' and 'Which students are having difficulties?' allow instructors in-depth understanding into study habits, students' mastery of objectives, and those who are likely to drop out," she says. "Personalised learning has made learning analytics more personalised in turn. Instructors can not only see which students are struggling, they can see what specific learning objectives they are struggling with and provide assistance with these topics."

Another key benefit of modern learning platforms, says Gowans, is the diversity of options they offer to teachers and students: "With rich content including video, interactive quizzes, and gamification models, there's a host of ways to deliver course materials to students."

DO IT YOURSELF

But how can time- and money-pressed educational institutions deploy these analytics effectively? "There are actually

some very powerful things you can do with minimal cost and effort," says Kenworthy. "Universities need not be daunted by the technology available to help improve their offering, and doing some very simple things can make a huge difference to both your institution and your students." Start small, he says, "People often get carried away with analytics and tend to want advanced statistical models, like AI, which they just don't need. By inputting very simple datasets you can immediately begin to gather basic data. Things like, 'Are people logging on to the digital systems?' 'Are they turning up to the campus?' Then you can get more sophisticated: 'How often do they log in? 'How do they log in?' 'Where do they log in?' This will help paint a picture of the learner journey, both short- and long-term."

The systems CoSector has worked on can accept around 35 data points, but, Kenworthy says, "You can actually

81% of students with a high average engagement graduated with a **2:1** or first-class degree, compared to only 42% of students with low average engagement.

27% of students reported changing their behaviour after using the system.

One third of tutors contacted students as a result of viewing their engagement data in the dashboard.

get strong results issuing just six – poor attendance and reduced engagement, for example, are strong focus areas."

There are many resources available in data analytics, from competitive sites such as Kaggle to more traditional learning resources: "It really can take just a few hours to become acquainted with how to use data in a beneficial way," says Century Tech founder Priya Lakhani. "We have created micro-lessons for people to learn more about how our AI works. The prevalence of technology in schools is also leading to more digitally literate staff and students than ever before. In some way we are all data scientists, whether we know it or not. While not many people sit down and work with data sets, our

brains are always absorbing data. All that a formal data scientist does is compile this and finds a way of using it for positive outcomes."

Cloud computing takes a great deal of the burden away from the shoulders of the educational institution as there's no software to buy, install or update. However, any learning platform with learning analytics functions must have usability at its core, says Gowans, "offering up-to-date information in reports and visualisations that are easy to digest". Implementation should also be as effortless as possible and complementary to the current programme, he says. Likewise, a learning platform provider should be acting as a partner, providing a dedicated customer success manager who can assist institutions

STAYING SECURE

"The concept of data and education can sound a scary prospect that conjures images of children's behaviours being tracked by robots and computers, but nothing could be further from the truth," says Lakhani. "Of course, nothing is more important than the safety of children and schools should ensure they are working with reputable companies that take privacy and security seriously. At Century, we take this extremely seriously and have the most robust and secure procedures, systems and storage in place to protect users' data."

Higher education organisation Jisc has done a lot of work within the sector to create some open guidelines on analytics

> 66 People often get carried away with analytics and tend to want advanced statistical models, like AI, which they just don't need. By inputting very simple datasets you can immediately begin to gather basic data. 99 *Dave Kenworthy*

in the appropriate use of their platform in all facets, including analytics. However, he adds, it's a two-way street. "A collaborative solution between educational institution, teacher and learning platform provider can be established, enabling the best results for all parties and making data analytics a core part of the teaching and learning experience."

and GDPR provides the legal requirements. Personal privacy is the responsibility of the institution and learning provider. However, says Gowans, "Privacy should be by design in a learning management system. It is not just about keeping data secure with an encryption in transit and at rest in the cloud – educational institutions own their data and control it. Software must be built with privacy by design as a core principle and support GDPR, PIPEDA and other privacy standards. Likewise, staff must be fully educated on the need for privacy and proper regulation."

It's worth it, he says: "In doing so, institutions will provide a secure learning environment that benefits both teacher and student, with an agreed understanding of data and security measures." ET

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