



## ITTE Conference 4<sup>th</sup> July 2015

### Keynotes (Theatre)

#### Keynote 1 (9:30-10:15)

#### **Computational Thinking and the Craft of Teaching**

[Miles Berry](#) is well known for his work developing the [new computing curriculum in the primary phase](#) (as well as his many contributions to [Computing at School](#)).

His keynote explores the idea of 'computational thinking' as a golden thread running through the new computing curriculum but with wide applications beyond it to problem solving, creativity and critical thinking in other disciplines. He looks at how these concepts and approaches can be used by teachers in the pursuit of their 'craft', and some of the implications of this for their professional formation.

#### Keynote 2 (1:30-2:15)

#### **Anatomy of a MOOC for CPD**

[Lynn Roberts](#) is a lecturer at [UCL Institute of Education](#) with a research interest in the use of new media technology in learning and teaching. Lynn teaches on the Primary PGCE programme at the IOE leading on the specialism in New Media in the Primary Classroom, and the Computing, and Professional Practice components. In 2014 Lynn helped to develop, run and evaluate the [first UCL IOE MOOC](#) and is currently supporting its second appearance on the Coursera platform. [The evaluation report is available here](#).

The MOOC grew out of a partnership between the [UCL Institute of Education](#) and the [UNESCO Institute for IT in Education](#), led by instructors from eight countries. The MOOC aimed to provide professional development for primary phase teachers, head teachers and policymakers working through an examination of ICT in Primary Education. The resources for the course were derived from an IITE funded [UNESCO project](#) which had collected practices, experiences, policies, case studies and data from several countries. An important element of the MOOC was its focus on developing a community of learners who were able to share their own experience and knowledge.

Lynn's keynote considers the outcomes of the first MOOC by illustrating the participants' experiences in the community of learning and the reflections and analysis of the instructor team. Initial findings from the second iteration of the MOOC (May 26<sup>th</sup>-July 7<sup>th</sup> 2015) will also be presented.

#### Keynote 3 (3:15-4:00)

#### **Inspection. Computing and Online Safety**

[John Nixon](#), an [OfSTED HMI](#) since 2013 and works closely with David Brown HMI the OfSTED national lead for Computing.

In his talk John will introduce the new common inspection framework for education, skills and early years that will come into operation from September 2015. The presentation will also draw upon the guidance for inspectors contained in the draft '*School Inspection Handbook– September 2015*' to explore how evidence relating to computing and online safety may contribute to the judgements that inspectors will be required to make.

John is an ex-head teacher (NPQH), with considerable experience in advisory work, primary leadership and school improvement from EYFS to secondary, John inspects schools, non-association

independent schools, ITE establishments and Local Authority School Improvement services. See his recent presentation at the MGL Spring conference entitled [Inspection of Computing & E-Safety](#). His keynote will include some coverage of the new inspection framework to be implemented from September 2015.



### ITTE Conference Papers: Running Order

| <b>Session 1 (single strand) 10:15-11:15: Conference Room</b>   |                      |
|---|----------------------|
| <b>After ETAG: what is the future of EdTEch in teacher education and training</b><br>Crispin Weston (invited paper)           | 20 min + 10<br>Q&A   |
| <b>ePortfolios: a case study of transition</b> (Pecha Kucha)<br>Helen Boulton   | 7 min each<br>No Q&A |
| <b>Developing metacognitive awareness through computer game design</b> (Pecha Kucha)<br>Yasemin Allsop                        |                      |
| <b>Poem Generator: A Comparative Evaluation of a Microworld-based Learning Approach</b> (Pecha Kucha)<br>Craig Jenkins        |                      |
| <b>Session 2 (Parallel Strand 1) 11:30-12:30: Conference Room</b>   |                      |
| <b>Meeting up in Minecraft: using games to promote peer to peer talk in the primary classroom.</b><br>Linda Cooper            | 15 min + 5<br>Q&A    |
| <b>Improving primary computing CPD with 'UpTIME'</b><br>Chris Shelton   |                      |
| <b>Iranian EFL teachers' self-perceived knowledge of technology and its relationship with pedagogy</b><br>Parivash Mozafari   |                      |
| <b>Session 2 (Parallel Strand 2) 11:30-12:30: Classroom</b>   |                      |
| <b>Employability and digital literacy</b><br>Moira Savage and Anthony Barnett   | 15 min + 5<br>Q&A    |
| <b>Using technology to monitor and assess integrated cognitive development</b><br>Charlotte Davies                            |                      |
| <b>Digital Futures: Towards Research-Informed Practice</b><br>Margaret Cox  |                      |
| <b>Session 2 (Parallel Strand 3) 11:30-12:30: Theatre</b>   |                      |
| <b>Technology: an undervalued and underused resource to support teaching and learning in primary schools?</b><br>Mike Lansley | 15 min + 5<br>Q&A    |
| <b>Towards tomorrow's successful digital citizens: A policy think tank.</b><br>Christina Preston and Malcolm Payton           |                      |
| <b>Next generation learning – who, what, how, when, where?</b><br>Malcolm Payton  |                      |



## **Session 1 (single strand) 10:15-11:15: Conference Room**

### **After ETAG: what is the future of EdTEch in teacher education and training**

Crispin Weston (invited paper)

In this talk I argue that ed-tech has a vital—but as yet unrealized—part to play in improving the quality, the breadth and the consistency of our teaching and learning. In my critique of the recent ETAG report, I suggested that we will only achieve this transformation if we can fundamentally reshape our understanding of the relationship between technology and education.

Defining pedagogy as the technology that is native to education, I will propose that digital ed-tech should be understood as a medium through which different pedagogies can be expressed, applied and evaluated. In teacher training and professional development we should keep separate the teaching about technology from the use of technology as a pedagogical tool. I will outline how such an approach to ed-tech could be implemented, what benefits it promises, what implications it will have for the role of the teacher and possible changes in the priorities for teacher education.

### **ePortfolios: a case study of transition (*Pecha Kucha*)**

Helen Boulton

The context of this paper is the final phase of a longitudinal action research project investigating whether an ePortfolio, created as a pre-service teacher to evidence a digital story of developing professional identity, can transition into employability, i.e. the first year as a newly qualified teacher. Traditionally evidence of development has involved large paper-based files with authentic documentary. With the increase in readily available technology many aspirational teacher educators across Europe have successfully embedded ePortfolios in professional training programmes (Granberg, 2010). While many report how this has been beneficial to trainee teachers it has raised new challenges for teacher educators (Lorenzo and Ittelson, 2005). Few have explored the transition of the ePortfolio from teacher trainee to professional teacher.

This research has explored the process of trainee teachers transitioning their ePortfolio from their teacher training programme (as student) to their first full-time teaching post (as a qualified teacher). The research findings indicate a changing purpose of the ePortfolio from training to the workplace, an increasing strength of ownership as part of the transition, development of digital literacy capability, and empowerment in becoming a teacher. The paper will discuss key outcomes and present arguments and challenges faced in the development of an ePortfolio to support professional development in the transition from university to employment.

- Granberg, C. (2009). E-portfolios in teacher education 2002–2009: the social construction of discourse, design and dissemination. *European Journal of Teacher Education*, 33(3), 309–322.
- Lorenzo, G., and Ittelson, J. (2005). An overview of E-Portfolios. *Educause Quarterly*, 1–19.

### **Developing metacognitive awareness through computer game design (*Pecha Kucha*)**

Yasemin Allsop

There is a growing interest in teaching children critical thinking skills so that they will become successful learners. A considerable amount of literature supports the vital role of metacognitive skills for the development of critical thinking and learning (Flavell, 1979; Zimmerman, 1994; Fisher, 2005; Shraw et al., 2006; Whitebread et al., 2009). However, there is no clear guidance on how to design learning experiences to accommodate the development of these skills.

This presentation will illustrate how computer game design as a computational activity provides a context for students to invent, develop and use metacognitive strategies using examples direct from a primary classroom. 'Planning', 'evaluating' and 'monitoring' will be focused on as the main metacognitive strategies and 'processing' will be explored as a metacognitive regulating-application skill representing the strategy of monitoring problem solving activities and the deployment of cognitive resources.

### **Poem Generator: A Comparative Evaluation of a Microworld-based Learning Approach** *(Pecha Kucha)*

Craig Jenkins

In Wales, the National Literacy and Numeracy framework sets a legal requirement for teachers to embed literacy into all lessons. In addition, the recent curriculum review for Wales by Professor Donaldson recommends a third statutory cross-curriculum responsibility of Digital Competence and the ICT Steering Group report to the Welsh Government recommends that all learners should be given the opportunity to learn programming.

Possible future changes in educational policy raise a very important question for educators in Wales: how should educational practice adapt in order to integrate digital competence more deeply? One possible response to this question is to employ a microworld-based 'guided discovery' approach.

This Pecha Kucha presents an update on a study that took place at a comprehensive school in South Wales. A year seven microworld-based teaching scheme in Verse Drama was co-designed by the researcher and a subject-specialist drama teacher. The aim was to examine the effectiveness of two microworld-based activities upon computational thinking and aspects of literacy in a cross-curricular context.

An independent samples T-test revealed promising results with a moderate effect upon the computational thinking and literacy aspects that were tested. Qualitative survey data provided some important insights to guide future research in the area of microworld-based learning approaches.



## **Session 2 (Strand 1) 11:30-12:30: Conference Room**

### **Meeting up in Minecraft: using games to promote peer to peer talk in the primary classroom.**

Linda Cooper

Outcomes of a pilot study from my evolving doctoral research will be discussed in this presentation. The use of technology in the primary classroom has long been associated with beneficial educational outcomes and this presentation emerges from an exploration of digital technology' potential to promote creative, dialogic talk between pupils in the classroom. While creativity and talk have been linked with technology on an individual basis, the ways in which all three of these themes interact is less well researched. This research devises a classroom intervention that combines creativity, talk and technology.

Using the 'Minecraft' (Mojang 2009) gaming world to create a virtual learning environment children's talk has been recorded and analysed according to the methodological approach of discourse analysis. This helps to provide a view of peer-to-peer classroom talk in the primary classroom from a dialogic perspective. The aim is to explore how technology can facilitate the development of a dialogic environment that supports creative interaction between pupils.

### **Improving primary computing CPD with 'UpTIME'**

Chris Shelton

This paper will discuss the development of a teaching sequence for primary computing that is designed to support teachers' professional development and future directions for the ideas.

Since the introduction of the National Curriculum for Computing, there has been increased demand for professional development opportunities for new and existing teachers. While primary teachers have appreciated CPD that has introduced the concepts and language underpinning the curriculum and have been keen to find out about teaching resources, the leap from using existing materials to designing their own lessons is often challenging.

To help make this transition smoother, we have introduced the acronym 'UpTIME' to suggest a teaching sequence for primary computing. UpTIME stands for: Use/play, Tinker, Improve, Make, and Evaluate. A summary can be found at: <https://challengingcomputing.wordpress.com/uptime/>

UpTIME provides a tool for designing sequences of activities to teach computing. The aim of the sequence is to create opportunities for children to develop their digital fluency through motivating, creative and challenging activities that maximise opportunities for children to learn through productive talk with peers and adults.

### **Iranian EFL teachers' self-perceived knowledge of technology and its relationship with pedagogy**

Parivash Mozafari

Underpinned by a socio-cultural epistemology, this qualitative multiple-case study aimed to explore participants' perceptions of their knowledge and learning experiences concerning the integration of ICT tools into their teaching.

The study involved a convenience sample of 9 Iranian English as a Foreign Language (EFL) teachers- 4 females, 5 males -across 6 high schools in the capital city of Tehran. The main method for data collection was a series of individual semi-structured interviews following and led by a series of observations of teachers' practices in their classrooms.

Using Technological, Pedagogical Content Knowledge (TPACK) as a conceptual approach that combines the knowledge of technology, pedagogy and content, data from the current study provided deep insights into teachers' current understanding of the potential educational benefits of technology, their current capacity to integrate ICTs into their teaching practices, and the types of skills and training that they needed in order to work effectively.

Data suggested that ICT mediated English language teaching was seriously hampered by teachers' insufficient expertise and self-efficacy related to TPACK as a result of inadequate initial and continued professional development. One of the most difficult conundrums for the teachers was what effective technology-mediated EFL pedagogy should look like.

The limited ICT-related trainings that they had received were narrowly focused on ICT literacy. However, these teachers needed support in learning the range of resources that were available to them i.e. technological knowledge, but more importantly in finding and implementing effective pedagogies. Effective technology pedagogy, therefore, seemed to be a missing link in the system.



## **Session 2 (Strand 2) 11:30-12:30: Classroom**

### **Employability and digital literacy**

Moira Savage and Anthony Barnett

Following the presenters' recent book *Digital Literacy for Primary Teachers*, the authors have commenced an 18-month project to explore the relationship between employability and digital literacy from multiple perspectives. The presentation will provide an overview of the project's four stages and outline progress so far. We will also focus on how we will use these insights to improve the experience of trainee and experienced teachers with whom we work.

In particular we will report on phase 1 in which we re-examined the drivers including; the Computing National Curriculum Programmes of Study (DfE 2014); the Higher Education Review Group Themes for 2015-2016 (QAA) and institutional measures to embed student digital literacy development opportunities within courses. We then matched particular elements of our previous work using a simple model of values, dispositions and capabilities to underline the limitations of viewing digital literacy as narrow set of skills to be attained.

We exemplified the model with a employability focus which includes scrutinising elements implied (or not) in the Teachers' Standards, inspection guidance, graduate attributes and popular digital literacy models from the UK as well as the global context related to the key tools a 21<sup>st</sup> Century teacher needs. This is very much an open and practice-based project and we welcome collaborators- details on how to become involved will be shared in our session.

### **Using technology to monitor and assess integrated cognitive development**

Charlotte Davies

It has been established that better motor skills are related to a better performance in cognitive tests (Livesey et al., 2006; Niederer et al., 2011; Nourbakhsh, 2006; Pangelinan et al., 2011; Piek et al., 2008; Roebers and Kauer, 2009; Wassenberg et al., 2005). Further, Goddard-Blythe (2012); Arrowsmith Young (2013); Schieman and Rouse (2006); Gilmore (1999); Doidge (2015); Begley (2007) and others have identified the potential to change cognitive processing through changing aspects of physiology. Much of this work has been individual coaching and has not been transferable to groups of students in a school environment. This research project considered whether it was possible to use new technology to monitor and to influence children's physiology in order to change their cognitive processing in a school-based environment.

The study looked at children in three schools, two primaries and one secondary school, 46 pupils in total. The data is derived from screening the children at the start and throughout for: bi-lateral integration; core strength; cognitive processing of sound; binocular vision; cognitive visual processing.

The research outcomes include: identifying a structure to profile a child's physiology for learning with visual screenshots and printouts that enable all stakeholders to share the underlying issues; identified key steps in changing a child's physiology which will impact upon a child's cognitive skills; provided the data to understand the precision with which it is necessary to work to impact on cognitive skills; and provided an understanding of the limitations of the methods; including the practical, and psychological barriers to manipulating cognition. This provides an initial framework to prevent learning difficulties and to help overcome developmental delays, hence in the long-term narrow the UK skills gap identified by the OECD (2012).

## **Digital Futures: Towards Research-Informed Practice**

Margaret Cox

Recent evidence from major research studies in Technology Enhanced Learning (TEL) shows that current research methods are remarkably similar to that of 40 years ago. However, a major concern of researchers, policymakers and practitioners is the limited use of research outcomes to inform educational practice. One major problem is that much of the previous research has used traditional measures that do not isolate outcomes that are specific to TEL. A communicative approach is needed to convey research priorities, needs, outcomes and implications effectively. Research methods should evolve to take advantage of new technologies to unobtrusively collect digital assessment information on learning, and new open research models are needed to make research findings more immediately available. This paper will discuss approaches for better research-practice-policy relationships in our presentation.



## **Session 2 (Strand 3) 11:30-12:30: Main Hall**

### **Technology: an undervalued and underused resource to support teaching and learning in primary schools?**

Mike Lansley

This paper will report on a study carried out to identify the reasons for an apparent gap between rhetoric and reality concerning initial teacher trainees' readiness to use ICT tools and resources to support teaching and learning. Whereas results from the annual Newly Qualified Teacher Survey indicated that the majority of trainees judged themselves to be well prepared to make the best use of new technologies, anecdotal evidence relating to current students suggested that this confidence was misplaced.

Data gathered through questionnaires and interviews with undergraduate and postgraduate trainees and their link tutors and mentors highlighted a number of possible school and teacher level barriers to their effective use of technology, in particular to support learning.

The presentation will discuss a number of tentative conclusions that were drawn leading to a number of recommendations for changes to existing practice at the university with the intention of enhancing the students' experiences. If implemented it is suggested that these actions will further develop the students' knowledge and understanding of best practice and result in reality coinciding more regularly with rhetoric.

## **Towards tomorrow's successful digital citizens: A policy think tank.**

Christina Preston and Malcolm Payton

Christina Preston and Malcolm Payton are reporting here on a knowledge creation event held in February 2015.

ITTE, MirandaNet, London Knowledge Lab and the International Baccalaureate, the main partners, invited forty international experts to share their views. The aim was to gather a consensus in a debate on an overarching issue in a form that can be reported back to policy makers and curriculum designers. The debate question was: *This professional community believes the importance of ethics and values in relation to digital technologies are not emphasised sufficiently in today's digital society.*

The conference explored three key themes linked to this debating topic: the concept of Digital Citizenship; the interplay between Computers Science, Social Informatics and Digital Wisdom. The group also looked at the implications these questions have for professional development.

The methods of data collection were refined from existing knowledge creation formulae like the MirandaMods.

Firstly, in order to record the perspectives of all the participants everyone published their view on the website before the event. Lead speakers introduced each topic and rapporteurs summarised the deliberations of each group of participants. Speakers were videoed. Opinions were also recorded during the day on post-its and concept mapping were encouraged on posters. Unfortunately the internet was not reliable enough to do digital collections like Twitter and collaborative digital concept maps.

In the draft report that is already published on the web the conclusions and key aspects for further exploration are outlined: summaries of key points stand alongside some very open-ended areas for exploration. At the ITTE conference we will share the draft conclusions in order to agree on what should be said to different audiences and in different media. We will also share the partners growing understanding about effective methods of running a knowledge creation think tank.

## **Next generation learning – who, what, how, when, where?**

Malcolm Payton

This talk will look at the ways learning is changing, touching on the changing world and leading on to look at changes to pedagogy and research. It is delivered by Senior Mirandanet Fellow Malcolm Payton (former Director of Education and Ministry advisor).

Starting with **who** should be teaching, the talk will look at some very inspirational videos and see how the thing that links them is not the topic but the pedagogy. This leads us on to key questions about the curriculum and whether it should be content or skills driven, the **what** of teaching. This section makes reference to the increasing need for cognitive skills and how our brains are in fact developing in new ways.

The **how** question looks at personalisation in some detail, dwelling on the idea of 'big data'. It begins by describing the new Apple Health Kit, which allows patients suffering from Alzheimer's to tap the screen to check for tremors or walk in a line to check balance. The really interesting thing is that this data is then transmitted to researchers ten times a day, giving them data that in the past would only be collected once a quarter, opening up whole new approaches to research in education as well as in health.

Finally, **when** and **where** look at ideas like flipped learning and online learning, exploring how learning can be made asynchronous, and personalised.