Case Study N: Identifying Effective Resources for First Year Computing Students

Dr Monica Ward & Dr Mark Glynn

Dublin City University

Email: monica.ward@dcu.ie

mark.glynn@dcu.ie

Module discipline: Computing

Approximate module size: 100+ students

Level of module: 1st year Undergraduate

Reasons for using analytics in the module

It is widely documented that first year students can sometimes struggle with their transition from second to third level. One area of concern with regards to computing is that students can struggle with the basic concepts. Therefore, the lecturer created a series of short instructional screencasts and short formative online quizzes relating to course content. The aim of creating this content was to help the student self-assess their progress in the module but also help the lecturer identify areas of the course that students have difficulty with. Furthermore, the lecturer can use the data generated from these activities to identify students that may be at risk of non-progression.

Data sources/modelling approach

The data was extracted from our learning management system Moodle. The data included activity logs for each student for the particular teaching activities i.e. the screencasts and the quizzes in addition to the student scores for each quiz. The end of year result for each student was also extracted from the student record system. Both sets of data were then combined into an excel spreadsheet which was used to do two sample tests comparing results of those that looked at the screencasts and quizzes and those who did not.

Impact of using data

Looking at the logs of the screencasts highlighted which screencasts students looked at the most. In some cases, students had looked at the same screencasts several times. Therefore, more screencasts were created with the aim of providing additional learning resources for other topics.

With regards to the quizzes. Moodle analyses the data from each question from each student and provides regression analysis to determine if the question was a "good" question or not. Based on the statistical analysis provided by Moodle, weak questions were identified and are currently been updated.

Gathering further data

The lecturer issued student surveys to obtain feedback on student opinion of the value and effectiveness of the screencasts and quizzes. This data is currently being analysed with the intention to write an academic paper on the entire experience.
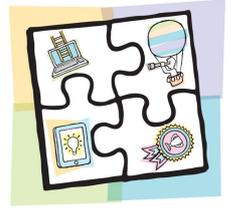
Advice for colleagues interested in using a data-enhanced approach

- Seek permission. Be up front with your students and tell them what you are doing or intend to do with their data.
- Don't be afraid to contact your teaching and learning unit – they can give you great insight into what is valuable to analyse in terms of data that you extracted. Furthermore, they can give you advice on how to set up your particular teaching/assessment activities in order to make them suitable for learning analytics, while keeping student learning at the forefront.
- Start small and once you get the hang of it, you can try new approaches.