

Transmodal delivery and neomillennial learning approaches

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Abstract

Relying on text-based instruction may be disenfranchising many students, whilst technology enhanced environments can provide real advantages to an ever increasing market of non-traditional learners. This research demonstrates higher levels of engagement are possible when a neomillennial learning approach is adopted to cater for a diverse range of student learning styles and backgrounds.

Introduction

The University of Southern Queensland (USQ) is a dual-mode institution with ‘triple-option’ teaching modes (on-campus, distance education, and online). It is currently the second largest distance education provider in Australia (see Table 1), with 75% of its students studying in this mode, with almost 90 nationalities represented. At USQ, as with many other institutions in Australia, distance education course materials have traditionally been delivered via static print-based packages. However, advances in technology and the greater use of multimedia in education have provided an opportunity for course leaders and designers to enrich students’ learning experiences by providing technology-based learning resources that comprise a range of multimedia and online components. A range of forces including, pedagogical, opportunistic, pragmatic, and psychological motivations, have encouraged many educators to adopt these educational technologies to enhance the delivery of their courses (Sankey & Birch, 2005). However, it has become increasingly clear that maintaining so many different approaches is economically unsustainable. Aligned with this concern is the increasing demand from off-campus students to be provided with more than simply a correspondence model.

BIG TEN			
Distance Ed Providers 2004		Distance Ed students	% of total
1	Charles Sturt University	21,213	18.5%
2	University of Southern Queensland	15,433	13.4%
3	The University of New England	11,863	10.3%
4	Deakin University	9,788	8.5%
5	Monash University	7,963	6.9%
6	Central Queensland University	5,682	4.9%
7	Southern Cross University	4,274	3.7%
8	University of South Australia	3,700	3.2%
9	Queensland University of Technology	3,245	2.8%
10	The University of New South Wales	3,126	2.7%
	Other Universities	28,650	24.9%
Total		114,937	100.0%

Source: DEST; Ian Dobson (Vergnani, 2005)

Table 1: *The top 10 providers of distance education in Australia for the year 2004.*

This paper seeks to demonstrate that higher levels of student engagement are possible when course materials are designed to cater for learners with a range of different learning modalities and backgrounds.. It also investigates the implications of catering for a wide range of students, proposing that one approach is to consider the notion of a neomillennial learning approach. ‘Neo-’ in this context means ‘new’ and ‘millennial’ refers to the learning modality required for the new millennium. This should be done whilst considering the ever increased growth of non-traditional learners in our universities and the problems associated with these students accessing an ever increasing quantity of

internet based materials. Further, with a view to re-engage those who may have been disenfranchised from learning. It is proposed that this approach may initially be facilitated by giving students the opportunity to discover their preferred learning modality and by the integration of a range of multimodal learning and teaching strategies. This hypothesis is supported by a summary of key points from research that draws on students' perceptions of USQs Transmodal approach to course delivery.

Differing approaches to learning

Taylor (2004) argues that traditional approaches to learning and teaching will not have the capacity to meet the escalating demands of higher education in the future. This is primarily due to the significant societal and technological developments that have resulted in major changes taking place in the field of higher education (Jochems, van Merriënboer, & Koper, eds 2004). These changes have not been restricted to individual institutions, but have occurred on a more global level, with institutions increasingly competing in the international marketplace for their students. This has required fundamentally new approaches to be considered in the delivery of course materials across the board (Kellner, 2004).

On top of this it is also known that, increasingly, people learn in very different ways. For example, Oblinger and Oblinger (2005) tell us that 'Net Geners' (those who have grown up with computers, usually under 25) spend so much time online, it seems reasonable to expect that they would have a strong preference for Web-based courses, however, 'the reverse is actually true' (p.2.11). Conversely, older students (Matures and Baby Boomers) are much more likely to be satisfied with fully Web-based courses than are traditional-age students. Oblinger and Oblinger (2005, p. 28) also state that,

“at the same time that colleges and universities are graduating their first Net Generation learners, most campuses are experiencing an influx of non-traditional students. Three-quarters of all undergraduates are 'non-traditional', according to the National Center for Educational Statistics”

Non-traditional learners in this context are those who may: come to university later in life, only attend part-time, hold full- or part-time jobs, have dependants, may be single parents, or may not have appropriate tertiary entrance qualifications. Either way, the need for universities to cater for a range of students with different experiences and backgrounds has never been greater, which is one reason why USQ has developed a strategy for creating course resources based on a hybrid model. This has become known as Transmodal delivery.

Transmodal delivery at USQ

Transmodal delivery at USQ has its genesis in the principles of hybridised learning environments. The term 'hybrid' in the educational context embraces a range of approaches to learning and teaching that integrate a number of delivery media, mainly facilitated by information and communication technologies (Parsons & Ross, 2002). This approach was deemed necessary as USQ study materials are delivered in many different contexts; on campus in Toowoomba, Wide Bay and Springfield; for students at preparation level through to postgraduate; to international agents and partners; to independent and corporate groups of students. More importantly Transmodal delivery is designed to complement the University's new directions for learning and teaching articulated in its 'Leading Transnational University' vision (Lovegrove, 2004). This approach has allowed considerable expansion of support mechanisms for students and has made them available *en masse* (Cookson, 2002).

Associated with this is the increased reliance on the internet for information retrieval, though currently restricted by the inconsistency of broadband technologies across the range of diverse student bodies (Bruch, 2003). These issues clearly made a CD based resource the most viable option for the provision of resource rich course materials for the foreseeable future. Therefore, in the context of USQ, Transmodal delivery is seen as the provision of a resource-rich learning environment. This

environment is then further supported by different levels of teaching support integrated with the university's learning management system *USQConnect*, as illustrated in Figure 1. For this to be the case, learning environments would need to be designed that were both consistent in their approach to navigation while at the same time being able to provide students with access to significant quantities of electronic resources.

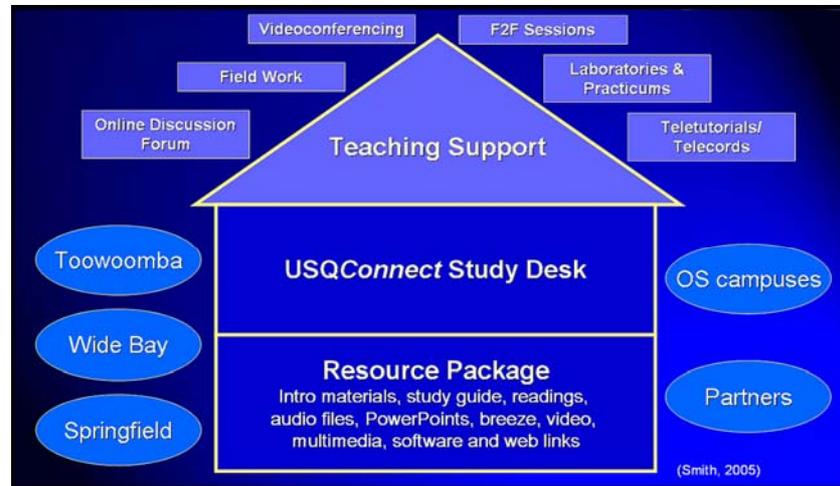
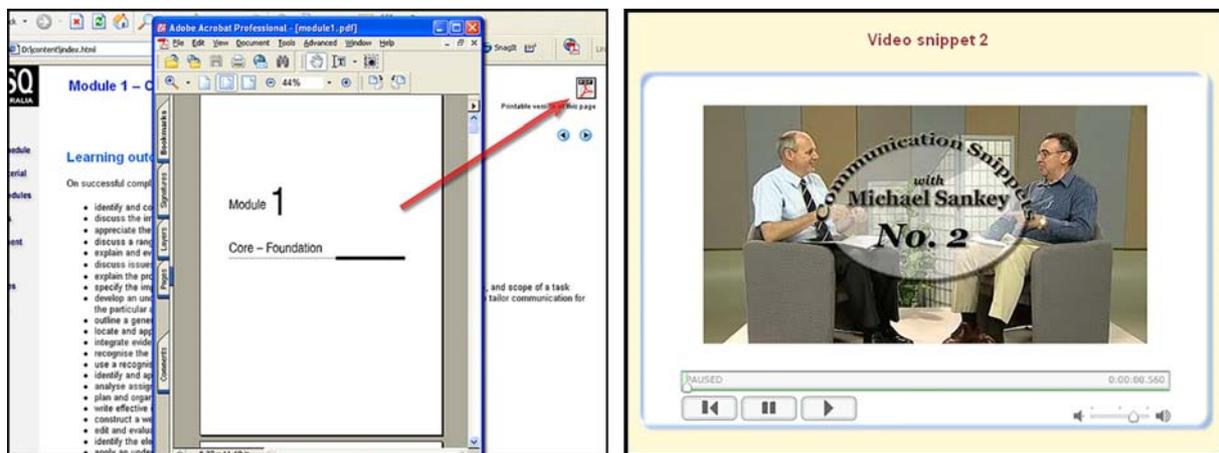


Figure 1. The hybrid delivery model: context specific support for the CD based package.

This approach does not deny the need to also provide easy access to traditional print based resource, as the CD is also used to provide students with printable resources; in the form of PDF files (see Figure 2). However, the HTML based environment allows for significant multimedia enhancements (see Figure 3), support software, USQ information publications, and hyperlinks to additional resources to be provided on the CD. Printed resources are also made available for purchase from the USQ Bookshop if students prefer this option; however, as it will be seen, given the choice the majority of students would prefer to print their own.



Figures 2 (left) and 3 (right). Two screen captures of the Transmodal environment showing the printable version of the materials and a multimedia enhancement.

As the CD based materials for courses are formatted in such a way as to permit them to be viewed as HTML pages, this allowed a range of navigation features to be incorporated. These features not only gave the course leader additional options as to what they could provide (in the forms of links to additional resources both on the CD and on the internet), but it gave students a greater level of control over how they accesses these resources. With additional hyperlinked options students are presented with a choice (or level of control) as to whether or not they access an alternate representation of the material. This level of control has been seen by Ainsworth and Van Labeke (2002) to significantly

improve the learning opportunities for students. Therefore, if a student prefers to listen to, or view a particular concept, as opposed to reading it (or doing both), they may. This aspect of these environments has been seen by students to be very helpful. It was also seen to make the process of learning (for many) more enjoyable, which in turn made the materials (for some) easier to learn (Sankey & St Hill, 2005). Previous research conducted by Anderson (2001) would support this claim. From her research, Anderson believes that this approach causes students to actively think about the structure of the information being presented.

As it is USQ policy that all students have access to the internet to fully participate in their courses, CD delivery may be further supported by activities housed on *USQConnect*. This provides each student with their own electronic Study Desk with links to each course they are enrolled in. This environment offers the opportunity for the course lecturer to establish and use either asynchronous or synchronous discussion forums to enable students to interact and communicate with each other and the lecturer. Announcements and updates may also be made available where appropriate. This environment also provides links to all library services, the USQ Bookshop, to *USQAssist* where students may find answers to questions related to USQ systems and individual courses, and *USQAdmin* where students can enrol, change personal details, access results and other resource materials related to their course or enrolment. These systems offered on *USQConnect* play an extremely important role in student support and communication, with students communicating both with each other and with the university.

Integral to the design of these courses is the premise that students learn in different ways and that each student has a preferred learning modality (Sarasin, 1999). When this is considered, and materials are designed to cater for multiple sensory channels, information processing can become more effective (Kearnsley, 2000). Fundamental then to the design of the Transmodal courses are the principles of multimodal design. Multimodal information being, 'information presented in multiple modes such as visual and auditory' (Chen & Fu, 2003, p.350). This is based in research demonstrating that students prefer to learn in environments that reflect the cognitive style in which they are most comfortable (Hazari, 2004). Transmodal delivery makes this possible as information can be presented in ways that utilise multiple sensory channels to thereby help engage students. Chen and Fu (2003, p. 359) state that, 'multimodal information presentation makes people feel that it is easy to learn and they can maintain attention, which will benefit the learning process and increase the learning performance'

In this context, the use of images is highly important, particularly for those entering higher education straight from school: the 'Net Geners'. This is also true in computer based environments where 'visual, displays are frequently useful for representing relationships amongst elements that are difficult to explain verbally' (Shah & Freedman, 2003, p.317). Even though visual images are proven to be an integral part of human cognition, they have tended to be marginalised and undervalued in contemporary higher education (McLoughlin & Krakowski, 2001). This is also true when utilising multimedia in learning and teaching environments to match students' different learning modalities (Ellis, 2004). For example, if material such as verbal texts (audio), diagrams, drawings, photographs, and videos are regarded as texts to be read, they can be applied to the development of new inclusive curricula (Roth, 2002). It is therefore necessary to develop strategies for the multiple representation of a whole range of instructional concepts to cater for the diversity of learners we have today.

The use of multiple representations, particularly in a computer-based learning environment is recognised as a powerful way to facilitate understanding. For example, when the written word fails to fully communicate a concept, a visual representation can often remedy the communication problem (Ainsworth & Van Labeke, 2002). Examples of multiple representations include, using point-form text with video and audio (mini lectures introducing each topic in the course), animated diagrams with voiceovers, interactive graphs and forms, audio explanations of concepts, and still images. The type of blended learning approach established for Transmodal delivery provides a unique opportunity to bridge both generational and cultural factors, providing the face-to-face contact requested by Baby Boomers, the independence preferred by Gen-Xers, and the interaction and sense of community for the Net Geners. (Hartman, Moskal, & Dziuban, 2005). Jona (2000) asserted that this kind of learner choice represents the paradigm shift that needs to occur in higher education.

Although it has been seen that there is a real need to design learning environments for a range of different learning modalities to aid student cognition, considering issues of students meta-cognition is equally necessary. This may be achieved by facilitating student's understanding of his/her own preferred learning modality. To assist students with this, a number of Transmodal courses have encouraged students to complete a VARK learning styles inventory (Fleming, 2001) early in their semester. VARK stands for Visual, Aural, Read/write and Kinaesthetic. This strategy, as it will be seen later in this paper, has been found to be particularly helpful to students. Coffield, et. al., (2004, p.37) state,

“A knowledge of learning styles can be used to increase the self-awareness of students and tutors about their strengths and weaknesses as learners. In other words, all the advantages claimed for meta-cognition (ie being aware of one's own thought and learning processes) can be gained by encouraging all learners to become knowledgeable about their own learning and that of others. According to Sadler-Smith (2001), the potential of such awareness lies in ‘enabling individuals to see and to question their long-held habitual behaviours’; individuals can be taught to monitor their selection and use of various learning styles and strategies.”

An important consideration in applying a strategy, such as the VARK inventory, is to also make available to students a series of study tips based on their modal preferences.

Researching student perceptions of transmodal delivery

There have been at least four Transmodal courses in the last couple of years that have used the strategy of using multiple representations whilst providing students with an awareness of their preferred learning modalities. In particular, attention will be drawn to two studies; the first conducted into student perceptions of two business courses, *ECO2000 'Macroeconomics for Business and Government'* and *MGT2004 'Human Development'* and the second, an Arts course *CMS1000 'Communications and Scholarship'*. These studies primarily focused on the use of the CD-based environment, the use of multimedia based enhancements and the use of a self-reporting learning styles inventory (VARK).

Surveys and focus groups were conducted for students enrolled in ECO2000 (S1 2004) and MGT2004 (S2 2004). Students completed two surveys, one in week three and one in week 14 containing a combination of questions based on a Likert type scale and the opportunity for open-ended responses. These surveys asked students for their perceptions of the CD based materials. A learning styles inventory was also administered in week three. Focus groups were also held for both on- and off-campus students in both weeks 3 and 14. A substantial quantity of data was collected covering a range of topics related to both the CD based materials and the support offered through *USQConnect*. The final data set consisted of 170 responses from 288 students. As this paper can only accommodate a summary of the data, further research results may be accessed at <http://www.usq.edu.au/users/sankey/hybrid.htm>.

The second study, into CMS1000 was conducted at the completion of Semesters 1, 2 and 3 of 2005. 188 external students voluntarily participated in a 20 question online survey evaluating their perceptions of the CD based environment. The survey consisted of 11 questions using a five point Likert type scale, three using a two point scale and six open ended response questions. Data for this study is viewable at: <http://www.usq.edu.au/users/sankey/cms1000/>

Overview of findings

ECO2000 and MGT2004

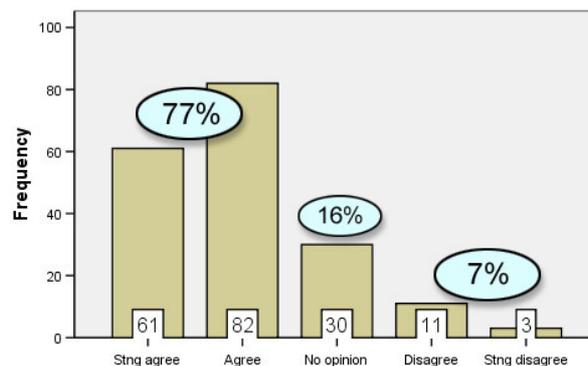
It was seen from the feedback from students in ECO2000 and MGT2004 that the CD based learning environments could be considered successful. The majority of students (67%) considered the

multimedia enhanced environment had suited their approach to learning (12% disagreed). This was particularly true in relation to the use of the multiple representations and used in the courses. Students described these elements as, “*enhancing their learning experience and making the materials more dynamic and complete*”, while others commented that the multiple representations had “*made the materials easier to learn*”, particularly for those students studying off-campus and for international students. This was mainly due to there being sufficient alternate representations to suit a range of preferred learning modalities. Fifty percent of on-campus students also agreed (27% disagreed) that the CD had suited their approach to learning and expressed a desire to receive their materials in this way. There was a clear perception that this gave them access to additional information, information they may not have gained from attending the lectures and tutorials.

As a result, but not solely attributable to the features the Transmodal environment, a higher percentage of students (10% more) overall attained passing grades in the 2004 offers of ECO2000 and MGT2004 than had previously done, either in 2003 or over the preceding four years. The only difference between these and the previous offers of both courses was the incorporation of the CD based environment, augmented with a number of multiple representations and multimedia enhancements. The course content itself had not changed in this time, simply the way it was represented. However, the importance of this result should not be overstated at this time as this trend would need to be continued before a claim of significance could be made. Nevertheless, this was a pleasing outcome for all concerned.

CMS1000

The interactive elements used on the CMS1000 CD were very highly valued as 77% of students identified these as helping them to learn the content, with 7% indicating they did not find them helpful (see Figure 4). This sentiment is summed up in the following two comments: “*Sometimes reading is not enough to get it into your head and it needs to be spoken, the CD completes that need effectively*”. And, “*Yes. Presenting material in a variety of formats and ways facilitates and stimulated my learning*”. Another student offered this assessment of the multimedia features: “*I found them extremely helpful - made me feel more a part of the class as well*”. This sentiment is expressed on at least 10 occasions in the qualitative analysis. One student commented: “*The different ways of learning catered for my specific needs very well and I appreciated the time taken to include all the different learning methods.*” This is a very pleasing result and worthy of further investigation.



Figures 4: Responses to question 7 of the survey (please see online data).

Conclusion

This paper has attempted to demonstrate that there are distinct advantages (for students) in providing course resources designed to suit a range of different learning modalities. It may be suggested that, from the research conducted into three Transmodal courses at USQ, the use of multiple representations can make learning environments more comprehensive, more interesting and more effective. This may be achieved by providing a more complete representation of the information being presented thereby increasing the opportunity of students to engage with their learning materials. This is further aided by

giving students the opportunity of understanding their own preferred approach to learning. Ultimately, what this paper is suggesting is that, designing for multimodal learners may reduce the impact of providing course materials to a very diverse and an increasingly non-traditional student body. This new approach for this new millennium has seen USQ develop what it now calls Transmodal delivery. The results from a number of research projects into this new form of delivery demonstrate that this approach has met with some initial success. However, it is still early days and further research is planned. The aim of course being to further improving the learning experience and assessment outcomes of students, which in turn may create an opportunity to re-engage many who may have been disenfranchised from higher education, encouraging them to once again give learning a go.

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