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Authentic tasks in e-learning designs

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Abstract

Constructivist approaches to learning design, while gaining increased acceptance in the higher education community, are the exception rather than the rule in the majority of web-based courses currently offered by universities throughout the world. The adoption of university quality standards and the widespread use of course management programs have inadvertently constrained more authentic and innovative approaches to online learning. Contemporary trends in e-learning designs are highlighting the value of authentic approaches to learning. This paper argues that authentic tasks that guide complex and sustained learning endeavours can be adopted in web-based courses, and provides guidelines for implementation, together with examples of successful university courses.

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The quest for more effective learning designs

Throughout the history of education, teachers and educators have sought to use pedagogical methods that ensure students learn efficiently and effectively in classroom settings. Decades of research and speculation have produced numerous programs and recommendations ranging from the bizarre (e.g., heated clothing to keep students at the most comfortable temperature for learning) (Morgan, 1997) to the controversial (e.g., the use of drugs to enhance cognitive function, (Lawton, 1997). Thousands of research studies and hundreds of meta-analyses have been conducted to try to determine those elements of instruction that are effective and worth adopting in a discipline that offers countless competing approaches and methods. Meta-analyses of meta-analyses have been conducted (e.g., Hattie (1992) combined the results of 134 meta-analyses to gauge the effects of schooling) in the quest to find the meaning of what is truly critical in pedagogy.

When an educational community is sufficiently convinced that a philosophy or paradigm for learning has promise, years of educational thought and innovation can develop according to its principles (Reiser, 2001). The field of instructional technology, for example, has shown a strong tendency to attempt to use “the confluence of research, technology and systems” (Shrock, 1995, p. 18) to effect educational change and increase the effectiveness of instruction. Shrock, in summarising the history of instructional technology, has nominated the predominant influences of thought and development in each of the decades since the early part of this century, influences such as behavioural objectives in the 1930s, programmed instruction and instructional systems development in the

1960s, microcomputers and performance technologies in the 1980s, and multimedia, hypermedia and the Internet in the 1990s. Many of these developments have been predicated on the belief that new technologies are integral to more effective learning, and they have been promoted on these claims.

However, rapid and widespread adoption of the technologies has been shown to present problems for the educational community, including expensive mistakes where the devices are discarded or hidden away without ever being used to their full potential—the ‘technology in the cupboard’ syndrome (Wilson, 1996). The history of education is full of such unfulfilled promises. Cuban (2001) lists some of the casualties: radio in the 1920s, film projectors in the 1930s, and instructional television in the 1950s. All these technologies held great promise to help improve the efficiency and effectiveness of education, only to be rejected when the exaggerated claims for their capabilities remained unfulfilled. For example, when desktop computers were introduced to classrooms in the late 1970s, when multimedia capabilities emerged in the 1980s, similar exaggerated claims were made. Bold claims have been made by writers such as Papert (1996) and Perelman (1997) that new technologies effectively undermine the necessity for formal educational institutions.

The rapid rise of the Internet in education

While there are few signs of the demise of schools and universities, the rapid proliferation of the Internet into education has caught many by surprise. Its use has risen three times more quickly than any comparable development (Economist, 1999) such as radio, the personal computer and television. In many ways not evident with the other failed technologies in the classroom, the Internet is positioned to dramatically affect the way we teach and learn. The process has been predicted by Pittinsky (2002) to be “a fundamentally transformed way of delivering and supporting the instructional process in higher education” (p. 2). Unlike many other innovations that have largely been promoted by early adopters, and proliferated from ‘the bottom up’, the Internet has impacted on educational institutions from a top-down approach as well (McNaught & Kennedy, 2000). It has proven to be an important learning tool, particularly in its capacity to rejuvenate and improve distance and flexible learning options, and has provided educators with a powerful tool to create effective and immersive learning environments (Jonassen & Reeves, 1996). It has also provided efficient and collaborative means of communication for students with their teachers, and with each other (Jonassen, 1995). Most now agree that it is well placed to provide opportunities for the design of imaginative learning environments that have never existed with previous technologies.

The widespread uptake of the Internet by educators has happened with such speed that university administrators have had to move quickly to regulate courses and subjects offered in this mode. There is a great deal at stake in terms of strategic positioning in the marketplace, and online delivery has now become central to universities’ strategic planning. Most now provide security of intellectual property and quality checks to ensure that the material meets each university’s standard. The formatting of courses has also been regulated in many cases, with many universities adopting course management systems such as WebCT and Blackboard, or their own customised solutions. While this has been done for reasons of quality and consistency, the effect in some cases has been to stifle teachers’ creativity in designing their learning environments, or to seduce many to adopt learning designs that owe more to didactic, behaviourist-based approaches than more innovative

designs based on constructivist philosophies. As Von Glasersfeld (1995) perceptively stated: “Behaviourism is *passé* as a movement, but some of its central notions are still very much alive ... in education” (p. xiii).

Authentic approaches to online learning design

The move towards constructivist and authentic perspectives in instructional technology shows much promise in shifting the focus of online courses to a model which is socially and culturally situated, and related more to learning in real life than learning from a traditional classroom approach (Relan & Gillani, 1997). However, to date, there has not been a great deal of research into how authentic learning might translate effectively to online learning situations, or indeed an agreed definition of what it means for a learning environment to be ‘authentic’. Our current research (cf., Herrington, Oliver, & Reeves, 2002; Herrington, Oliver, & Reeves, 2003; Herrington, Reeves, Oliver, & Woo, 2004; Reeves, Herrington, & Oliver, 2002) has sought to investigate examples of courses or subjects that use authentic tasks as a framework for the completion of entire semester courses, or large sections of them. So rather than presenting weekly study schedules, resources and intermittent tasks, the courses must present complex tasks—with little breakdown into sub-tasks and activities—requiring a sustained effort that effectively comprises a semester unit of study.

A wide-ranging literature review, principally in the areas of constructivist approaches, situated learning, anchored instruction and problem-based learning, have identified ten characteristics commonly found in learning environments described as ‘authentic’ (for a more detailed description of these elements together with full attributions of each characteristic in the research literature, see Herrington et al., 2004). These characteristics were used to select cases for investigation:

1. Authentic tasks have real-world relevance
2. Authentic tasks are ill-defined, requiring students to define the tasks and sub-tasks needed to complete the activity
3. Authentic tasks comprise complex tasks to be investigated by students over a sustained period of time
4. Authentic tasks provide the opportunity for students to examine the task from different perspectives, using a variety of resources
5. Authentic tasks provide the opportunity to collaborate
6. Authentic tasks provide the opportunity to reflect
7. Authentic tasks can be integrated and applied across different subject areas and lead beyond domain-specific outcomes
8. Authentic tasks are seamlessly integrated with assessment
9. Authentic tasks create polished products valuable in their own right rather than as preparation for something else
10. Authentic tasks allow competing solutions and diversity of outcome.

Using these criteria for the selection of appropriate courses to study, the research investigated the characteristics of authentic activity that facilitate a whole semester unit of study being encapsulated within complex tasks, and to determine the factors that contribute to the successful adoption and implementation of activity-based online course units. The criteria listed were used to select web-based courses of study that use authentic activities as a central core of their design.

Locating the courses was not easy. Originally, only cases that had been implemented for two full semesters, and cases that had been written up and

published in conference papers and journal articles were intended to be used. It was hoped this would ensure, firstly that the course had managed to survive teething problems that often present in the first run of a new subject, and secondly that the material and approach had been scrutinised and publicly defended. In order to find these cases, educational technology journals (such as *Australasian Journal of Educational Technology*, *British Journal of Educational Technology*, *Journal of Interactive Learning Research*, *Journal of Educational Multimedia and Hypermedia*, *Educational Media International*, etc.) and conference proceedings (such as the proceedings of the conferences of the *Australasian Society for Computers in Learning in Tertiary Education*, *Association for the Advancement of Computers in Education*, e.g., *E-Learn*, *EdMedia*, etc.) were systematically searched for descriptions of learning environments that most nearly matched the 10 elements derived from the literature. When few appropriate cases were discovered using this method, the search was supplemented with a web search (e.g. using *Google*, *AltaVista*, *AllTheWeb* etc.), and a database search (e.g., using *ERIC*, *ProQuest*, etc.). Finally, emails were sent to professors and leaders in educational technology at universities throughout the world, to ask if they could nominate any courses they knew that closely or nearly matched the criteria. Many of these contacts very graciously sent useful information about innovative and interesting uses of authentic tasks in online courses, and efforts were then made to contact the owners and teachers of the subjects.

The courses selected were post-secondary school (higher education) and were required to have a major online component, not simply comprise supplementary material to on-campus delivery. While whole semester courses based on authentic tasks were ideal for the investigation—and we did find some of them—in order to find enough cases, we also researched subjects that incorporated a major assignment comprising a substantial part of the subject (no less than a third of the whole subject). The courses were from a range of disciplines and levels, ranging from first year subjects to post-graduate offerings.

Authentic tasks: The learning environments

Many of the learning environments investigated in the study provide exemplars of some of the most interesting and innovative online courses available to students today. Few of the environments used expensive graphics and simulations to create their worlds (Herrington et al., 2003). Although some students complained initially about the involvement required, or the difficulty they had at first ‘suspending belief’ to enable them to become fully involved in the tasks (Herrington et al., 2002), generally students found the tasks motivating, immersive and engaging. Students in the learning environments were frequently given imaginary roles, but not in the sense of formalised role play. Authentic tasks guide all the students’ learning in the online environments. A brief description of some of the cases investigated is given below, together with a description of how each course had been transformed from a more didactic style of presentation to one where the task forms a crucial and central part of students’ learning.

Learning literature

One way to teach literature is to give students a list of books, have them analyse the text and write a paper on a particular aspect or topic. In *North American Fiction and Film*, students study novels (and films) by North American writers such as Hemingway, DeLillo, Melville, Atwood, and Esquivel in a more authentic and purposeful way. They are given the role of Editorial Board Members of an online

scholarly journal, to which they submit book reviews and articles based on their study of the text. The online journal is a real one that is published online at the end of each semester, and is edited by the course teacher. The key authentic task in this environment is to write a real piece of literary criticism for a real audience, and to make editorial decisions on the selection of papers for inclusion in the online journal. The theoretical and design framework of this course is described in more detail in Fitzsimmons (2001).

Learning research methods

Research Preparation: Research Methods was formerly taught through traditional lecture-tutorial methods, where half the course time was devoted to learning qualitative research methods and half quantitative methods. Using more authentic approaches, students now work ‘virtually’ as researchers in a graduate research centre where they investigate the closure of a rural school and the impact that this might have on the community. They go to work in an online research room and work vicariously, using the data that has already been collected by two researchers, Peggy and Brian. In the research room, students can examine school records, population data, interviews with teachers, parents and community members, newspaper reports and other documents. In this way they focus in a meaningful way on what it means to design a research study, the use of data and methods of analysis. The authentic task in this learning environment is to create a report, based on qualitative and quantitative data and analysis, to inform decision-makers about whether or not to close a school.

Learning medical examination techniques

In a multimedia resource to teach medical students issues associated with the performance of cervical screening tests, the *Sensitive Examination Technique*, described in Keppell et al. (2003), students follow the medical histories of four different patients and make choices about how they will handle each examination. The learning environment is set in a realistic doctor’s surgery, and students can navigate around the spaces according to need. The emphasis in the resource is for the students to think about the nature of the procedure and its execution from the woman’s perspective. At all times, the fostering of a positive doctor-patient relationship is paramount. The authentic task is to manage the examination of four very different female patients, and to make decisions and keep records on the diagnosis and management of each case.

Learning environmental management

Rather than using a more traditional lecture-laboratory approach to teaching environmental management, *Coastal and Marine Systems* uses authentic tasks that are typical of those faced by an environmental consultant. The course comprises three such tasks. For example, in one major task, annual monitoring of water quality is required for an established marina to ensure that its presence is not harming the marine environment. The students are provided with real data to assess whether the water quality within the marina is different to that in the ocean outside, and if so explain the possible causes. The authentic task for this part of the course is to prepare a water quality report such as might be required for the renewal of a marina license.

Learning business communication

A common method of learning how people communicate in business is to break up a subject into the types of communication that might be required, and to then teach strategies for creating such communications effectively. An alternative approach is one where students are immersed within a business, and the task they are given is so complex that they learn business communication in a natural and meaningful

way as they complete the task. In *Writing in Organizations*, the authentic task required of students is to prepare a report on whether the workplace would benefit from the introduction of an internal company newsletter. In order to complete this task, they make appointments, keep a diary, ‘interview’ the director and other employees, and write letters, and memos as required. This environment is described in detail in Pennell, Durham, Orzog, and Spark (1997).

The exception rather than the rule

In each of the five cases described above, the principal challenge has been for the course designers to think beyond the content of the course itself to the authentic use of the knowledge developed in the course. To think deeply about how professionals use knowledge and to query when and where such knowledge will be useful, is a most demanding part of task design. In effect, while teachers are often comfortable deciding on the scope and sequence of a course, and are happy to design weekly readings, activities, and assignments to test whether the material has been learnt, it is often much more difficult to do this the other way around, that is, to create a complex task, that in its completion, the critical components, strategies and skills of a subject will be learnt.

The learning environments presented here show a glimpse of how this design process can be done most successfully, through the creation of tasks that are complex, sustained and engaging. All these courses have a strong association with real-world professional practice. As such, they provide students with opportunities to think and make choices in much the same way as professionals do in their daily activities—processes that are frequently denied to students who learn from the content-based learning environments that are so prolific on the web today.

There is a widespread belief that e-learning holds the key to providing convenient, flexible, lifelong learning for the masses, and that it exemplifies the learning of the future. However, is it possible that it too could burn itself out, its ultimate fate being just another ‘technology in the cupboard’? It is arguable that if the Internet continues to be used in education to provide content, and little else, its educational significance will be diminished. As was patently clear in the research described here, it was difficult to locate cases of authentic tasks at the core of online courses. They are the exception, rather than the rule. Unless the Internet is used in education in much more creative ways to provide supportive and genuinely engaging learning environments for students, producing what (Resnick, 1987, p. 18) calls “adaptive learners” who can respond effectively to changing demands and unpredictable circumstances, it too will be assigned to the educational technology scrap heap.

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