Pre-publication Article Research in Comparative and International Education 13(1) 227-235

Technologies, learning and culture: Some emerging themes

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Abstract

This paper reflects on some of the themes emerging from a consideration of recent research at the nexus of technologies, learning and culture. The authors comment on the expansive nature of the concept of learning spaces in papers featuring an investigation of technology enhanced learning (TEL) and communication design studios in the UK and Australia, the use of interdisciplinary research collaborations to develop novel implementations of TEL learning spaces, and the challenges of developing an e-university in Malawi. They also examine a comparative study focused on classroom-based learning spaces augmented by computer-based assessment technologies, and the role of TEL both within and in response to protests at universities in South Africa. Massive open online courses are then considered as distinctive educational designs that may offer diverse student experiences, either formal or informal. The next emerging theme considers the sources of tension and richness arising from the widely divergent values that can be embedded in TEL. This is followed by consideration of infrastructural issues and the technologies–learning–culture nexus, followed by the use of theory in TEL work, leading to interdisciplinary theory-informed TEL projects that may be beneficial in the wider project of reimagining higher education for work and study. Finally, the paper examines the theme of mobile TEL and the hegemonic issues surrounding the building of sustainable and authentic foundations for learning with mobiles in the globalised South. The theme points to the methodologically challenging and problematic aspects of this hegemonic analysis and considers how the arguments may be further developed.

Keywords

Technology enhanced learning, interdisciplinary, learning spaces

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Introduction

In this paper, we share some personal and preliminary reflections on some of the themes emerging from the special issue of *Research in Comparative and International Education* (Sclater and Lally, 2018a), which we were privileged to edit. In this issue (Technologies, Learning and Culture Across Disciplines: International Perspectives) we have brought together a collection of papers that we argue form an interdisciplinary nexus, in urgent need of further research and pedagogical development. With a little more distance, in terms of time, we may gain further 'perspective' on the complexity of this nexus. For now, it is our hope and intention that this preliminary reflection may offer some constructive directions and issues deserving of research attention and pedagogical work.

Learning spaces: an expansive concept in the technologies–learning–culture nexus

A recurring theme in these papers is 'learning spaces'. This concept is closely allied to that of learning communities. We think it refers to all the learning design, software and infrastructural elements that contribute to the affordances of technology enhanced learning (TEL) for educational activities and communities. However, the examples below reveal the expansive nature of the concept as it appears in this special issue.

In their investigation of TEL and communication design studios in the UK and Australia, Marshalsey and Sclater (2018) reveal the tensions that can arise when the relationships between an institution's mission and its students' needs become divergent. They identify this with the impact that TEL may have on the connection between students' senses and engagement with stu-dio learning (Henshaw and Mould, 2013; Marshalsey, 2015; Pink, 2008; Scott-Webber, 2012). Learning spaces, they argue, are evolving rapidly alongside the development of new technologi-cal tools, processes and pedagogical practices. Hence, they argue for investigations into how students experience TEL innovations in their studio spaces, to understand how this impacts on learning and creativity. Educators and institutions, they advise, should facilitate a communication design pedagogy that embraces a progressive, student-centred approach, is discipline-specific, and includes digital, analogue, offline and online tools and methods. Furthermore, they think this requires an experiential and experimental approach if it is to lead to participants developing con-fidence, agency and a reflective awareness in studio and studio-based classroom learning spaces. Marshalsey and Sclater (2018) advocate this type of research investigation as a form of 'reconciliation' of the tensions between institutions and their students. Their own study is partly methodological, employing a transferable framework – the methods process model (MPM). This approach includes students' individual and collective relationships with learning and practice, community, governance, the role of the studio, pedagogy and curriculum, and sensory affect. The framework can help educators, researchers and institutions to understand the dimensions of learning spaces. Future research could, for example, employ MPM across a broader range of settings and institutions to help understand and work with disruptive influences more explicitly in studio and studio-based classroom learning.

Sclater and Lally (2018b) explain how their interdisciplinary research collaborations, and the weaving together of previous work, helped them to develop novel implementations of TEL learning spaces and methodological approaches to researching and understanding them. Early work on learning spaces in Art and Design Education by Sclater (2007) provided extensive evidence that visual and creative processes, and effective learning, can occur in geographically remote individuals, working collaboratively through the Internet, using a learning (textual and image based) design/space that is structured to support activity and collaboration. This has had implications for

the development of pedagogical designs for Art and Design Education, where there were almost no reports of this kind of work at the time. This work articulated some new learning designs/spaces, based upon empirical evidence from research in real educational settings. These understandings became the basis of an interdisciplinary contribution from Art and Design, into the InterLife Project, where artefacts were used to support the development of student voices in three-dimensional (3D) environments. Sclater's (2007) learning spaces were the precursors of the more modern 3D environments, such as 'Second Life', in which InterLife was subsequently developed. Preliminary methodological work was undertaken by Lally in asynchronous text-based systems, including Blackboard, Lotus Notes and WebCT. Much of the work was conducted with adult learners who were globally distributed and engaged in forms of collaborative continuing professional development. Sclater's new sustainability project (see Sclater, 2018) focuses on identifying the characteristics of learning spaces (real spaces and online spaces) that will support the use of creative practices (for example, photography, film, performance, and environmental art) to address socio-ecological sustainability within multiple higher education contexts. This collaboration will occur between inquisitive partners from different fields and focus on different uses of these spaces for interdisciplinary communication.

Zozie and Chawinga (2018) employ Joksimović's map (Joksimović et al., 2015: 120) of the most significant factors that frame educational experience in online learning spaces to locate their study. However, they are operating in a resource-challenged environment where some of the basic requirements for learning spaces are still not met. They argue that when the challenge of availability of e-resources has been solved in Africa, there will still be a need for educational institutions to ensure that learners have access to these resources every day. Interrupted power supplies to local servers means that institutions of higher learning need to invest in alternative power sources, such as solar and wind energy in case the power supply on the national grid fails. Zozie and Chawinga's (2018) work provides much insight into a setting where the key elements of TEL learning spaces are still not fully available or integrated. They argue that digital learning mediated by many technological applications will be possible in Malawi. It will require planning, and well-designed courses that are appropriately supported by the right mix of technologies. They support claims made by Joksimović et al. (2015: 121) that 'with the further development of online education, it seems that learning para-digms are evolving into a single learning approach – digital learning'.

Brown and Lally (2018), in an Irish/Finnish comparative study, focused on classroom-based learning spaces that were augmented by computer-based assessment technologies. Working with engineering mathematics students, they investigated students' anecdotal concerns about computerised assessment. Samples of second year engineering students, based in Ireland and Finland, were taken for group discussion to obtain the views of those who had progressed from their first year. The mathematics curricula of the participating higher education institutions, in Ireland and Finland, were also analysed to determine levels of similarity prior to the research. Interactions between lecturers also took place under the Erasmus+ teacher exchange scheme. Levels of similarity in programme content, assessment methods, and student cohort, were considered sufficiently close to allow comparisons to be made. This research will support discussions about the design of new learning spaces as online provision is expanded. The data will help designers frame their under-standing of the effects of the assessment technology on the learning process, by examining pedagogical barriers and support, and understanding how this relates to levels of interaction and engagement online. The project was theoretically informed and designed within a socio-cognitive theoretical framework of self-efficacy (Bandura, 1977, 1989) to help the researchers understand the experiences and perceptions that learners bring in their transition assessments. The main thrust of self-efficacy theory is that the actions of the learners, and the subsequent reactions of the learners, are influenced by their observations and experiences.

Learning spaces take on an overtly political dimension in Czerniewicz and Rother's (2018) paper. They provide insight into an important dimension of the recent turbulence in the higher education sector in South Africa. They argue that TEL has had a role both within and in response to the protests themselves. Many universities have turned to a form of what has been termed 'blended learning' when faced with disrupted classes and the possibility of shutdowns. At short notice, academics were encouraged to provide course materials online, to offer their courses as blended learn-ing, and to exploit the possibilities of technology to circumvent disturbances in face-to-face classrooms. Czerniewicz and Rother (2018) argue that this has been controversial, with TEL becoming entangled with the politically charged currents within the institutions. Students regarded these developments as contentious. Many students engaged in heated discussions and commentaries on social media, criticising the developments. TEL/blended learning was associated with academic exclusion for Black students – students on financial aid would not have access to technology and connectivity off campus. The argument was made that blended learning was for the privileged who could teach themselves if they had access to the required resources. TEL (blended learning) was called 'an academic project for the wealthy'. It was further argued that 'this strategy still leaves students, particularly those from poor and working-class backgrounds, worse-off' (Baker, 2016).

Massive open online courses (MOOCs)

Student experience is not limited to face-to-face or blended environments. The Internet, and its ability to act as a conduit for interaction, has enabled the development of large-scale educational designs, for example MOOCs. This is a recent development and has been the focus of much attention across all contexts of education, both formal and informal.

Larionova et al. (2018) provide a research assessment of an implementation of MOOCs in the Russian Federation. The Federation must address the needs and requirements of education across a large physical space with very particular social, cultural, technical, and infrastructural issues. To address some of the issues in this educational sphere, with a view to increased internationalisation of courses, the MOOC has been viewed as an important way to create new educational opportunities. Larionova et al. (2018) evaluate the shift in focus to the MOOC by comparing it with existing face-to-face and blended courses in an engineering faculty. The differences in student grades turned out to be not very significant between three designs. However, subjects requiring greater student interaction demonstrated better results via the MOOC.

Honeychurch and Patrick (2018) take an alternative approach to the use of a MOOC as a formal learning space. They report on the globalised connected learning MOOC (CLMOOC). In the CLMOOC the social connectivity affordances of the Internet (for example, Twitter) release the potential for loose or more tightly structured group activities to be undertaken. Participants (informal learners) provide stimuli for others to vicariously and freely learn without compulsion and generate their own content through shared dialogue. The rich diversity of participants on the global CLMOOC platform acts as a key resource for the benefit of all group members, providing knowledge, experience, and expansion of personal networks. The voice of the learner is very much at the forefront in this experience.

Values and TEL: sources of tension and richness

There are multiple value domains represented in this special issue: culture; nationality; profession; society; technology; and education. These largely reflect the range of interests of researchers in this issue, explored here through empirical, theoretical and technical studies. Many education systems are also highlighted. There is both richness and diversity to stimulate comparative interest,

including detailed work from Ireland, Finland, the UK, Australia, the Russian Federation, China, the Middle East and Africa.

At the same time, perceptions of 'belonging' to a domain, whether it is cultural, national, professional or societal, is a complex issue, not easily understood. Belonging is a source of richness developed from prior experiences, including cognitive, social, emotional and cultural inputs and norms. A common thread cutting across this complexity is TEL: its application, effects, requirements, design, and pedagogy. The ubiquity and expectations/affordances of TEL within educational programmes may have their own norms – sometimes without pedagogical or research foundation. At the same time, educational institutions may be driven by other imperatives, including international league tables. Policy-makers and other stakeholders in education may also be influenced by media concepts such as 'digital natives' or 'digital immigrants', and the rhetoric of 'the digital divide'. Through this conflicting array of values, the paradigm of research-based TEL in education may be at risk – increasingly influenced by under-researched concepts and other interests, in support of commercially driven 'educational solutions'. These value conflicts may lead to TEL designs that are unsustainable, because they are difficult to reconcile with other values of 'belonging' within and across domains. This may ultimately become costly for both learners and institutions.

In the noisy atmosphere of these potentially conflicting values and stakeholder needs, there are also expectations of 'abundance'. Quinlan (2017) identifies this sense of abundance arising from the considerable and often overwhelming availability of information, media, and communication tools. We think it is important to remain cognisant of the value, tensions, and risks to education, which may sometimes be invisible, concealed by this perceived state of abundance. Re-imagining the educational narrative may be better served by taking a research-based approach to TEL in education.

Infrastructural issues and the technologies–learning–culture nexus

Technology enhanced learning requires infrastructure to support the complex components that make up the support systems for learning. The 'macro' discourses of infrastructure in this special issue inevitably focus on the systems-level architectures necessary to support learning at national, regional and institutional levels. The nuances of pedagogy, and subject disciplines feature only at a 'lower' micro-level of analysis. These systems-level architectures (Phipps et al., 2018) both create affordances for learning, and limit them. Some forms of pedagogy may be impossible in some settings. Much more research and modelling at the technology–learning–culture nexus may be required to be able to make rational decisions about the relations between infrastructures and pedagogy. It may already be too late for many students. Strauss (2013) quoted Bill Gates as stating, '…we won't know for probably a decade' – when discussing if the impact of educational reforms in this 'fourth industrial age' were working.

Issues of infrastructure and its provision are not trivial matters; in-depth consideration must be given to its fundamental role and the resources necessary to support it. Zhang et al. (2018) address the importance of infrastructure to the Chinese government in the development of its e-learning policies. The magnitude of the task – to plan, support and grow in a sustainable manner – considering the cultural differences within Chinese society, is outlined in their analysis. They reveal how the balancing, facilitation, and implementation of infrastructural reforms are delicate processes, requiring support at all levels of public and private sector, community, and society. Infrastructural growth has been achieved in China in the previous ten years, and deficiencies in the process have been identified – to be addressed in the next five-year plan.

Aljaber (2018) identifies the provision of mobile e-learning as having the greatest potential for growth in Saudi Arabia, with minimal infrastructural cost. Seen as a convenient means of accessing education, the mobile solution has the potential to offer a rapid means of integrating the student experience into the TEL environment. As in the Chinese context, distance is a major factor in Saudi Arabia and mobile technologies offer possibilities of flexibility and increased ease of access. An area of interest in the establishment of Saudi TEL programmes has been the increased access to education for women.

Zozie and Chawinga (2018) consider the importance of infrastructure to Malawi, in the knowledge that an optimum solution for the promotion of TEL is to share resources with neighbouring countries. Funding of educational programmes within higher education in Africa remains problematic, leading to impediments to growth. The physical infrastructure requires investment to over-come the negative experiences of academics: poor connectivity; high cost of Internet access; and intermittent power supplies.

Interdisciplinarity and the technologies–learning–culture nexus

Sclater's (2018) paper argues that there is an urgent need to develop new pedagogies for socio-ecological sustainability. She further argues that there is a need to adopt critical approaches to the use of technology in learning to embed a consciousness of socio-ecological sustainability within education. This will require interdisciplinary approaches to thinking, working and researching practice. Sclater (2018) identifies key elements to these approaches: understanding the relationship between aesthetic and creative responses that consider both individual and societal perspectives; understanding the relationship between analogue, digital and virtual creative practices in shaping learning spaces, and as an important vehicle for the development of learning communities; and understanding the relationship between informal, lifelong and formal learning. Sclater (2018) further explains how her research in *virtual worlds* has explored *how* technology can help in developing pedagogies of sustainability, by supporting learning communities to engage in creative and open investigation of the environmental crisis. The focus of Lally and Sclater's (2018c) paper is the project of reimagining higher education, using the theme of TEL. They argue that interdisciplinarity is an essential feature of this work, and that it is largely invisible in the TEL literature. TEL itself is also largely invisible in the sociology of education literature, and hence suffers a 'dual invisibility'. Lally and Sclater (2018c) argue that the use of theory in TEL work, leading to interdisciplinary theory-informed TEL projects, may be beneficial in the wider project of reimagining higher education for work and study.

Mobile TEL: issues of the Global North and South

Traxler's (2018) paper addresses the hegemonic issues surrounding the building of sustainable and authentic foundations for learning with mobiles in the globalised South. He focuses on a critical review of the nature of learning with mobiles in the global North. In particular, `he dissects the relationships between research, policy, and practice that exist in the global North. The developments of mobile technology, he argues, impact on language, and the hegemonic nature of international educational developments. Looking at the broader, critical historical framework that views education and technology as instruments of the hegemony of the global North, he argues that they reinforce its values and world view. Traxler (2018) points to the methodologically challenging and problematic aspects of his analysis, and then considers how the arguments may be further developed.

Final comments

In this short paper, we have reflected on some of the themes that appear promising as future directions for research and pedagogical work at the nexus of technologies, learning and culture. The Foreword to this special issue (Sclater and Lally, 2018a) argued that this is a complex area of study that is currently under-researched. It remains challenging to synthesise some of the fundamental undercurrents and discontinuities that the papers in the special issue clearly reveal. In this reflection, we have tried to confront and thematise some of the incoherencies and conflicts that are uncovered. We are aware that the special issue has a very broad scope, in terms of levels of focus, methodology, discipline, and theory. We view this positively, as a platform from which to look forward to exciting research opportunities, and as a serious stimulus to methodological diversity and innovation.

Acknowledgements

We are very grateful for the inexhaustible support and encouragement of Professor Hubert Ertl, and the journal of which he is editor: *Research in Comparative and International Education*. We are also grateful to all the authors, research participants, students, and institutions providing help and support for this work.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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