Case study

Sector Education
Service Data & Analytics

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Predicting and preventing learner dropout with AI

Learning Curve Group (LCG) delivers education to around 40,000 active learners through its eAssessor Pro online learning platform. Developing new skills that transform lives, the workforce across the UK gains fresh talent across sectors to boost communities and support growth.

Results at a glance

- Circa 4% decrease in learner non-completion reported following initial pilot rollout.
- Proactive identification of at-risk learners at four key milestones (14 days, 25%, 50%, and 75% course progression), enabling earlier, targeted support.
- Efficient use of tutor capacity by focusing interventions only where the predicted impact is highest.
- Automated, tailored WhatsApp outreach integrated with Learning Curve Group systems, reducing manual effort.
- Embedded A/B testing and comprehensive logging to evidence effectiveness and continuously optimise.
- Stage-specific machine learning models improving prediction accuracy by reflecting different risk drivers across the learner journey.

The challenge

A significant proportion of students were either enrolling but never starting their studies, or starting but not completing their courses. While LCG had a tutor and learning support team who could intervene once a student had already disengaged, this reactive approach was too late to prevent drop-off, and non-completions directly influenced funding.

Tutors needed to focus on teaching, not chasing disengaged learners. The challenge was clear: LCG needed to reliably identify learners likely to struggle (ideally before they realised it themselves) and move from a reactive to a proactive model. Triggering interventions through high-success channels such as WhatsApp, rather than lower-engagement channels like email, was identified as the right approach.

It was following an AI Hack Day run by Waterstons, where the team explored AI applications and potential use cases at LCG, that non-completions emerged as the priority area for the business to focus on.

What we did

Working with LCG's development team and built on the existing data warehouse, we designed and delivered a pilot to identify at-risk learners and trigger timely, personalised support. We started by reshaping and normalising LCG's warehouse data so it could reliably support modelling.

From there, we selected and built a regression-based machine learning approach aligned to the indicators available - engagement, progress, and attainment signals - and trained an AI model using historic patterns of disengagement. At the core is a set of machine learning models trained to estimate each learner's likelihood of dropping out, drawing on patterns across engagement, progress, and attainment data. In simple terms, regression finds relationships in data - like how rising temperatures correlate with higher ice cream sales. Here, we applied that principle across many variables to calculate a numeric risk score for each learner.

Validation focused on ensuring the model could consistently identify learners trending towards non-completion early enough for an intervention to make a difference. Critically, we found that the drivers of dropout risk vary depending on where a learner is in their journey - so we built separate models for each of the four touchpoints to reflect stage-specific behaviours and signals.

Around these models, we built a nightly process that ingests the latest learner data, scores every active learner, and flags those at risk for automated but personalised outreach via WhatsApp, integrated with LCG's existing messaging capability.

How the system works

- Assesses risk and messaging eligibility at defined touchpoints: 14 days, 25%, 50%, and 75% course progression.
- Suppresses repeat contacts to avoid over-messaging learners.
- Factors in additional non-ML metrics, such as relative module completion speed.
- Supports A/B testing, withholding a controlled portion of learners to rigorously evaluate impact.
- Captures all AI-triggered interactions, risk states, and A/B allocations in a comprehensive audit and outcomes log for transparent evaluation over time.

What drives the predictions

Approximately 20 variables were evaluated during model development. The following had the greatest predictive power and were prioritised:

- Login frequency and change in login frequency versus the previous period
- Mandatory and non-mandatory activities completed per day
- Age bracket, gender, and employment status
- Highest qualification and presence of a learning difficulty
- Course start date proximity to the end of the academic year

From pilot to production

By the end of the engagement, LCG had the foundations of an intervention capability ready for broader rollout:

- A validated AI model to identify learners at risk of non-completion, trained on LCG's historic learner behaviour.
- A reusable scoring service that wraps the model and can be called with a learner snapshot to return an actionable risk likelihood.
- Integrated pilot capability connected to core systems - including eassessorpro and LCG's messaging subsystem - to support real interventions via WhatsApp.
- Automated test coverage and quality checks to support repeatable validation of model behaviour and integration logic.
- Deployment and configuration support, with hosting and token costs remaining within LCG's Azure subscription.
- A structured handover to LCG's development team, including a one-day onsite workshop to walk through the solution, cover the technology, and set the team up for ongoing ownership.

The result is a working system that finds learners at risk before they disengage, and gets the right support to them at the right time. That's good for learners, good for tutors, and good for LCG's funding.

To understand how AI can help your business, your operations or your team, get in touch at ***ai@waterstons.com***