

# Big data helps SUSS assess student dropout risk

University, which caters mainly to adult learners, hopes to tackle high attrition rate

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A local university has turned to big data to tackle a key problem: the high attrition rate of its adult learners.

Using predictive analytics, the Singapore University of Social Sciences (SUSS), where one in five part-timers do not make it to the second year, can assess if a student is at risk of dropping out, even before starting school.

It has spent nearly \$3 million on the initiative, with the funds going towards hardware and servers, as well as yearly operational costs.

Its algorithm analyses as many as 85 data points, such as past grades in secondary school or polytechnic, work experience, demographics, students' behaviour in submitting university assignments and course-taking patterns like withdrawals.

The university, which caters mainly to adult learners, has about 13,000 students, with some 11,000 of them in part-time programmes and 2,000 in full-time programmes.

About 20 per cent of SUSS' part-time students do not make it to the second year. It currently has about 2,000 students who are at-risk, with a cumulative grade point average of 2.3 and below out of 5.

Students get an academic warning from the university if their cumulative grade point average falls below 2.0 out of 5 for the first time. The second time it happens, they



Data from SUSS' Business Intelligence and Analytics Unit can be used by the schools to provide earlier and more targeted support for students who need help with their university work. The unit is headed by Professor Koh Hian Chye (left, seated). With him are (from left) Associate Professor Ludwig Tan, dean of the School of Humanities and Behavioural Sciences; Associate Professor Sylvia Chong, the unit's project lead; and Associate Professor Luke Peh, vice-dean of the School of Science and Technology. ST PHOTO: JASON QUAH

are terminated. About 20 per cent of students in each intake receive an academic warning.

Some of the five schools at SUSS have used the data churned out by the university's Business Intelligence and Analytics Unit to provide earlier and more targeted support for some students.

For instance, the School of Science and Technology set up a peer-mentoring network last year to help freshmen in its part-time pro-

grammes who need more help to adjust to university. About 430 of its 2,700 students fall into this at-risk category, said Associate Professor Luke Peh, vice-dean of the school.

These students are matched with senior students who are academically strong, or recent graduates who take the role of peer mentors, and give them advice on how to select suitable courses.

The senior students also check in on them during the semester.

Professor Koh Hian Chye, who heads SUSS' Business Intelligence and Analytics Unit, said: "Many of our students have left school for a while to work and come from diverse backgrounds, so they need time to pick up on their studies again."

The average age of SUSS' part-time students is 29 to 31 years old.

Said Prof Koh: "Using past data from earlier batches and constructing a predictive model, we can tell

the likelihood of students in the newer cohorts doing well."

For instance, applicants with at least a B4 in O-level English do better in university. Hence SUSS' Teaching and Learning Centre has developed a suite of five English language courses to boost its students' language and critical thinking skills.

These modules are compulsory for students who do not attain at least a B4 for O-level English.

Prof Koh also said students tend to struggle in university if their degree programme is not related to their diploma course of study.

A diploma or two A-level subject passes, as well as two years of work experience, are needed to enter SUSS' part-time courses.

Associate Professor Ludwig Tan, dean of the School of Humanities and Behavioural Sciences, said being able to see at a glance the profile of students has helped the faculty to understand them better.

"Unlike other universities with mostly full-time students, we don't see ours daily and have the chance to talk to them often, because our courses can be done online."

"Before this, it was all anecdotal. But now with the dashboard of data, we can tell which sectors of employment our students came from, and what sort of skills would be more relevant for them," he said.

Associate Professor Sylvia Chong, project lead of the Business Intelligence and Analytics Unit, said the next phase is to measure how useful the analytics tool is for the different schools.

Some professors have already written a few academic papers on the topic, such as how predictive analysis works.

She added that the analytics team is also working on a simpler report showing students how they are faring academically and their average cohort performance.

This could be sent to them several times a year, along with advisories on how to do better, she said.

Said Prof Koh: "With our diversity comes a range of diverse support needed. There's no one-size-fits-all approach. Hopefully with the insights we get, we can better support our students."

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## GREATER UNDERSTANDING

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