Editorial: Research Into Teaching with Whole class Interactive Technologies
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This themed issue contains a selection of papers associated with presentations at the International Conference on Research Into Teaching with Whole class Interactive Technologies (RITWIT) hosted at the University of Cambridge, UK, in June 2009 (http://www.educ.cam.ac.uk/events/conferences/ritwit/). The conference focused on research into the pedagogy underlying use of technologies in the whole class context, including innovative tools such as interactive whiteboards (IWBs), visualisers, tablet PCs, and handheld devices, asking how their use facilitates or inhibits more effective whole class teaching and learning at school level. Implications for teacher development and educational policy were also addressed. The conference was attended by 85 delegates, 25 of them from outside the UK, representing 14 countries spanning 5 continents. Attendees included academic researchers, teacher educators, school leaders and classroom teachers (many of whom presented), local authority representatives and advisers, independent consultants, publishers, plus educational representatives from Becta (British Education and Communications Technology Association), UNESCO, and the main IWB and voting system distributors. In addition to attending and participating in presentations, this diverse group of delegates engaged in some very thought-provoking dialogue during a number of dedicated small group and whole group discussion sessions and we hope to capture the flavour of some of it in this themed issue.

This issue features six full-length and six short (half-length) research papers resulting from the conference. Full papers have been refereed by three peer reviewers, in accordance with the journal’s usual procedures, whilst the short papers were reviewed by one anonymous peer and by the guest editors. The short papers are all research-based but include work in progress, informed opinion pieces and small-scale case studies of classroom practice or professional development initiatives; their length restriction inevitably means that reporting of supporting data is minimal, but in all cases authors can provide more information to interested readers upon request. The overall aim in constructing this themed issue was to include cutting edge and emerging research as well as more established work in the field, in order to stimulate debate and interaction between interested parties.

In addition, readers will find that there is an introductory paper by Mal Lee (an Australian educational consultant and pioneer of digitally networked schools), a keynote speaker at the conference, and a concluding paper by our conference discussant, Professor Karen Littleton (Open University, UK). Their contributions provide an overview of the historical context, an informative picture of the present digital landscape, a scholarly synthesis of the themes emerging across the papers and conference discussions, and some speculation about issues arising for future research.
and practice. Consequently, our own task in this editorial is to introduce the contents of the themed issue, as follows.

As we have indicated, Lee opens the proceedings with a scene-setting piece intended to place the developments with interactive whiteboards (IWBs) in particular, in their historical educational context. Whilst the conference deliberately sought to encompass many different kinds of ‘whole class interactive technologies’, IWBs ultimately featured prominently in the conference and in the submissions for this issue. Lee argues that, within the last decade, use of this instructional technology has had a ‘profound impact’ upon teaching and learning across the developed world and upon the fundamental nature of schooling itself. In stating this, he stresses the importance of considering both the micro and macro context in framing research into educational technology use. His arguments draw upon his experience as a distinguished educator, consultant, ex-director of schools, and follower of international trends in this field; as such, he brings a valued perspective upon how governmental policy plays out in practice in schools and how digital technologies are taken up by teachers. In his arguments, Lee’s use of terms such as ‘revolutionary’, and his generalisations about the IWB as an ‘agent of change’, will be provocative to many; they will undoubtedly be stimulating for all readers.

Lee’s arguments might fruitfully be critiqued in light of the 12 subsequent research papers which elaborate examples of using IWBs and other digital technologies in classrooms. This work was carried out in England, Cyprus, Germany, Hungary, Mexico, New Zealand, Norway and Wales. Seven papers focus wholly on IWBs (Beauchamp et al., Cutrim-Schmid, Fernández-Cárdenas & Silveyra-De La Garza, Mercer et al., Twiner et al., Harlow et al., Miller & Glover), spanning a wide variety of subject areas and student age groups, while a further contribution by Lavicza & Papp-Varga makes close reference to IWBs in the context of using GeoGebra mathematical software. This paper is one of several to emphasise the central importance of well-structured professional development that sees a consideration of the developing views of teachers as central to the process of integrating new technologies into the classroom. (These IWB papers are grouped together in the full and short paper sections respectively; the order of papers is alphabetical by first author otherwise.)

Interestingly, several papers focus, in different ways, on teachers’ experiences of using the IWB in specific classroom contexts. Cutrim Schmid, for example, reports a case study from a wider research project that examines the ‘new competencies’ that English as a Foreign Language (EFL) teachers may need to develop to incorporate IWBs into productive classroom practice. The focus is not on mastering specific technical functionality; rather it is on developing IWB-based materials that develop learner interaction, management of that interaction to promote pupil agency (see also Warwick et al., 2010) and finding the ‘right balance’ of technology use. This last concern features in two further papers; Harlow et al. again take a case study approach, this time examining an early years classroom and the integration of IWB use with the class teacher’s pedagogic approach. Here the specific focus is on how use of the technology might be seen in the context of promoting the key competencies embedded in the New Zealand curriculum; we are treated to a vignette of orchestration of the classroom environment that indicates clearly a positive and considered use of the IWB as just one, however important, of the mediating tools at
the disposal of teachers and learners in an early years setting. Beauchamp et al. employ a novel jazz improvisation analogy in elaborating how mediation takes place; they describe how some teachers encourage students to improvise, to develop their own perspectives and methods and pose their own questions, while others feel more comfortable sticking to their scripts, perhaps feeling under pressure from external constraints. Interestingly, these different types of orchestration have been found in a single lesson.

Teacher views on IWB use are a central feature too of the paper by Fernández-Cárdenas & Silveyra-De La Garza, who provide a fascinating insight into changing pedagogic practices as IWBs are introduced on a large scale into Mexican schools. (While the UK leads the global educational market with penetration into 72% classrooms now, Mexico is currently the seventh biggest investor, with IWBs in about 28% of classrooms: see Figure 1 in Lee’s paper.) Here, the comparison between IWB-equipped teachers and classrooms and pedagogical approaches in ‘non-IWB’ classrooms is fascinating and suggests, as does their considered review of recent literature on the subject, that teachers pass through several ‘phases’ in the incorporation of a technology into teaching and learning in their classrooms. All of these papers additionally emphasise that researcher-teacher collaboration in research programmes and associated professional development can be highly productive in developing and supporting pedagogic practices with new technologies that are based upon sociocultural perspectives on learning.

Three further papers describe research into innovative uses of other kinds of interactive technologies in whole class teaching. De Winter & Winterbottom chart their development of a user guide to assist novice and in-service teachers in integrating everyday technologies (wikis, digital video, podcasts, personal digital assistants, games consoles) into science education. Wikan et al. focus on multimodal text production in secondary school group project work using animation and story building software, and the opportunity offered to strengthen ‘collaborative and creative group-based learning’. In so doing, Wikan et al. attempt to untangle the meaning of collaboration in the context of classroom technology use. Wright, again considering how individuals and groups interact around classroom technologies, investigates how students’ personal access to wirelessly networked handheld graphing calculators can create an interactive space for whole class discussion. Finally, Mama’s doctoral work explores how teachers align whole class technology use with their pedagogical approaches, lesson objectives and attitudes to technology, and examines the links with student engagement. She again shows clearly how the teacher’s views of technology use in the classroom have a profound impact on how pupils come to see technology in relation to their own learning.

Karen Littleton’s concluding piece helpfully weaves together the themes emerging across all of the preceding papers (and which were represented in the further conference presentations and discussions not represented in this collection). It elaborates our ongoing thinking about some of the key issues and illustrates how the conference and the articles arising from it have taken this forward. Littleton summarises the pedagogical affordances of whole class interactive technologies, IWBs in particular, and makes the important point that as technologies evolve teachers need support, time and space to explore the associated implications for their pedagogy and practice. Likewise, while Lee construes the IWB itself as an ‘agent of
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(rapid) change’, Wright concludes that the more powerful and functionally complex a tool, the longer it takes teachers to learn how to use it effectively and to develop and refine their pedagogic approaches in relation to the tool. Hence, he argues, potentially powerful pedagogical systems will not be used in classrooms unless an immediately effective but simple application is found.

The thorny notion of ‘interactivity’ peppers the discussion throughout the entire collection, with several contributors building on the identification of technical and pedagogic interactivity of IWBs by Smith, Higgins, Wall & Miller (2005). Miller & Glover make some of the more contentious arguments here, for example asserting that curriculum change is a ‘catalyst for a new interactive pedagogy’. They also go further than Wright in making the case that ‘working on pedagogic change without being an “IWB technology-proficient” teacher’ is less likely to work; a body of research does in fact indicate that teachers may develop their technical competence to support and enhance their established interactive pedagogies. Our own case studies led us to postulate that ease of achieving technical interactivity using the IWB may encourage dialogically-oriented teachers to increase opportunities for dialogue (Mercer, Hennessy & Warwick, this volume). Yet they also demonstrated that ‘whizzy’ use of the IWB is not a prerequisite and that highly interactive forms of dialogic teaching can take place with quite basic use of the IWB (or indeed with no technology at all); however, such ‘basic use’ does certainly move beyond the purely ‘presentational’ use described by Miller & Glover and frequently observed in classroom practice (Moss et al., 2007). Developing more ‘proficient’ use in our view means that the IWB technology can be harnessed in more imaginative (but not necessarily technologically very sophisticated) ways to move on student thinking and in particular to sustain and develop dialogue more effectively over time. Hennessy is currently developing this argument in more depth elsewhere, illustrating how teacher and student proficiency at exploiting the affordances of the IWB for co-constructing, archiving and revisiting digital knowledge artefacts creates tangible, interim records of sociocognitive activity that can usefully act as supportive devices for emerging thinking. The paper by Twiner et al (this volume) offers further insight into how such infinitely ‘improvable objects’ support the temporary exploration of ideas and provide the focus for progressive discourse, without implying a straightforward linear trajectory of learning. Their paper also indicates that the role of various ‘actors’ in this scenario – primarily teachers and learners – is of huge significance in how the potential multimodal affordances of technologies are actually employed for learning in the classroom.

Collectively the work indicates that the ‘tipping point’ mentioned by Lee in terms of a country’s acceptance of the benefits of IWB technology after a trial period and its widescale roll-out may apply at the micro level of the IWB-equipped classroom too. That is, we postulate that there may need to be a minimum level of both technical competence and pedagogical – especially dialogic – interactivity, including a positive attitude to integrating interactive technologies (encompassing handheld devices) into whole class teaching, before teachers and their classes can fully exploit these technologies in ways that promote student learning. Likewise might a ‘tipping point’ need to be reached before teachers can benefit from professional development designed to support this integration process? We look forward to further debate of such issues within the field as new forms of technology continue to emerge.
References