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The Open University

eSTEeM Projects Summaries: Mar 22-23

Project title: Practical skills progression and employability in the Life Sciences pathway at the Open University

Project leader: Janet Haresnape (LHCS)

A study of student perceptions of development of practical science skills and links to employability. Suggests that tutors could play a greater role to link skills development and employability to account for individual student circumstances.

Keywords: employability, skills development, life sciences

Reviewed by MHJ

Project title: Can an asynchronous student conference in OpenStudio develop students' critical evaluation skills?

Project leaders: Catherine Halliwell (LHCS) and Jenny Duckworth (EEES)

A study exploring the use of a poster presentation and peer-feedback activity within an asynchronous conference to develop students' critical evaluation skills on the 'Evaluating Contemporary Science' module (S350). An analysis of a sample of 100 posters from one presentation were used to develop additional 'quick fixes' for ALs and a set of 'top tips' for students. A comparative analysis of 100 posters from the next presentation indicated an improvement in the quality of the poster designs and peer-feedback provided by students.

Keywords: peer feedback, learning design, innovative assessment

Reviewed by TC

Project title: Day time tutorials for apprentices – what is best practice in computing?

Project leaders: Chris Thomson and Marina Carter (C&C)

A study of the expectations and experiences of tutorials in degree apprentices in Computing and Communications. The report makes recommendations of how to improve tutorial provision for these students. These include better communications about tutorials, scheduling across a range of times/days, suggestions for good practice in online sessions, and that engagement seems better when the student's own tutor runs the tutorials.

Keywords: apprentices, tutorials, computing

Reviewed by MHJ

Project title: The value to students of drop-in tutorials to support assessment on a level 1 interdisciplinary environment module

Project leaders: Maria Townsend, Emma Champion, Wendy Berndt (E&I)

This work describes the implementation and evaluation of a "drop-in" model of online tutorials on a level-1 environment module. These sessions are assessment-focussed and student-led and are offered in addition to the more "presentational" tutor-led tutorials. There is good evidence that these drop-in tutorials are highly valued by the students who participate in them. In particular, 94% of students report an increase in their confidence in dealing with assessment tasks as a result of engaging in these sessions.

Keywords: tutorials, assessment

Reviewed by MHJ

Project title: An investigation into the breadth of learning outcomes and skills developed in OpenSTEM Labs experiments

Project leader: Helen Lockett (E&I)

A project to review learning outcomes of OpenSTEM Labs experiments. The authors extend existing classification schemes for types of online experiment and their learning outcomes. A sample of OpenSTEM Labs experiments is then classified and analysed, giving a useful overview of the learning outcomes that are currently addressed by these activities.

Keywords: online laboratories, remote experiments, virtual experiments

Reviewed by MHJ

Project title: Student co-design of confidence-building formative assessment for Level 1 Computing and IT students

Project leaders: Paul Piwek and Simon Savage (C&C)

A students as partners project focusing on module TM112 (Introduction to computing and information technology 2) which uses formative quizzes to help students build confidence with programming and problem-solving tasks. Through a co-design workshop, a small group of previous TM112 students and module

team members worked together to design new and redesign existing quiz questions.

Keywords: Student co-design, online quizzes, programming

Reviewed by TC

Project title: An investigation into the way Jupyter Notebooks enhance learning and teaching on TM351

Project leaders: Sharon Dawes and Chris Thomson (C&C)

A study of computing students' experiences in using Jupyter Notebooks (web-based documents that facilitate running of computer code with explanatory text). Students report that technology is very helpful to their understanding. The main issue reported is that notebooks have no search/index system, making it difficult to locate content that has already been studied.

Keywords: computing, technologies for STEM learning

Reviewed by MHJ

Project title: Investigating how to enhance the student idea generation process for academic project

Project leaders: Martin Braun (E&I)

A project which developed an online ideation toolkit to help with the generation and focusing of ideas for possible topics for final year engineering undergraduates. The findings suggest that the development of creative thinking skills in students, one of the three components in Amabile's models, should be included in the engineering module studied here more explicitly.

Keywords: Final year student project, idea generation, engineering

Reviewed by TC

Project title: A review of the use of Office 365 and Adobe Connect for active learning by ALs tutoring on T227 and TXY227

Project leaders: Katharine Jewitt (C&C)

An investigation to identify what Open University approved technologies are being used by Associate Lecturers and explore how and why they are being used for teaching and learning. The findings of the research have introduced ALs to a range of tools within Adobe Connect and Office 365 that may help them inspire

students to engage in their learning asynchronously and Page 19 of 28 to help them make use of the tool to promote active learning.

Keywords: Digital skills, digital technology, AL development, building digital capacity, sharing digital experience, Office 365, Adobe Connect

Reviewed by TC

Project title: Developing student use of feedback on their marked TMAs

Project leaders: Carol Calvert and Clare Morris (M&S)

A wide-ranging study of student use of TMA feedback based on student data, a student survey and Associate Lecturer workshops. Some of the key findings are that; rates of non-collection of TMA feedback can exceed 20% for some TMAs on some modules; non-collection is correlated with TMA score; students highly value receiving encouragement in feedback; there is mixed practice amongst ALs about prompting students to engage with TMA feedback.

Keywords: assessment, feedback

Reviewed by MHJ

Project title: Investigating the motivations of female students choosing an open versus named qualification

Project Leaders: Elaine McPherson (EEES) and Mary Keys (PVC-S)

This study investigates the reasons why the proportion of women studying the BSc (Hons) Combined STEM degree is higher than in single/joint honours STEM subjects. A key factor is subject choice and flexibility in this degree, but there are various reasons behind this. It is recommended that qualification design and description should have a greater emphasis on subject choice/flexibility.

Keywords: Women in STEM, qualification design

Reviewed by MHJ

Project title: eSTEeM Project Report: Cultivating student led tutorials - The effects of a flipped online classroom

Project leaders: Melanie Gregg and Vivien Cleary (LHCS)

A project to trial and evaluate peer-learning activities in online tutorials. Found that students value skills developed in this way, but group members need to get to know each other before embarking on such activities.

Keywords: tuition, peer-learning

Reviewed by MHJ

Project title: Teaching distributed computing using Raspberry Pi clusters at a distance

Project leader: Daniel Gooch (C&C)

This project looked at evaluating the pilot of remote use of physical hardware. It concludes that the students enjoyed the activity and felt engaged, however there were specific challenges with the development and long term maintenance of the hardware systems.

Keywords: programming, distance, practical

Reviewed by SP

Project title: What is known about how to write online exams and how to prepare students for them?

Project leader: Martin Braun (SPS)

This literature review examined the wealth of information about online exams. It was divided into 4 sections, 1) Advice for examiners who need to provide an un-invigilated, open book exam (UOBE), 2) 3) discussions on cheating, advice for students and 4) case studies and provides recommendations and suggestions from each.

Keywords: Open book exam; closed book exam; physics; maths; exam preparation

Reviewed by SP

Project title: Perceptions, Expectations and Experience of Group Tuition: towards a shared understanding amongst stakeholders (part II: the student perspective)

Project leaders: Anne Campbell (AS), Mark Jones (SPS) and Anne-Marie Gallen (E&I)

This study investigates student perceptions and expectations around group tuition. The key findings are that students have a strong preference for tutorials to be based on a mixture of presentational materials and learning activities and the opportunity to ask questions is highly valued. However, some students are too anxious to participate in tutorials, which in some cases arises from their

misconceptions about the format. More could be done to help students understand the benefits of tutorials and develop their confidence to participate.

Keywords: Tuition

Reviewed by SP

Project title: Challenges of assessment for a level 3 interdisciplinary module: an AL and student perspective

Project leaders: Jenny Duckworth and Harriet Kopinska (EEES)

This study investigates the student and tutor experiences of interacting with marking grids for assessment. The key findings are that most students read the grids and they help them to understand the Learning Outcomes they have achieved and how well they have been met. They found them easy to identify what they had done right, but not always what they had done wrong. Fewer than half the tutors found the grid criteria easy to apply, with some questions being harder than others and that they were not always user friendly due to their size. However, some tutors found the grids a clear method for marking to Learning Outcomes.

Keywords: Assessment, learning outcomes, marking grids, tutor feedback, interdisciplinary

Reviewed by SP

Project title: Investigating students perception of some of the key learning activities in T272

Project leaders: Foroogh Hosseinzadeh (E&I), Anne-Marie Gallen (E&I), Helen Lockett (E&I) and Rafael Hidalgo (LDS)

An investigation of the student experience of activities in a Stage 2 engineering module. The activities include remote laboratory experimentation, use of professional software and maths simulations. The team use a methodology combining real time student feedback (RTSF) and interviews that could be applied to other modules.

Keywords: STEM; Engineering; Distance Learning; Student Feedback; Thinking and Learning Skills

Reviewed by MHJ

Reviewed by key: MHJ – Mark Jones; TC – Trevor Collins; SP – Sue Pawley