Technological University Dublin

PreSS (Predict Student Success) usage in the Computing Learning Centre (CLC)

Overview of Initiative

PreSS (Predict Student Success) is an early-warning predictive model originally developed by Bergin (2006) to identify, within the first few hours of an introductory programming module, students who may be at risk of failing or withdrawing. Using three factors — secondary school mathematics results, hours spent playing computer games, and programming self-efficacy (students' confidence in their ability to learn and perform programming tasks based on the Rosenberg self-esteem measure) — the model achieved 80% prediction accuracy and 87% sensitivity in identifying at-risk students.

The TU Dublin Computing Learning Centre (CLC) introduced PreSS in 2025/26 as part of its retention and student success strategy. The CLC provides academic and transitional supports to first-year computing students to improve retention, progression, confidence, and belonging. This represents the first practical deployment of PreSS beyond its original research context.

In its first year, the model was applied to 375 first-year computing students and identified 88 students as potentially at risk of non-progression. Evaluation of prediction accuracy and the effectiveness of subsequent interventions is currently underway, with future plans focused on refining interventions and exploring wider adoption across programmes.

Monitoring & Oversight

The initiative is monitored through the TU Dublin CLC, with oversight provided by the Academic Lead. Progress is reviewed through regular analysis of model predictions, student outcomes, and intervention activities. Findings are reported through Faculty retention and student success structures and inform ongoing refinement of both the PreSS model and associated support processes. Evaluation focuses on prediction accuracy, intervention effectiveness, and contributions to student retention, progression, and success.

Key Features

- First-year students
- Student wellbeing, experience, & success focus
- Early intervention initiative
- Targeted initiative

Aims & Objectives

Aim: Previously, PreSS existed only as a developmental predictive model. This initiative represents its first deployment in practice, with the aim of using machine learning predictions to identify students at risk of non-progression at an early stage and provide additional evidence to support timely, targeted interventions.

Objective 1: To identify students at risk of failing or withdrawing from their first-year programming module at an early stage, before traditional indicators such as attendance patterns, assessment results, or engagement data become available.

Objective 2: To use predictive analytics to inform and enhance student retention and support strategies.

Institutional Context

Faculty of Computing, Digital and Data Retention Strategy

Data & Evidence of Impact

Data are collected on model predictions, student outcomes, attendance, and support interventions. In its first year, PreSS was applied to 375 first-year computing students and identified 88 students as potentially at risk of non-progression. Ongoing monitoring of attendance, assessment performance, and student progression is being used to validate predictions and evaluate intervention effectiveness, with findings informing future refinement of the model and support processes.

Impact has not yet been fully established, as the initiative is in its first year of implementation. Impact will be evaluated by tracking the progression, retention, and module outcomes of students identified by PreSS and comparing predictions with actual outcomes.

Additional Information

https://tudublin.ie/clc
https://www.tudublin.ie/explore/faculties-and-schools/computing-digital-data/
https://keithquille.com/