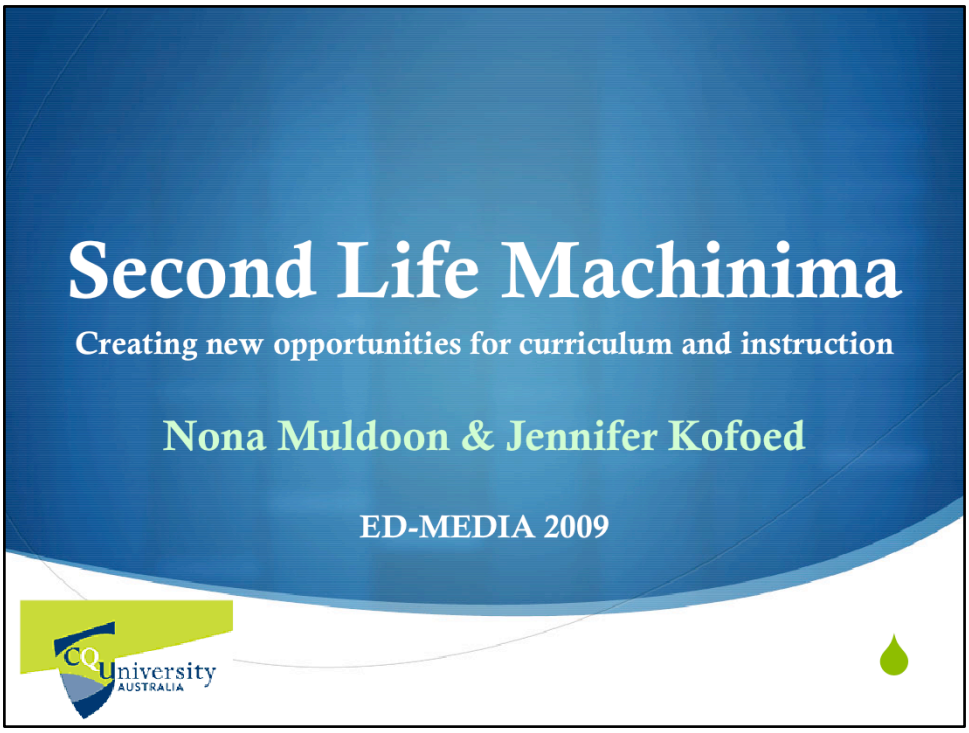
Second Life Machinima
Creating new opportunities for curriculum and instruction
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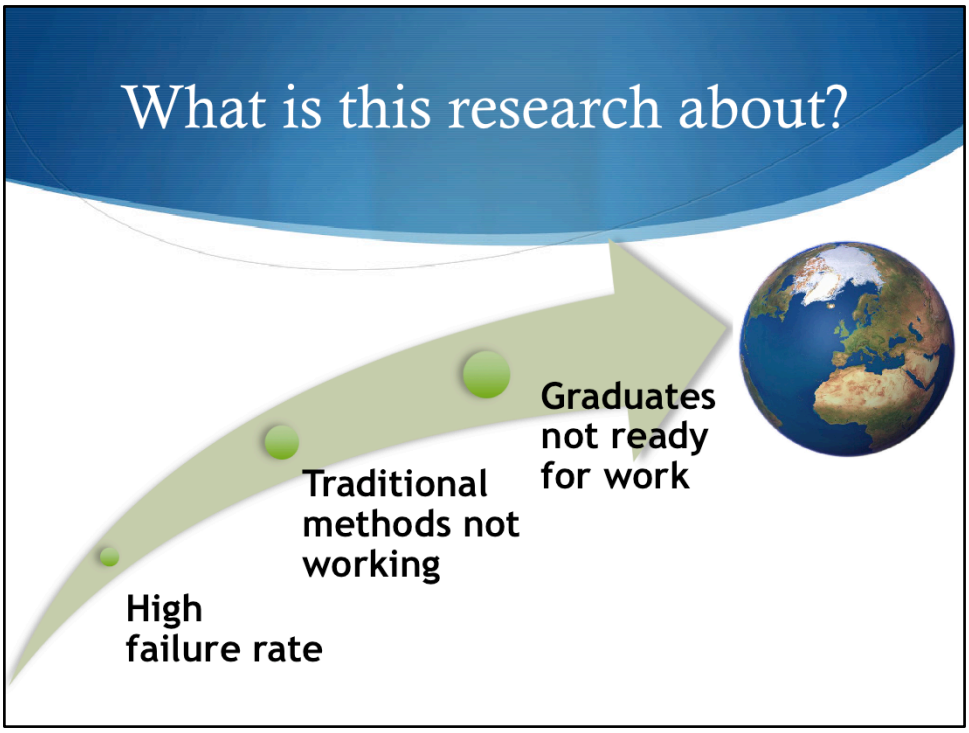
AUSTRALIA

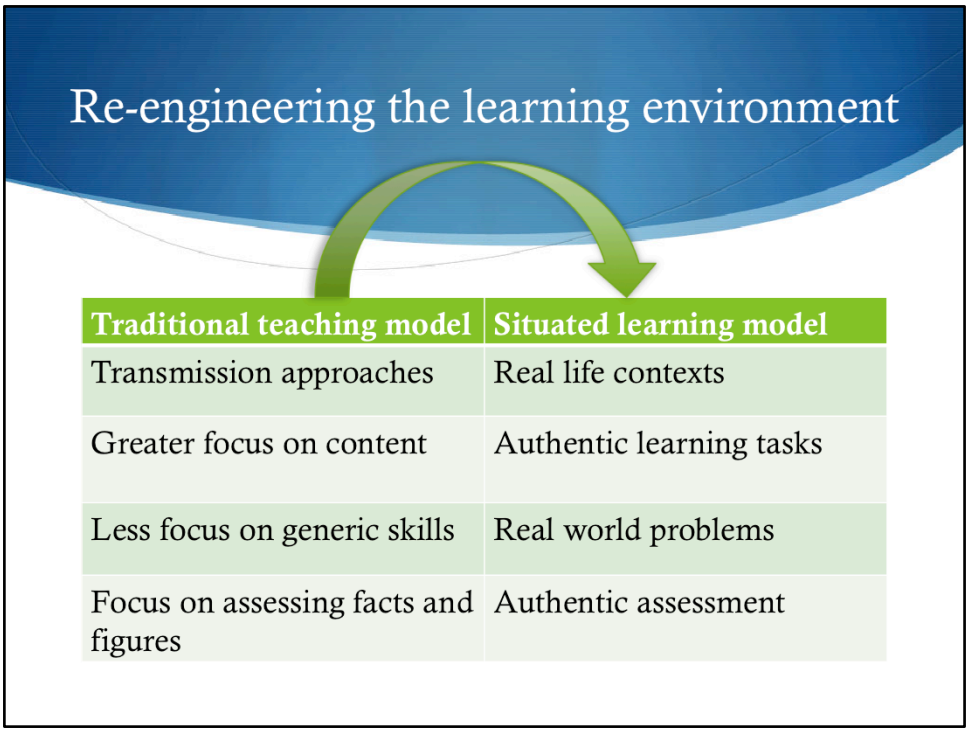


Traditional methods of instruction that embody abstracted and decontextualised development of knowledge dominate the pedagogical practices in accounting education, within which the focus is on covering content at the expense of depth, providing little or no opportunities to develop skills and attributes required in today's competitive professional work environments (Adler & Milne, 1997b; Freeman et al., 2008; Kavanagh & Drennan, 2008).

As a consequence, according to Catanach et al. (2000, p. 583), although graduate accountants may be technically proficient, many of them cannot "integrate rule based knowledge with real world problems".

Similarly Sundem (1994, p. 39) contends that, "the average graduate accumulates a storehouse of knowledge, but has difficulty applying it to real situations".

These sentiments are echoed by researchers in the education field, explaining that "much of the abstract knowledge taught in schools and universities is not retrievable in real-life, problem-solving contexts, because this approach ignores the interdependence of situation and cognition" (Herrington & Oliver, 2000, p. 23).



Re-engineering the traditional learning environment is therefore critical, in such a way that the curriculum integrates opportunities for students to perform authentic activities that practitioners and experts engage in during real problem solving situations.

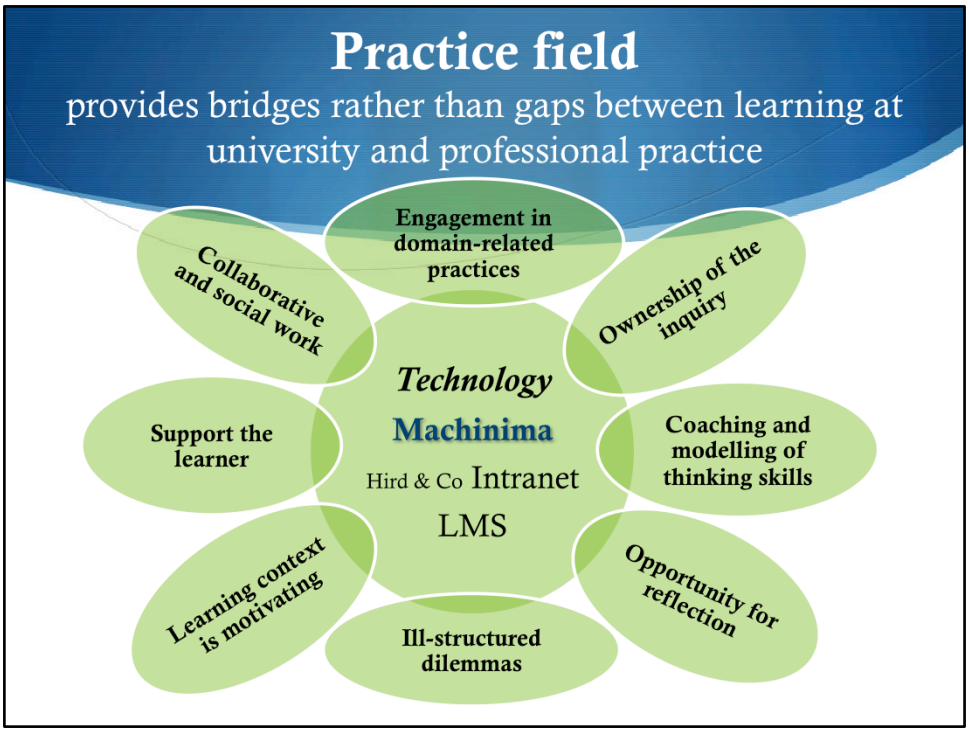
"Since authentic tasks are often problem based, students are better able to gauge what they are learning and how to use it", and indeed students "learn to respond to changes in circumstances that influence their own problem solving" (Choi & Hannafin, 1995, p. 56).

Barab & Duffy (2000) contend that the cognitive apprenticeship framework offers critical design principles for creating "practice fields".

Practice fields are contexts in which learners can perform and practice the kinds of discipline activities that they will encounter outside of formal learning environments (Barab & Duffy, 2000).

Another critical question emerged…

How can we make the student's learning experience equitable?



The design principles for creating practice fields suggested by Barab and Duffy (2000) offer pedagogical guidance for how best to harness the affordances of technology to provide learning activities that encompass all of the components of apprenticeship-style learning in the classroom.

Practice fields are contexts in which learners can perform and practice the kinds of discipline activities that they will encounter outside of formal learning environments (Barab & Duffy, 2000).

Technology according to Brown and Duguid (1996) can provide a 'window' into practice, "allowing students to look through to as much of actual practice as it can reveal…" (p. 55).

Indeed McLellan (1996) contends that technology is a central consideration in the situated learning model, as it helps designers and teachers to incorporate the critical characteristics of apprenticeship-style engagements in the design of learning environments.

Herrington and Oliver (2000) support this assertion and suggest that computer-based representations and 'microworlds' provide a powerful and acceptable medium for the critical characteristics of apprenticeship in classroom environments.

As McLellan (1996) further elaborates, the situated learning model explains that knowledge must be learned in context but that context can be a virtual surrogate of the actual work environment.

It can also be an anchoring context such as a video or multimedia program within which authentic problem solving and critical thinking in the domain can be practiced and applied.

Machinima is described by Merino (2004) as “real-world filmmaking techniques applied within an interactive virtual space where characters and events can be either controlled by humans, scripts, or artificial intelligence”.

Through the built-in video capture feature within Second Life, it is possible to use the environment to produce machinima with the same affordances for effectively creating authentic learning conditions.

Berkeley (2006) explains that machnima offers “some distinctive new possibilities for creative audio-visual narrative production” (p. 66), and that at a minimum, “it can be seen as a means of facilitating and accelerating the creative story development and storytelling process” (p. 75).

Questions about whether or not students have sufficient network bandwidth and computational power to effectively use the environment.

Second Life usage also raises organisational issues including the difficulty of getting the Second Life client installed on University computers and some campuses blocking access to Second Life at the network level.

Critically, learning how to use and navigate in MUVE may overwhelm learners' limited working memory and may hinder learning due to unnecessary cognitive load (Pollock, Chandler and Sweller, 2002).

This situation is described by Pollock, Chandler and Sweller (2002) as extraneous cognitive load, which pertains to unduly loading learners with unnecessary information.

Extraneous cognitive load is likely to occur when difficulties in navigating the environment are experienced and run the risk of diverting the focus of attention away from the direct object of learning (Marton, Runesson & Tsui, 2003).

For example, when students spend most of their time trying to learn how to navigate through the unfamiliar environment, instead of planning, writing and revising their ideas, it is hindering learning (Bransford, Brown & Cocking, 1999).

Authentic context is a critical element of the apprenticeship model, but integration into traditional learning environments such as lectures and tutorials is often challenging.

In the machinima approach, learners are exposed to a highly engaging third person experience by viewing the story, but then changes to a first person experience when learners actively engage in identifying problems and in helping to solve the main character's dilemmas.

With the same story format and characters, additional conditions can be set for individuals and/or teams of learners working together to solve a series of new challenges.

Such challenges are situated against the backdrop of authentic workplace activities and practices, within which the stages of apprenticeship are creatively entwined in the story, i.e. modeling, scaffolding and fading (Collins, Brown & Newman (1989).

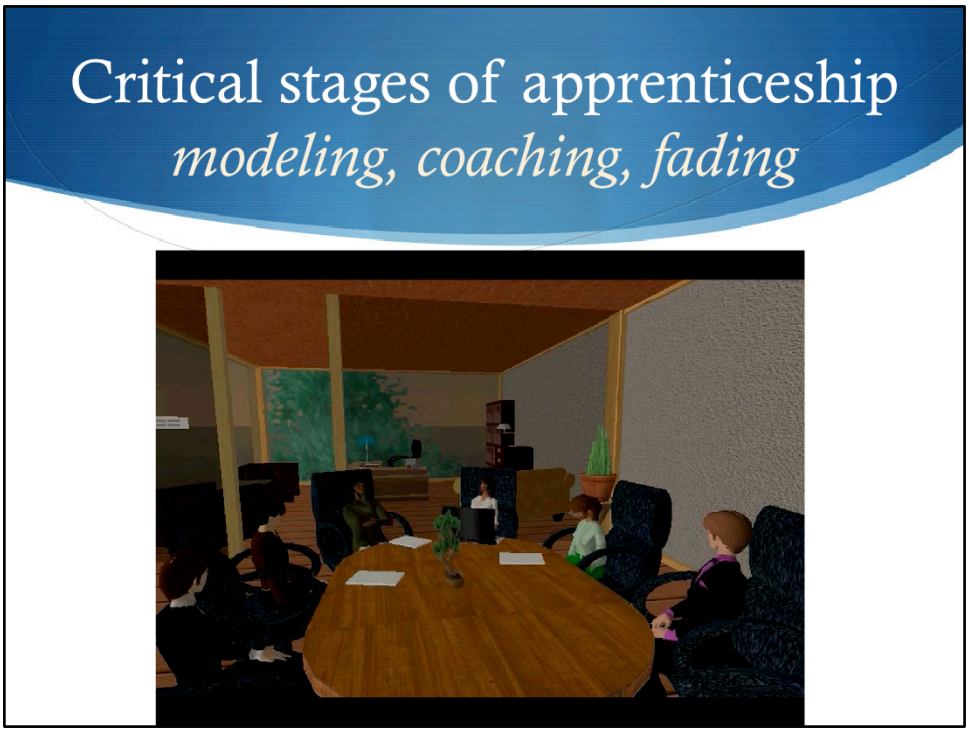
Throughout the term students in the course were required to work within audit teams comprised of four 'Audit Assistants' and two 'Audit Seniors' at a maximum.

Allocations for the role of 'Audit Seniors' changed on a weekly basis providing all students with the opportunity to develop leadership skills. For on-campus students, the 'Audit Manager' (Tutor) was responsible for ensuring that all students were assigned to an audit team during the first workshop.

Whereas, for off-campus students, the 'Audit Partner' (Course Coordinator) allocated students to audit teams based on geographical location (where possible), and ability levels.

All off-campus teams consisted of students with a range of ability levels so that all teams had a similar expected level of achievement.

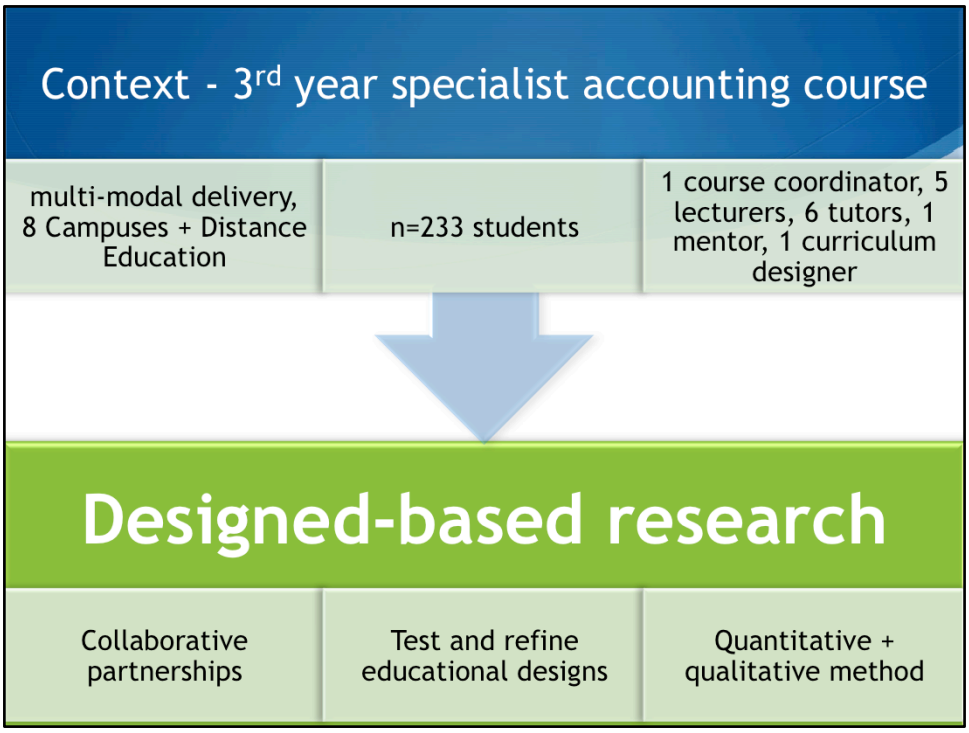
"Since authentic tasks are often problem based, students are better able to gauge what they are learning and how to use it", and indeed students "learn to respond to changes in circumstances that influence their own problem solving" (Choi & Hannafin, 1995, p. 56).



This learning model explains the situated aspect of knowledge development and clarifies the reciprocal nature of knowing and doing (CTGV, 1990; Palinscar & Brown, 1984).

In this learning context participation in practice is the main activity through which learning occurs (Lave & Wenger, 1991).

McLellan (1996, p. 103) notes the vision of Collins, Brown and Newman nearly two decades ago that "the core techniques of modeling, coaching and fading can be formalized and embedded in tomorrow's powerful personal computers, thereby fostering a renewal of apprenticeship-style learning".



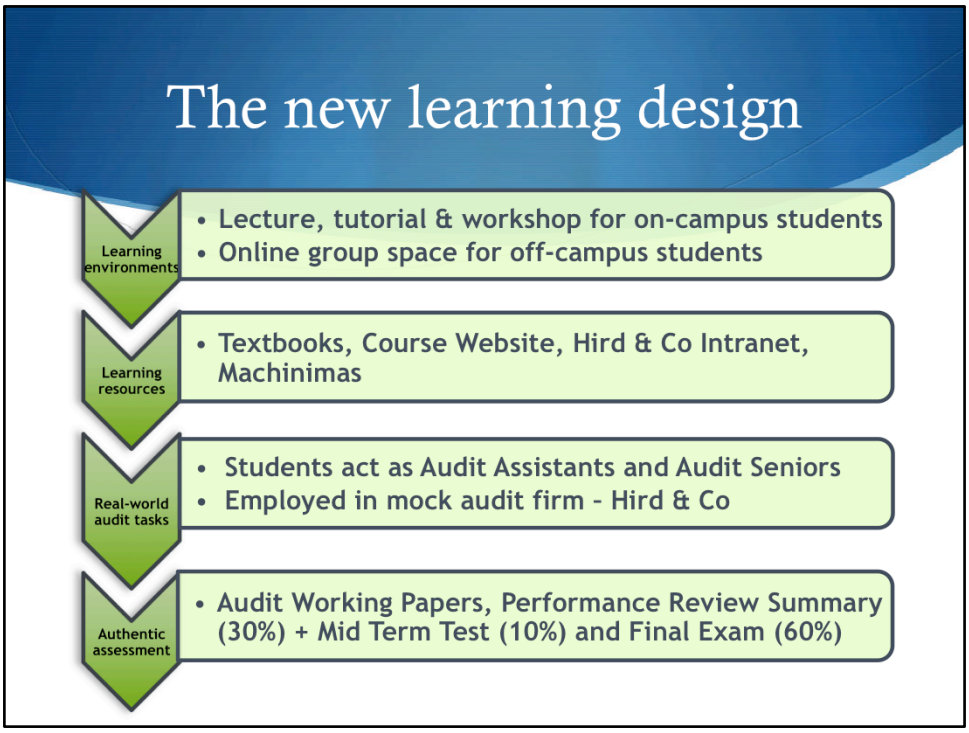
The design-based research approach guided the study, which allowed researchers "to carry out formative research to test and refine educational designs based on principles derived from prior research" (Collins, Joseph & Bielaczyc, 2004, p. 15).

This approach requires generation of multiple forms of data to document the evolution of the design and its impacts on learning and teaching. Thus, both quantitative and qualitative methods were used.

A survey questionnaire was administered to gather demographic data, as well as data on students' perceptions of their learning experiences, which were then tabulated and analysed using statistical software, SPSS.

Summary statistics generated from the course website provided useful information for tracking the students' path through the knowledge base to determine the frequency of access, which information and/or resources were accessed and what the students interacted with repeatedly.

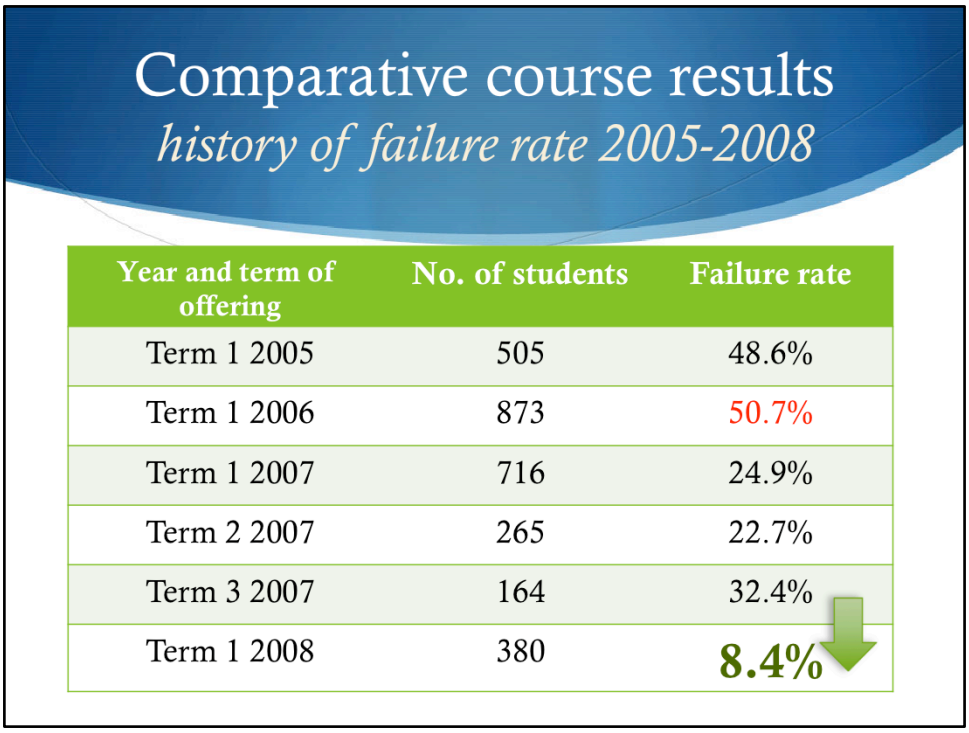
Qualitative data were collected from field notes, recorded while the first author was engaged in ongoing and dynamic observations of activities in the online environment and participation in the discussions within group spaces. Narratives through journal writing, performance review documents and portfolio submissions provided rich data for evaluating the impact of the design to student performance.



The study was implemented within the normal program of instruction, consisted of activities facilitated during lectures, tutorials and workshops for on-campus students, and self-directed and collaborative activities online for off-campus students. Students and teachers took on roles based on the typical organisational structure of audit firms, as illustrated in the machinima.

Following the idea of constructive alignment (Biggs, 2003) all learning activities and assessment tasks were linked to each other, explicitly targeting the course intended learning outcomes. Both formative and summative assessment tasks were explicitly linked to authentic learning activities.

The summative assessment consisted of a choice between mid-term test and minor team-based assessment (10%), team-based portfolio assessment with individual reflective task component (30%), and final examination (60%).



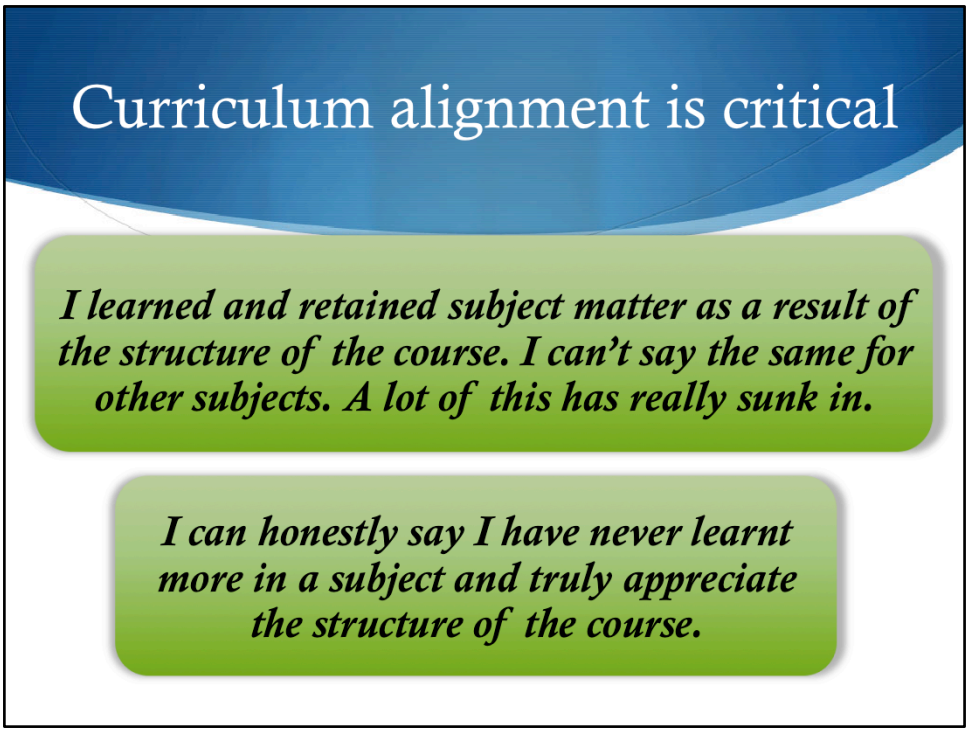
The final results of students' performance show a significant drop in failure rate.

The majority of survey respondents reacted positively to questions about active participation.

Results suggest that there was no significant difference in student perceptions of the course design enabling active engagement between students with different capability levels as indicated by prior academic performance.

The Kruskal-Wallis test indicates that the distribution shape and dispersion of responses for each of the three questions relating to active engagement are the same for students regardless of whether their commonly awarded grade is a pass, credit or distinction.

This finding suggests that the learning and teaching design used in this study is suitable for students with a range of capability levels.

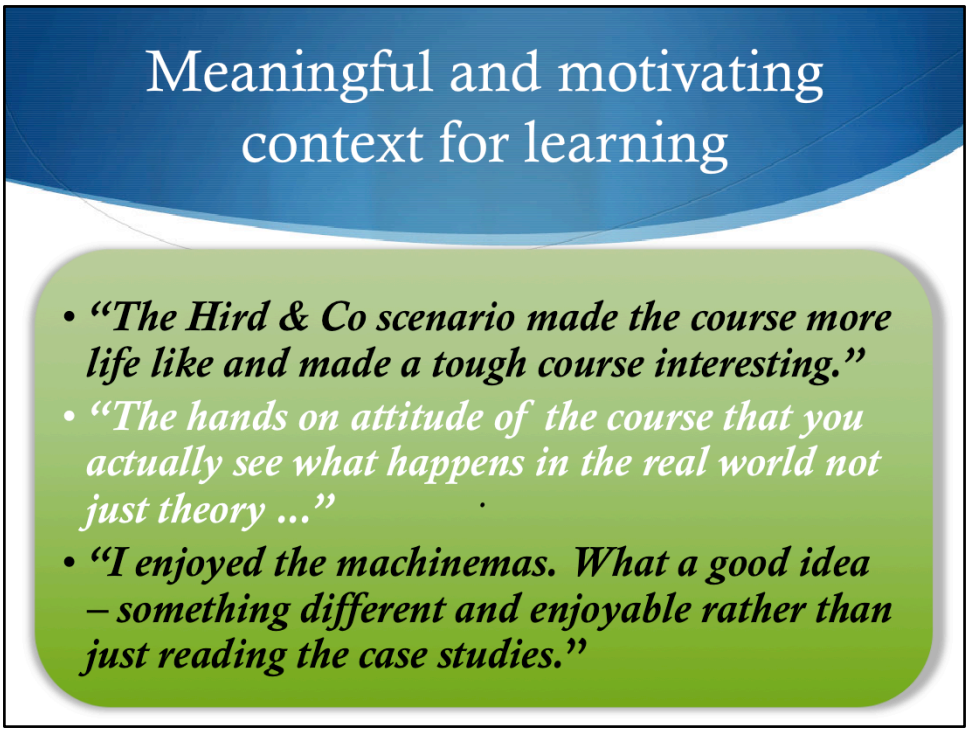


The students' reactions to the new course structure underscored the importance of an aligned curriculum in facilitating student engagement and active learning.

A common theme emerged in the survey data, journal writings and performance review documents that students perceived assessment as a critical source of motivation, and the results suggest that such motivation can indeed be harnessed through an aligned curriculum.

Because the verbs used in the outcome statements in this course were the same verbs that students enacted in the learning activities and assessment tasks, the alignment facilitated active involvement amongst students.

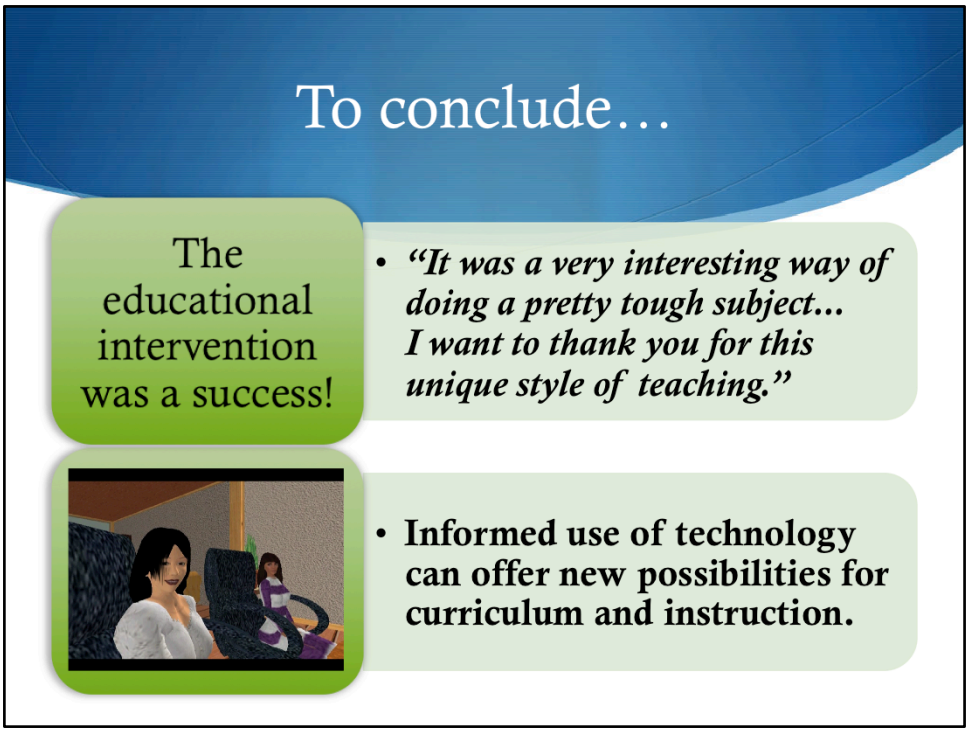
Students appreciated the linking of all curriculum elements, and acknowledged the positive impacts this has made on their motivation and learning,



The study found that the development of higher order thinking skills are best facilitated in authentic contexts that provide students with learning experiences that exemplified the values and practices of the discipline.

Findings indicate that, as students engaged to perform authentic tasks, the approach effectively facilitated active participation and collaboration.

In doing so students learned concepts in a meaningful fashion, and allowed them to relate the activities being performed in the classroom to the authentic practices of the auditing profession.



In this research project, attempts were made to engage in a program of change within accounting education, and the results of the study are promising.

It validated the value of providing practice fields in formal education settings, to enable students to practise the kinds of activities they will encounter in the workplace.

It also validated that technology has a central role in facilitating authentic learning, and that it can provide motivating contexts for apprenticeship-style interactions in the classroom.

Questions and further info…

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