

REAL Analytics: Making Learning Trajectories Visible, Measurable and Responsive at Scale

Overview of Initiative

ATU serves Ireland's only EU Transition Region. Identifying early signs of difficulty from the opening weeks matters: it allows support to be offered before students fall behind. Designed from the ground up by lecturers, for lecturer use, REAL Analytics was developed around a simple observation: student progression is shaped not only by academic performance, but also by how well students regulate their own learning during the semester. The system supports both. Assessments contribute a critical signal. STACK and Formulas questions form part of graded continuous assessment in first-year Science and Computing, not an optional add-on, capturing algebraic reasoning, computational workflows and laboratory data. Each student sees their own Moodle view: an On Track or Needs Attention indicator, a weekly self-regulated learning (SRL) reflection, and a confidence measure they update themselves. Nineteen per cent self-identify for support before the model flags them. By Weeks 5 to 7, the model identifies 89% of off-track trajectories. Module coordinators follow up through existing student support structures; disability and learning support is integrated, so accommodations are applied without repeated disclosure.

Monitoring & Oversight

At module level, the assessment system captures structured interaction data, with engagement visible to educators through Power BI dashboards. At student level, the Moodle view returns the On Track or Needs Attention indicator to the student alongside a confidence score and a weekly reflection; staff see the same indicator, and automated notifications go to named role owners when key thresholds are met. At institutional level, retention and pass rates report through School programme boards and the TSAF Work Package 5 steering group.

Key Features

- First year students
- New entrants
- Early intervention initiative

Aims & Objectives

Aim: To make learning trajectories visible, measurable, and responsive at scale, through evidence that enables students to understand, shape, and regulate their own progression.

Objective 1: Detect off-track learning trajectories through behavioural, engagement, and linguistic data, enabling intervention before academic failure becomes visible.

Objective 2: Enable learners to understand, monitor, and regulate their own learning trajectories, while ensuring inclusive, equitable support through integrated, GDPR-aligned infrastructure.

Institutional Context

ATU Performance Agreement 2024–2028 (Indicator 1.1: reduce non-progression from 25% to 21%)

Data & Evidence of Impact

Three signals show the system is working.

1. Behavioural: ~2,000 interactions per student annually, sevenfold the standard module rate, supported by an 8,208-question STACK library.
2. Qualitative: 90–92% NGSE completion across Year 1 cohorts; NLP surfaces the why behind each prediction.
3. Responsive: trajectories are dynamic; students move between On Track and Needs Attention. The system tracks trajectory, not students.

Additional Information

- [Abacus consortium \(Aalto University, Finland\)](#)
- [STACK Assessment Project](#)
- [MoodleFlaskAPI \(open-source\)](#)
- [Moodle Question Forge](#)
- [QQI Rethinking Assessment](#)
- [View of Leveraging Machine Learning and AI to Enhance Educational Learning Analytics](#)
- [Dataiku Responsible AI case](#)

