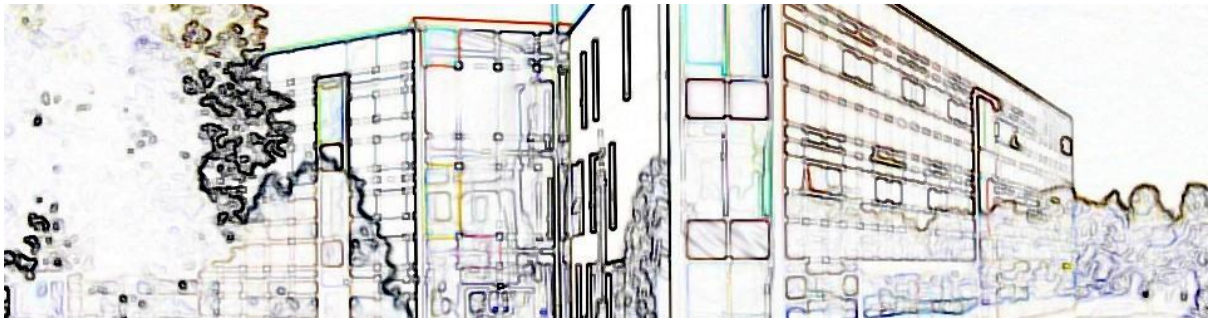

CALRG

Computers and Learning Research Group

CALRG 2018 Conference
18-19 June 2018

Conference Proceedings

The Open University
Milton Keynes, UK
Meeting Room 1, ground floor,
Jennie Lee Building

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Computers and Learning Research Group

Conference Schedule

Monday 18th June 2018 All sessions held in Meeting Room 1, Jennie Lee Building

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	Julia Sargent and Ashley Casey	*Digital technology and pedagogy in Physical Education teaching: Flipped learning as a strategy to optimise physical activity time.*
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	Christine Gardner, Allan Jones and David Chapman	*Analytics for tracking student engagement.*
	Tim Coughlan and Kate Lister	*Using journey representations to reflect and understand the student experience.*
	Katy Jordan	*Tracing the boundaries of personal and professional academic identities through social media platforms, perceived audiences, and research impact.*
	Francisco Iniesto	*YourMOOC4ALL research project: MOOCs for inclusive design.*
	Chrysoula Mangafa	*Children and Families in the Digital Age: Playing Together with Mobile Devices to Build Social Skills in Children with Autism.*
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	Koula Charitonos, Stamatina Anastopoulou, Agnes Kukulska-Hulme and Carolina Albuerne	*Evaluating the Frontline Immigration Advice Project*
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	Victoria Murphy, Vasudha Chaudhari, Allison Littlejohn and Bart Rienties	*A comparative perspective of approaches to uncertainty: Finance vs energy sector.*

09.30-09.45	**Welcome** to day 2, by Professor Eileen Scanlon	
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	Pinsuda Srisontisuk	*Teachers designing for collaboration among young children using mobile touch screen technology.*
	Fernando Rosell-Aguilar	*Automated and peer feedback within a language learning app: how much do learners need?*
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	Gosia Iwaniec-Thompson	*Older academics' learning: participation in practice and learning biography.*
	Khadija Mohamud	*Investigating the Impact of Hello Hubs a locally-focused Educational Technology Initiative in Uganda*
	Christine Gardner and Soraya Kouadri	*Supporting Degree Apprenticeship students: Tutors' and Students' perspectives*
	Trevor Collins *et al.*	*Exploring inclusive labwork and fieldwork in the OpenSTEM Labs*
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13.30-15.10	***Session theme: Learning analytics*** *(Full papers)*	
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	Bart Rienties, Thomas Ullmann and Simon Cross	*Critical discussion of Student Evaluation scores, written expressions and academic performance at the OU.*
	Saman Zehra Rizvi, Bart Rienties and Jekaterina Rogaten	*Intertemporal Modelling of Learning Trajectories; a Validation Study of Four MOOCs.*
	Quan Nguyen, Bart Rienties and Sam Thorne	*The effect of study breaks and exam revision weeks on student engagement and pass rates in Computer-Based Assessment setting.*
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	Andrew Brasher, Wayne Holmes and Denise Whitelock	*Comparing comparators: how should the quality of education offered by online institutions be assessed?*
	Alice Peasgood	*Applying systems thinking to mobile learning: where is the learning occurring?*
	Wayne Holmes, Stamatina Anastopoulou, Heike Schaumburg and Manolis Mavrikis	*Technology-enhanced Personalised Learning: Untangling the Evidence.*

Keynotes

Mon 18th June 2018
10.00-11.00hrs

Dr Andrew Manches, University of Edinburgh
Embodiment and Learning: implications for the design of novel learning technologies

There is general agreement that 'hands-on learning' is something to be encouraged. But why? Is it simply more fun and sociable, or are there any more direct cognitive benefits? This talk will draw upon work from several funded projects (ESRC/NSF/Carnegie/Wellcome) that have evaluated claims that cognition is grounded in body-based interaction. The shared approach of this work has been to examine the gestures that children, and adults, generate when communicating their thinking. These embodiment claims have many implications for education, from the types of activities we provide to the design of learning technologies. The talk will share video from across the projects and include reflections on the challenges of bridging learning sciences research and the commercial development of learning technologies.

Biography
Andrew Manches is depute director of Research and Knowledge Exchange, and senior lecturer in the Learning Sciences at the University of Edinburgh, where he directs the Children and Technology group in the Digital Education Research Centre. Previously an Infant teacher, he is a design-based researcher focusing on the role of physical interaction in learning and the implications for emerging technologies. His work has been supported by various funders including a recently completed ESRC Future Research Leader grant, and he has recently begun his role as PI of the UK on a UK/US Science Learning+ project funded by the Wellcome/ESRC/NSF examining embodied learning in early science and the implications for museum exhibit design. Andrew is keen to realise the impact of his work and has spun out two educational technology start-up companies, one of which has developed a product informed by the research presented in his talk.

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Mon 18th June 2018
13.30-14.30hrs

Dr Manolis Mavrikis, UCL Knowledge Lab
Augmenting teachers' intelligence: a new role for Artificial Intelligence and Learning Analytics

Drawing on examples from a series of funded projects on artificial intelligence in education (AIED) and learning analytics (LA), I will argue that working in tandem these technologies can augment (rather than replace) teachers' intelligence. I will present how the data that intelligent learning environments generate for the purpose of supporting the learner (e.g. learner modelling, feedback provision, additivity) open up opportunities for supporting teachers, educators and learning designers. The talk will demonstrate that although both areas of research have had significant advances, light integration between the two is problematic and more work is needed to close the gap. This should challenge us all, as designers and developers, to seize the opportunities afforded by the rich technological context but also take into careful account the requirements of our users and the challenges they face.

Biography
Dr Manolis Mavrikis is an Associate Professor in Learning Technologies at UCL Knowledge Lab. He holds an BSc in Mathematics from University of Athens, Greece with an emphasis in teaching, MSc with distinction in Informatics and PhD in Artificial Intelligence in Education from the University of Edinburgh. His research interests developed over more than 15 years of experience, lie at the intersection of learning sciences, human-computer interaction and artificial intelligence. Manolis's research centres on designing evidence-based intelligent technologies that provide direct feedback to learners, and in employing learning analytics to help teachers, schools, education ministries or researchers develop an awareness and understanding of the processes involved in learning. Manolis has been principal investigator on a portfolio of large interdisciplinary EU projects most recently iTalk2learn, which has received Demo awards in the ECTEL and AIED conferences and an 'Honourable Mention' for potential business impact from the i-KNOW conference.

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Tue 19th June 2018
09.45-10.45hrs

Professor Jane Seale, The Open University
with special guests Ajay Choksi, David Banes and Julie Harris
Examining the design challenges of the 21st Century through the eyes of disabled people: Openness, Assistance and Participation

In this presentation Jane will share her experiences of working on three research projects that focused on the role that technology plays in the lives of disabled people and with the help of three disability and technology experts, Ajay Choksi, David Banes, and Julie Harris who participated in her research, draw out three key design challenges for the 21st Century.

In a project examining the history of how special needs technology in the UK was developed for and used by people with special educational needs between 1970 and 1999 and how this history might illuminate the current digital divide, Jane interviewed 52 experienced practitioners about their memories of the period. Analysis of these interviews revealed that the period was considered a golden age, where creative practice was able flourish. Jane likened this practice to the 'Open' and Maker movement. David Banes, a participant in this project will share his views on whether the 'Open' or 'Maker' movement can provide ways forward in terms of enabling disabled people to freely share apps or we will always need specialist companies.

In a project called 'Telling Tales of Technology', Jane worked alongside two experienced technology users, with personal experience of learning disabilities, Ajay Choksi and Karen Spencer to enable eight adults with learning disabilities to share their memories of using technologies, from childhood to the present day. To illustrate what we can learn from these stories, particularly about what assists or supports people with learning disabilities to use technologies in a meaningful way, Ajay will share his memories of technology use.

Finally, a current project Jane is working on is an EU funded project called ARCHES (Accessible Resources for Cultural Heritage EcoSystems) which involves heritage and technology partners across Europe. Working in the context of museums, art galleries and heritage sites, the overarching objective of the ARCHES project is to create more inclusive cultural environments for people with differences and difficulties associated with perception, memory, cognition and communication (commonly ascribed labels would include learning difficulties, sensory impairment and hearing impairment). The project partners are working to achieve this by using participatory methods to develop online resources, software applications and multisensory technologies. Julie Harris, a participant in this project will share her experiences of the project so far, and with Jane will reflect on her relationship with the technology and technology partners. Finally, with Jane, will reflect on the challenges to achieving full participation of disabled participants in such a design project and the implications for future partnerships between inclusive researchers, disabled users and technology developers.

Biography
Jane began working in the field of special needs technology in 1987 when she joined the Computer Applications to Special Applications Research Unit at Keele University. Focusing on health and social care organisations who worked with adults with severe learning disabilities, Jane's PhD explored what factors influenced the effective management and use of computers with this group of learners. Alongside her PhD research Jane worked as a day centre officer for Telford Social Services and as a special needs technology consultant, working with health and social services staff to help them use technology with adults with learning disabilities. In 2000, whilst at Kings College London, Jane designed and co-ordinated the first ever Masters in Assistive Technology in the UK. Jane's research focuses in particular, on the role that technologies play in the lives of adults with learning disabilities and the factors that influence or sustain the digital exclusion of disabled people. Jane's methodological interest is the development and evaluation of participatory research methods that promote voice and empowerment for disabled research partners. Oh, and she likes cats!

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Posters

Poster sessions will be held during lunchtimes and coffee breaks on 18/19th June. Posters being displayed at the conference include:

- **Christine Gardner and Soraya Kouadri** – Supporting Degree Apprenticeship students: Tutors' and Students' perspectives

- **Christine Gardner, Allan Jones and David Chapman** – Analytics for tracking student engagement

- **Gosia Iwaniec-Thompson** – Older academics' learning: participation in practice and learning biography

- **Lesley Boyd** – Using learning networks and Tricky Topics to drive module improvements in the OU

- **Pinsuda Srisontisuk** – Teachers designing for collaboration among young children using mobile touch screen technology

All abstracts – in alphabetical order of title

A comparative perspective of approaches to uncertainty: Finance vs energy sector

Victoria Murphy, Vasudha Chaudhari, Allison Littlejohn and Bart Rienties
The Open University, UK

In the modern age uncertainty is an inherent part of many professional fields. Often uncertainty is viewed as negative, something to minimise and mitigate. However, times of uncertainty can offer opportunities to learn and develop both individuals and organisations. In this paper we explore how uncertainty is dealt with in two industries, where it is viewed in diametrically opposite lights: the finance and energy sectors. In financial circles uncertainty is an inherent part of practice, and a necessary part of progress. In the energy sector, on the other hand, uncertainty is more frequently associated with a loss of control, which can lead to incidents.

Based on thematic analysis of 30 semi-structured interviews conducted in the finance sector, two prominent strategies were identified that were used by financial professionals during times of uncertainty: help seeking from peers and external networks, and self-reflection on their past experiences to tackle new challenges. The results of a social network analysis survey of 35 employees in an energy company, combined with 18 semi-structured follow up interviews, highlighted that the same strategies of utilising relationships to gather help, in addition to reflecting on past events formed the core part of the energy sector's strategies to deal with uncertainty. Nonetheless, this comparative study highlighted that the specific ways in which these strategies were employed were highly dependent on the context of both the industry and the role of the employee within their company. For example, while reflective strategies were employed in both sectors, the finance professionals primarily focused on solitary reflective practices, while in the energy company reflection most commonly occurred in a group during company mandated meetings.

Despite the differences in their views on uncertainty the finance and energy sectors utilised similar strategies when faced with uncertainty. However, there are many differences in how these practices were implemented, which offer potential opportunities for the industries to learn from each other.

An analysis of the learning gains of first year STEM students

Jekaterina Rogaten and Bart Rienties
The Open University

With the introduction of the Teaching Excellence Framework a lot of attention is focussed on measuring learning gains. However, the effect of individual differences on learning gains have been ignored. Therefore, this study aims to address this gap by examining whether learning gains (grade trajectories) are influenced by students' socio-demographic characteristics. A vast body of research has found that individual student characteristics influence academic progression over time. This case-study aims to explore how advanced statistical techniques in combination with Big Data can be used to provide new insights into how students are progressing over time, and how students' socio-demographics (i.e., gender, ethnicity, socioeconomic status, prior educational qualifications) influence students' learning trajectories. Longitudinal academic performance data was collected from 4,222 first year STEM students across 9 modules and analysed using multilevel growth-curve modelling. The results indicated that using students' grades data for measuring learning gains is challenging. Furthermore, our results showed that 8.5% of variance in students' learning trajectories could be attributed to student characteristics and there were significant differences between white and non-white students and students with different prior educational qualifications. However, student-level characteristics accounted only for a small portion of variance. The majority of variance was explained by module-level characteristics and assessment level characteristics. Practical applications of this findings will be outlined in the presentation.

Analytics for tracking student engagement

Christine Gardner, Allan Jones and David Chapman
The Open University, UK

This research explores the use of specific computer aided learning (CAL) resources on the Level 3 module TM355 (Communications Technology), using the data analytics tool Analytics for Action (A4A). The module is print-based , supplemented by on-screen activities.

The prompt for this particular study was students' poor performance on a particular exam question. Using A4A it could be seen that the associated CAL tool had not been extensively used, either during the module or for revision. If there are barriers to using the CAL tools the module team would seek to address the issues. Student interviews are currently being conducted to gain further insight.

The research questions cover two key areas; the effectiveness of the analytics tool and students' perception of the CAL resources. It is hoped that analytics can used to best effect, informing module teams and thus helping students achieve their maximum potential.

Applying systems thinking to mobile learning: where is the learning occurring?

Alice Peasgood
The Open University, UK

This study applies the investigative lens offered by systems thinking to the situation of mobile learning. This particular theoretical approach does not seem to be widely represented in the literature of mobile learning. In systems thinking, a 'messy situation' is one that has complexity and ambiguity. The system of interest includes the person, device and environment. The environment includes physical, digital and social factors. The core research question is 'where is the learning occurring?' This paper reports upon a small-scale empirical pilot study to investigate the interrelationships between the person, the device and the environment. Participants were interviewed whilst using their own mobile devices. They described and reflected upon a recent learning experience and demonstrated on their mobile device. Video recording of the device screen and audio of the dialogue with the researcher were recorded. Using a grounded theory approach, a thematic analysis was carried out. The analysis comprised both open coding and coding of instances of constructs previously identified from theory. These constructs were derived through the use of systems maps to explore various concepts of the mobile device, and discussion of their epistemological, ontological and social implications. The constructs included: device as a tool, device as a medium (or mediating technology), device as an extension of a person's capabilities, device as a participant in a learning conversation with the person (as envisaged by Gordon Pask), construction of reality, cognition, identity, sense-making. The results explore the subtleties of the interplay between the person, the device and the environment. Participants showed varying levels of awareness of this interplay. In some cases, the participants described their experience in terms very similar to one or more of the pre-defined concepts. In other cases, the constructs were more implicit, although they could still be identified by the researcher. In response to the question: 'where is the learning occurring?' the apparent location of the learning differs from one situation to another, and the constructs provide helpful insights into these variations.

Automated and peer feedback within a language learning app: how much do learners need?

Fernando Rosell-Aguilar
The Open University, UK

The possibility of providing and receiving feedback from fellow language learners has been highlighted as one of the features of language learning social networking sites (LLSNS) and their mobile application versions that differentiate them from from other mobile apps, which only offer automated feedback.

This paper presents the results of learners' engagement with feedback from a large-scale survey (n=4095) into the use of one of the most popular language learning apps in the market: the busuu mobile app (over 60 million registered users). Data were collected through an online questionnaire with 30 items: multiple-choice and open questions. The survey was distributed both in English and in Spanish.

The results provide a profile of busuu app users, show patterns of use, and what app features learners find most valuable for language learning. Most users are at beginner level and learn for personal interest. They find the app has helped them improve their knowledge of the language they're learning, with vocabulary as the main area of improvement. Despite the agreement from most language learning professionals that feedback needs to be meaningful and provide opportunities to reflect on errors, the results from this survey show that over 76% of learners consider automatic feedback - which only provides the learner with whether their answer is correct or incorrect without further explanation - is either good or very good. The results also show that over 40% of learners using the busuu app do not take the opportunity to share their work for native speakers to provide corrections, although the majority of those who do find the feedback useful. During this presentation we will explore the reasons provided for this. Finally, the paper will discuss the challenges and potential of language learning apps as language learning sources. The high expectations from users and the fact that a third of respondents use busuu as their only language learning source suggest that a large proportion of users consider apps a reliable tool for language learning.

BizMOOC: massively open online courses for business development and excellence

Robert Farrow, Beck Pitt and Bea de Los Arcos
The Open University, UK

BizMOOC (http://bizmooc.eu/) is a European-wide Knowledge Alliance project alliance which runs from 2016-2019. This project tackles the challenge of enabling businesses, labour force and universities to increase their activities and exploitation of the MOOC potential in the European area. It focuses on work force & HEI-training and the acquisition of labour market key competences through applying new methodologies for online teaching & learning. Delegates will be introduced to key project outputs, including 3 openly available MOOC (http://bizmooc.eu/pilot-moocs) ('Digital Skills, Digital Learning'; 'Making Innovative Ideas Work'; and 'Intrapreneurship') and the MOOC BOOK (http://bizmooc.eu/mooc-manual) a collaboratively authored, agile and interactive book which brings together guidelines, good practice examples and recommendations (pedagogies, moderation & support, quality assurance, accreditation/certification & recognition, intellectual property, sustainable business models) for the higher education, businesses and labour force communities to fully exploit the potential of MOOC across education and business.

Children and Families in the Digital Age: Playing Together with Mobile Devices to Build Social Skills in Children with Autism

Chrysoula Mangafa
The Open University, UK

Despite the increasing use of mobile tablets in schools and homes, and the children's motivation in using them, there is limited guidance on how to use tablets to teach children with autism specific skills. Semi-structured interviews with 10 parents of young autistic children showed that even though parents use a variety of strategies and joint activities to boost their child's communication skills, they have concerns about screen time, e-safety and selection of mobile applications. The study led to the development of a parents' guide informed by evidence-based practice with the aim to help parents feel more confident in using technology with their child in more collaborative ways.

Comparing comparators: how should the quality of education offered by online institutions be assessed?

Andrew Brasher, Wayne Holmes and Denise Whitelock
The Open University, UK

Keywords: quality assurance; marketing; online education; metrics; ranking; students; stakeholders.

Comparing universities and courses is of interest to a variety of stakeholders including potential students, policy makers, news and media organisations, and universities themselves. There are a range of existing university ranking schemes that provide comparisons (e.g. Academic Ranking of World Universities) but typically these are designed with face-to-face teaching and learning in mind. There is also a number of quality assurance tools and approaches aimed at ensuring quality in online education that have been developed by a variety of providers (e.g. E-xcellence). In this paper we describe a method for comparing approaches to quality assessment and assurance in online education, and present the results of comparisons for a range of existing approaches.

We have analysed documentation and literature drawn from the following two groups: group 1: current ranking schemes, group 2: quality assurance tools for online education, and found a variety of conceptual and methodological approaches to measuring quality. However, we found that all approaches across both groups defined and utilised indicators (and metrics) of quality that could be compared through consideration of:

1. What is measured?
2. How is it measured?
3. How can these measurements be used?

We discuss our findings in the light of a meta-analysis of factors affecting student choice of university. We conclude from our analysis that usability and workload are important considerations for both producers (e.g. media organisations and universities) and consumers (e.g. prospective students) We recognise that prospective students are not a homogeneous group, and a variety of approaches for measuring quality is needed to be inclusive and meet the requirements of all stakeholders

The work reported was completed within the EU Erasmus+ funded COODUR project with partners from Universitat Oberta De Catalunya and Consiglio Nazionale Delle Ricerche. The project is due to finish in September 2018.

Critical discussion of Student Evaluation scores, written expressions and academic performance at the OU

Bart Rienties, Thomas Ullmann and Simon Cross
The Open University, UK

Satisfaction surveys have increasingly been used as a proxy for student learning in higher education (Kember & Ginns, 2012; Li, Marsh, Rienties, & Whitelock, 2017), for example in the UK's teaching excellence framework. However, whether satisfaction and student evaluation results are related to teaching excellence and academic performance can be debated. During CALRG we will critically discuss this practice using two studies. First of all, we will build on our recent study OU data on 111,256 students on 151 different modules (Rienties & Toetenel, 2016). Significantly higher student satisfaction was found in modules in which students received large amounts of learning materials and worked through them individually, than in courses where students had to collaborate and work together. However, the best predictor for whether students actually passed the module was whether there were collaborative learning activities, such as discussion forums and online tuition sessions. In fact, no relations were found between student satisfaction scores and academic performance in those modules. In our second study, we aim to use Natural Language Processing techniques to mine actual qualitative data and responses by students (Ullmann, Marsh, Slee, Cross, & Rienties, 2016). Preliminary data analyses indicate that student responses are influenced by students' ability, socio-economic status, and the modules students take. We will discuss during CALRG whether or not we should actually listen to students' feedback, and if yes which students' voices we should adhere to.

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Li, N., Marsh, V., Rienties, B., & Whitelock, D. (2017). Online learning experiences of new versus continuing learners: a large scale replication study. Assessment & Evaluation in Higher Education, 42(4), 657-672. doi: 10.1080/02602938.2016.1176989
Rienties, B., & Toetenel, L. (2016). The impact of learning design on student behaviour, satisfaction and performance: a cross-institutional comparison across 151 modules. Computers in Human Behavior, 60, 333-341. doi: 10.1016/j.chb.2016.02.074
Ullmann, T., Marsh, V., Slee, A., Cross, S., & Rienties, B. (2016). Data wranglers' key metric report. Retrieved from: http://article.iet.open.ac.uk/D/Data%20Wranglers/Key%20Metrics%20Report%20Autumn%202016/DWKMR_WELS_2016.html#33_student_satisfaction

Digital Pedagogy: Past, Present & Future

Simon Rae
The Open University, UK, (Retired)

An article by Dominic Sandbrook in the Daily Mail on 10th April 2018 said “I would give Mr Horrocks a chance to drag the OU kicking and screaming into the digital age, …” ruffled a few feathers on Twitter, mine included.

I was part of the OU when it was exploring the ‘digital age’ in the 1990s, this presentation recalls some of the landmarks of OUr digital pedagogy, looks at where things are now, and where things might be going. CoSy was one of the first CMC systems in the OU, allowing people to post tagged messages to each other on the mainframe computer. In Mindweave: Communication, Computers and Distance Education (1989), Robin Mason, she contributed ‘An evaluation of CoSy on an Open University course’ (Chapter 9).

By the late 90s the OU was making use of the Web. The MAODE used an in-house developed bulletin board system, EBBS, to facilitate communication between the international students (Matthew Stratfold (1998)). David Hawkridge gave a presentation at CALRG in 1997 about the first year of the course, as his co-presenter that was my first time speaking at CALRG.

The OU moved on with Firstclass and Moodle and the digital pedagogy developed alongside (Salmon (2000 and 2002).

MOOCs appeared in2008, and the OU set up FutureLearn to provide short, open courses.

Away from the OU different digital forums offer educational experiences. By participating in one of the 2018 Open Education Week Webinars people were able to listen in to John Daniels and Tony Bates discuss “The future of the distance education university" and earn themselves an OEW 2018 EDEN Open Badge.

The weekly #LTHEchat Twitter chat affords an evening of CPD for a group of HE staff who tweet answers to questions set by the week’s moderator.

I took part in the world’s first online MAODE graduation ceremony in 2000 and in 2018 I took part in the first online life-drawing class broadcast on YouTube by the Royal Academy with drawing exhibited on #LifeDrawingLive on Twitter (Cohen (2018).

Digital technology and pedagogy in Physical Education teaching: Flipped learning as a strategy to optimise physical activity time

Julia Sargent and Ashley Casey
The Open University, UK and University of Loughborough, UK

Digital technology (DigiTech) is not commonplace in education (Selwyn, 2017) or physical education (PE) (Gard, 2014). This may be because little consideration has been given to what PE teachers' think, say and do regarding DigiTech (Casey et al., 2017). This study aimed to explore how and why UK PE teachers' use DigiTech. For this presentation, we focus specifically on the teachers' use of DigiTech to optimise students' physical activity time.

Four UK PE teachers, who were self-identified users of DigiTech, were selected for this study. Their experiences and views were explored through a case study approach. Data were generated from (a) interviews with PE teachers, headteachers, senior leaders and IT network managers, (b) lesson observations, (c) document analysis and, (d) field notes. Data were analysed using a grounded theory approach.
Teachers used DigiTech in different ways to optimise students' physical activity time. These included, showing videos in the changing rooms, using videos or quizzes in rest periods or, most commonly, flipped learning. Flipped learning enabled students to enhance their knowledge outside of school so that they could be more active in class. The use of DigiTech facilitated teachers in supporting students' initial learning; assessing students' understanding and; optimising students' physical activity time in the lesson.
The results indicate that when used in conjunction with DigiTech, flipped learning has the potential to support PE teachers to optimise students often limited physical activity time (Østerlie 2016; Roth 2014) and, thus, use DigiTech pedagogically. This is particularly pertinent given the limited time allocated in the curriculum to PE (some of which is inevitable lost in the changing rooms) and the perceived need for students to be physically active in lessons (Cale et al. 2016).

Evaluating the Frontline Immigration Advice Project

Koula Charitonos, Stamatina Anastopoulou, Agnes Kukulska-Hulme and Carolina Albuerne
The Open University, UK and Refugee Action, UK

The paper will focus on the evaluation of one of Refugee Action's flagship programmes, the Frontline Immigration Advice Project (FIAP). The FIAP emerged in a changing social and political landscape in the UK, particularly with regards to legal-aid provision in the not-for-profit sector. FIAP aims to widen early access to free, good quality and appropriately regulated legal advice for migrants and refugees in order to understand their options and make informed decisions about their futures. The evaluation of the Frontline Immigration Advice Project (FIAP) will demonstrate the impact and development options of the FIAP and will provide strategic insight to Refugee Action. The aims of the evaluation are as follows:

- To assess the FIAP's online provision and provide short-term development options for the FIAP programme, by considering the wider Community-based Legal Advice context within which the FIAP is operating.
- To provide baseline data on existing provision of immigration legal advice to vulnerable people in the UK.
- To assess the impact of the FIAP on advisors and their organisations.
- To identify tools and systems to support access to quality immigration advice through a robust monitoring and evaluation framework.
- To provide concise and informative insight reports to Refugee Action, with evidence-based indications of successes, issues and lessons learnt.
- To provide recommendations to Refugee Action on how to embed and deliver high-quality services that are scalable and sustainable in an environment of reduced funding.

The paper will provide an overview of the FIAP and present the life-cycle approach to evaluation, and how it will produce evidence-based indications of successes, issues and lessons learnt. It will further discuss key issues related to capacity building in the not-for-profit sector e.g. changing legislation, high number of volunteers, mobility of practitioners, cuts in funding.

Exploring inclusive labwork and fieldwork in the OpenSTEM Labs

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Practical labwork and fieldwork have been identified as a particularly challenging aspects of the Science, Technology, Engineering and Maths (STEM) curriculum to deliver by distance learning [1]. Ensuring students gain practical experiences and skills through applying their learning in lab or field settings has traditionally involved significant periods of time in those locations, to the extent that the number of days is used as a metric for accrediting degrees [2]. However, for many students, particularly distance learning students, time spent away from employment, family or caring commitments is difficult to give.

Furthermore, for students with disabilities (i.e. with physical, sensory or cognitive impairments) accessing these environments can be additionally physically and emotionally demanding. Universities are obliged by the Equality Act 2010 [3] and the Quality Assurance Agency's subject benchmark statements to anticipate the needs of disabled people. However, many have been slow to implement reasonable adjustments and inclusive practices, and a degree attainment gap has been identified indicating that students declaring a disability are not doing as well as other students [4].

The increasing use of online technologies within STEM, including online observatories and remote experiments, is expanding the definition of labwork and fieldwork to include activities and sites accessed online. Therefore, the time spent in the lab or field is an increasingly ineffective measure of professional skills and competencies. Within the OU, the OpenSTEM Labs [5] are used to engage students in practical experiments that are embedded within their module materials. These include three laboratories, which students access online: The OpenScience Lab, The OpenEngineering Lab and The OpenScience Observatories. The labs provide flexible remote access to authentic high-quality apparatus and resources that can be operated at scale.

In this presentation we will discuss the implications of online practical work and remote laboratories for students with disabilities, and the processes and challenges involved in ensuring they are equally accessible and social inclusive for all students. In particular, we will explore the accessibility of a selection of activities available through the OpenSTEM Labs and some of the anticipatory and responsive adjustments that have been made. Through reviewing the OU's systemic approach to embedding accessibility within the resources it produces, we'll consider how inclusive practices are engaged with and promoted across the OU and the implications this has for higher education institutions seeking to reduce the disability degree attainment gap.

[1] D. Kennepohl 'Teaching Science at a Distance'. In M. G. Moore (Ed) Handbook of Distance Education: 3rd Edition (pp. 670–683), England: Routledge, 2013.
[2] See for example The Geological Society's degree accreditation requirements https://www.geolsoc.org.uk/Education-and-Careers/Universities/Degree-Accreditation/Aims-and-Requirements-for-Accreditation.
[3] The Equality Act 2010 https://www.gov.uk/guidance/equality-act-2010-guidance.
[4] Equality in Higher Education: Students Statistics Report 2017. The Equality Challenge Unit. Available online https://www.ecu.ac.uk/publications/equality-in-higher-education-statistical-report-2017/.
[5] An overview of The OpenSTEM Labs is available online http://www.open.ac.uk/about/teaching-and-learning/esteem/TheOpenSTEMLabsconcept.

Games-Based Sex Education in Thailand: An Integration of an Online Games-Based Learning Approach to Help Secondary School Students in Thailand in Their Learning about Sex Education

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In Thailand, teenage pregnancy rate is the highest in South-East Asia. Although Thailand has adopted a national policy on Comprehensive Sexuality Education (CSE), several problems related to implementation remain. Findings of different projects about sex education concluded that there is need to propose new methods for teaching sexuality education that stimulate analytical critical thinking and encourage discussions between students to raise awareness in topics related to sexuality. Digital Games-Based Learning (GBL) integrates gaming into learning experiences to increase engagement and motivation. This study aims to investigate and evaluate year 7 secondary school students' experiences and views of GBL in their learning about CSE. The study design is based on a pre-designed prototype of an online GBL module in CSE. Study setting will be 6 secondary schools in Chiang Mai in the north of Thailand and the proposed number of participants is 1567 students and 12 secondary school teachers.

How do people with learning disabilities understand citizen inquiry, and where do we go now?

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One question often asked is whether people with learning disabilities are regularly excluded from decision-making processes which may have a direct impact on them. This study uses citizen inquiry research methodologies to engage adults with learning disabilities in scientific inquiry through the use of participatory research approaches. It is aimed at learning how people with learning disabilities understand citizen inquiry and what levels of support are required for future work in this area. A group of six participants, from the Monday night social group at Yellow Submarine Charity (www.yellowsubmarine.org.uk), engaged in a citizen inquiry project run over four 1 hour sessions. The sessions were aimed at gaining data on how the participants understood citizen inquiry through ethnographically-informed observation and a focus group. Through the analysis of the data, I found that participants understood citizen inquiry in two ways; what they believe a citizen to be and how the project made them feel. Often, the participant's responses were positive in nature but identified a need for future research into their understanding of citizen inquiry. Whilst people with learning disabilities are routinely excluded from decision-making processes, the inclusive nature of this research and the way in which citizen inquiry works allowed for the participants to have a positive experience whilst gaining autonomy in their decision-making.

Having now moved on to the first year of my PhD I aim using these findings to influence my study, looking at how capacity building methods can offer an opportunity for people with learning disabilities to engage with citizen science. It will be inclusive in nature and will use a mixture of traditional and creative research methods. It will be in collaboration with the Oxfordshire based charity My Life My Choice, working alongside their 'champions', a group of adults with learning disabilities who campaign for issues affecting their community.

Intertemporal Modelling of Learning Trajectories; a Validation Study of Four MOOCs

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In the past decade there was a steady increase in research that examines learning in Massive Open Online Courses (MOOCs), with large number of studies examining the factors that impact final academic results or retention likelihood. However, little is known about the nature or level of participation as learners' progress in ordered learning activities in a course. Also, processual learning in MOOC environment is yet to be explored by the researchers. This study aims to fill this gap and explore temporal dynamics of MOOC learners' learning trajectories or learning pathways. With a focus on sequence of activities accessed by dominant group of learners, frequency and duration of different type of learning activities were analyzed. Data was collected across four MOOCs offered in 2017 via FutureLearn platform. By using Educational Process Mining (EPM) methods on log data, learners' activities within each MOOC were mapped to identify their learning paths. Analyses were performed on two distinct groups of learners: *Completers* or those who marked all their activities as completed, and *Non-Completers* or those who never marked any of their activities as completed. Using mean and median time-on-task measures, current study compared *completers'* participatory behavior with expected learning behavior for all type of learning activities. In addition, we explored mainstream weekly performance, identified and mapped most significant temporal learning pathways of two groups of learners. The results indicated that at least one main and dominating pathway existed in each of the four MOOCs, but paths of *completers* and *non-completers* remained noticeably different. We concluded the paper with practical implications in relation to the potential implicit bias of learning designs, and with a mention of limitations of this research. Future research directions and potential benefits of such intertemporal modelling in MOOC learning environment, and how the results can be translated into effective learning designs are also discussed.

Investigating the Impact of Hello Hubs a locally-focused Educational Technology Initiative in Uganda

Khadija Mohamud
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African governments and the international community have invested heavily in education. Despite this, huge challenges remain and low levels of learning and completion have led to what is being called a 'learning crisis'. In response, a range of initiatives have emerged to complement formal schooling experiences.

Project Hello World is an Edtech initiative which provides community-built solar-powered internet kiosks called Hello Hubs. This lightening talk reports on a PhD study which focuses on two of these hubs in Central Uganda. The study is exploring the impacts (if any) that Hello Hubs have had on school-aged users' lives; their potential in facilitating informal learning for out of school children; and issues around the sustainability of the hubs.

A range of interviews and focus group discussions were held with gatekeepers and children using the hubs in an initial scoping phase. Further in-depth interviews will be conducted with in and out of school hub users, participants' teachers, parents/carers and employer/referee where applicable.

Older academics' learning: participation in practice and learning biography

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Drawing on recent reports and future projection this study explores current trends of ageing academics in higher education. As little is known on older academics' learning at their workplace, this research intends to address the gap. In this study, older academics are defined by teaching, research or academic management responsibilities who are 55 years and over. By taking on an ethnographic approach, this study sets out to trace how older academics learn in and through everyday practice across three faculties at the OU.

Three methods of data collection will be employed: in-depth interviews on learning biographies of academics (career transition, development of knowledge and skills, values and norms), observation of participants in their workplace, and reflexive diaries of those academics.

Through analysis of this data the research aims to increase an understanding of older academics learning in a context of their workplace, by looking at the interrelationship between individual and social dimensions of learning.

Open Networking Lab: online practical learning of computer networking

Jon Rosewell and Open Networking Lab Team
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Learning to configure computer networks is a topic requiring a substantial practical component and suggesting a pedagogic approach that foregrounds experiential learning. However, providing appropriate computer networking hardware is expensive for classroom labs, and is not viable for individual distance learners.

Simulation offers an alternative basis for practical learning and supports a range of modes, from individual distance learning to in-class blended learning. Sophisticated network simulation packages, such as Cisco's Packet Tracer, have high fidelity to networking devices and can simulate complex network scenarios. Unfortunately their complex interfaces make it difficult for a novice student to engage productively.
The Open Networking Lab (ONL) will provide online resources for students of introductory computer networking. It will take an activity-centred approach, supported with video and screencasts, in preference to lengthy text. Practical activity is based on PT Anywhere, a network simulator that provides students with an easy-to-use, browser-based interface over Cisco's Packet Tracer. PT Anywhere thus provides fully authentic simulation but, by only revealing a subset of features, supports a carefully scaffolded approach to teaching and learning.

We report at an early stage in the development of the ONL. Material is being piloted with students at UK Further Education colleges. Evaluation will include observation, surveys and interviews with students and staff; PT Anywhere also provides learning analytics. A further stage of development will culminate in a badged open course on the Open University's OpenLearn platform.

The ONL will provide vocational learning at scale in educational institutions, employment contexts and for individual learners.

Repurposing MOOCs for Academic Language Learning: An Exploration of Self-regulated Learning Strategies in Higher Education Language Courses using MOOCs

Barbara Conde Gafaro
The Open University, UK

This study attempts to identify the self-regulated learning strategies that students at a University level employ when engaging with Massive Open Online Courses (MOOCs), which are integrated in their English for Academic Purposes module. Literature from MOOCs identifies self-regulation as an essential feature of the learners that take part successfully in such courses. The participants in this project will choose a MOOC related to their academic interests. Data will be collected using two online questionnaires and some semi-structured interviews. It is expected that the data gathered from these instruments can help to gain a better understanding of how the integration of a MOOC into a language course (e.g. in academic writing in English) may foster the self-regulated language learning process of the participants. Findings may also shed light on necessary tools, affordances and activities that may encourage the development and practice of self-regulation in academic language courses for higher education.

Supporting Degree Apprenticeship students: Tutors' and Students' perspectives

Christine Gardner and Soraya Kouadri
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The project investigates the support of Degree Apprenticeship (DA) students during Year 1 studies, primarily focussing on the first cohort of Digital and Technology Solutions students within the School of Computing and Communications. In particular, students initially study the theory module TMX130 (Computing Technologies) and the work based learning module TXY122 (Career Development and Employability). The students are supported by the module tutors and a practice tutor. The employer also plays a key role in students' learning experiences but the implications of this new learning model are hard to predict.
The project is timely as any 'gaps' or 'good practices' in the students' support should be identified as early as possible in the degree programme lifecycle in order to inform further DA modules' development. Long term success measures for the project depend on the findings of the project, for example module teams and tutors adapting how they support DA students.

Teachers designing for collaboration among young children using mobile touch screen technology

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The current expansion and advancement of new digital tools particularly mobile touch screen technology (MTST), has meant a new array of learning experiences for pre-school children. The intuitive nature of touch screen technology and the ease with which children are able to use the devices, means that it is important to investigate the role that teaching practitioners can play in maximising the effectiveness of this technology. The few studies that have given pre-school practitioners a role in research and design, have been limited to issues about selecting the types of apps they want to use that best fit the needs of the children. This research however, aims to report and document the attitudes and contributions of practitioners to facilitate the collaborative interaction of 4-5 year olds when using a creative mobile app (Our Story) on tablets. Data collection in this research includes detailed semi-structured interviews with 9 practitioners across 2 pre-school settings in the UK. The research examines what roles the practitioners believe they can play in designing MTST-supported activity, the reasons for these beliefs, the barriers to carrying out these roles, and the practical suggestions that emerge to promote collaborative learning with MTST. Although, there is some research which demonstrates that the use of digital technologies has a positive effect on the development of preschool children, research looking specifically at collaborative learning with the iPad for preschool children is just beginning to emerge. These interviews are part of a design based-research project that recognizes the unique experience and expertise that early years practitioners have in working with young children. Working alongside the practitioner, this research is aimed to better understand the practitioner's perspective and also work towards designing a learning activity that promotes collaborative learning through the use of MTST. I will be presenting some of my initial findings and the learning activity that was designed in collaboration with the practitioners.

Technology-enhanced Personalised Learning: Untangling the Evidence

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It seems likely that the educational system will need to adapt to the increasing individualism in societies. On the one hand, societies believe in the uniqueness of each person and promote the notion that individuals should be able to control more of their own lives. On the other hand, education systems still tend to have fixed content and timing. (OECD, 2006)

Over recent years, technology-enhanced personalised learning has been proposed as a likely candidate for addressing the issues identified by the OECD. In fact, in a wide variety of reports (e.g., NMC Horizon Report Europe 2014 Schools Edition; Sharples, et al., 2016; UNESCO, 2017; World Economic Forum, 2016), technology-enhanced personalised learning has been identified as one of the emerging fields likely soon to have a major impact on teaching and learning. However, whether or not technology can help deliver personalised learning in the classroom remains an open question, one that we address in our report *Technology-enhanced Personalised Learning: Untangling the Evidence*.

To begin with, what exactly is meant by personalised learning? It can mean different things in different contexts, and it depends on who makes the decisions. One way through this complexity is to consider personalised learning in terms of multiple dimensions: the why, how, what, when, who and where of personalised learning. The introduction of technology to enhance personalised learning only compounds the complexity. Its implementation can be a challenge, it often reduces social learning opportunities, and there is a lack of robust efficacy evidence (it simply is not possible to say which technology will work best in any particular context).

Accordingly, we aim to support decision making by providing an illustrated framework of analysis for individual technology-enhanced personalised learning tools and a set of evidenced-based principles to support their implementation. We conclude that the promise of technology-enhanced personalised learning is worth pursuing (although not at the expense of social learning opportunities). However, the evidence also clearly shows that it is not a silver bullet. Indeed, it is important not to be seduced by exciting technologies and to always start with the learning.

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The effect of study breaks and exam revision weeks on student engagement and pass rates in Computer-Based Assessment setting

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Study breaks and exam revision weeks have been widely embedded in course design under the assumption that students would make use of this time to either take a rest, catching up with their study, or prepare for the upcoming exam. However, there remains a paucity of empirical evidence to evaluate to what extent the implementation of study breaks and exam revision weeks impact students' engagement and academic performance. By applying learning analytics in Computer-Based Assessment (CBA) setting, this study investigates the effect of study breaks and exam revision weeks on student engagement and pass rates. A mixed-effect model was run on learning design data of 198 module presentations at the Open University and trace data of 147,210 enrolled students. A follow-up fine-grained analysis on an exemplar module over four semesters revealed the temporal characteristics of how and when students engage in exam preparation.

Tracing the boundaries of personal and professional academic identities through social media platforms, perceived audiences, and research impact

Katy Jordan
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Academics are increasingly encouraged to use social media in their academic practice for a variety of reasons, from cultivating a personal learning network to enhancing the impact and dissemination of their work. Social media for academics encompasses a wide range of potential tools, however, and platforms which seem technologically very similar may be viewed in contrasting ways in practice. Initial research suggests that academics may be highly selective of what they choose to post to different sites, through a combination of choosing whether to merge personal and professional identities, and contrasting perceptions about the audiences at different sites (Jordan, 2017). In this session, initial results will be presented from a recent online survey intended to explore how academic identity is refracted through different major social networking sites.

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Trust in Time? Teacher and Staff views after piloting an e-authentication system

Denise Whitelock, Alexandra Okada, Wayne Holmes and Chris Edwards
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A number of researchers have investigated the benefits of e-assessment (Whitelock, 2011; Novakovich & Long, 2013; Ferrell, 2014; Whitelock & Bektik, 2018) which include improved learner engagement, instant feedback, location and time flexibility, together with improved reliability. However, one of the main concerns for the adoption of widespread e-assessment is the authenticity of the user performing the assessment and that the work submitted is original and not plagiarised from other sources.

In order to address these issues An Adaptive Trust-based e-Assessment System for Learning (TeSLA) project (http://tesla-project.eu) was set up with EU funding. The TeSLA system was designed to check student authentication and authorship through a combination of the following instruments:

- **Biometrics:** facial recognition, voice recognition and keystroke analysis
- **Textual analysis:** anti-plagiarism and forensic analysis
- **Security:** digital signature (to authenticate) and time-stamp (to identify when an event is recorded by the computer)

This paper reports the findings from pre and post-session questionnaires, with both students and teachers, after TeSLA was piloted with seven European Universities. These being: Anadolu University (AU), University of Jyväskylä (JYU), Open University of the Netherlands (OUNL), The Open University UK (OUUK), Sofia University (SU), Technical University of Sofia (TUS) and The Open University of Catalunya (UOC). The students' data revealed that there were three Universities OUNL, OUUK and UOC where students trusted an online authentication system more than students from the other four Universities involved in the pilot study.

A possible explanation for this difference in trust is that students from AU and TUS were less used to online assessments and they were also less aware of academic malpractice than students from OUUK, UOC and OUNL. Most of the students from the test Universities identified various advantages for using e-assessment with authentication, such as improves rigour and proves submission of original own work, but only an average of 20% of the students tested were willing to share personal data. However, as a student from UOC remarked:

"It is still a very green project, so trust will not be gained overnight"

Understanding SEaM student comments from a Big(ger) Data perspective: what are students saying?

Thomas Ullmann, Stephanie Lay, Tim Coughlan,
Kate Lister, Simon Cross, Bart Rienties and Denise Whitelock
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Each year, students contribute tens of thousands of comments about their student experience via the Student Experience on a Module Survey (SEaM survey). There remains a challenge as to how best utilise this data effectively for understanding module performance and planning module revisions. This presentation takes a big data perspective analysing tens of thousands of comments of the OU wide administered SEaM survey. It uses automated empirical text analysis methods to detect hot topics students talk about during an academic year and it evaluates the sentiment that students express towards these topics. This presentation shows results from several lines of investigation that started in research about the automated detection of reflective keywords in writings (Ullmann, 2015c, 2017b) to its first feasibility study in the context of the Open University (QE PID 'Applicability of Natural Language Processing to analyse SEaM open comment data'), to its first application in the context of quality enhancement at the Open University, such as the SEaM comment analyses for WELS (Ullmann, 2015b, 2015a), in the context of widening access (Coughlan, Ullmann, & Lister, 2017), group tuition (Ullmann, 2017a), and the latest Data Wrangler Scholarly Insight Report Spring 2018.

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Using journey representations to reflect and understand the student experience

Tim Coughlan and Kate Lister
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Creating representations of journeys is a recognised activity in user experience and service design. Educational institutions create representations of idealised student journeys and processes. Here we focus instead on supporting the structured creation of representations of these journeys as experienced from individual student perspectives. This is inspired by our previous research that identified challenges faced by disabled students as they complete processes necessary to support study. Our evidence on the types and prevalence of different impacts (such as time lost from study, stress, or exacerbation of disabilities) and the challenges that arise (such as repeating information, delays, and restricted communications) are now informing the design of a flexible and accessible approach to student journey representation. We aim to trial activities through which representations can be created and used for a variety of scenarios including as an engaging reflective task for students, supporting interactions with tutors or support staff, as a form of data collection, and a basis for improving the design of provision.

Using learning networks and Tricky Topics to drive module improvements in the OU

Lesley Boyd
The Open University, UK

This presentation describes a current PhD and scholarship research project investigating how technology-enabled learning networks can be used in the OU to achieve practical improvement outcomes. The devised working definition of a technology-enabled learning network is 'a task-driven technology-mediated intervention, connecting together individuals of disparate backgrounds to learn how to address a specified outcome or goal; the learning may be formal, informal, social, organisational or creative'. A practical improvement outcome is the result of collaborative activity of participants in a learning network, which is evaluated as an organisational change for the better by the participants and other interested stakeholders.

The research uses a technology-enabled participatory action research approach, in which both researcher and participants learn together in an unfolding and emergent process, how to address a particular organisational challenge and achieve change or improvement. The action research approach is being underpinned by Grounded Theory Method to explore a new conceptual framework regarding the unfolding process of technology-enabled organisational learning to achieve practical improvement outcomes.

The current project concerns OU tutors in scattered geographical locations who hold vital insights into 'Tricky Topics', or aspects of academic work that students find tricky or challenging. Learning networks hosted in standard VLE sites for each of three pilot modules have been used to seek feedback from tutors, in order to collaboratively identify improvements or produce learning interventions. Initial open codes have been allocated to discussion forum posts, and an integrative diagram has been produced indicating how these codes relate together. The integrative diagram illustrates the components of a successful learning network which have been identified so far. The project specifically aims to contribute towards developing a systematic model for identifying and addressing Tricky Topics in all modules across the OU in the future, feeding into aspects of pedagogy, learning design and teaching delivery, thus contributing towards improving retention and the student experience. Some issues arising in achieving this aim will be discussed, and questions and feedback welcomed.

YourMOOC4ALL research project: MOOCs for inclusive design

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At present, there are no applications which include accessibility revisions for Massive Open Online Courses (MOOCs). In this presentation an approximation to this problem is presented, in the form of a specific website which offers the possibility for any learner to freely judge the accessibility following Universal Design for Learning (UDL) principles of an individual course and advice about the missing means of meeting learner needs. This kind of user feedback can be of great value for the future development of MOOC platforms, courses and the educational resources. The development of this website, which is currently in a pilot process by UNED, will gather valuable information directly from the learners themselves to improve the educational quality and accessibility of this learning environment.