Engaging the millennial first-year teacher education learner: A preliminary case study

Eva Dobozy, Romana Pospisil
School of Education and Centre for Learning and Teaching
Edith Cowan University
Perth, Australia

Teaching practices grounded in constructivist learning theories run counter to the dominant highly structured and lecturer-controlled approaches to learning and teaching in which the lecturer transmits established, accumulated information for students to learn and reproduce, largely through one or two hour lectures followed by practical tutorial exercises. Consequently, university lecturers interested in adopting constructivist approaches to university learning and teaching will have to successfully negotiate a set of challenges that have been described as conceptual, pedagogical, cultural, and political. In this paper, we briefly explore the principles of humanist learning and teaching as we understand them. This is followed by an illustration of our pedagogical responses to the needs of millennial first-year teacher education learners, many of whom demand to be active, hands-on, practical and supported by peers, tutors and lecturers on a 'just-in-time' basis. In particular, we report some preliminary findings from our LAMS pilot with first-year teacher education students. They confirm earlier observations that note that many first-year university students seem to possess the emotional maturity, cognitive and interpersonal skills necessary for student-centred technology-enhanced learning and teaching, but others do not. Finally, we discuss possible directions for better integrated learning environments that provide adequate support to millennial first-year teacher education students to enable their meaningful engagement and participation in online learning conversations with their peers.

Key words: humanist-constructivist learning, millennial learners, first-year university students, teacher education, self-managed learning

Introduction

According to humanist-constructivist learning theory, university students are meant to be well placed to self-manage much of their learning. Nevertheless, Dobozy (2007a) questions some first-year teacher education students' emotional maturity and cognitive skills necessary for such an endeavour. In addition, Ho and Tani (2007) caution against the uncritical adoption of student-centred learning and teaching approaches at university. Despite these calls for vigilance, we agree in principle with a student-centred epistemology. This view is supported by recent educational research which points to the feasibility of this pedagogical approach at different levels of school education (Candy, 2004; Jonas-Dwyer & Pospisil, 2004; Lea, Stephenson, & Troy 2003; Van Deur, 2004; Van Deur & Murray-Harvey, 2005).

Learning in the knowledge era places unique demands on students and calls for different approaches to learning and teaching at the university and school education levels (Phillips, 2005; Reid, 2005; Rowe, 2007). Teaching approaches grounded in humanist-constructivist learning theories run counter to the dominant highly structured and lecturer-controlled approaches to learning and teaching in which the lecturer transmits established, accumulated information for students to learn and reproduce, largely through one or two hour lectures followed by practical tutorial exercises. Consequently, university lecturers interested in adopting constructivist approaches to university learning and teaching will have to successfully negotiate a set of challenges that have been described as conceptual, pedagogical, cultural, and political (Dobozy, 2007a; Phillips, 2005).

The cultural challenge pertains to the implicit university learning and teaching norms that govern the actions and behaviours of lecturers and students. As noted above, the dominant pedagogical approach at university is still lecturer-directed and instructional in nature, in which established facts and procedures are transmitted from an expert (the lecturer) to novices (students). The culture that flows from this model is one in which lecturers lecture (talk most of the time). The student, meanwhile, is expected to sit quietly and attentively in the lecture hall for 45 to 90 minutes, taking notes and many times accepting – unchallenged, the lecturer's elaborations as

facts. The design of learning and teaching situations based on a humanist-constructivist model tries to break free from the constraints of old institutional habits and traditional pedagogical practices.

We begin our discussion with a theoretical exploration of the principles of humanist-constructivist learning and teaching, as we understand them. Our theoretical discussion is followed by an illustration of the pedagogical strategies used in response to the identified needs of millennial learners. Having provided a justification as to why we perceive a learning environment that integrates face-to-face on campus delivery with off-campus components to be particularly conducive to positive learning outcomes of millennial learners, we then proceed to report on our experiences with the LAMS 2.0 learning activity management system. Finally, we discuss possible directions for better integrated learning environments that provide adequate support to millennial first-year teacher education students to enable their meaningful engagement and participation in online learning conversations with their peers.

The need for pedagogical change from a theoretical perspective

A humanist-constructivist philosophy of education is based on a holistic approach to learning and teaching. It is thus concerned with and pays particular attention to the role of noncognitive variables in learning that contribute to high or low self-efficacy or academic self-concept in students. There is an implicit assumption that when students' emotional and physical needs are met, they will be intrinsically motivated to learn. However, the learning materials need to be personally meaningful and students need to take responsibility for understanding the reasons for their behaviours and actions. Learning environments that fulfil this basic condition contribute to students' beliefs that they will be supported, even if they struggle. Consequently, a humanist-constructivist philosophy of learning and teaching strives to help students better understand themselves. It attempts to create a compassionate and encouraging but also demanding learning environment in which students are able to challenge taken-for-granted beliefs and assumptions. Students can become comfortable with taking risks and begin to develop attitudes and skills that will allow them to self-manage their learning. Working in this way, students will begin to take increasing responsibility for their own learning and personal cognitive and emotional and growth. (Barr & Tagg, 1995; Biggs, 2003; Maslow, 1970: Montessori, 1964; Ramsden, 1992; Rogers, 1983).

Humanist-constructivist philosophies of education emerged during the 'industrial era' and inspired a movement for educational reform in various European countries. Past and present educationists who adhere to a humanist orientation to teaching are particularly sensitive to social, political and moral issues and concepts such as student's self-concept and self-esteem. Children's rights, child freedom and autonomy, empowerment and intrinsic motivation are recurring themes in their educational theories. In the early parts of the 20th century, humanist educators such as Maria Montessori, Rudolf Steiner and John Dewey, who were inspired by the works of Jean-Jacques Rousseau, Johann Pestalozzi, Johann Friedrich Herbart and Friedrich Froebel, understood problems associated with academic performance, motivation and behaviour not as problems of underdevelop-ment or underpreparedness in children, but rather as problems related to the underdevelopment of the learning environments (Dobozy, 1999). These theorists and their followers believed that student agency; cooperative learning environments and a classroom culture that promotes self-esteem and intrinsic motivation will lead to better learning outcomes (Dobozy, 2004). Thus, humanists distinguish between 'education' (Latin: *educatio*) and 'teaching' (Latin: *instructio*) and generally subordinate the concept of 'teaching' to that of 'education'. Humanist educationists agree that 'education' unlike 'teaching' means shaping the whole person. Following in the path of the European forbearers of humanist-constructivist conceptualisations of 'good' learning and teaching, American educationists, such as Abraham Maslow, Carl Rogers, and Arthur Combs, stimulated education reform at the heights of the Industrial era and well into the 'knowledge era' (see Altoni, 1997; Conrad & Wyer, 1980; Donnan, 2007; UNESCO, 2005).

Today, the relevance of a humanist-constructivist philosophy of learning and teaching may invoke critical reactions from 'back to basics supporters' such as Kevin Donnelly (2007). Nevertheless, we conceive this epistemological position to be the most conducive to learning at university and elsewhere. To illustrate this assertion further, we point to the Education for All (EFA) Global Monitoring Report, which is an annual publication prepared by a team of scholars at UNESCO. The UNESCO's working group is charged to monitor progress toward the six EFA goals adopted in Dakar, Senegal in 2000, one of which is "improving all aspects of the quality of education" (Goal 6). In its 2005 report entitled *The Quality Imperative*, the authors note that humanist ideology has "immediate relevance for educational practice" and they elaborate as follows:

Learners, for humanists, are at the centre of 'meaning-making', which implies a relativist Interpretation of quality. Education, strongly influenced by learner actions, is judged central to developing the potential of the child. The notion that acquisition of knowledge and skills requires the active participation of individual learners is a central link between humanism and constructivist learning theory. (UNESCO, 2005, n.p.)

Although, Australia's most vocal and best-known 'back-to-basics' advocate, Kevin Donnelly, proposed in his 2004 publication, *Why Our Schools Are Failing*, that humanist ideology was to blame for lower literacy and numeracy standards of Australian students, unsurprisingly, Australian students, many of whom become first-year teacher education students, are performing remarkably well on standardised international tests (Programme for International Student Assessment of the OECD, 2006), compared with other nations who may not adopted or be sceptical of humanist-constructivist approaches to learning and teaching in K-12 classrooms and beyond. It is noteworthy that humanist-constructivist educational views have become fashionable again in Australia and may even represent a counter movement to the back-to-basics calls (Brown, Woods & Hirst, 2006; Dobozy, 2007b; Marsh, Hau, Artelt, Baumert & Peschar, 2006).

The need for change from the millennial learner perspective

The term 'millennial', or 'net generation' (Oblinger, 2004), describes students who are born between 1982 and the present. Many of these students are now at or graduating from university. The characteristics of the millennial learner summarised by Diana Jonas-Dwyer and Romana Pospisil (2004, p. 200), which locates the needs and wants of this particular student group, provides useful here, although we understand that the stereotyping of students is always problematic. They are:
- 'civic-minded' (in need of opportunities for community related learning)
- 'inclusive and team oriented' (in need for staying connected with others)
- 'confident' with 'zero tolerance for delays' (in need of opportunities for electronic communication)
- 'hopeful-optimistic' (in need of opportunities for experiential and authentic learning activities).

Millennial students appear to prefer information connectedness, multitasking, and a focus on immediacy in their university studies. This is posing a challenge to educators who are trying to meet the expectations of millennial students by supporting experiences that are immediate in terms of their access and reliability, are sufficiently flexible to cross the boundaries of study, work, and social lives, and provide them with a connected and information rich environment in which to learn (McMahon & Pospisil, 2005).

Based on our theoretical understanding of effective learning and teaching at university discussed above, we, as lecturers of millennial students, need to aspire to providing ample opportunities for virtual and real-life collaboration. It is now generally accepted that learning management systems such as Blackboard, Moodle, LAMS are not just administration tools to transmit or deliver information for large cohorts of university students; they also provide environments that allow for discoveries and insights. In such an exploratory environment, students might investigate and discover exciting information, engage with each other, judge the relevance of the topic for personal use and enter simulations or microworlds and gain confidence in problem solving skills (see Beisser, 2006).

Experimenting with the Learning Activity Management System (LAMS)

The open source learning activity management system (LAMS 2.0) is an innovative authoring environment, which promotes the easy design, management and delivery of online collaborative learning activities. James Dalziel, the director of the Macquarie University e-Learning Centre of Excellence (MELCOE) was instrumental in the development and testing of LAMS. A key strength of emerging technology environments such as LAMS is their compatibility with humanist-constructivist conceptualisations of 'quality' learning and teaching at university. These technologies enable the lecturer to design learning activities (or learning objects) that gradually place the responsibility for learning into the hands of university students. Therewith the lecturer's role changes from a transmitter of information to that of designer of particular learning environments with enable the construction of knowledge. In other words, the humanist-constructivist lecturer assists students to ask personally meaningful and relevant questions, pursue needed information for knowledge generation, and generally be more self-managed (Dobozy, 2007a). LAMS 2.0, for example, is a technology that helps to support humanist-constructivist lecturers' diversity awareness and promotes greater inclusively by virtue of its design features and

therewith enabling the 'education' rather than the 'teaching' of students (Carden, 2007, Williams & Jacobs, 2004).

The Pilot Study

The unit in which we introduced simple LAMS 2.0 sequences was a first-year teacher education course with a large student cohort. The unit, Learning and Development 2 is a compulsory education studies unit in the Kindergarten through Primary program at Edith Cowan University. The unit's focus was on students' development of (a) pedagogical content knowledge and (b) reflective learning and teaching skills. The students in this class were predominantly school leavers, therefore representing the millennial generation and characteristics of net generation learners. The students were accessing their units in Blackboard, the enterprise learning management system at ECU, and LAMS activities were introduced as embedded activities within the Blackboard environment. The LAMS sequences we developed were deliberately kept simple to assist students to gain familiarity with blended learning modes and learning objects presented in LAMS to reduce the students' cognitive load (see Figure 1).
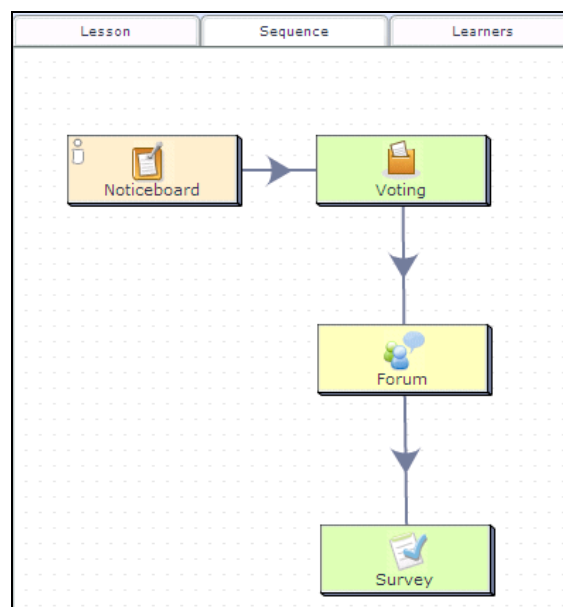

Figure 1: LAMS activity sequence

The basic sequence used represented a series of related and interdependent learning activities, the model being:
1. *Welcome activity* – the lecturer presents a learning artefact or trigger (video segment, link to an online resource) to prompt student thinking and engagement with a particular topic or theme
2. *Voting activity* – students are invited to 'take a stance' and present their viewpoint on the given issue or topic
3. *Forum activity* – students are invited to prepare a short personal journal entry, discussing the activity, sharing and engaging with other students' perspectives and ideas
4. *Survey activity* – students are encouraged to evaluate the usefulness of the online workshop in relation to their individual learning experience.

In this case example, students were first presented with a five minute video segment by two well known Australian political comedians from the national media (*Welcome activity*, Figure 2), which was used as a trigger to get our first-year teacher education students to reflect on a well known problem: "Keeping up with reading". This humorous introduction was then followed by subsequent activities that were designed to help students reflect on their personal study habits and compare their experiences and strategies with their peers (*Voting and Forum activities*, Figures 2 and 3). The final segment, (*Survey activity*, Figure 4) was designed to elicit personal feedback from students about their views of the value-adding nature of online-learning opportunities, such as the one discussed here. This first LAMS sequence was designed to take between 10 to 20 minutes to complete. The subsequent two sequences (one online lecture and online tutorial) were designed to take between 45 and 60 minutes to complete.

The reusability and modifiability of sequences in LAMS 2.0 was a welcome feature. It allowed us to design similar sequences, which we developed into a series of learning objects for this particular group of students. The major aim was to encourage these students to become comfortable and motivated whilst working in this elearning environment, without the added stress of worrying about assessment points and complications with off-campus access etc.

Figure 2: LAMS Welcome activity

The activity, which followed the *Welcoming* segment in the four-part sequence that we discussed above, was the *Voting activity* (Figures 3a and 3b). In this part of their online work, the first year teacher education students were prompted to reflect upon and express their personal opinion on this given problem. An attractive feature of this tool is that as soon as students submit their vote, they are taken to a summary screen which shows them how their view compares with that of other students from this learning group (see Figure 3b).
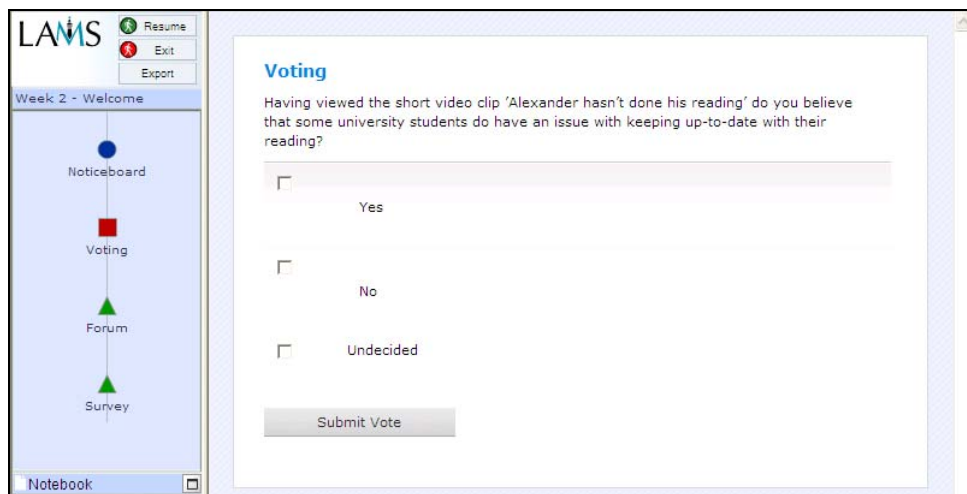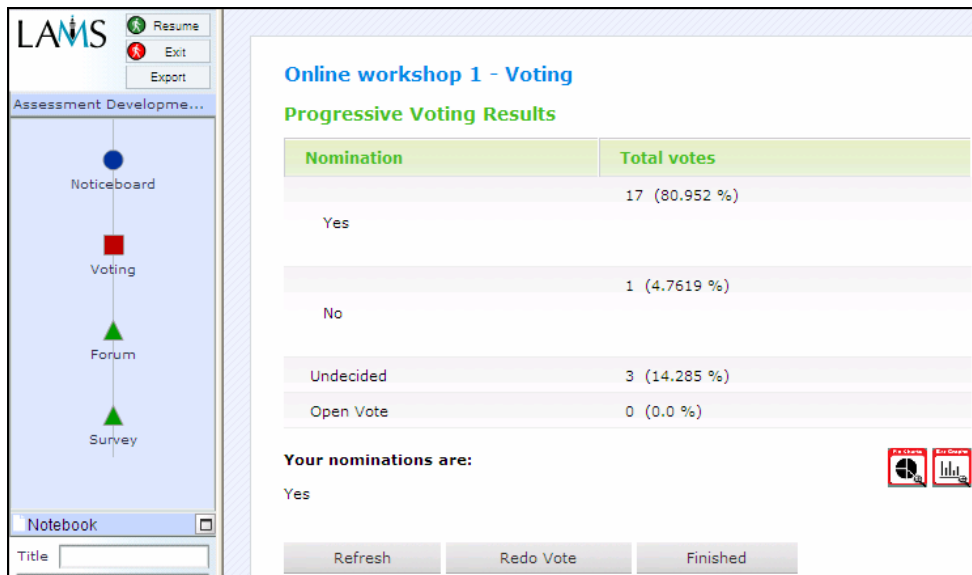

Figure 3a: LAMS Voting activity

Figure 3b: LAMS Progressive Voting Results

The discussion *Forum activity* (Figure 4) was designed to invite students to think deeper about the topic under investigation, to extend their boundaries and take risks by openly stating their viewpoints, agreeing or disagreeing with positions put forward by the lecturer or fellow students. This part of the four-part sequence may be the most valuable for students, where they are provided with a space to explore and compare viewpoints or strategies, exchange ideas and reflect on their habits and behaviours, and discuss potential changes to their original stance.
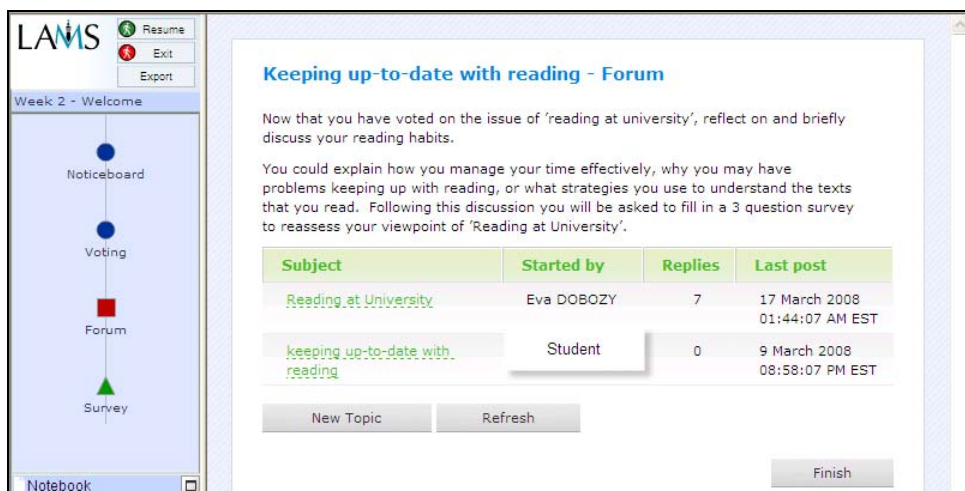

Figure 4: LAMS Discussion forum activity

Finally, the *Survey activity*, which forms the final part of the four-part sequence (Figure 5), was designed to gather feedback on students' learning experience with this activity. The feedback was invaluable in informing the lecturer as to the effectiveness of this self-paced learning activity and students' perceptions of learning in an online environment with LAMS.
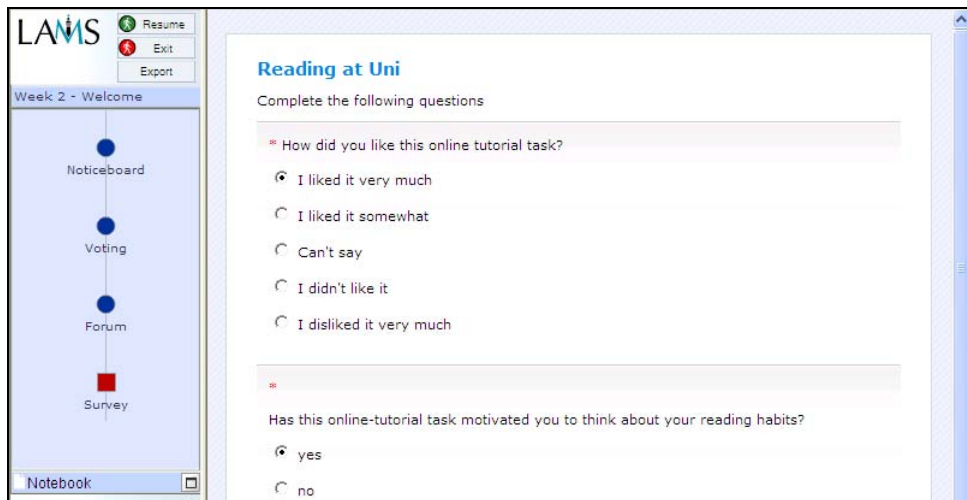
Figure 5: LAMS Evaluation activity

The role of the lecturer as primarily a resource person that designs a safe, motivating and meaningful learning environment and acts as a guide and mentor to students is in line with humanist-constructivist educational philosophy discussed earlier in this paper. It needs to be pointed out that this is not a 'laissez-faire' learning environment where students are left to 'fend for themselves', rather the lecturer is able to view students' progress through the LAMS sequence by accessing the Monitor feature. If problems are encountered or progress is not evident in one of the activities the lecturer/tutor can investigate and provide advice and support if needed. Figure 6 illustrates a LAMS activity sequence showing student progress throughout their work on particular learning objects.
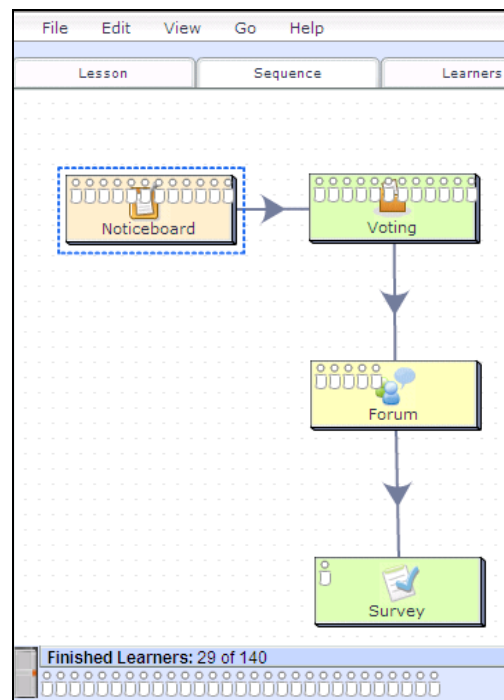

Figure 6: LAMS activity sequence showing student
progress throughout activities.

Evaluation of students' engagement with the LAMS-based activities

Probably one of the key findings of this preliminary study is that the *Forum activity* (Figure 4), as an important learning space, was underutilised by our students. Although personalised online writing (often referred to as blogging) has gained popularity in education circles (Williams & Jacob, 2004) and spaces such as the 'LAMS discussion forum' are specifically designed to provide an avenues for spontaneous reflection, short journal entry and collaboration, many of our students did not feel confident enough to voice their opinion publicly. The reasons for this deliberate choice of 'tentative engagement' need further investigation. Other evaluation of students' engagement with the LAMS-based activities that involved the gathering of access data, written feedback, and a review of recorded instances of support requests made by students also unearthed interesting findings.

Overall, 86% of the 218 students attempted the LAMS-based activities which replaced their face-to-face, on-campus lecture and tutorial sessions for one week, during one of the school holiday weeks. Only 1% of the students who attempted the activities did not complete them, usually this appeared to be due to technical difficulties, however, the LAMS access data also uncovered that 13% of the students did not even attempt to access the activities. It is important to note that no assessment points were allocated to the LAMS-based activities and some students may simply have lacked motivation to engage with activities that provided 'no apparent incentive or penalty' (see Table 1).

LAMS Activity	Welcome		Lecture		Tutorial		Total
Completed	178	82%	192	88%	193	89%	**86%**
Attempted	4	2%	2	1%	2	1%	**1%**
Did not Attempt	36	17%	24	11%	23	11%	**13%**
Total	218	100%	218	100%	218	100%	100%

Table 1: Student Access Data

Student feedback

Of the students that attempted and completed the activities, a summative survey on the completion of all three activities uncovered predominantly positive perceptions of LAMS-based learning: Over 80% of the 53 students who completed the survey expressed positive views of using the environment (Table 2). and the remaining 20% expressed concerns, mostly with the mode of learning and the lack of formal face-to-face lectures (see Table 2).

89%	Found LAMS easy to use
81%	Believed LAMS assisted them in their learning
87%	Believed the LAMS activities were relevant to their learning needs
85%	Stated that it was helpful to be able to come back to a LAMS activity and continue from the point where you finished previously.
89%	Would welcome more LAMS activities

Table 2: Student Feedback

Positive feedback – some examples

I really liked using [LAMS} because I struggle at staying focussed for a long period of time therefore the program aloud me to come back and forth to complete the task. I also like how it made you feel like you'd accomplished something once you had finished. (first-year teacher education student, 2007 cohort)

The benefits were it kept me on task, and interested in the topics that were spoken on. I enjoyed watching the video clips and could rewind and stop them at times when I wanted to write down notes. (first-year teacher education student, 2007 cohort)

This worked well for me as I completed the work well before the due date (so that I could use the time normally allocated to the tutorial caring for my children during the school holidays) . (first-year teacher education student, 2007 cohort)

The activities were interesting and although they were simple they did make you really think. (first-year teacher education student, 2007 cohort)

Very professional program and that it was a lot fun! (first-year teacher education student, 2007 cohort)

Great, I really enjoyed it and think it assisted my learning style significantly. I really enjoyed doing this activity in my own time. (first-year teacher education student, 2007 cohort)

Negative feedback – some examples

Not having to attend university for a lecture was a big advantage although a disadvantage as not being able to ask spontaneous questions of the lecturer. (first-year teacher education student, 2007 cohort)

I thought it was good that we could leave them and come back later but I also found myself off track a lot of the time because of the freedom. (first-year teacher education student, 2007 cohort)

It was a good program to use however I feel that this exercise did not teach me anything and felt that I did not learn anything relevant from it. (first-year teacher education student, 2007 cohort)

I found LAMS extremely difficult to use. It took a long time to be able to access LAMS. I had a lot of problems viewing the videos and there were lots of problems in general when I tried to use LAMS. (first-year teacher education student, 2007 cohort)

LAMS was difficult to use. The program would not load on several computers I used. (first-year teacher education student, 2007 cohort)

Benefits included being able to access it anywhere in the world. Disadvantages may include a power blackout before saving work. (first-year teacher education student, 2007 cohort)

Students' written responses illustrate their desire 'to have fun' while learning, and being 'independent', empowered to access information on an 'anytime-anywhere' basis. Nevertheless, a few students not only grappled with the technology but were also concerned about the lack of face-to-face 'spontaneous' interaction with the lecturer. Based on these preliminary findings, we conclude that LAMS-base activities do seem to present an element of motivation for students who managed to gain access to the program. We found further support for this idea because our evaluations show that the majority of students attempted the LAMS activities although they were not compulsory and no assessment points were attached to them. Many students reported during informal feedback sessions and to some extent in the survey that although the learning activities were easy to complete, they made students think and reflect on the theme or problem presented. Discussion with students indicated that there is a readiness level for online self-managed learning and a sufficiently developed maturity level for us to continue implementing online workshops.

These findings add support to our understanding that LAMS-based activities are compatible with our epistemological beliefs about quality learning. The majority of our first-year teacher education students who responded to the survey or voiced their opinion during informal feedback sessions were positive about increased use of online learning activities. Nonetheless, possible directions for a better integrated learning environment that provides adequate support for learners who may not yet possess sufficiently developed cognitive, interpersonal and/or technical skills to feel confident enough to engage in meaningful self-managed online conversations are needed. Our preliminary research confirms previous work that suggests that students need to be adequately prepared to work in flexible learning environments. We cannot just assume that students will engage and/or like student-centric learning and teaching (Ho & Tani, 2007; Lea et. al. 2003; Prosser & Trigwell, 2002; Stevenson & Sanders, 2002; Taylor, 2000) .

Further, it cannot be disputed that a significant number of students seem to prefer direct instruction approaches that are teacher-directed rather than independent student-centred learning (Coltheart & Prior, 2007; Farkota, 2005, Ho & Tani, 2007, Rowe, 2007). These students need to be educated about the value of student-centred

learning approaches, their advantages and drawback from both teacher and student perspectives. What we cannot do is ignore the learning preferences of these students and pretend it does not present us with a dilemma.

New approaches to learning and teaching, such as the flexible learning approach underpinned by humanist-constructivist educational philosophy need to be evaluated for their usefulness to provide solid evidence of their value-adding nature. The fact that a significant number of students seemed to openly reject our attempt to let them self-manage their learning through our provision of LAMS-based activities, may suggest that their non-engagement with this form of pedagogy is based on unmet needs. Thus, we need to proceed with caution when developing and implementing self-managed, flexi-learning programs.

The LAMS trial will continue throughout 2008 with new classes of students. Sequences of the same complexity will be reused and new sequences developed to encourage more self-managed learning and include more challenging activities.
The questions arising from this pilot are;
1. How can we encourage and support student directed learning in students have yet to develop the maturity and readiness to interact confidently in online learning environments
2. How can we assist first year teacher education students in developing their cognitive, interpersonal skills and sometimes their resilience levels to engage in online learning communities and persist when technical problems surface
3. How can we foster student-centred, self-managed learning readiness in students who seem to have a preference for traditional, teacher-directed classroom education.

Conclusion

Further studies are required to identify whether the factors limiting students' readiness to engage in self-managed learning activities could be attributed to digital literacy, technology acceptance, level of 'maturity', resulting in a fear to experiment or lack of confidence to communicate and put forward their own views. Based on an understanding of the trends presented in this paper, we could develop learning activities that include a suitable level of scaffolding to extend the cognitive and interpersonal skills of students that are struggling to become confident and self-managed in their learning. LAMS is, in our view, able to provide a practical vehicle for developing and refining students' self-reliant attributes and problem-solving skills. With each cohort of millennial students entering university study we may find that there is a variation in students' digital literacy levels which may affect students' acceptance of and engagement with online learning activities. The opportunity to reuse LAMS activities will be invaluable in our future research in this area.

Acknowledgements

References

Aloni, N. (1997). A redefinition of liberal and humanist education. *International Review of Education,* 43 (1), 87-107.
Barr, R. & Tagg, J. (1995). From learning to teaching: A new paradigm for undergraduate education. *Change,* 27 (6), 13-25.
Biggs, J. (2003). *Teaching for quality learning at university*. (2nd Ed). Buckingham, UK: The Society for Research into Higher Education and Open University.
Beisser, S. (2006) An examination of gender difference in elementary constructionist classrooms using Lego/Logo instruction. *Computers in the Schools,* 22 (3), 7-19.
Brown, H., Woods, A. & Hirst, E. (2006). The public construction of values in education: A synthesis of case studies. *Australian Association for Research in Education*. Annual international conference, Adelaide, 27-30 November.
Candy, P. (2004). Linking Thinking: Self-managed learning in the digital age. Report prepared for the Department of Education, Science and Training. Canberra: Commonwealth of Australia.

Carden, P. (2007). LAMS design for diversity leadership, followship and awareness. European LAMS conference. 5th July. London: LAMS Foundation.

Coltheart, M. & Prior, M. (2007). *Learning to read in Australia*. Policy Paper #6. Canberra: The Academy of the Social Sciences in Australia.

Conrad, C. & Wyer, J. (1980). Liberal education in transition. Research Report No 3. Washington DC: American Association for Higher Education.

Dobozy, E. (2007). *The Learning of Democratic Values: How four 'out-of-the-ordinary schools do it'*. Frenchs Forest: Pearson Education Australia.

Dobozy, E. (2007). The digitalisation of pedagogy: Dressed-up consumerism, techno-utopianism or genuine benefit? Refereed Proceedings of the annual international *Australian Association for Research in Education* conference, Fremantle: University of Notre Dame. Paper abstract and full-text available at: www.aare.edu.au.

Dobozy, E. (2004). *Education in and for democracy and human rights: Moving from utopian ideals to grounded practice*. Unpublished PhD thesis. Perth: Murdoch University.

Dobozy, E. (1999). Constructivist and Montessorian perspectives on student autonomy and freedom. *Proceedings Western Australian Institute for Educational Research Forum 1999*. Available at: www.waier.org.au/forums/1999/dobozy.html

Donnan, R. (2007). Epistemology: Roger's and Skiller's contributions to training analysis. Weblog. Available at: www.blog.klpnow.com/2007/epistemology_rogers_and_skinne.html.

Donnelly, K. (2004). *Why our schools are failing*. Potts Point, NSW: Duffy & Snellgrove.

Donnelly, K. (2007). *Dumbing down: outcomes-based and politically correct – the impact of the culture wars on our schools.* Prahran, Vic: Hardie Grant Books.

Ho, M. & Tani, M. (2007) What medical students value from their teachers. *Australian Health Review,* 31(3), pp. 358-361.

Jonas-Dwyer, D. & Pospisil, R. (2004). The millennial effect: Implications for academic development. Paper presented at the annual *Higher Education Research and Development Society of Australasia (HERDSA) conference*, 4-7 July, pp. 194-207. Miri: Sarawak: HERDSA.

Lea, S., Stephenson, D. & Troy J. (2003). Higher education students' attitudes to student centred learning: Beyond 'educational bulimia'. *Studies in Higher Education,* 28(3), 321-334.

Farkota, R. (2005). Basic math problems: The brutal reality! *Learning Difficulties Australian Bulletin,* 37(3), 10-11.

McMahon, M. & Pospisil, R. (2005). Laptops for a digital lifestyle: The role of ubiquitous mobile technology in supporting the needs of millennial students. *EDUCAUSE Australasia 2005*: The Next Wave of Collaboration, SKYCITY Auckland Convention Centre.

Marsh, H., Hau, K., Artelt, C., Baumert, J. & Peschar, J. (2006). OECD's brief self-report measure of educational psychology's most useful affective constructs: cross-cultural, psychometric comparison across 25 countries. *International Journal of Testing,* 6(4), 311-360.

Maslow, A. (1970). *Motivation and personality* (2nd Ed). New York: Harper & Row.

Montessori, M. (1964). *The Montessori method*. New York: Schocken.

Oblinger, D. (2004). The Next Generation of Educational Engagement. *Journal of Interactive Media in Education* 8(May).

Phillips, R. (2005). Challenging the primacy of lectures: The dissonance between theory and practice in university teaching. *The Journal of University Teaching and Learning Practice (JUTLP),* 2(1) Available online at: http://jutlp.uow.edu.au/2005_v02_i01/phillips003.html

Programme for International Student Assessment of the OECD (2006). Assessing scientific, reading and mathematical literacy: A framework for PISA 2006. Paris: Organisation for Economic Co-Operation and Development.

Prosser, K. and M. Trigwell (2002). Experiences of teaching in Higher Education. In Understanding Learning and Teaching: The Experience of Higher Education. Buckingham: The Society for Research into Higher Education and Open University Press.

Ramsden, P. (1992). *Learning to teach in higher education*. New York: Routledge.

Reid, A. (2005). Rethinking national curriculm collaboration: Toward an Australian curriculum. DEST Research Fellowship Scheme.

Rogers, C. R. (1983). *Freedom to learn for the 80's*. Columbus, OH: Merrill.

Rowe, K. (2007). The imperative of evidence-based instructional leadership: Building capacity within professional learning communities via a focus on effective teaching practice. Keynote address presented at the *Sixth International Conference on Educational Leadership*, 15-16 February.

Woolongong, NSW: University of Woolongong, NSW: The Australian Centre for Educational Leadership.

Stevenson, K. and P. Sander (2002). Medical students are from Mars-business and psychology students are from Venus-University teachers are from Pluto? Medical Teacher 24(1), 27-31.

Taylor, P. G. (2000). Changing Expectations: Preparing students for Flexible Learning. *The International Journal of Academic Development* 5(2), 107-115.

United Nations Educational, Scientific and Cultural Organisation (2005). Understanding education quality (Chapter 1). Education for All: The quality imperative. Paris, France: UNESCO. Available online at: www.unesco.org/

Van Deur, P. (2004). Gifted primary students' knowledge of self-managed learning. *International Educational Journal,* 4(4), pp. 64-75.

Van Deur, P. & Murray-Harvey, R. (2005). The inquiry nature of primary schools and students' self-managed learning knowledge. *International Education Journal, ERC 2004, Special Issue,* 5(5), 166-177.

Williams, J. & Jacobs, J. (2004). Exploring the use of blogs as learning spaces in the higher education sector. *Australasian Journal of Educational Technology*, 20(2),232–47. Available online at http://www.ascilite.org.au/ajet/ajet20/williams.html.