Where shall the future student learn?
Student expectations of university facilities for teaching and learning

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This paper examines some of the issues surrounding educational facilities - their design and impact upon student learning now and into the future. It details some of the recent literature in this area with particular emphasis upon teaching and learning trends that match the needs of modern students. The responses of a group of first year university students in the School of Property, Construction and Project Management at RMIT University are also matched against these trends. The conclusions from these responses drawn indicate that the future university student will want flexible learning spaces that can adapt to both individual and collaborative work with a strong emphasis on social learning and advanced technology. The responses also indicate a mismatch between existing lecture theatres and tutorial rooms and the third space learning that these graduates of 2011 want. The results have implications for all higher education institutions as we enter the new millennium.

Introduction

The biggest challenge is keeping pace with the changing educational demands of the university population. Many of the older buildings do not fulfil today's teaching and learning requirements or methodologies. There is a mismatch between the facilities and the demand usage. Chalk and blackboard classrooms are provided where high-tech, fully digitised data projections on walls in open learning spaces are required (Gow, 1999).

The Australian university is a very different place of learning in the new millennium. Full-fee students mix with corporate clients, Commonwealth sponsored undergraduates, postgraduates and industry benefactors in an environment that is becoming increasingly more oriented to commercial activity. Parallel to this change is the growing adoption of flexible learning strategies with an emphasis on providing superior quality research and teaching. Universities have traditionally been about teaching, learning and research, but the way in which learning now occurs and the developments in collaborative research and teaching opportunities have created pressure upon existing university facilities built for a 'one size fits all' model of teaching and learning. Gow (1999) notes that more than 50% of all commencing students have based their decision to come to a particular university on the quality/appearance of its campus, its buildings and its facilities: learning spaces matter to future students.

Trends in how information and knowledge is transmitted are also changing. New research about how individuals learn has impacted upon how knowledge is taught in universities in the 21st century. This paper examines some current trends in higher education learning and teaching and summarises the impact these trends will have upon students of the future. These trends are then matched against the responses of a group of current university first year students, graduating class of 2010, who are questioned about their learning and facilities needs. All of the students involved were first time users of the university. Finally some
conclusions are drawn about the needs of the students in this study and wider implications for learning spaces and improved student learning in higher education into the future.

**Trends in learning and teaching in tertiary education**

Fisher (2005) introduces the purpose of higher learning as a construction of context where learning is not simply the memorisation of facts but the ability to learn. Universities are places where one learns how to learn. Nonaka (1998) talks of university learning as the social construction of knowledge. Students learn how to construct new contexts with the knowledge they receive. Universities have always been halls of higher scholarship and learning, but the delivery of that learning has changed in this millennium. Herz (2005) examines the hallmarks of an educated person in the new millennium and concludes It's about an educated person taking this vast river of data and information available nowadays at their fingertips and creating a context in which the information makes sense and can be understood. Value exists less and less in the pure data or in the pure information and more and more in the implicit, in people and in their context (Herz, 2005).

One of the key enablers of this move from a content-delivery model to a knowledge-based model has been the impact of technology. Mountfield (2005) notes that the Net Generation (Net Gen) born after 1987, have grown up with technology. They have used it their entire lives and employ all the toys and tools of the digital age. This exposure to technology impacts upon how the Net Gen view the world and how they want to interact with the world. Prensky (2001) calls this generation the Digital Natives - native speakers of the digital language of computers and the internet. They are demanding IT-rich learning environments for student-centred learning, collaborative learning, reflective learning and knowledge acquisition. In short, they want flexible learning spaces that allow them to learn in their own digital language.

These demands have placed pressure upon the university staff to abandon traditional approaches to teaching and learning and develop digital solutions that match the demands of the Net Gen. Almost all universities now have online lectures, or .wav or .mp3 files for access by students. Most staff, even the most traditional, are besieged by students wanting electronic files of Powerpoints or electronic notes. Technology has been one of the greatest enablers of change in modern universities.

Developments in educational research in learning models have also been a key enabler of change. Fundamentals that focus upon problem-based learning, student-centred learning, flexible learning and authentic learning experiences are becoming universally agreed educational practice and impacting upon how knowledge is transmitted in universities (Jamieson & Dane, 2005). These developments place stress upon traditional facilities and their design.

Garrison and Anderson (2003) develop the concept of a "critical community of learners" where students and lecturers construct and validate understanding that leads to further learning. The aim is independent learning where the individual is "cognitively independent but socially interdependent."

The interaction between industry and university has also been another key enabler. As universities seek to build collaborative relationships with those who apply the knowledge there is pressure to recreate learning environments that reflect industry. Integrated
professional learning as evidenced by the scholarship model proposed by Boyer (1990) are further impacting upon how learning occurs.

Schon (1985) explores the integration of application, teaching and discovery by "doing." This framework implies learning environments that are laboratory or studio based for interactive exchange of knowledge. Gibbons (1994) bases his work on a concept of "new production of knowledge" where learning is heteroarchical and transient. This concept implies learning activities that are more socially accountable and reflexive, where learners and practitioners collaborate on a problem in a specific, localised context. The learning spaces required for this collaboration may vary.

Learning takes place also in socially peer-to-peer oriented settings. This is quickly becoming an enabler of change on university campuses. Research by Scott-Webber (2004) examines the social or informal learning environment and the reduction of formal timetabled learning segments. The conclusion emphasises the importance of learning "hubs" - informal and formal learning precincts and student socialising areas or "third learning" spaces where informal learning occurs. Chism (2006) endorses the "third space" concept with her emphasis on the environment of learning.

Environments or spaces that provide experience, stimulate the senses, encourage the exchange of information, and offer opportunities for rehearsal, feedback, application and transfer are most likely to support learning (Chism, 2006, p.4).

Other developments in learning and space have emphasised the ways university rooms convey nonverbal messages - welcoming or not, encouraging or discouraging discussion, valuing or not valuing input, trusting and supportive or not - that can be powerful learning enablers (Strange & Banning, 2002). The student and staff as co-learners on a collaborative journey is a theme developed by Chism (2006) who concludes that when students and staff are kept apart such as in office configurations, then the collaborative nature of a learning journey cannot occur naturally. It becomes "top down learning.

Finally, Milne (2006) discusses how modern learning occurs "out of sequence." He notes that the traditional presentation of lectures and materials in a deliberate, sequential manner does not sit comfortably with modern learning techniques where students may be involved in overlapping discussion threads or parallel activities that may span different types of media, technology and communities. This smorgasbord approach to learning recognises the role of students as active decision-makers about their learning.

In summary, Australian universities have seen a number of trends in learning and teaching develop over the past two decades. These trends in most cases have become entrenched in the delivery of knowledge in higher education in this millennium. Key features and trends of the literature discussed in this paper are

- technology (the emergence of the digitally native learner, new technology etc.)
- learning models (collaborative research, student-centred, flexible delivery etc.)
- communities of learning and practice (global centres etc.)
- professional learning (industry partnerships, transient knowledge etc.)
- third space learning (peer to peer, non-verbal learning, informal learning etc.)
- non-sequential learning (smorgasbords of overlapping, parallel knowledge etc.).
Each of these trends will impact upon the way future students learn. The ability of our learning spaces to match these trends is paramount to the future of university schools.

The study

First year undergraduate students in the School of Property, Construction and Project Management at RMIT University were interviewed about their engagement with university and in particular their learning styles in the physical environment. Although a small volunteer sample (n=12), they were all first-time users of the university and its facilities. The average age of the sample was 19.8 years. The case studies were interviewed regularly (n=8) over a 12 month period and their responses to learning needs and styles and university facilities recorded. The gender mix (m=8, f=4) reflected the enrolment patterns in the university school. The students were given a range of discussion triggers in semi-structured interviews to promote discussion about their own learning styles and where and when they felt they learnt best at university. Further material relating to how the students felt about their university learning experiences was discussed, but is not analysed in this paper. The sample did not include post-graduate or research students and full-fee paying domestic students were not asked to identify themselves.

Overwhelmingly the students interviewed in this study were confident users of technology and it was reflected in their discussions about the ways they learn, and the pivotal role technology played. They were all used to digitally rich environments, mostly in their homes, and expressed the desire to see that replicated at university. They expressed dismay that the IT environments they had created for themselves at home or for recreational use were not available at university. One commented

The servers are too slow, and often inefficient, time out or just take too long. Sometimes the lecture material is not available electronically - can you believe it?

Milne (2006) noted that the "Gen Net" students of the modern university were at home with technology and are digital natives. They quickly adapt to, use and then discard technology. Students in this study had little patience with learning areas that were not set up for technology such as laptops or memory sticks. One noted

I want to carry my work in on the stick, but you cannot plug into most of the lecture theatres. If you are lucky enough to get a lecture room with computer access, it makes the lecture more accessible. I can update my notes as the lecturer talks ...

The students in this study were also critical of IT centralised delays or shutdowns and felt that campus services and resources were inferior to what they could access at home or elsewhere. Staines (2006) endorsed what many of the students felt about using university resources and technology: why go to uni, if the services are available faster, in more detail, digitally richer and technologically more sound elsewhere? Students in this study were more aligned with interactive media than passive presentations. They all used the latest technology and preferred their information in an interactive format. When it came to learning they wanted to question and research the material using the latest technology as a learning tool.

The students in this study were also bored by the "chalk and talk" approach taken in many lectures and tutorials. The rows of desks and set out of the "lecture podium" in many lecture rooms did not encourage collaborative learning with the majority of the students interviewed complaining of lecturer-dominated sessions. One noted
You can really only talk to the people on either side of you. If someone below or behind you has an idea you cannot even look at them to see who said it, let alone discuss it. The lectures are really boring because of this lack of discussion. I doze off sometimes...

Another commented
You get the impression in some rooms that the lecturer does not want you to learn - there is no discussion, no working together, just endless powerpoints! It is not really learning, just sitting there while someone hands out the facts in the most boring way!

And again
The lecturer has all the information at the front and then 'gives it out' piece by piece. It is boring waiting for the slides and he just discusses each one in the same way, even if we understand it, he doesn't pass over it or anything. It is like a set pattern every class, even if we want the information or not! He just stands there like he is rooted to the podium.

Staines (2005) talks of seating in lecture rooms that encourages peer-assisted learning, noting that many lecture rooms are set up to actively discourage collaborative learning and instead promote passivity. One student in this study supported this with the following comment. I learn best from my friends explaining it to me, so that I can ask questions at any time. The lecturer doesn't like us talking and often tells us to turn around or leave the room. It is like you have to be quiet to learn in that course.

Evidence from the students interviewed indicated that the formal lecture rooms were not reliable for peer-assisted learning, or third space peer-to-peer learning. The students interviewed favoured collaborative research and learning based upon real-life problems and industry scenarios. They wanted to bounce ideas around in an informal learning setting, with tables and facilities set up to promote collaborative discussion. Even in smaller tutorial rooms the students interviewed did not feel that the physical facilities encouraged learning exchanges. One noted
It is all verbal - you just listen to others talk and then try to fill in the answers. Very few chances to exchange work - normally you just copy the answers to the technical questions, but you cannot really understand it. I like to spread out my notes and see other people's drawings and charts. You normally wait till after the tutorial to work together. Most people just stay stuck in the seats that are sort of in a circle... till the tutorial ends, then we go to the café to work on it.

The physical layout of rooms with a podium or lecture stand at the front implied "no interaction" to the first year students interviewed. It implied a model of "knowledge transmission" which was not in keeping with their own experience of how best they would learn. It must be acknowledged that formal lecture theatres with fixed seating encourages "transmission model" learning, but there was no evidence from the students that lecturers engaged in any active learning alternatives when placed in these rooms. Even when in smaller tutorial rooms the teaching model reflected a "transmission model" rather than opportunities for active learning. In general however, the type of learning was driven by the teaching facility.

In many cases the physical set-up of the formal tutorial rooms was "threatening" for the students, not encouraging social learning or learning models that were student-centred. The students interviewed felt more comfortable learning in an informal, collaborative setting. The students were more likely to undertake an analysis of their own self-learning needs and make decisions about where this was likely to best occur. Fisher (2005) further stresses the concept that the university students of the future want input into their own learning and want to be treated as autonomous individual learners. Students in this study made active decisions about suitable physical environments in which to learn, selecting not to attend lectures where no learning occurred for them.
The students in this study were participatory learners - they wanted to share knowledge, research and information in a physical setting that encouraged such sharing. Chism (2006) noted that many assumptions universities make about students and learning are outdated, citing evidence that students are likely to be learning material in a wide variety of places. Evidence from the first year students in this study cited cafes, homes, corridors and outdoors as places where they learn best. One noted

Lectures are like where you get the notes, but we go to the café to learn it.

Informal learning conversations also occur in online forums or chat rooms. Students often exchanged their ideas online, learning by engaging in online conversations, or text exchanges. This was especially true of those students who were "time poor." Where once time at university was considered the raison d'etre in a student's life, now greater independence and changing lifestyles mean students juggle paid work, recreation and study. Learning time is fluid and not confined to time at university. The students are mobile learners, carrying connected electronic devices to communicate with each other, even if they are not physically present. One student commented

I was actually working extra hours when that project was due - I kept in touch with the group when I was at work. It was easy to give them my ideas. I just used my phone. We had quite a discussion about the best way to answer some of those questions. You can email stuff on my phone - that's all you need.

The students interviewed were not even present on the campus on many "learning" occasions, or even physically in contact with each other, yet many commented that they learnt much of their university material through these "mobile" conversations. Oblinger and Lomas (2006) note that modern students move seamlessly between living and learning environments - they blend physical and virtual worlds. For the students in this study formal lectures delivered in a set pattern appeared at odds with their integrative learning behaviour. There was a seamlessness between learning whether it occurred in class or in another physical location. For some of the students interviewed they viewed the majority of their learning as occurring away from the actual classroom. Two commented upon a disinterest in formal learning as it is currently presented.

I don't really learn much in lectures. They are boring - it is just an opportunity to find out what is required. Same as the tutes - just get the answers. If you really want to learn you need to go somewhere else ... like the coffee shop.

I used to go to classes - now I don't. You can learn the stuff without going ...

Mitchell (2003) points out "if you get wireless reception under a tree, or at work, you don't need to be in the classroom" (p. 8). These two students indicated that their learning styles were not met adequately by the formal transmission of knowledge only.

All of the students interviewed wanted physical facilities where they could meet, discuss work and learn together. Preferably they wanted to do this in a relaxed, informal setting that was technologically enabled. They wanted opportunities for professional spaces that belonged solely to them - industry learning opportunities. There was no evidence of alternative learning spaces being provided for students in this study outside of the timetabled areas. The students did note however that many lecturers saw them in corridors and any spare room to engage in active participatory learning, but this was normally at the request of the students or their friends.
The students interviewed felt that the library met some of their learning needs, but did not treat them as mature learners. One student commented

It is really meant for silent study - not active learning. The group rooms are good, but there are not enough. Besides you want to be able to leave your books and bag around if you want a break. In the library you have to pack up every time you get a coffee. It is easier to work in the cafÉ.

Fisher (2005) notes the importance of safety, security, natural ventilation, lighting and other physical features as conducive to effective learning. Students in this study also indicated a need for multi-use spaces for intense work and learning opportunities. These spaces also need to allow for students to interact with the global environment through technology.

Conclusion

Chism (2006) notes "A campus should proclaim it is a location designed to support a community of scholars" (p.11). Changes in learning and teaching have been significant in the past 25 years. There is a greater emphasis on the learning needs of tertiary students and the relationship between learning and facilities.

This paper has examined the responses of a small number of first year students in the School of Property, Construction and Project Management at RMIT University, Melbourne in relation to learning styles and preferred learning facilities. Although a limited sample, a number of conclusions can still be drawn from their responses.

- Learning for these students occurred in both formal and informal settings
- The timetabled facility dictated the teaching style used and alternative teaching styles were rarely used
- Active learning occurred more often away from the classroom, often in informal, ad hoc spaces
- The lecture and tutorial rooms discouraged learning for these students
- The technology available throughout the university was inadequate for their needs now and into the future
- The students favoured collaborative, social spaces for learning and technology exchange.

This study challenges some of our existing assumptions about where students learn and allows some insight into how future students want to engage with the university. One part of that engagement will be the provision of facilities that allow alternate teaching styles to match these needs. As Australian universities move further into the new millennium this is an opportunity for further research into the type of learning spaces that will best engage the students of the future.

References


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