

Teaching and research Award 2023 Progress Report

Evaluation of interactive online technologies used to teach laboratory skills on a distance learning (DL) programme using a value creation framework.

A brief update on what has been achieved against original project plan

The original aim of the study was to determine if H5P materials affected student learning and attainment on the LSHTM, MSc Infectious Diseases, elective module “IDM201 Bacterial Infections” we will compare 2 cohorts from prior to the use of H5P for laboratory skills teaching; the class of 2019/20 and 20/21 and 2 cohorts from after the introduction of H5P for this purpose the classes of 21/22 and 23/23. Extract and analyse student record from years prior to introduction of blended learning and compare with years when the technology has been introduced.

This retrospective cohort study allowed us to compare grades pre- and post- introduction of interactive learning technologies during the 2021-22 academic year. In addition, using an adapted value creation framework to analyse surveys and interview data, the value that the interactive activities created when used for learning was assessed. Outcomes were analysed utilising both qualitative and quantitative data collected from multiple sources, including student databases, module evaluations and feedback surveys. We analysed this qualitatively and recorded themes.

In original application aimed to extract exam results from years of interests and analyse to see if the new learning approaches resulted in better passing outcomes. The actual analysis of the cohort assessment data showed no difference in mean value of assessment grades between cohorts, the distribution of grades was affected by digital enhancements, with higher frequency of grades over 3.3 and lower counts of grades 0. In addition, we demonstrated that digital poverty score was inversely proportional to grade point achieved.

In the original application we aimed to extract and encode qualitative student satisfaction surveys to describe the satisfaction quantitatively and gather and analyse results from Moodle feedback sessions

In our actual analysis, overall student responses confirmed that H5P enhancements helped to reduce the intrinsic cognitive load of the course through well-structured teaching materials which connected the complex ideas and concepts into a logical and easy to follow journey. The learning journey survey also indicated how students utilised the interactive activities including navigation of the study material, as a framework for study, to improve and enrich their notes, but mainly for recall of knowledge and revision. Furthermore, the majority of students who had used the interactions reported positive experience and were of opinion that interactive activities should be made more widely available in the programme.

The deliverables of the project were as follows:

June 2023 Apply for Ethics approval – approval 12th July 2023

Amendment 1 - 29th January 2024 permission granted to reapproach alumni and students within the cohorts.

Amendment 2 – pending update 25th March 2024 permission requested to access anonymised whole cohort data on student location and assessment grades so we can analyse the whole cohort data on

digital poverty index and determine if the data supports further the preliminary finding that digital poverty is inversely proportional to assessment grade. The committee are consulting the data protection officer.

August –September extract data from student records, “Moodle” and survey. We also undertook some additional work on a value creation framework that included interviewing students and alumni on value creation of the digital content. Data is extracted.

September- February, preliminary analysis – analysis complete

January- March final analysis and presentation of findings at RIDE conference. – presented at RIDE

April-May write up paper - Paper written and submitted to CODE for consideration for inclusion in proceedings.

Changes made to the plan

It was decided to also undertake an analysis of the value created by the inclusion of digital elements in the study materials. We utilised the Wenger Traynor module of value creation and undertook a survey and 12 one to one alumni/student interviews examining the value created by the digital content.

Rather than looking at economic status of student country of origin we looked at the standardized digital poverty indexes to assess access to internet etc of our students and their assessment attainment.

We are currently awaiting approval of an amendment to ethical approval so we can look at an anonymised data set of the whole study cohort’s digital poverty index and assessment grades to determine if our findings are generalisable to the whole cohort.

Initial findings

No difference in mean value of assessment grades between cohorts, the distribution of grades was affected by digital enhancements, with higher frequency of grades over 3.3 and lower counts of grades 0. In addition, we demonstrated that digital poverty score was inversely proportional to grade point achieved.

Using an adapted value creation framework to analyse survey and interview data, the learning journey survey also indicated how students utilised the interactive activities including navigation of the study material, as a framework for study, to improve and enrich their notes, but mainly for recall of knowledge and revision. Furthermore, the majority of students who had used the interactions reported positive experience and were of opinion that interactive activities should be made more widely available in the programme.

Expected completion date of the project

If the 2nd ethics amendment is approved, we expect to complete in around two months from the approval date. However, if the amendment is not approved then the project is now complete.

Plans to disseminate the work

We have already presented the work at the RIDE 2024 conference and have submitted a paper for the proceedings. If the 2nd amendment is approved, then we will prepare a paper for an education

journal with the complete set of digital poverty data and do some additional analysis of the qualitative survey and interview data. We will also present at any LSHTM education events.

Ethics approvals - attached.