

Innovations in Education: Introduction to the Special Section

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1 Introduction

Logic will get you from A to B. Imagination will take you everywhere. Einstein

The conception of an ‘Innovations in Education Colloquium’ grew from a dedicated group of European dental educators in 2003 who met at the University of Brescia, Italy (Reynolds et al. 2005). This meeting of minds resulted from the aspirations of the Bologna Declaration of 1999 that aimed to harmonise Higher Education (HE) across borders (<http://www.ehea.info/cid100210/ministerial-conference-bologna-1999.html>).

During the first Anglo-Italian Collaboration, it soon became apparent that the future of HE was not just European but global. Sharing the challenges of healthcare education through academic discourse and worldwide collaboration was considered essential to generate the greatest potential for a brave new educational world. There have now been 14 annual Colloquia with invited international experts, speakers, student leaders and representatives from related industry from over 20 countries. About 50 globally recognised academics have met annually from a multitude of disciplines that has included art and humanities, healthcare, the sciences and business. Collaborative new research and grant income was generated for award winning projects such as HapTEL (Haptics in TEL) and UDEnte (Universal Dental Education) (San Diego et al. 2012a, b; Reynolds 2011).

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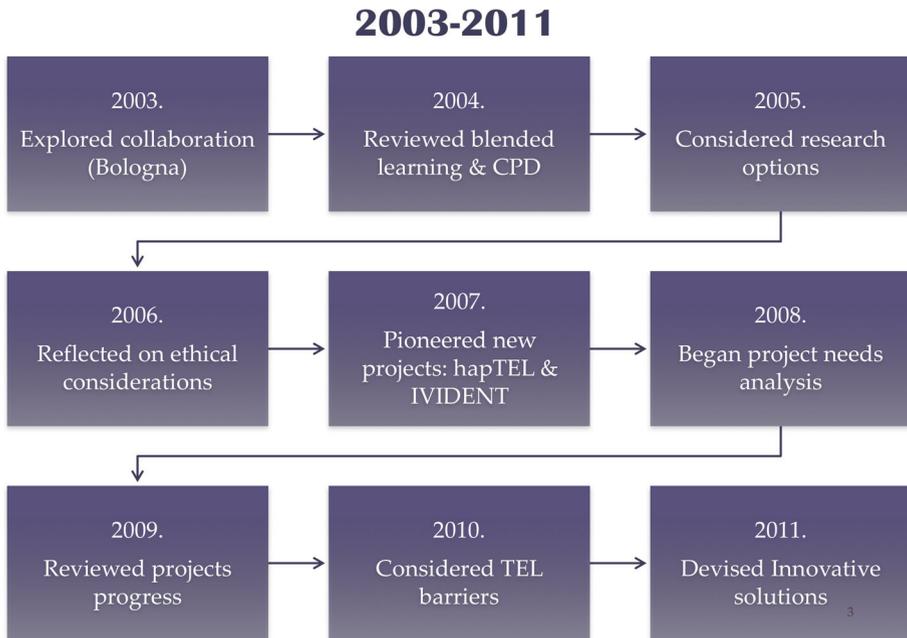


Fig. 1 Flow chart of the first 9 years of the summary activities for the Innovations in Education Colloquium, 2003–2011

The Colloquia moved through cycles of debate as depicted in Figs. 1 and 2 with outcomes of peer reviewed publications, such as this Special Issue (Elson et al. 2008, 2009; Roberts et al. 2010; Dobozy et al. 2011; Donaldson et al. 2011; Quinn et al. 2015).

The old adage that “*necessity is the mother of invention*” held true as we moved from “*bored to death by lectures*” to a brave new world where innovative solutions are needed to the barriers of educationally driven Technology Enhanced Learning (TEL) (Reynolds and Mason 2008; Schönwetter and Reynolds 2011; Reynolds 2014). Given best evidence, prophecies have been made, some of which have come to pass, such as the use of TEL in assessment and robotics in training (Eaton et al. 2008; Schönwetter et al. 2010; Arevalo et al. 2013). The digital revolution is compelling but much of HE is still dragging behind (Schönwetter and Reynolds 2013). This Special Issue gives a flavour of some of the innovative research and entrepreneurial activities undertaken as we try to forge best educational practices for the future (Reynolds et al. 2008).

2 Paper Selection Process

The nine short papers that make up this Special Edition were selected from the scientific sessions, at the 12th and 13th Innovations in Education Colloquia held at the University of Brescia, North Italy, 28th April–1st May 2014 and 23rd–26th April 2015 respectively. The overall themes of the two Colloquia were “Leadership in Learning” (2014) and “Personalisation: Who do you think you are?” (2015). The papers for this Special Issue were chosen by a subgroup of Professorial level reviewers to demonstrate a range of innovative research under the headings of pedagogical practices, virtual reality, gaming and clinical

education. The nine selected short papers were taken from a total of 30 accepted abstracts that included oral presentations in the Plenary and Innovative Technologies sessions, and from posters and roundtable sessions.

For inclusion in the Proceedings of the Colloquium itself, all abstracts were peer reviewed by at least one expert in the field under the umbrella heading of “Innovations in Education”.

Seven of the nine short papers were given as oral presentations, one as poster presentation (Shahriari-Rad et al.), and one reported the outcomes of a snap questionnaire and subsequent roundtable (Lea et al.).

3 Contributors to the Special Section

The nine short papers fall into four categories as listed above, starting with the underpinning theories of pedagogical practice, and two categories of innovative endeavour in virtual reality and serious games. The area of domestic violence provides the topic for clinical educational research.

3.1 Pedagogical Practices

The predesigned lesson through the use of templates across disciplines was presented by Dr. Eva Dobozy (Curtin University, Perth, Australia). Although a need for such methods was clearly identified there was still a distinct theory practice gap between teacher and student capacities in engaging effectively with TEL.

Dr. Stylianos Hatzipanagos and Bernadette John (King’s College London) in their keynote, discussed whether institutional social networks work, perhaps by fostering a sense

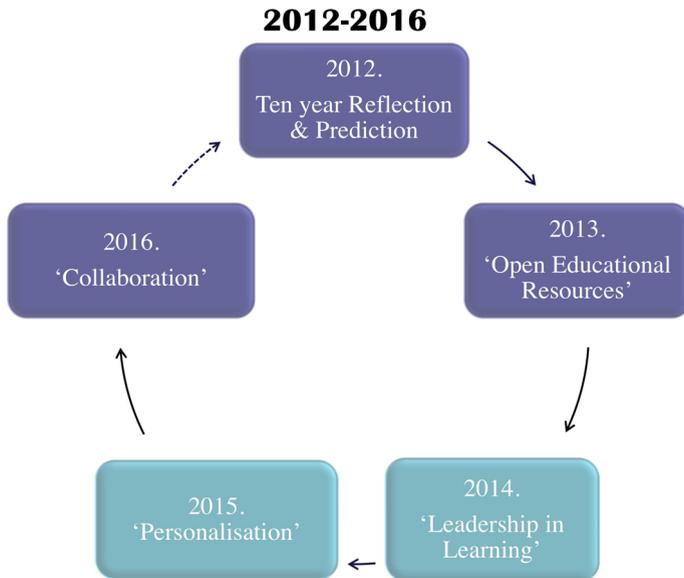


Fig. 2 Cycle of the past 5 years of the themes for Innovations in Education Colloquium. Contributions to this Special Issue are from 2014 and 2015

of community as well as enhancing learning. A social network called KINSHIP (King's Social Harmonisation Project) was built in the open source Elgg software. Although the majority of medical students were positive about KINSHIP few actually embraced it fully.

Formative assessment using a Performance Indicator Tool (PIT) was created with a bespoke bulletin board application for medical students undertaking their obstetrics rotation. Again students were enthusiastic but without institutional buy in, Dr. Philip Dutton and colleagues (Guy's and St Thomas's Hospitals NHS Foundation Trust, London) demonstrated that embedding the PIT in an otherwise traditional setting was challenging. All three papers identified barriers to the uptake of TEL in HE.

3.2 Virtual Reality

In the innovative area of virtual reality and art, Jen Wright (University of the Arts London) literally drew links between art and dental education. There are highly creative and meticulous elements to both, but they also have an interface between a tool and a surface. Supporting key skills in medical education, when combined with virtual reality were seen as a very useful activity in training.

The theories of skill acquisition in dentistry were presented in a poster by Dr. Arash Shahriari-Rad and the award winning HapTEL team led by Professor Margaret Cox OBE from King's College London. Using robotic arms and virtual reality screens to simulate drilling a tooth, the results showed that it was possible to measure and monitor the student's psychomotor training. There was more regular and instant feedback on a computer screen, compared with the traditional physically present phantom-head manikin.

From Croatia and the US Airforce, Drs. Maja Sabalic and Jason Schroener discussed the knowledge, attitudes and practice of students and professionals in Europe and the USA towards virtual reality technologies. Dental students and educators overall had a positive attitude to virtual reality but it was greatest in those who had already embraced it. There was therefore a need to educate all users in the benefits for education.

Again, challenges were seen when implementing innovative TEL, but solutions through research were identified.

3.3 Serious Games

A serious game in dental public health called GRAPHIC (Games Research Applied to Public Health with Innovative Collaboration) was developed to improve the oral health of children in virtual communities. The work was presented by Dr. Kawin Sipiyanuk (Mahidol University, Bangkok, Thailand and King's College London). He and colleagues evaluated the analytic data through a logging system of the game. GRAPHIC not only contributed to dental public health education and informed future game refinement, but it also allowed academic staff to identify and assist students in achieving learning outcomes.

3.4 Clinical Educational Research

The clinical education setting chosen for both papers in this section was domestic violence (DV). Prof Susan Lea (University of Greenwich, UK) and colleagues carried out a voluntary snap poll during the Plenary session and discussed the significance of the results in the ensuing roundtable. It was clear that DV is a widespread problem that can be identified

by dental professionals. However, the gaps in training need to be addressed, facilitated by a well-designed TEL course.

Dr. Marika Guggisberg (Curtin University, Perth, Australia) continues the DV theme with her work on the role of education in DV, concerning the association between dental fear and child sexual abuse victimisation. Professionals may be reluctant to intervene in part because of their lack of knowledge and training, but they may also help identification of victims. Developing specific policies and guidelines was considered a helpful way forwards. Combined with the paper by Lea et al., a specific need for TEL delivered education in DV may help bridge the educational gap.

This collection of short papers is a snapshot of work in progress in a ‘super collaboration’ between like-minded academics who work together in harmony, aware but unclipped by the barriers to best practices in TEL.

It is the long history of humankind those who learned to collaborate and improvise most effectively have prevailed. Charles Darwin

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