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DESIGNING COLLABORATIVE E-LEARNING FOR THE NET GENERATION

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ABSTRACT
The designer of higher education programs is on the cusp of some very exciting resource development, particularly in the area of postgraduate coursework. Part of this is because of the new learner, a millennial or net generation learner who is time-poor, a networker with strong inclinations towards social or community knowledge pooling and a multiple media literacy which is comfortable in virtual worlds and with visual emphasis. The other element is the perceived changing role of the university or higher education in the transfer of knowledge, moving from a transmission or narrative model to learner-centred and performative approaches. This has been highlighted by greater emphasis on experiential learning methodologies, and the development of action learning practices. The nexus of these two influences, the new learner and the higher education response to delivering learning, may be elaborated further from learning theory which seems to be moving beyond social constructivist approaches, or certainly encompassing what is referred to as connectivism.

This may be a new theoretical approach, or it could simply be an organic growth in meeting the needs of large numbers of higher education student participants who perceive a degree as a skills-based workplace preparation. Whatever the theoretical underpinning may be, the large numbers of learners moving to postgraduate coursework or more workplace-oriented programs and subjects has thrown out the challenge to instructional designers to provide just-in-time, relevant and socially transferred learning with strong creative and imaginative engagement.

The case studies incorporated in this paper provide two separate approaches to these challenges – one is a workplace-oriented postgraduate team project in a Masters in Communication, the other provides a virtual simulation for developing creative and professional writing skills at postgraduate levels. They both provide perspectives on the net generation learner and collaborative and connected learning models.

KEYWORDS
Net Generation, neo-millennial learners, connectivism, virtual environments, experiential learning

1. INTRODUCTION

More than one third of the world's population is under 20. There are over 30 million people today qualified to enter a university who have no place to go. During the next decade, this 30 million will grow to 100 million. To meet this staggering demand, a major university needs to be created each week.

Sir John Daniel, (currently CEO of Commonwealth of Learning) 1996

These massive numbers of potential university learners, referred to by Sir John Daniel, are a part of the experiential, digitally literate, connected and socially collaborative net generation. Higher education is attempting to respond to their needs and the societal and economic forces which are influencing a major change in knowledge and skills acquisition within that context.

But educators are potentially still working within the paradigm of knowledge transfer, the dominant model of teaching is transmission, and digital technologies are often working within that transmission model rather than working through other more constructivist, or even connectivist, theories of learning. So the acquisition of knowledge which will provide learners with the lifelong flexibility of learning they will require, indicates the importance for the instructional designer of teasing out what is the "...difference between a curriculum which teaches what is known and one that teaches how to come to know..."(Laurillard 2002, p.20).
The case studies integrated into the following investigation form ongoing models of instructional design which engage with teaching, learning and technology approaches for the Net Generation learner.

2. TEACHING: REPOSITIONING HIGHER EDUCATION

*Higher Education in the Learning Society*, a report on the future of the Higher Education sector in the United Kingdom, foreshadows the shaping of a society committed to learning throughout life (Dearing 1997). Dearing envisages the learning society as one that aims to inspire and enable individuals to develop their capabilities to the highest levels, to increase knowledge and understanding, to serve the needs of the economy and shape a democratic and civilized society.

This is not about short-term employment needs. Laurillard (2002) positions this learning society within the context of higher education and its true benefits, and by extension the role of the curriculum expert and teacher. The degree course is seen within these terms as a long term grounding for an individual, leading to graduate attributes which will enable multiple jobs, movement between sectors and a commitment to lifelong learning to enable that flexibility. But it is also faced with a teaching sector which is still working with transfer of knowledge, albeit using technology tools appropriate to the millennial learner. There is a tension in attempting to balance expert knowledge and practitioner knowledge within this context.

Lyotard (1988), in *The Postmodern Condition: A Report on Knowledge*, argues that in the postmodern learning society:

> Knowledge will no longer be transmitted en bloc, once and for all, to young people before their entry into the work force: rather it is and will be served 'a la carte' to adults who are either working or expect to be, for the purpose of improving their skills and chances of promotion, but also to help them acquire information, languages, and language games allowing them both to widen their occupational horizons and to articulate their technical and ethical experience (in Rasche 2003: 77).

The ability to be adaptable, and able to change with the requirements of their careers, is therefore an important graduate attribute for the graduate of the twenty first century. Atkins (in Crebert et al. 2004) suggests research has identified that 'graduates in the [twenty-first] century are likely to be knowledge workers and symbolic analysts, service providers, members of learning organisations, and managers of their own careers' (p. 150).

Transformation in learning is also potentially about transforming the learning space, or the knowledge space as an academic framework. Rasche (2003) writes of the postmodern university, or hyperuniversity, in the postmodern age. The fluid definitions of personal identity, nationhood, culture and knowledge are challenging the non-fluid models of instruction and enquiry, those transmission methodologies engaged prior to the postmodern era. Rasche anticipates a stressful transformation that involves moving the current learning space from a history of hierarchy. Lyotard (in Rasche 2003: 77) understands postmodern knowledge as encompassing 'competency' or 'performativity', as opposed to 'narrative'. Narrativity has been the model that provided iterations of knowledge for successive generations. This movement to 'performativity' matches well with the movement away from internalized, individualistic learning theory, as the educational technologies encourage connected, socially adept networks and collaborations within workplace/industry contexts.

2.1 Connectivism's Role in Learning

The whole context of digital convergence in the 21st century learner's social framework or world is reflected in how a person learns in this environment. The significant trends in learning as identified by Siemens (2004) relate to the sense for the learner that knowledge is now measured in months and years, where previously it was a matter of decades. Gonzalez (2004) quoted in Siemens indicates that the 'half-life of knowledge' is the time span from when knowledge is gained to when it becomes obsolete. According to the American Society of Training and Documentation (ASTD), quoted by Gonzalez (2004), the amount of knowledge in the world has doubled in the past 10 years and is doubling every 18 months. This has led to several major trends. Learners will move into potentially unrelated fields over the course of their working life. Informal learning is becoming a major part of the learning experience, with formal education no longer the majority of our learning. An example of this is the move towards experiential learning and volunteerism, the development of
skills through communities of practice or personal networks. There are also much higher levels of part time and casual employment. Learning and work related activities are not separate, and technology is altering the way learners approach their thinking. The learner is looking for where to find the knowledge required, rather than focusing purely on the ‘how’ and ‘what’ of the knowledge base (Gonzalez 2004).

Driscoll (2000) defines learning as ‘...a persisting change in human performance or performance potential...[which] must come about as a result of the learner’s experiences and interaction with the world.’ (Driscoll, 2000, p.11). A brief survey of learning theory within the framework of learner experiences provides some evidence of the growth or applicability of connectivist theory (as summarized by Siemens (2004) to the new or millenial learner. Behaviorism (for example Gredler 2005) is composed of several theories based on three assumptions about learning: that observable behaviour is more important than understanding internal activities; that behaviour should be focused on simple elements such as specific stimuli and responses; and that learning is about behaviour change. Cognitivism sees learning as a process of inputs, managed in short term memory and coded for long-term recall. Constructivism suggests that learners create knowledge as they attempt to understand their experiences (Driscoll, 2000, p.376).

Considering the relationship between the learner and the process, behaviorism and cognitivism place knowledge as external to the learner and the learning process as the act of internalizing the knowledge. Constructivism assumes learners are actively attempting to create meaning. The constructivist theory focuses on learning which is contextual (considering the student’s understanding), active (engaging in analysis, debate and criticism to receive and test information) and social, using discussions, direct interaction and team-based projects (Brown, M. 2005). Behaviorism, cognitivism and constructivism focus on learning as a lasting changed state (emotional, mental, physiological) brought about as a result of experiences and interactions with content or other people.

The ability to synthesise and recognize patterns and connections is a valuable skill within an experiential or workplace learning environment. Connectivism is about forming those connections. The principles of connectivism, according to Siemens (2004) relate to developing learning processes for connecting specialized nodes or information sources, encouraging learning and knowledge in a diversity of opinions and developing the capacity to know more rather than focus on what is known. The nurturing and maintaining of connections will facilitate continual learning, and enable the ability to see connections between fields, ideas and concepts. To be current, to have accurate, up-to-date and timely knowledge is the aim of the connectivist approach. This seems to find an interesting match with the millenial learner and the higher education course developer’s need to develop capacity and opportunity to connect in lateral and layered ways.

The key focus for connectivism is the individual and their personal network. This will greatly impact on the design of the learning environment. An example of current challenges to the environment is the blogging now actively encouraged by online media outlets, as opposed to the mainstream media. The growth of Wikipedia as an interactive community of learning/knowledge in another example of a connected environment attempting to manage or at least connect to the knowledge explosion. Learning is no longer an internal, individualistic activity because of the impact of the new learning tools and environmental changes in what it means to learn. Thus the learning space is also changing into a more connectivist model which is not constrained by traditional narrativity. It is potentially mobile, and certainly more strongly collaborative.

2.2 Case study 1: Postgraduate Reflective Learning Collaboration – Building Creative Teams and Exposure

The work-based project which forms the basis of this case study has been set up to support the university’s undergraduate performing and creative arts showcase season Exposure, and has been the driver of the experiential learning approach since 2006. This case study provided a workplace-based learning context, where postgraduate students became the ‘consultants’ pitching to the client/coordinator of Exposure, to develop proposals for the launch, e-bulletin/website and other promotional tools, and an archive to be used by the following year’s teams as the basis for their work on the season. The methodology involved setting up collaborative teams of 4-5 participants, using tools such as the Honey and Mumford Learning Styles Questionnaire (see http://www.peterhoney.com for details on the LSQ and interpretations of individual types) and the Belbin Self Perception Inventory (see http://www.belbin.com for details on the nine team roles). The purpose of using these tools was to establish blended teams with a mix of skills, and develop communication tools to facilitate collaboration with the performing and creative arts sector of the university student body.
The project was exploring team-based collaboration, experiential learning and communication methodologies including mobile technology as well as a WebCT-based online platform.

Students were doing postgraduate coursework in a Masters in Communication to pick up employable skills, to career change and/or to provide a strong portfolio of demonstrable expertise. In 2007 there were 11 students, with 64% internationals. In 2008 there were 27 with 89% internationals. The teams needed to be strongly collaborative, and the real-life projects (for instance the launch or the website/e-bulletins) provided the drama and pressure of deadlines. Retention rates were high, in 2007 92%, and in 2008 90% (Deakin University 2008). The Deakin University (2008) Student Evaluation of Teaching of the Unit (SETU) responses indicated a strong endorsement of this mode of learning. In 2007 there was an average ranking for teaching and resourcing of 4.65 out of a possible 5.00. The technology and online delivery elements were lower at 4.00, but still impressive. The results in 2008 were 4.55 for teaching/resourcing and 4.33 for the technology and online elements. A response as to whether students would recommend this unit to others resulted in 4.57 for 2007 and 4.58 for 2008. The students were engaged and excited by the projects and their development of team and people skills.

Outcomes were not only related to the launch and promotion of the Exposure season, but also to the sense of reflection engendered by project teams analyzing their successes and failures. Reflection was a vital part of the process as team members discovered the communication and problem-solving values of different media. The WebCT-based online platform was used for file storage rather than communication, while the wireless, portable and speedy response media alternatives including mobile phone, text messaging and email provided immediate problem-solving discussion. Above all, the project provided the experiential contexts which led to exponential growth in learning – the live work project and its pressure to commit to the outcomes. This pressure provided the dependence on interpersonal skills to problem solve, negotiate and reach positive outcomes. These media technologies and experiential contexts became the drivers of the students’ learning, rather than (or more accurately in addition to) the information in print and online, or the educational ‘expert’ or authority. Each of the teams was fluent and self-directed, moving between multiple medias, and focused on what they could achieve with the alternatives. During their oral review reports on completion, the students reflected rigorously on the powerful learning achieved by the blending of face-to-face and media-related communications in emergency situations.

One of the major outcomes of this project indicated that the Net Generation learner seemed to be comfortable with blended learning which focused on collaboration and networking, whether it was people or technology based. For best effect, it needed to be just-in-time blends which may have been directive or more discovery-oriented, formal or informal (Rossett et al, 2003). The key was that the information was readily available for collective blending in the learning project/s, task/s or outcomes.

3. THE NETGEN OR MILLENNIAL LEARNER

The Net Generation is generally considered to be the generation born between 1980 and 2000. Summary by Arnsparger (2008) indicates this is the first generation growing up surrounded by digital media, and they are strongly connected to friends, parents, information and entertainment. They have an ability to multitask, and are motivated by connection of their actions to personal/career goals. They require both time and flexibility within their lifestyle approach (Arnsparger 2008).

The Net Generation learning preferences, according to Prensky, (quoted in Dziuban and Moskal 2008) tend towards active learning, blending graphics with resources, clear and relevant connections incorporated in the design, multitasking rather than singular or linear approaches, technology utilized as a friend, and the integration of gaming and fantasy concepts within learning environments (Prensky 2008). These preferences lead to both opportunities and challenges in structuring learner-centred approaches to this generation.

The NetGen learner is also demonstrably connected and experiential through social networks such as MySpace, Facebook and Flickr (Oblinger 2008). Such sites not only provide a social network but also a potential immersive learning environment. This use of social networks also indicates a participatory culture, with a sense of collective intelligence – everyone has something to contribute. Knowledge is created not possessed, and it is possible to use a community rather than an individual to gain knowledge. The millennial learner sees experiences as more important than the acquisition of information (Oblinger 2008).
Today’s learner comes from this connected Net Generation, digitally literate, which constructs knowledge in a nonlinear way, starting from the known or concrete, then moving informally through more lateral mosaic-style developments (Marquardt 2007). A contextual learning space developed using the principles of connectivity and experiential learning can provide socialisation, exploration and conversations that reflect on the learning. It is reflection on that connectivity, in non-linear ways, which leads to effective experiential learning.

Experiential learning is, as Kolb (1983) has stated, ‘... the process whereby knowledge is created through the transformation of experience’ (p. 41). According to Silberman (2007), experiential learning incorporates a direct involvement at emotional and intellectual levels, using projects or work-based activities that are very similar to or replicate workplace experiences. This transformative experience potentially requires immersive and imaginative simulations and situations to bring the learning closer to the day-to-day workplace experiences, particularly in aspects such as interpersonal skills and communications.

Dede (2005) describes immersion as participating in a comprehensive and realistic experience. This situated learning needs to build in the transfer of knowledge learned in one situation to another, leading to improved performance in a real-world setting. Immersion incorporates mediation (an expert guide) to develop reflection, and to identify the importance of transfer. Transfer is also strongly linked to work-based or problem-based learning, provision of authentic work settings within which to transfer the learning. Dede (2005) puts forward the neomillennial learning styles to match these immersions within experiential learning. He describes neomillennial learners as fluent in multiple media and simulation-based virtual settings, with their learning communal and situated in experience. The knowledge is distributed across a community and context as well as within an individual. Dede (2005) advocates three aspects which have been tested in the included case studies: a balance between experiential learning, guided mentoring and collective reflection; developing nonlinear and associational links in resources; co-design of experiences which match individual needs and preferences.

Do neomillennial learners synthesise and process experiences rather than (or as well as) information? Dede (2005) has proposed that the neomillennial learner is moving from the three types of learning styles related to sensory-based visual and auditory skills, personality-based responses and aptitude-based multiple intelligences to a fourth, which is media-based. He proposes that media can neutralize learning differences. This was a strength of the case study situation above, which utilized media as a social connectivity across potential barriers of learning styles and cultural differences. It also provides the designer with additional research-based pointers towards the importance of virtual communities and worlds which are non-linear in construction and navigation, communally negotiated and personalized for the NetGen learner. Newlandia became the immersive world to explore further the NetGen learning styles and preferences.

3.1 Case Study 2: Virtual Worlds and Immersive Learning – Newlandia Scenario

The designer’s role is to design the learning environments to engage the participants and incorporate what they bring to that engagement in the way of experiences, that is experiential learning. As Margaret Haughey (2003) indicated, learning is about ‘making connections – both within our brain and among ideas – through experiences with others and with the help of learning materials’ (NLII 2003 annual meeting plenary session, Educause). Those connections were designed as associational and non-linear, with an emphasis on multiple media. The virtual scenario was testing whether the neomillennial learning styles described by Dede (2005) were drivers in the learning of the students in this unit.

The virtual scenario of Newlandia was developed within a website framework, and operated as a resource tool more than a full interactive world. It triggered imaginative responses by the creative immersion guided by the tutor through social communicative technology and face-to-face interactions. The assessments sat outside the virtual world, and acted as catalysts for the appropriate writing responses which could be adjusted depending on the audience and purpose stipulated. The use of media varied from a radio station interview program to a breaking news TV report and a print-based story run across several different papers. The design was based also on characters who led the advocacy groups, and photographic slide shows formed both the personality development of the characters and the environments in which they operated, the narratives that challenged students to provide creative written responses. The knowledge to develop the written responses was developed by written/online models of good writing and activities to develop skills, but also involved
shared collaborative discussion in business units such as the Newlandia Environment Society and Business Development Association. The communal knowledge gathered provided more informed and creative individual responses. The Newlandia scenario has since been utilized as a resource for a public relations campaign subject, and the design incorporates the potential for additional storylines as they are developed by the participants, and other teaching staff. The scenario has transferability beyond the initial unit targeted.

The case study involved both on campus and online postgraduate coursework groups during 2007 and 2008. In 2007 the international students in the on campus cohort were 64% of the total 28. From the total of 27 online students, 13 were local students, 11 interstate and 3 based overseas. In 2008, 36% of the on campus enrolment of 22 were international students. Numbers in online enrolments grew to 43, with 23 from the local region, 13 interstate and 7 overseas. Retention grew from 86% in 2007 to 88% in 2008, in both online and on campus groups (Deakin University, 2008).

3.2 Outcomes and Trends

In 2007 (response rate of 39.1% to the SETU survey – Deakin University, 2008), there was strong support (4.28 of a possible 5.0 ranking) for the teaching of the unit, its materials and resources and use of online and other technology from both on campus and online groups. The off campus group in 2008 (response rate of 27.5%) was more critical, with an average ranking of 3.73, indicating individual frustrations with aspects of the teaching and technology. On campus (56.5% response rate) had a ranking of 3.97. Using the assessment results as a measure, the distinction and high distinction grades (above 70%) moved from 51% of total in 2007 to 67.5% in 2008.

In constructing the immersive environment of Newlandia, the Pacific island with water and tourism problems, the developer has incorporated reflective practice that encourages deep learning. This provides a much stronger potential for engagement of the learner. For, as noted by Boud et al. (in Smith et al. 2007) ... 'Learning builds on and flows from experience: no matter what external prompts to learning there might be – teachers, materials, interesting opportunities – learning can only occur if the experience of the learner is engaged' (p. 132). It also required smooth blending of technological tools and teaching/mentoring, an issue identified by the off campus group in 2008.

Much of the discussion from inclass evaluations and anecdotal feedback centred on the immersive nature of Newlandia, and its contextualizing of writing requirements into a workplace orientation. The development of the virtual world of Newlandia has indicated that the immersive environment can operate as a learning tool for learners who are digitally media literate, interested in communal knowledge and engaged by the experiences of that virtual world. It needs to be combined with reflective practices (in this case the writing tasks within their virtual world context) and the freedom to explore creative responses both individually and collaboratively. Dede’s (2005) neomillennial learning styles provided a solid basis for the design of Newlandia, and the outcomes suggest this was an appropriate approach.

These outcomes are interesting in relation to the surveys of higher education instructional designers, conducted by Bonk et al (2006). The instructional designers’ responses provided perceived trends in learning approaches and technologies. In relation to learning, group problem-solving, collaborative tasks and problem-based learning were the top three trends (Bonk et al., 2006). The survey also indicated the top five potential technologies as reusable content objects, wireless technologies and peer-to-peer collaboration tools, digital libraries and simulations/games (Bonk et al., 2006). The emphasis on collaboration and mobile connectivity is reflected in Newlandia, and the virtual world is becoming a reusable content object, providing a simulation with multiple applications.

4. CONCLUSION

The immersive learning environments of the two case studies have provided contextualized workplace simulations for Net Generation learners, testing whether the neomillennial learning styles postulated by Dede (2005) have relevance to experiential learning in higher education. Outcomes from the case studies suggested the design is relevant in providing learners with collaborative and socially transferable skills within a connectivist learning model. The learner in these case studies has generally been focused on achieving appropriate graduate attributes to increase employability through the postgraduate coursework program,
transforming their learning from a knowledge transfer into an experiential workplace orientation. Each of the case studies utilized technology as a tool to develop collective experience and knowledge. Most importantly, the design encourages a learner-centred approach, reflecting on both collaborative and individual outcomes in shaping the learning process. The Net Generation learners (with the neomillenial learning styles indicated by Dede) were connected through social networks, mobile and multiple digital technology and a collaborative approach to acquisition of experiential knowledge. Through experiential learning design they can be strongly placed to embrace lifelong learning, incorporating ongoing experiences-as-knowledge within flexible and collaborative communities.

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