

Stakeholder Summary

Researchers develop a model to forecast dropout rates, better support students

Can a mathematical equation predict which students are most likely to drop out? Yes, according to the findings of a new report published by the Higher Education Quality Council of Ontario (HEQCO).

Researchers at Mohawk College and the Education Policy Research Initiative (EPRI) developed and tested a predictive model that categorized incoming students at Mohawk based on their risk of leaving early. A predictive model uses historical data to predict the likelihood of future outcomes, in this case the probability of a student leaving college before graduating. Such predictions can allow institutions to effectively tailor interventions for students based on their risk level.

The report, *Using Predictive Modelling to Inform Early Alert and Intrusive Advising Interventions and Improve Retention*, presents the findings of the first phase of a larger research project, which explores predictive modelling, approaches to academic advising and student retention.

The project was funded through HEQCO's [Access and Retention Consortium](#), a partnership between HEQCO and researchers at six institutions who are evaluating the effectiveness of interventions intended to improve access to and persistence in higher education.

Project description

In the first phase of the study, researchers developed and tested a predictive model that was used to forecast student retention at Mohawk. The data used to develop the model were derived from students who entered Mohawk College from 2005 to 2012. The model was used to predict the likelihood of leaving early for each student entering Mohawk in Fall 2013 and 2014. When the predicted levels of leaving were compared to actual leaving rates, the model performed well, the researchers found.

The individual-level predicted leaving rates were then used to assign students to three risk categories: high, medium and low. The groups were analyzed to identify individual, program and other characteristics that were represented in each of the risk categories and to calculate participation rates in existing student advising programs across the three groups.

Findings

Among the main findings of the study were:

- Female students, older students and those enrolled in graduate certificate studies have lower rates of leaving early

- Students with lower high school grades and those enrolled in certificate programs have higher rates of leaving early
- Contrary to common perceptions, students in the high- and medium-risk groups have higher rates of participation in student advising programs, while those in the low-risk group participated in lower proportions

“Overall the findings suggest that employing administrative and related student-level data to develop and then use predictive models of student retention represents a promising practice to assist institutions in better understanding student retention, in targeting students at higher risk of leaving with student support programs, and in testing and further developing policies, programs and services that could have a positive effect on student persistence, retention and graduation rates,” the authors write.

Further Research

This is the first of two reports by Mohawk and EPRI that use predictive modelling and intrusive advising to understand how Mohawk can better tailor intervention programs to those who need them the most. The second phase of the study, which is expected to be published later this year, will test the efficacy of three advising interventions offered to students in the Fall 2015 entry cohort.

The authors suggest that one avenue for further research is for more institutions to develop and employ similar sorts of predictive models for student retention based on the experiences of their own students. Consideration should also be given to developing and testing other kinds of predictive models. “We see advanced machine-learning algorithms as representing a particularly important avenue for new work, although these approaches need to be more thoroughly developed and tested before their efficacy is determined,” they add.

Predictive models can also be put to greater use in targeting and testing student support initiatives. “We see great opportunities in all of these directions in the PSE context,” they conclude.

The authors of *Using Predictive Modelling to Inform Early Alert and Intrusive Advising Interventions and Improve Retention* are Ross Finnie, Tim Fricker, Eda Bozkurt, Wayne Poirier and Dejan Pavlic.