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Rethinking (e)learning: a manifesto for connected generations

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In the broad context of adult and higher education, this article argues that to allow the *e* of e-learning to disappear would be to lose the opportunity to grasp the enabling and emergent properties of digital networked technology. Through examining cycles of educational technology, current trends in e-learning research, the practices and competencies of educational designers, and the roles of key stakeholders, a framework is established to reinforce the emergence of the nomadic, mobile learner who is dependent not on the teacher or formal educational systems, but on the network of knowledge and skills that can be accessed on an anytime, anywhere, e-learning basis. Through this framework a manifesto for connected generations is proposed, grounded in c^3-learning – collaborative, contextual, and connected learning.

Keywords: collaboration; connection; contextual learning; design; emergence

Introduction

> Advances in theories of human memory parallel, and perhaps depend on, advances in technology … The information processing approach has been an important source of models and ideas, but the fate of its predecessors should serve to keep us humble concerning its eventual success … Unless today's technology has somehow reached its ultimate development, and we can be certain it has not, then we have not reached the ultimate metaphor for the human mind either. (Roediger, 1980, p. 244)

Roediger's remarks remind us that, not only are we in a constant state of change and development, but also that there are inherent risks in arguing that we know what there is to know about teaching, learning, and e-learning. Therefore, without undermining the importance of understanding the dynamics of human learning, this article adopts the position that it is untimely to let the *e* of *e-learning* disappear, because without that *e* we might lose sight of the value digital technology provides, especially through social networks, to emergent forms of learning and knowledge construction.

Emergent forms of learning cannot easily be addressed by current instructional design methodologies (Kays & Francis, 2004), which are often teacher-centered. New models and strategies embracing the roles and skills of the teacher, the learner, and the design team are required to address such developments (Sims & Koszalka, 2008). Recent reports by Oblinger (2004), Irlbeck, Kays, Jones, and Sims (2006), and Siemens (2007) posit that these emergent technologies and interactions have opened doorways to new ways of learning and that these deserve new models of thinking about the very essence of the teaching and learning dynamic.

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While this article accepts that *e* is becoming more mainstream and part of the infrastructure of developed nations, the real question is whether the models we use to create learning environments and measure outcomes retain their relevance in a generation in which technology is the medium of communication for many.

I write this article after nearly 30 years of designing, and writing and teaching others about e-learning. My journey began with PLATO, in the corporate context, after which I moved to the higher education sector, where I continue to work with online doctoral students. The perspectives, the challenges, and the questions I pose are therefore informed by my research, experiences, and encounters over that period. Others have traveled similar, parallel paths and have developed supportive, tangential, or contrasting views of e-learning. It is this diversity of viewpoints that ensures our field remains refreshed and invigorated – allowing the existing and dominant paradigms of our discourse to be challenged and debated to ultimately enhance the overall effectiveness of educational practice.

It is also pertinent to remember the many thousands of papers devoted to computers and learning published over the past 30 years, and a glance at the contents of articles published in 2007 shows little difference – almost all are focused on some aspect of online or e-learning. Had it been 10 years ago, the focus would have been on multimedia; 20 years ago, the focus would have been on computer-assisted instruction. While my analysis is informed by a small subset of these papers, readers may know of others that either refute or support my claims. Regardless, it is important that we acknowledge these different positions and trust that future generations of researchers and practitioners will integrate our analyses into their own discourse.

The editors have devoted this special issue of *Distance Education* to e^3-learning – forms of technology-enhanced learning that are efficient, effective, and engaging. To address this position and establish a response, this article argues that a rethinking of teaching and learning is needed to enable c^3-learning – technology-enhanced environments that enable collaborative, contextual, and connected learning. Prompted to investigate whether the fascination with new technologies can lead educators astray and away from effective and sustainable learning, I would argue that the opposite can and should be the case – that this fascination can lead to both creative, emergent, strategies and effective, sustainable learning. While acknowledging that analysis of teaching and learning without addressing the technology is important, in the same way we might discuss travel without addressing the manufacturers of the vehicle, it is nevertheless critical to understand what the technology enables, and determine whether an automobile is in fact the right vehicle for that journey.

One advocate of this position is Siemens (2004), who articulated a learning theory for the digital age – connectivism. 'Learning has changed over the last several decades. The theories of behaviourism, cognitivism, and constructivism provide an effect view of learning in many environments. They fall short, however, when learning moves into informal, networked, technology-enabled arena' (Siemens, 2007, ¶ 1).

With the potential of new learning theories and a position that it is not timely to allow the *e* to disappear, specific issues will be addressed that position learning in a contemporary, technology-based environment and provide a framework to enable educators to reconstruct their existing models of teaching and learning. The first of these concerns cycles of e-learning, and the challenge to differentiate technological rhetoric from pedagogical integrity. The subsequent analysis extends the cyclical view to assess recent trends in e-learning research, specifically addressing issues such as the impact of technology on learning outcomes, design models, stakeholder roles and the importance of e-learning to collaborative, contextual, and connected experiences. Through this analysis, a manifesto for connected generations is proposed, one that challenges current models and their potential to meet the needs of diverse,

individual, and connected users (teachers and learners), and which provides a focus for collaborative, contextual, and connected learning.

Cycles of e-learning

Over the past 30 years educational practitioners have witnessed huge shifts and cycles in the way technology affects teaching and learning. In parallel, teaching and learning strategies have been developed to align with the technology, and both rhetoric and research on the value of these technologies to teaching and learning have been prominent. When we view these cycles we find that, while the technology has changed significantly, in many ways the pedagogy supporting these innovations has remained remarkably stable. The early works of Alessi and Trollip (1985) and O'Neil (1981) provided a baseline for effective teaching and learning with technology, and yet while the technology has evidenced many new generations, our field continues to question and validate the dynamic between technology, teaching, and learning (e.g., Hedberg, 2006; Reinmann, 2006).

Nearly 30 years ago, we were advised by Apple Computer that:

> It's easy to get into classroom computing. What's tough is to do it right … Hundreds of innovative educators have already discovered the Apple Computer for instructional applications from kindergarten through college … Apple engages student interest with sound and color video … And you can use your Apple for testing, counseling, even class-room data processing. (The Mothership, n.d.)

It seems very little has changed in the way vendors promote the value of technology for education. Blackboard® (2007), a leading provider of learning management software, promotes its learning management system as 'a family of software applications designed to enhance teaching and learning. Intuitive and easy-to-use for instructors, the Blackboard Learning System helps instructors to build course materials online and engage with students in an interactive way' (¶ 1). Similarly, Elluminate® (2007) promotes its communications systems as being able to 'add real-time interaction to distance learning. Extend the boundaries of the traditional classroom. Engage more students in more ways' (¶ 1). For 30 years we have been assured technology will engage our learners, but we have yet to consistently see that promised outcome, even though we know how (Allen, 2003). It is therefore to that goal of engagement through effective use of technology that we must continue to strive.

As a framework for discussion, these cycles can be viewed as recurring every 10 years, commencing with programmed instruction, which sprang out of a behaviorist model in the 1960s and which had developed into computer-assisted instruction (CAI) by the mid- to late 1970s, when computer technology began to be available to the educational community (O'Neil, 1981). Systems such as PLATO and TICCIT (see Alessi & Trollip, 1985) presented environments that are remarkably similar to the learning management systems we see today (and were even labeled the same); the only difference being mainframe rather than server technology enabling the communication between participants. By the early 1980s, for educational technologists the mainframe was superseded by the personal computer (PC). Educational applications and authoring systems emerged, and early adopters delighted in being able to develop color displays. With the development of the PC the business sector began to embrace computer-based training (CBT), justified by reusable, consistent training and return on investment through reduced travel and accommodation costs. In the late 1980s hypermedia appeared, which, by the early 1990s, had been overtaken by the ability to integrate media elements (multimedia) into displays and presentations, giving rise to the ubiquitous CD-ROM applications. By the end of the 1990s, online learning and e-learning began

to gain prominence across both the higher education and business sectors, where it has now reached (at least in developed countries) what might be seen as infrastructure status.

Currently we are amidst yet another cycle, that which enables the mobile and nomadic student or worker, supported by networks of information that are increasingly more sophisticated, more individualized, and more reliable. Most remarkable is the ability for individuals to share and communicate with both familiar and new colleagues anywhere, and anytime. This cycle in many ways can be seen as a threshold, where the potential of e-learning, so long promised, can be realized through the empowerment and emancipation of the electrate learner (Ulmer, 2003).

Accompanying these cycles have been prescriptions for a pedagogy for e-learning that often reflected the nature of the technology. With technology-enabled self-paced modules the pedagogy reflected active (interactive) and media-rich learning to support encoding. With the advent of the Internet, that pedagogy has extended to focus on interpersonal communications and interactions, social constructivism, and the empowerment of the learner. The importance of maintaining a focus on e-learning is that it will also maintain a focus on effective and efficient applications of educational technology.

Trends in e-learning research

Investigations into the value and effectiveness of e-learning are extensive, and the research agenda has embraced all stakeholders, institutions, and design methods to better understand the impact of e-learning on education. This section begins by reviewing the *no significant difference* phenomenon (Russell, 2001) prior to examining current thinking on design strategies as well as the importance of e-learning to better understand collaborative, contextual, and connected learning.

No significant difference?

Each cycle has seen the emergence of early adopters, evangelists, and pessimists. Of particular note is the Clark–Kozma debate (Clark, 1994a, 1994b; Kozma, 1994a, 1994b), based on the extent to which media influences learning – does technology itself influence learning, or is it merely a delivery vehicle? Russell (2001) documented studies that found no significant differences in student outcomes between alternate modes of education delivery, which supported the argument that good learning is only delivered via technology. However, a companion website to what is known as the *no significant difference phenomenon* documents both significant and non-significant differences (WCET, 2008). So can technology influence and enhance learning?

Certainly recent research continues to find 'no evidence … to prove the hypothesis that the Technology Enhanced Learning Environment *per se* could act as a prime determinant of knowledge acquisition' (Carneiro, 2006, p. 426). However, when viewing e-learning as a partner with pedagogy, the importance of harnessing that *e* to achieve positive, engaging, and interactive learning experience becomes critical:

> Students consider it a valuable support to the learning process. They see it as an additional reinforcement to the traditional face-to-face delivery mediums, and they make regular use of the medium's flexible access, and the incentive it provides for ongoing study and continuous assessment, in preparation for the final exams. Whilst there is room for technical improvements such as customizing feedback and adapting the material to the learner's profile, the e-learning component is a welcome and expected improvement, particularly for large class groups such as this. Its impact falls far short of the radical visions of the virtual university, but neither is it

seen as an ineffective, misplaced support to student learning at university level. Instead, e-learning, based on a solid pedagogic rationale, providing feedback, interaction, and access to course materials, is seen as both a benefit, and an improvement in teaching quality. (Concannon, Flynn, & Campbell, 2005, p. 512)

Other studies have been more emphatic as to the extent to which e-learning actively provides an educational differential. For example, Twigg (2005) assessed the redesign of courses that normally attracted nontraditional students, such as the first in the family to attend college, those from ethnic minority groups, and mature students. While the original courses had been associated with poor retention and achievement rates, the redesigns focused on widely accepted principles such as a learner-centered focus; active, on-demand help; continuous feedback and assessment; and online tutorials. The outcomes demonstrated significant improvements in costs, retention, and achievement through a broad, e-learning intervention approach.

The nature of significant difference was revisited by Oblinger and Hawkins (2006), who reframed the debate by noting that 'learning occurs as a result of motivation, opportunities, an active process, interaction with others, and the ability to transfer learning to a real-world situation' (p. 14) and asked 'does using technology produce a significant difference? The answer depends on how the question is asked' (p. 15). As a long-time advocate for, and practitioner of, e-learning, it seems clear that technology can enhance the total learning experience, but whether this is evidenced through statistically significant changes or by more subtle means remains to be seen. However, I find myself convinced that technology indeed has an impact on how we approach learning and learning design. Keeping the *e* of e-learning is important to ensure we maintain the added value it can bring to the educational context.

Design models and stakeholder roles

A second and most important factor in assessing e-learning relates to the models we use to conceptualize, design, and implement teaching and learning environments. While our tradition lies with instructional design models such as those of Dick and Carey (1996), it is important to consider whether new models, such as *three-phase design* – 3PD (Sims & Jones, 2003) or *emergent design* (Irlbeck et al., 2006), may more appropriately encompass e-learning. A recent approach to resource development is that of *universal design*; as suggested by Rose and Meyer (2002) 'barriers to learning are not, in fact, inherent in the capacities of learners, but instead arise in learners' interactions with inflexible educational materials and methods' (p. iv). And because it is unlikely the same instructional approaches will work for each learner, a combination of bottom-up (learner-prompted) and top-down (teacher-prompted) strategies become appropriate. Interestingly Moore's review (2007) of universal design suggests that using instructional design will:

lead to designs that incorporate greater flexibility, multiple modalities, and an understanding of how different learners access learning so that we build truly optimal instructional and performance support systems to ensure that the learning systems, materials and environments we build do not limit *by design*. (p. 534)

In emphasizing the need to move design from the replication of classroom practices online, Hedberg (2006) argued for *disruptive pedagogies* which 'involve the use of teaching strategies that exploit the currently underused capacities of technology options in such a way as to enable student engagement, motivation and higher order thinking skills' (p. 171). A

component of these disruptive pedagogies is enabling teachers to focus on pedagogy rather than on the topic to be taught, which, Hedberg suggested, will enhance learner outcomes. Elaborating on shifts in thinking, and citing Metros (2003), Hedberg (2006) referred to what can be seen as a three-stage process to understanding the potential of e-learning:

(1) Transfer: conventional instructional tools, strategies, communication and delivery within a technology-enhanced learning environment.
(2) Translate: redefine and shift conventional instructional tools, strategies, communication and delivery within the technology-enhanced learning environment.
(3) Transcend: go beyond conventional instructional tools, strategies, communication and delivery to invent new paradigms for teaching and learning. (p. 180)

The challenge to develop new paradigms or models for teaching and learning reinforces the need to go beyond our current ways of thinking, to challenge convention and consider more radical perspectives. Perhaps it is not so much that the *e* in e-learning should disappear, but that current e-learning is heralding the disappearance of the traditional and stereotyped representations of the teacher and learner.

An equally important element of design practice is the roles of the relevant stakeholders; with the continued growth of e-learning these roles have not only blurred but also created the need for new competencies (Sims & Koszalka, 2008) and even generated the potential to introduce new players to the educational stage. In describing their *three-phase design* (3PD) model to support e-learning development, Sims and Jones (2003) emphasized the importance of enabling the roles of designer, teacher, and learner to be interchangeable in order to take advantage of the extensive information available across networks and the ability to implement change rapidly within an e-learning environment. Thus, for those involved in education questions arise as to who is the teacher, who is the learner, who is the designer – and when do those roles need to be active to meet the specific needs of the course and the preferred interactions between participants (Sims & Hedberg, 2006; Sims & Jones, 2003)?

The rethinking of learning environments was also addressed by Gerber and Scott (2007), who examined the design of a learning curriculum and found that shifting focus to the specific rather than general principles of design was the key to being able to re-think and re-assess the process. Their conclusion that 'the relationship between teaching and learning is indirect … designing a learning curriculum emerged out of our observations of the identity of the individual students and what that student brought to the learning situation' (p. 475) reinforces a shift to addressing the diversity encountered within many learner groups. This outcome also confirms the predictions of Kays and Francis (2004), who argued that instructional design generates *wicked* problems, where there is little or no agreement as to the exact problem, and that e-learning enables certain dynamics to cater for such complexity (Irlbeck et al., 2006).

Collaboration

Through collaboration and active manipulation, students are able to engage at levels only achievable through the affordances of e-learning. Although earlier cycles of e-learning enabled similar interactions, it is the openness and ability to mix formal and informal learning, formal and informal learners, that ensures e-learning provides a super-pedagogical layer over the traditional educational models. It is for this reason that we must maintain the *e*. Woo, Herrington, Agostinho, and Reeves (2007) support this through authentic learning, where 'students studying a computer simulation of global warming share ideas

about factors influencing global warming. They vary the amount of greenhouse gases emitted by vehicles and factories or manipulate the quantity of green plants in the simulation' (p. 36).

In an examination of the role technology might play in reducing the exclusion of various groups within society, Webb (2006) concluded that 'For such learners, with supportive tutors, ICT-based learning was a medium that encouraged learners to imagine a future of greater inclusion in the host community' (p. 507). Such findings also reinforce the value of collaboration and the potential to form online communities of practice (Wenger, 1998).

Through collaboration, e-learning encourages a (potentially) higher quality of participant interactions (Beldarrain, 2006) and with this social exchange there is also the potential of what Kays and Francis (2004) referred to as *emergent learning*. Based on emergence theory (Johnson, 2001), emergent learning proposes that complex outcomes can emerge through interactions without top-down guidance, and therefore enabling learning to emerge through collaborative interactions may represent a new paradigm for teaching and learning (Irlbeck et al., 2006; Kays & Francis, 2004).

Context

Many designers of contemporary systems are faced with questions such as 'How do I design for learners with different cognitive styles?' or 'How do I cater for students from different cultures?' Consequently a growing area of interest is the extent to which current models and practitioners of education can indeed cater for the increasing diversity of students.

As designer or teacher we can no longer rely on a relatively homogenous group of students from similar social backgrounds – the landscape for many learners has changed and thus the way in which e-learning can address such diversity is critical. Similarly, as the responsibilities for teaching and learning spread beyond the classroom, even beyond national borders, we find that providers of learning resources must consider a diverse, heterogeneous group of learners. So diverse are these learners that concepts such as target-audience analysis may become meaningless. How, therefore, do we cater for the range of learning styles or cultural diversity that may manifest itself in the online class?

Rogers, Graham, and Mayes (2007), in an analysis of instructional design and cultural competence, suggest that 'those assigned to accomplish this task are left with the great challenge of meeting the needs of learners who come from cultures that are foreign to themselves, and who often have very different abilities and experiences than originally assumed' (p. 197). While this highlights the increasing diversity being encountered by the instructional designer, their analysis also suggests that instructional designers should be able to make some cultural discrimination when creating resources to be used across such cultures. This is in contrast to the *design for contextual learning* model proposed by Sims and Stork (2007), a conceptual model that argues that it is not the designer but the learner who should take responsibility for his/her own individuality and cultural diversity. In essence, this allows the designer to focus on strategy and activity, while the learner provides localized and contextualized.

Rather than it being the responsibility of a designer, collaborative environments have the potential to enable learning environments where the learner takes on significant responsibility for ensuring the outcomes meet their personal, contextual, and cultural needs. In addition the contextual and the collaborative provide an ideal model to implement authentic learning environments (Doering, 2006; Herrington, Reeves, & Oliver, 2006). In a cyber-fictional account, Stephenson (1995) took this even further, where the combination of interaction,

technology, artificial intelligence, and interpersonal communication created a personalized and computer-mediated environment that meets the specific needs of the individual learner.

Connection

While computer-based educational games are by no means a new concept (Alessi & Trollip, 1985), the importance of e-learning games is currently in vogue, and one important implementation are those known as *massively multiplayer online role-playing games* (MMORPG), which can involve many thousands of players simultaneously. As noted by Childress and Braswell (2006), the MMORPG can enhance online learning through the provision of cooperative learning activities. One extrapolation of this virtual environment where many participants interact is that the game environment itself becomes the teacher and the interactions between players and environment will generate learning. The connected potential for education is also seen in emerging environments such as Second Life, MySpace, FaceBook, and YouTube, where communities of practice (Wenger, 1998) emerge and form spontaneously rather than by design (Webb & Sims, 2006). What might it mean for educational practice if the collaborative, contextual, and connected essence of technology allowed learners the same flexibility (Irlbeck et al., 2006; Kays & Francis, 2004; Sims, 2006)?

A manifesto

Allowing the *e* of e-learning to disappear is to acknowledge that we have established appropriate models to support its ongoing, effective application to learning – something the research does not necessarily support. Through each cycle of e-learning there have been persistent attempts to align pedagogy with technology. By illustrating that the roles of teacher, learner, and designer are shifting and blurring and that there is real potential and value in focusing on collaboration, context, and connection, it is timely to re-emphasize *e* and proclaim a manifesto for connected generations.

If we are seeing a shift in learning to outside the classroom, then what does that mean for existing instructional design theory and learning theory? Are the constructivists and collaborationists and connectionists representatives of a new pedagogy? What of the possibility that technology has developed as part of the human evolutionary process and that it is slowly and irrevocably becoming part of both individual consciousness and the broader human psyche? Is technology therefore making it easier to learn, making the collaborative experience (whether it be planned, unintentional, or serendipitous) the key to ongoing and lifelong learning? Is the age of the classroom, as Siemens (2007) suggested, nearly over?

To address these questions, a manifesto is proposed to reinforce the importance of e-learning for our future.

The active, nomadic learner

E-learning can emancipate learners from mandated and teacher-centered environments. While mobile learning suggests access to information while away from some base, the concept of nomadic learner emphasizes the ability to learn anyplace, anytime, and with anyone. It no longer matters where you are to learn, and therefore there is an empowering and freeing element that collaborative, contextual, and connected learning provides. At the same time the onus of responsibility for learning falls on the learner, and therefore it is this independent and nomadic learner who must develop the appropriate skills to work with a complex network of people and technologies.

The absent, responsible teacher

In the same way that the learner is empowered the teacher, as a figure of knowledge and control, is disempowered through the affordances of connected environments. Rather the teacher, like the learner, needs to develop a skill set and ethos that allows him/her to become a participant in the one connected environment, where his/her experience and knowledge are a critical part of the learning environment, but not necessarily its foundation.

Emergent learning

With empowered learners and teachers, we must move beyond a mind-set of fixed curricula, standard outcomes, and standardized tests, beyond those systems that reinforce past practice, the conservative, and the reactionary. Instead we align with theories that explicitly advocate the opportunities of connected learning (Siemens, 2004); we have the potential of an educated and learning society, where the very interactions themselves enable knowledge to be disseminated, knowledge to be shared, knowledge to be de/reconstructed and, ultimately, new concepts and knowledge to emerge from those interactions (Kays & Francis, 2004) that would not be predictable or even sanctioned by traditional curriculum or instructional design.

Design for/by anyone

As proposed by Sims and Stork (2007), Figure 1 represents a common design process which establishes a set of strategies, activities, and performance indicators designed to meet the learning needs of a specific target population who are assumed to have certain learning styles or multiple intelligences, culture, prior knowledge, media preferences, and social contexts. Once the course is developed, the targeted learner will use it with those elements prescriptively embedded in the formal course structure.

However, Sims and Stork (2007) contended that classifying and predicting the particular characteristics learners bring to a course is presumptive, especially considering anyone, anytime, anywhere e-learning. The course design, especially that offered in diverse contexts and geographies, should focus on strategies and performance indicators while allowing learners, with their individual and contextual characteristics, to manage their learning processes and engage with all course participants, as well as with others whom they encounter. This concept is illustrated in Figure 2.
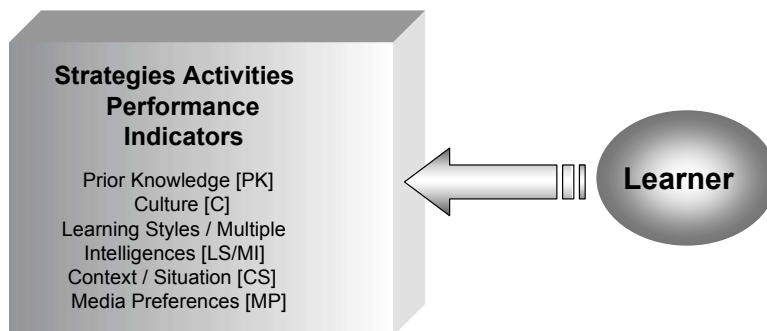

Figure 1.   Learner attributes embedded in course structure (adapted from Sims & Stork, 2007).
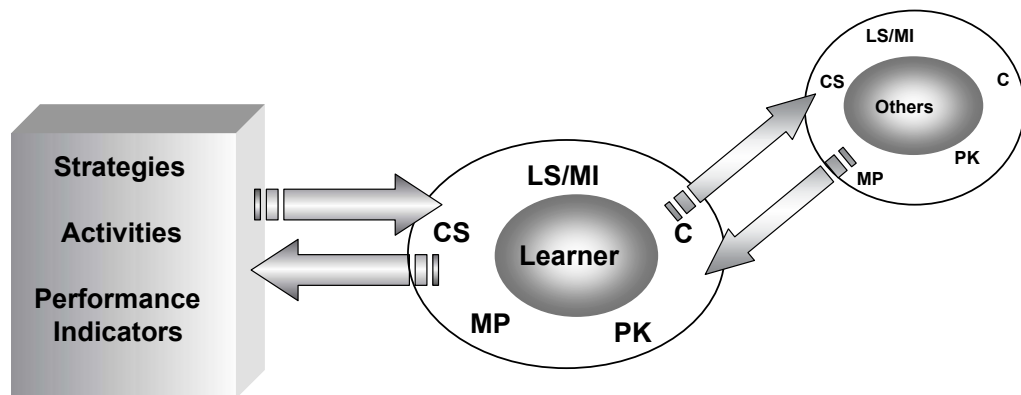
Figure 2.   A contextual and connected learning experience (adapted from Sims & Stork, 2007).

This conceptual model enables learners to integrate their personal attributes into the learning experience, while at the same time enabling teachers to use those learner-specific attributes to enhance the productivity and performance of multiple learners, even those who are theoretically external to the formal course structure.

Conclusion

In today's developed world it is difficult to talk about teaching and learning without considering the digital technology that supports the delivery of and access to education. At the same time, however, that technology has become more available and has developed into a vast social network where informal and formal learning are potential outcomes of the encounters and interactions between participants. In the context of this special issue, and the question of whether the *e* can disappear, it has been argued that to effectively present contemporary learning it is essential to emphasize just what that *e* brings. By proclaiming a manifesto for the connected generation, there is a challenge to not only embrace e-learning as a means of empowerment and emancipation, but also to consider the extent to which the teacher's role as provider of knowledge and guidance is changing with the rise of an empowered, knowledgeable, and connected generation.

Through assessing both historical cycles and current thinking in educational technology, this article advocates c^3-learning – collaborative, contextual, and connected. Collaborative in that learners and teachers can engage in meaningful interactions that are dynamic and emergent. Contextual in that individual learners can focus on their own needs in their own situation as well as taking responsibility for contributing content relevant to those needs. Connected in that learners and teachers need not be constrained to the one classroom – there are many learning spaces and many willing to participate in those spaces.

The opportunity exists for a paradigm shift in teaching and learning. Who will challenge tradition and grasp that opportunity?

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