Achievements Statement 2015

ENHANCING STUDENT LEARNING OUTCOMES WITH SIMULATION-BASED PEDAGOGIES

Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

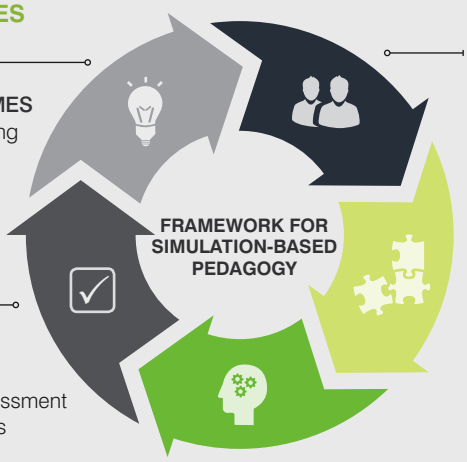
1 PROJECT AIMS

- Map the features of online business simulations.
- Assess the challenges associated with the integration of simulations into sustainable teaching practice in business.
- Evaluate the contribution of simulation-based pedagogies to student learning outcomes.
- Identify and promote innovative pedagogies and resources for using online business simulations as learning tools.

2 INFORMATION SOURCES

- Audit of 59 online business simulations from 25 different providers
- Interviews with 23 experienced business educators and four senior managers
- Student focus groups
- 1100+ student surveys across seven institutions
- Four national forums

3 KEY OUTCOMES



1. LEARNING OUTCOMES
- Applying and integrating
- Analysing and evaluating
- Planning and creating
- Collaborating

2. SIMULATION ADOPTION
- Championing change
- Managing constraints
- Understanding students
- Selecting a simulation

3. SIMULATION PEDAGOGY
- Designing authentic tasks
- Offering multiple perspectives
- Supporting collaboration
- Coaching and scaffolding

4. AUTHENTIC ASSESSMENT
- Performance and participation
- Reports and reflections
- Plans and strategies
- Team interactions

5. EVALUATION
- Engagement
- Activities and assessment
- Learning outcomes
- Satisfaction

4 RESOURCES FOR EDUCATORS

- Online Toolkit (www.bizsims.edu.au)
- Papers, Reports & Case Studies
- Simulation Learning Barometer
- Good Practice Guide

5 PARTICIPATION

FORUM PARTICIPANTS BY TYPE

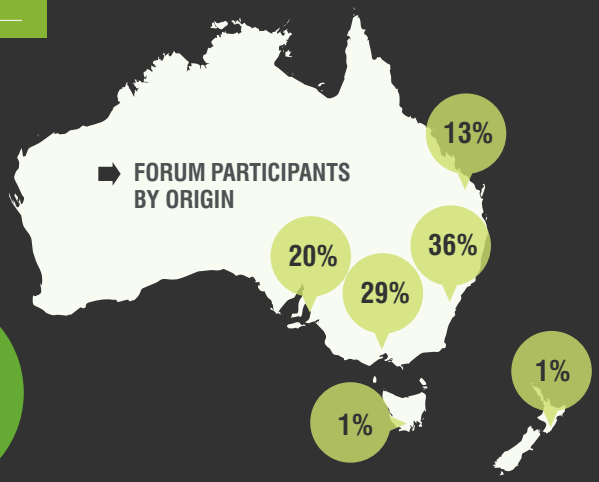
84% UNIVERSITY
- 6% Private provider
- 6% VET
- 4% Association/Company

Forum audience 147

Conference audience 342

Webinar audience 27

FORUM PARTICIPANTS BY ORIGIN



6 ONLINE ENGAGEMENT

8230 PAGE VIEWS

1630+ WEBSITE USERS

2340+ WEBSITE VISITS

650+ YOUTUBE VIEWS

7 PROJECT BY NUMBERS

5 PARTNER INSTITUTIONS
27 INTERVIEWS
12 CASE STUDIES
4 NATIONAL FORUMS
170 PROJECT COMMUNITY MEMBERS
1100+ SURVEYS
18 VIDEOS
6 CONFERENCE PRESENTATIONS

WWW.BIZSIMS.EDU.AU

PROJECT TEAM

Pierre Benckendorff
The University of Queensland

Gui Lohmann
Griffith University

Marlene Pratt
Griffith University

Paul Reynolds
University of South Australia

Paul Strickland
La Trobe University

Paul Whitelaw
William Angliss Institute

Australian Government

Office for Learning & Teaching

The University Of Queensland AUSTRALIA | Griffith UNIVERSITY | LA TROBE UNIVERSITY | University of South Australia | William Angliss Institute

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Australian Government | Office for Learning & Teaching

Enhancing Student Learning Outcomes with Simulation-based Pedagogies

Final Report 2015

Lead Institution
The University of Queensland

Partner Institutions
Griffith University
La Trobe University
University of South Australia
William Angliss Institute

Project Leader
Associate Professor Pierre Benckendorff

Project Team
Dr Gui Lohmann
Dr Marlene Pratt
Mr Paul Reynolds
Mr Paul Strickland
Dr Paul Whitelaw

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Requests and inquiries concerning these rights should be addressed to:

Office for Learning and Teaching
Department of Education
GPO Box 9880,
Location code N255EL10
Sydney NSW 2001

<learningandteaching@education.gov.au>

[Office for learning and teaching will add year]

ISBN [office for learning and teaching will add]

ISBN [office for learning and teaching will add]

ISBN [office for learning and teaching will add]

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List of acronyms

Abbreviation	Full Text
ABDC	Australian Business Deans Council
ABSEL	Association for Business Simulation and Experiential Learning
ACEN	Australian Collaborative Education Network
ALTC	Australian Learning and Teaching Council
AQF	Australian Qualifications Framework
ASCILITE	Australian Society for Computers in Learning and Tertiary Education
CAUTHE	Council for Australasian Tourism and Hospitality Educators
Griffith	Griffith University
HE	Higher Education
HERDSA	Higher Education Research and Development Society of Australasia
HOTS	Hotel Operations, Tactics and Strategy
IMPEL	Impact Management Planning and Evaluation Ladder
LTU	La Trobe University
OLT	Australian Government Office for Learning and Teaching
PBL	Problem Based Learning
PMAs	Post Meeting Actions
RWD	Responsive Web Design
SCU	Southern Cross University
TAFE	Technical and Further Education
TE	Tertiary Education
TEQSA	Tertiary Education Quality Standards Agency
UniSA	University of South Australia
UOW	University of Wollongong
UQ	The University of Queensland
UTS	University of Technology, Sydney
VET	Vocational Education and Training
VU	Victoria University
WAI	William Angliss Institute

Executive summary

This report provides a final account of the 'Enhancing Student Learning Outcomes with Simulation-based Pedagogies' (SP13-3261) project funded by the Australian Government Office for Learning and Teaching as part of the Strategic Priority Projects scheme in 2013.

Project overview

Enrolments in business fields such as management, marketing, accounting, finance, tourism and hospitality have expanded dramatically over the last decade. This popularity has resulted in large class sizes, which create challenges for encouraging interaction and skills development. There is evidence that technology enhanced learning may help to overcome some of the challenges faced by business education. In particular, 'gamification' and the use of simulations have received recent attention.

Online simulations provide experiential learning environments that replicate workplace tasks or processes to allow students to practise work relevant knowledge and skills. They allow learners to apply critical thinking and decision making skills in a non-linear environment in which decisions and actions often lead to complex and unexpected outcomes. In larger classes, simulations offer a number of advantages over other experiential learning approaches because they provide automated and simultaneous feedback, enhance student engagement, encourage authentic teamwork and allow students to apply their skills and knowledge.

This project was conducted to address a problem concerning the lack of knowledge about online business simulations. Prior to this project there was little understanding of the effectiveness of pedagogies and learning outcomes associated with simulations as a form of technology enhanced learning in these fields. This project endeavoured to specifically address a lack of knowledge about the use of online simulations in business and related fields by identifying how business educators could most effectively utilise online simulations to enhance graduate capabilities.

Project aims

The **purpose** of this project was to gather and disseminate good practice in the design of pedagogy and assessment in simulation-based units. The **aims** of the project were to:

1. Map the features and characteristics of online business simulations;
2. Assess the challenges associated with the integration of online simulations into sustainable teaching practice in business education;
3. Evaluate the contribution of online simulations and related pedagogies to student learning outcomes; and
4. Identify and promote innovative pedagogies and strategies associated with the use of online business simulations in universities.

Project approach

The project consisted of a multi-method approach divided into seven overlapping stages:

1. Project Initialisation (December 2013-April 2014): The first stage in this project involved the appointment of a Project Manager, implementation of a project management system, multi-institutional agreements, ethics applications, project branding, appointment of a reference panel and evaluation panel, and the development of an evaluation framework.
2. Literature Review and Audit (January-February 2014): A comprehensive review of the literature was conducted to identify key issues, measurement approaches and variables. This was followed by a desktop audit of existing business simulations.
3. Simulation Learning Barometer (January-June 2014): A Simulation Learning Barometer was developed from the literature and the findings of the project.
4. Data Collection (July 2014-June 2015): Data were collected from several stakeholders. Focus groups were conducted with students at two institutions. The Simulations Learning Barometer was deployed in 2014 and 2015 to collect data about the learning outcomes and team dynamics of simulation-based pedagogies. Interviews were also conducted with educators and senior university managers.
5. Design of Online Toolkit (August 2014-June 2015): Information from the previous stages was used to design the online multimedia toolkit that included a good practice guide, case studies, learning materials, assessment and evaluation tools for educators.
6. National Forums (November 2014-March 2015): A series of national forums were held with business educators in Adelaide, Brisbane, Melbourne and Sydney. A webinar was also held in March 2015 to reach a wider audience.
7. Project Finalisation (March 2015-June 2015): The final stages of the project included the completion of the final project report and planning for post-project activities.

Project outcomes and contributions

The project **deliverables** included (1) a **simulation learning barometer** for benchmarking the learning outcomes of online business simulations; (2) an **online toolkit** to increase the level of understanding about online business simulations and to provide useful resources for educators; (3) four **national forums** to disseminate and promote the findings of the project; and (4) published and planned **reports and academic papers** analysing the use of online simulations in business education based on an **audit** of 59 online business simulations from 25 different providers, **interviews** with 22 experienced business educators and four senior managers, student **focus groups** and **student surveys** across eight cohorts using the simulation learning barometer.

The project makes several key contributions regarding the learning outcomes, adoption, pedagogy, assessment and evaluation of online business simulations. These five areas form the basis for the 'Framework for Simulation-based Pedagogy'.

1. **Learning outcomes:** Simulations are particularly effective in helping learners to integrate and apply business knowledge and skills. Our findings also indicate that simulations allow students to practise analysis, evaluation, creation and collaboration skills.
2. **Simulation adoption:** Simulation-based pedagogies require tactful management of the institutional constraints and challenges that have been identified. A champion is needed

to promote and sustain the use of a simulation. Active engagement with supportive program directors, senior managers and decisions makers is a necessity. The background and needs of students should also be considered. The Good Practice Guide and companion website attempt to address the complex landscape of online business simulations by providing an online toolkit to support adoption and implementation.

3. **Pedagogy:** Key suggestions for pedagogy include the use of non-traditional pedagogy that incorporates authentic learning tasks and activities, providing learners with opportunities to experience multiple perspectives, supporting collaboration, and coaching and scaffolding learning.
4. **Assessment:** The development of higher order graduate capabilities can be encouraged by designing authentic assessment tasks that require students to practice these capabilities. Common methods included assessing team interaction; using reports and presentations to communicate proposals, plans, company performance and competitor analyses; asking students to reflect on their learning experience; or requiring students to complete a viva.
5. **Evaluation:** The project has developed a *Simulation Learning Barometer* for benchmarking and evaluating student engagement, learning activities and assessment, team dynamics, learning outcomes, and satisfaction.

Project engagement and impact

Face to face and online engagement with the project exceeded the team's expectations. Over 530 participants from 48 organisations attended project forums, webinars and presentations at conferences. The project website received over 2,100 visits from more than 1,400 users and the project's YouTube videos received over 600 views. Forum participants included educators and learning designers from public and private institutions as well as representatives of associations/companies. All team members have been able to use the findings of the project to implement changes at their own institutions, ranging from minor tweaks and refinements to the development of new simulation-based units and entire streams/majors. It is expected that within the next two years over 700 students per year will benefit from these changes. An ongoing legacy of the project is the creation of an Online Toolkit that will continue to have an impact beyond the life of the project.

Future opportunities

A number of future opportunities and ideas have arisen from the current project. The interest and momentum surrounding online business simulations continues to build. This project has generated a community of almost 200 interested stakeholders and there is scope to build on this by forming a network to act as a custodian for the project website and to continue the legacy of the project. It is suggested that simulations and other technology enhanced learning pedagogies continue to be included and supported through future grant programs. Lastly, the project team suggests that considerable efficiencies could be realised through a more coordinated approach to national teaching and learning projects.

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Chapter 1: Project overview

1.1 Context and rationale

Enrolments in business fields such as management, marketing, accounting, finance, tourism and hospitality have expanded dramatically over the last decade. This growth has largely been due to the popularity of these programs amongst international students. However, this popularity has resulted in large class sizes, which create challenges for encouraging interaction and skills development. As a result, peak industry organisations such as the Business Council of Australia have expressed concern about the employability skills of business graduates. Business education has a strong vocational and technical history. Most business disciplines have emerged from pragmatic and utilitarian traditions that have emphasised workforce skills as the cornerstone of economic competitiveness. It has been argued that this emphasis on graduate capabilities requires a reframing and rethinking of teaching practices to obtain desired learning outcomes (Biggs, 1999).

There is evidence that technology enhanced learning may help to overcome some of the challenges faced by business education (Karakaya, Ainscough, & Chopoorian, 2001). Emerging learning technologies have created new opportunities for educators to create student-centred learning environments that foster the development of graduate capabilities. The evolving use of Information and Communication Technologies (ICTs) in teaching and learning "raises a whole series of questions ranging from the appropriateness of the 'chalk and talk' paradigm, through the role of assessment, to the need to cater for different learning styles"(Holmes, Tangney, FitzGibbon, Savage, & Meehan, 2001, p. 1). In particular, 'gamification' and the use of simulations have received recent attention in a number of fields (Jones & Sheppard, 2007; Mitchell, 2004; Thompson & Verma, 2003).

Online simulations provide experiential learning environments that replicate workplace tasks or processes to allow students to practise and master work relevant knowledge and skills. They allow learners to apply critical thinking and decision making skills in a non-linear environment in which decisions and actions often lead to complex and unexpected outcomes (Bowness, 2004). Simulations are especially useful as a learning tool because they model aspects of reality in a safe environment, allowing learners to make errors that do not have real repercussions (Adobor & Daneshfar, 2006). In larger classes simulations offer a number of advantages over other experiential learning approaches because they provide automated and simultaneous feedback, enhance learner engagement and encourage productive team work (Edelheim & Ueda, 2007; Feinstein, Mann, & Corsun, 2002; Fripp, 1997).

Given these benefits, it is not surprising that a number of open source and commercial 'off-the-shelf' online simulations are available to educators. Some universities have also invested resources to create their own business simulations (e.g. Monash University's STARLab, University of Wollongong's IDLE, and UniSA's 'Ramsden' and 'Radicor' Hotels). However, prior to this project there was little understanding of the effectiveness of pedagogies and learning outcomes associated with simulations as a form of technology enhanced learning in these fields. A key observation is that previous studies have generally focussed on single units and cohorts. Many are based on small samples focussed on one stakeholder group (such as students). Furthermore, many studies are nothing more than descriptive accounts of course design and assessment. It is also clear that very few studies have examined the teamwork aspects of simulations, although the work by Roberts (1999) on team formation and composition is one exception. Much of the earlier research is also focussed on computer simulations installed on local machines rather than simulations that are accessed online.

Douglas, Miller, Kwansa and Cummings (2008) identified a lack of information and guidance for educators regarding the most effective pedagogic approaches for embedding simulations in the curriculum. Previous ALTC/OLT national teaching and learning grant projects have focussed on the use of online simulations and serious gaming in the health sciences and the built environment, with very little attention in the social sciences, management or commerce. This project endeavoured to specifically address a lack of knowledge about the use of online simulations in business and related fields by identifying how business educators could most effectively utilise online simulations to enhance graduate capabilities.

1.2 Project aims

The **purpose** of this project was to gather and disseminate good practice in the design of pedagogy and assessment in simulation-based units. The **aims** of the project were to:

1. Map the features and characteristics of online business simulations;
2. Assess the challenges associated with the integration of online simulations into sustainable teaching practice in business education;
3. Evaluate the contribution of online simulations and related pedagogies to student learning outcomes; and
4. Identify and promote innovative pedagogies and strategies associated with the use of online business simulations in universities.

1.3 Project scope

Although there are many types of online simulations, including online virtual environments such as *SecondLife*, the scope of this project was limited specifically to business simulations that encourage learners to analyse the interrelationships between the various dimensions of an organisation. The project was concerned with innovative pedagogies that enhance the effectiveness of online simulations in universities. The role of simulations in linking theory with practice in a business context was also a focus of this project.

Figure 1. Project team members (from left) Gui Lohmann, Paul Whitelaw, Paul Reynolds, Pierre Benckendorff, Marlene Pratt, Paul Strickland and Lainie Groundwater.

Chapter 2: Background literature

The project draws on the wider teaching and learning literature, the general simulations literature and the specific literature on business simulations. The theoretical basis for this project is positioned around five well-known conceptual frameworks:

1. Simulations draw on the **constructivist paradigm** wherein learners participate to construct knowledge and understanding from their experiences (Boulos, Maramba, & Wheeler, 2006). Learning through simulations enables students to learn by analysing information, making choices, and generating and testing ideas (Lainema & Makkonen, 2003).
2. Simulations are a type of **problem-based learning (PBL)** because they present a problem that has to be solved using concepts and knowledge (Anderson & Lawton, 2009).
3. The use of simulations supports an **experiential learning** paradigm and can be described by Kolb's model (Kolb, 1984), which suggests that learning occurs through a continuous four-step process of experimentation, experience, observation and conceptualisation.
4. The project is informed by recent work on **authentic learning** because simulations have the potential to work as an effective substitute for real experiential contexts by providing students with an authentic learning context (Herrington, Reeves, & Oliver, 2010).
5. The project draws on **Bloom's Taxonomy** to evaluate the learning outcomes of simulations (Bloom, Englehart, Furst, Hill, & Krathwohl, 1959).

Thavikulwat (2004) defines a simulation as "an exercise involving reality of function in an artificial environment, a case study, but with the participants inside" (p. 243). Computer simulations, virtual worlds, games, the use of cards and role playing are all forms of simulations. The literature on simulations includes several themes relevant to this project:

- Some studies have focussed on the attitudes of learners to simulation-based pedagogy. Generally, this literature suggests that participants view simulations more positively than lectures or case studies (e.g. Anderson & Lawton, 2009; Gosen & Washbush, 2004).
- Several studies have attempted to classify simulations (e.g. Feinstein & Parks, 2002).
- There has been a focus in the literature on weighing up the advantages and disadvantages of using simulations for learning (Antonacci et al., 2007; Fripp, 1997; Penfold, 2009).
- The literature has increasingly focused on understanding what participants learn from simulations. Evidence indicates that simulations are inefficient for lower order outcomes such as remembering terminology or understanding basic concepts but are effective at developing higher order skills (e.g. Anderson & Lawton, 2009; Faria & Wellington, 2004).

Many of these themes from the wider simulations literature are also evident in the business simulations literature. The following additional points are relevant to this project:

- There is evidence to suggest that business simulations result in learning, but there is a lack of evidence to support a relationship between learning and performance in the simulation (Gosen & Washbush, 2004; Wolfe & Luethge, 2003). However, Business simulations can provide learners with a good understanding of business performance metrics and can enhance their evaluation and analysis skills (Fawcett, 2002).
- Challenges of adopting business simulations include adapting to pedagogical change, professional development, technological infrastructure, learner expectations, clarifying the role of the instructor, and delivering appropriate learning spaces (Clarke, 2009).
- Like the simulation literature in general, the business simulation literature has also attempted to categorise simulations (Aldrich, 2005; Bolt, 2005; Gibson, Aldrich, & Prensky, 2006; Romme, 2002; Vinod, 2004).

Chapter 3: Project approach

The project consisted of a multi-method approach divided into seven stages. Some of these stages overlapped to ensure that milestones were achieved in the available timeframe. Table 1 provides a simplified version of the project management framework by summarising the stages and related tasks. The overarching approach involved using a number of data sources (audit, focus groups, surveys and interviews) to evaluate online business simulations as learning tools. These data sources formed the basis for engaging with our project community to share resources and disseminate key findings.

Table 1. The project approach presented in stages

Stages	Tasks
Stage 1: Project initialisation *December 2013-April 2014*	▪ Appointment of a Project Manager to assist the Project Leader. ▪ First face-to-face project team meeting. ▪ Key tasks and responsibilities of each team member confirmed. ▪ Implementation of a project management system based around meeting agendas, minutes and post-meeting actions (PMAs). ▪ Multi-institutional agreement prepared and signed by each project partner. ▪ Ethics approval was received for key data collection activities. ▪ Project branding developed, project templates designed and approved by the OLT. ▪ Evaluation panel appointed by the OLT and evaluation framework confirmed. ▪ Engagement with the Australian Business Deans Council (ABDC) Teaching and Learning Network to ensure awareness of the project. ▪ Membership of the reference panel confirmed and arrangements made for the first reference panel meeting.
Stage 2: Literature review & audit *January-February 2014*	▪ Comprehensive review of the literature conducted to identify key issues, measurement approaches and variables. ▪ Desktop audit of existing online business simulations.
Stage 3: Barometer development *January-June 2014*	▪ Key variables identified from literature. ▪ Refinement of key variables and feedback from reference panel. ▪ Pilot test with three student focus groups, followed by further refinement. ▪ Trial of barometer with three student cohorts, including use of open-ended questions to identify missing variables.
Stage 4: Data collection *May 2014-June 2015*	▪ Focus groups conducted with three student groups ▪ Simulations Learning Barometer deployed in semester 2, 2014 and semester 1, 2015. ▪ Interviews conducted with two simulation providers and 22 educators in a number of disciplines across 14 institutions. ▪ Four interviews with senior managers/decision makers.
Stage 5: Design of online toolkit *August 2014-June 2015*	▪ Domain name registration and site development ▪ Development of case studies, including text, teaching resources and YouTube videos ▪ Development of *Good Practice Guide*
Stage 6: National forums *November 2014-March 2015*	▪ Forums held in Adelaide, Brisbane, Melbourne and Sydney. ▪ Webinar hosted by *Transforming Assessment* network in March 2015 to reach a wider audience.
Stage 7: Project finalisation *March 2015-June 2015*	▪ Completion of the final project report. ▪ Planning for post-project activities and publications.

Chapter 4: Outcomes and key findings

The multi-faceted approach to the project, described in Chapter 3, allowed the project team to collect data from a range of sources to triangulate our findings. The following sections summarise the project deliverables, key findings and outcomes from these sources. More detailed analyses will be published in a series of academic papers following the conclusion of the project. These papers will be available from the project website.

4.1 Project deliverables

In line with the project aims, the project **deliverables** included the following:

1. A **simulation learning barometer** for benchmarking the learning outcomes of online business simulations.
2. A dedicated **project website** (www.bizsims.edu.au) to provide resources for educators, including a good practice guide and an online multimedia toolkit of case studies, video vignettes, assessment and evaluation tools.
3. A series of **national forums** to disseminate and promote the findings of the project.
4. **Reports and academic papers** analysing the use of online business simulations based on:
    a. An **audit** of commercial and open access online simulations in business education;
    b. **Interviews** with experienced business educators to identify intended goals, learning strategies, challenges and innovative pedagogies associated with simulations;
    c. **Interviews** with senior policy makers and resource managers to understand the institutional priorities and challenges regarding simulations in curriculum design; and
    d. A series of **student surveys** assessing the learning outcomes of online simulations and related pedagogies at several universities.

4.2 Simulation audit

The first aim of this project was to map the features and characteristics of online business simulations. To achieve this, the project team undertook an audit of online business simulations. The audit identified 59 online business simulations offered by 25 companies. In addition we became aware of several bespoke simulators developed by Australian universities, including the IDLE Simulation at the University of Wollongong, STARLab at Monash University and Ramsgate and Radicor Hotels at the University of South Australia.

Key Findings

1. *Disciplinary coverage:* Most simulations require students to consider and integrate a range of business areas (e.g. Capsim) but some simulations focus on specific areas of business such as marketing (e.g. Markstrat), accounting and finance (e.g. Mt Nebo Pumpkins, GoVenture Accounting). The 'enterprise-wide' simulations are better suited to capstone courses but sometimes individual modules in these simulations can lack the sophistication found in more targeted simulations.
2. *Teamwork:* Most simulations are better suited to learners working in teams to run a business, although a small number are designed for individual use (e.g. Ethics-LX).
3. *Industry Sectors:* A wide variety of sectors are represented, including manufacturing (e.g. CAPSIM), retail (e.g. Mike's Bikes) and service businesses (e.g. HOTS, AIRLINEOnline).

4. *Interfaces*: Most simulation interfaces are menu-driven and data oriented. Students enter decisions using dropdown boxes and text boxes. Very few online business simulations offer 3D virtual worlds. Most simulations require students to solve problems, implement decisions and analyse the results of these decisions through a series of 'cycles' until the simulation is concluded. The outcomes of decisions are reported to students using various performance metrics (e.g. financial data, balanced score cards, employee and customer satisfaction) at the conclusion of each cycle. Only a small number of simulations allow students to make decisions and view outcomes in real time. Furthermore, very few simulations are focussed on the development of personal capabilities such as interpersonal skills, ethics or corporate social responsibility (e.g. Ethics-LX, UOWs IDLE).
5. *Customisation*: Some simulations can be customised by automating or removing modules (e.g. marketing, human resources and sustainability).
6. *Pricing structures:* A range of pricing structures were evident. Some simulation providers charged a license fee per student while others provided an option for a site license. Some providers charge a once-off setup fee, while others charge a setup fee for each cohort. In some cases technical support packages may also be charged separately. Additional charges may also be applied for optional modules or assessment and testing modules.

4.3 Student focus groups

The need to conduct focus groups with students was not identified in the original project proposal but became apparent early in the project. The purpose of the focus groups was twofold. Firstly, the focus groups allowed us to collect feedback to refine the Simulation Learning Barometer. Secondly, they allowed us to gain a better insight into student attitudes and the learning outcomes associated with simulations. This contributed toward achieving the third and fourth aims of the project. Focus groups took place in May 2014 with Masters students from The University of Queensland (one group of five students), as well as undergraduate students from Griffith University (two groups with seven students in total, one high performing and one lower performing group). The focus group sessions lasted for about 30 minutes each (see Appendix B for focus group questions).

Key findings

1. *Real world experience:* There was a consensus among the interviewed students that the simulation provided them with 'real world' experience, in spite of any limitations that the simulation might have.
2. *Integrated problem solving:* Students reported that they had to use their critical thinking and problem solving skills to make sense of how individual business departments and operations impact on each other in a safe and risk free environment.
3. *Application of knowledge:* The opportunity to apply the theory learnt in the course (or an entire degree in the case of capstones) was highlighted as a unique and positive outcome.
4. *Time management:* One negative aspect identified by all students was the amount of hours they have spent on the simulation, which required constantly checking their performance and improving their decisions. Hence, time management skills were essential to successfully juggle the simulation with other teaching, work or personal commitments.
5. *Authentic teamwork:* Students observed that they worked more closely with their team members than in other learning settings because of the interactive nature of the simulation. Students also reported a higher number of hours working together than in

other group assignments. Communication between the team members was mentioned as a very important attribute for the overall performance of the group.

6. *Competition as a motivator:* While the competitive nature of the simulation motivated team members, some students highlighted that it was difficult to learn from peers outside their group, as they perceived that any help could hinder their final performance.
7. *Learning resources:* Students stated that learning resources (e.g. guidelines, manuals, videos) could be improved. They also felt that the amount of time taken to learn the simulation took up a considerable part of the course and that the simulation could be used in other courses to benefit the learning process across a larger number of weeks.
8. *Assessment*: Students used expressions like "overloaded" and "burdened" to refer to how they felt in regards to the large number assessment tasks. Students were also concerned about the fact that the simulation was done in groups, but that some major assessment tasks were submitted individually. On a positive note, students mentioned that the simulation created an opportunity to engage with a variety of authentic assessment tasks.
9. *Engagement*: It was clear that despite some concerns the students were very engaged with the simulation and enjoyed the learning experience. For example, one student mentioned: "*I think it's definitely better than any courses in the uni, because it's practical and you really make something happen and it's not only about theoretical things.*"

4.4 Simulation learning barometer

The third aim of the project was to evaluate the contribution of online simulations and related pedagogies to student learning outcomes. To achieve this aim the project team developed and deployed the 'Simulation Learning Barometer'. The Simulation Learning Barometer was designed as a benchmarking and monitoring device for measuring the impact of simulation-based pedagogies in business education. Key constructs for the barometer were identified from the literature and the survey was refined by using student focus groups, a trial and a pilot test in the first half of 2014. Feedback was also collected from the Reference Panel.

The barometer is built on the premise that the impact of simulations can be measured by monitoring different variables before, during and after the simulation. The items developed for the barometer draw together many disparate areas of the academic literature related to learning theory, learning outcomes, experiential learning, simulations, collaborative learning and self-directed learning (see Appendix C for sample surveys).

Data collection occurred from July 2014 to June 2015 in order to capture responses from a range of cohorts using simulations across several institutions. Data were collected at The University of Queensland (AIRLINEOnline), Griffith University (AIRLINEOnline, HOTS), La Trobe University (HOTS), University of South Australia (Radicor Hotel), William Angliss Institute (RevSIM), International College of Management Sydney (HOTS), University of Wollongong (IDLE). A total of 711 pre-simulation surveys and 414 post-simulation surveys were completed.

Key Findings

1. *Learning Outcomes*: Pre-simulation expectations about knowledge and skills development were higher than post-simulation evaluations (see Figure 2). In spite of this, perceived learning outcomes for both business knowledge and skills were high across all business fields and levels of Bloom's taxonomy. Students' ability to solve the case study questions improved significantly from a mean score of 3.7/7.0 before the simulation to a mean score of 4.0/7.0 after the simulation.

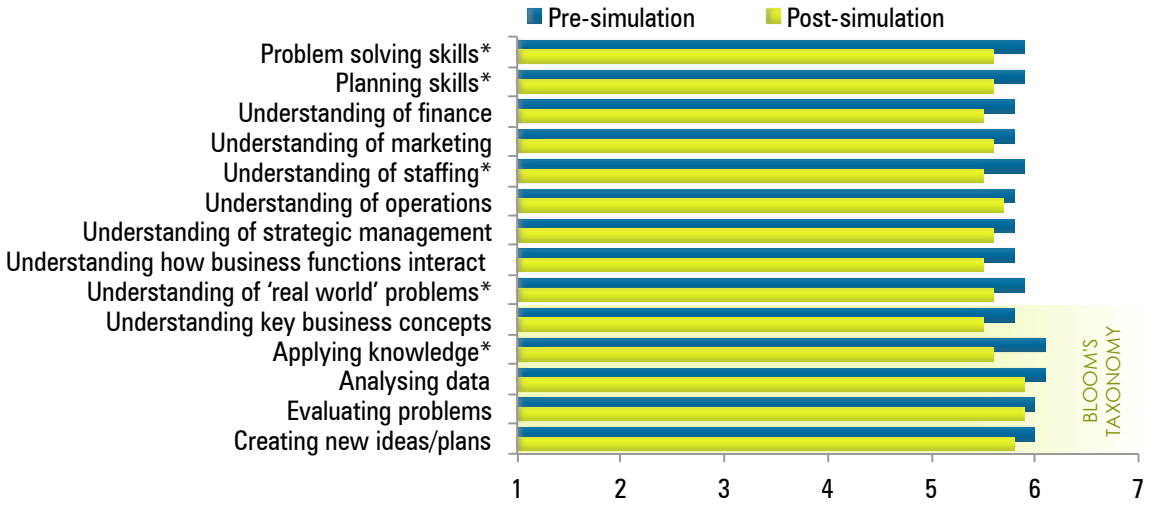

Figure 2. Student perceptions of learning outcomes
1 = Strongly Disagree … 7 = Strongly Agree; * differences are significant at p=0.05

2. *Teamwork:* Students had high expectations about developing their teamwork skills prior to completing the simulation and post-simulation evaluations indicated that these expectations were met. As Figure 3 shows, student attitudes after the learning experience surpassed expectations about the importance of teamwork and the development of teamwork skills. Students were more comfortable working in a team than they expected.
3. *Student Engagement*: Individual engagement and general levels of confidence were found to improve after the simulation.

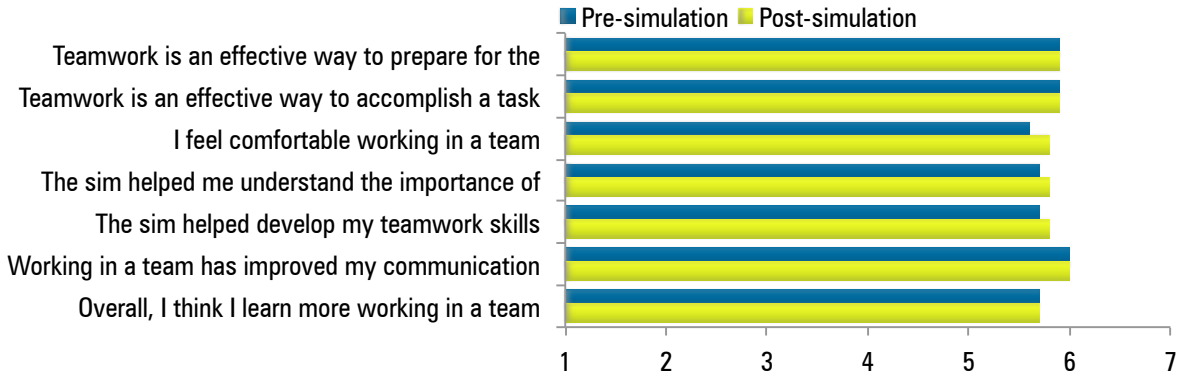

Figure 3. Student perceptions of simulations and teamwork
1 = Strongly Disagree … 7 = Strongly Agree

4.5 Interviews with educators

Interviews were conducted with two simulation providers and 22 educators from 16 institutions representing 12 different business simulations. These interviews contributed to all four of the project aims. The questions were divided into three sections (see Appendix D).

Key Findings

1. *Adoption*: The use of online business simulations is not prevalent in Australian institutions. In a few instances educators inherited courses containing a simulation but in most cases interviewees were responsible for introducing simulations themselves. The main reasons for adopting a simulation were to improve the learning experience and learning outcomes.

2. *Learning outcomes*: Most interviewees echoed the literature when asked about the learning outcomes related to their simulation. Key responses included integrating what students have learned, helping students think beyond their own discipline area to take a holistic view of business, giving students the ability to apply what they have learned, and developing and practicing skills that will help students transition to employment.
3. *Pedagogy*: Many interviewees did not use a conventional lecture/tutorial format. In fact, it appears common to have an intensive block of content followed by application of knowledge through the simulation. Class contact hours for simulation-based units were often higher than conventional units but contact hours may be managed by considering blended learning pedagogies such as a flipped classroom.
4. *Learning activities*: Several interviewees used case studies, guest speakers and class discussion to provide real world examples of what students were experiencing in the simulation. Some educators also created a wider narrative of events impacting on the simulation through newsletters and news broadcasts.
5. *Learning resources:* The resources and teaching materials used to support learning also form part of the pedagogy. Here provision of support materials such as user manuals, how-to guides, videos and flow charts are critical in conditioning students to the technical aspects of the simulation environment. Some simulation companies provide these resources but in other cases these resources must be created by the educator.
6. *Assessment*: Educators used a range of assessment techniques, including performance metrics from the simulation, business plans, reports and presentations, reflective assessment, vivas, memos, videos, wikis and student observation. A key consideration is whether students should be assessed based on the performance of their business. As the literature highlights, there may be no link between business performance and learning. For this reason some educators do not allocate any marks to the simulation itself, while others allocate only a small percentage (typically 5-15%). Another approach is to ask learners to select which metrics they wish to be evaluated on.
7. *Barriers and Constraints*: Since the interviews focussed on educators who had successfully implemented simulations very few barriers and constraints were mentioned but a few comments were made about timetabling constraints (i.e. insisting that all courses must have two hour lectures and one hour tutorials, availability of suitable learning spaces), inflexible assessment policies (i.e. timing, number and size of assessment tasks) and large class sizes. Cost was rarely mentioned as a constraint, presumably because the interviewees had successfully justified the cost of simulations to more senior managers.

4.6 Interviews with senior decision makers

The second aim of the project was to assess the challenges associated with the integration of online simulations into sustainable teaching practice in business education. To fully achieve this aim the team added to the educator interviews by conducting interviews with senior institutional decision makers. The interviews with senior decision makers were both troublesome and enlightening. A total of 13 institutions were approached: 11 public sector universities, one degree granting TAFE and a privately owned hotel school. Interviews were sought with individuals holding titles such as “Associate Dean Teaching and Learning”, or “Director of e-Learning” or similar. All had strategic and policy responsibilities and were considered senior members of their faculty or college. Upon a further explanation of the purpose of the interview all but four declined to be interviewed, with the four in question, from both public and private sectors, preferring to speak “off the record”.

Key findings

1. *Student expectations:* Interviewees acknowledged that students are increasingly comfortable with the technology (one interviewee used the term "digital natives") and had increasingly higher expectations for their learning experiences. In such an environment, the interviewees acknowledged that their institution had to do something about embracing online simulations as a means to meet student expectations.
2. *Top down approaches:* Two institutions made a strategic decision to make a substantial investment in the development and deployment of simulation based resources, and did so via a top down approach wherein senior management has made the decision, without necessarily engaging front line staff. One institution was spending well in excess of $1m on setting up "simulation suites". The other was spending even more on establishing a software authoring centre that was charged with developing a wide range of online simulation programs which will be rolled out across their institution. When asked, neither interviewee was able or prepared to talk about the level, form or nature of staff consultation that had taken place, or was planned to take place.
3. *Bottom-up approaches:* The other two institutions adopted a 'bottom up cargo cult mentality'. They recognised that such approaches needed to develop and bloom from within the teaching ranks and that the adoption of such pedagogies needed to be driven by champions. However, they had no policy, strategy or process by which such champions could be identified or supported.

4.7 Contributions to business education

It is useful to draw together all of the threads across these various deliverables and activities to address the final aim of the project: *Identify and promote innovative pedagogies and strategies associated with the use of online business simulations in universities.* It was not part of our project brief to develop 'recommendations' as such. However, key contributions can be identified regarding learning outcomes, adoption, pedagogy, assessment, and evaluation.

Learning outcomes

It is clear from the literature, interviews with educators and feedback from students that learning outcomes should drive the adoption of a simulation. Not all learning outcomes are suited to simulations and educators must consider whether other pedagogic approaches are likely to be more appropriate for achieving learning outcomes. The data collected in this project suggests that simulations are particularly effective in advanced units where the learning outcomes require learners to work in a team to integrate and apply business knowledge and skills developed across a range of earlier units. Our findings also indicate that simulations allow students to practise analysis, evaluation, creation and collaboration skills.

Simulation adoption

Several key contributions regarding the adoption of simulations emerge from the various data sources used in this project:

1. *Championing change:* The use of simulations as pedagogic tools requires a commitment from both senior managers as well as educators on the ground. Our interviews with educators who have successfully introduced simulation and our experience with the diffusion of technology suggests that front line staff need to be actively involved in not just adopting the technology but also driving it. On the other hand, without engaged proactive support from senior management any developments in a new pedagogy are unlikely to grow and be adopted more widely in the institution.

2. *Managing constraints:* There are several institutional constraints related to the adoption and maintenance of a simulation. The first and most obvious issue is **funding**. Commercial simulations are not free and bespoke simulations require time and funding to develop. Given that these simulations are often required for assessment, and given Australian legislation regarding incidental costs, most institutions are not able to pass the cost of a simulation on to students. For educators wishing to adopt simulations this means making a compelling argument to justify the additional cost of using a simulation. Other constraints identified and discussed in the Good Practice Guide include professional development for educators, technology, teaching spaces and timetabling.
3. *Understanding students:* Our interviews highlight the importance of understanding the characteristics of the learners using the simulation, including aspects such as class-size, diversity, disciplinary background, level and prior learning.
4. *Selecting a simulation:* There are a bewildering array of simulations and deciding which simulation to adopt is a major consideration. The project attempted to address this confusing landscape by providing an online toolkit to support educator adoption and implementation. As far as we are aware, this online toolkit is the only non-commercial site that provides a comprehensive listing of the range of online business simulations available to educators. Based on the audit, Good Practice Guide also outlines a number of considerations when selecting a simulation.

The findings also highlighted some gaps. Generally very few simulations offer real-time 3D virtual worlds. Most simulations are focussed on 'micro-worlds' (i.e. one company or industry sector) and few offer a 'macro-world' (i.e. many industries) perspective. Furthermore, very few business simulations focus on the development of interpersonal capabilities such ethics, corporate social responsibility, sustainability, negotiation and conflict resolution.

Pedagogy

Once a simulation has been selected it is critical to ensure that an appropriate pedagogy is developed to optimise student learning. The findings offer some rich insights into how students learn with online business simulations and how business educators can better support learning. Herrington, Reeves, & Oliver (2010) suggest a framework for authentic learning in digital environments. We have used elements of this framework to organise the implications for pedagogy that have emerged from our project:

1. *Designing authentic tasks and activities*: Authentic tasks involve clear goals with real world relevance and the production (rather than reproduction) of knowledge. The greatest challenge when designing authentic learning tasks is to ensure that students are supported without providing too much help. One approach identified from our interviews includes creating a wider narrative of events impacting on the simulation through newsletters and news broadcasts. The simulation should be embedded within these learning activities rather than appearing to be an add-on to a traditional unit.
2. *Providing access to multiple perspectives:* The simulation can be extended into the classroom and the real world by connecting events to content presented in the unit, using case studies and guest speakers to provide real world examples of what students are experiencing in the simulation.
3. *Supporting collaboration:* Although much of the simulation learning experience involves human-computer interaction the findings demonstrate that simulations are an effective tool for authentic team-based learning. These learning opportunities can be encouraged by using pedagogies such as flipped classrooms and collaborative learning techniques and readily available online collaborative tools such as wikis, Facebook pages and Skype.

4. *Coaching and scaffolding*: It takes time to learn most simulations and student learning should be supported through clear guidelines, manuals and videos. Often the simulation providers offer these resources but sometimes they need to be created by the educator. Students also need to be supported by providing resources that can help them develop strategies for time management and collaboration. Student expectations regarding assessment tasks, time commitment and teamwork should be clarified early.

A simulation-based unit typically requires more class contact time than traditional units. A strategy for dealing with the student workload generated by simulations is to reduce the workload associated with other aspects of the unit. This suggests that a unit should be redesigned with the simulation at the core so that class time and learning activities are centred on the simulation rather than introducing new content. As the recent *Business Capstones* project (PP10-1646) recommends, a focus on the integration and application of knowledge rather than new content is particularly important when the simulation is used in a capstone unit (Bailey, van Acker, & Fyffe, 2012). Non-traditional pedagogies such as flipped classrooms may also be appropriate.

Assessment

Student learning needs to be assessed and a key contribution of this project is the range of authentic assessment approaches identified from the findings. The findings clearly demonstrate that the most common learning outcomes from simulations are related to application, evaluation, analysis, creation and collaboration. These outcomes require students to demonstrate higher order skills such as *collaboration, analysis, evaluation* and *creativity*. Designing authentic assessment tasks that require students to practise these skills can encourage deeper learning (Herrington & Herrington, 1998). An analysis of the educator interviews identified the following common approaches to assessment:

1. *Performance metrics:* A key consideration is whether students should be assessed based on the performance of their business. As the literature has pointed out, there may be no link between business performance and learning. For this reason some educators do not allocate any marks to the simulation itself, while others allocate only a small percentage.
2. *Reports and presentations:* these may be done individually or in teams and include proposals, strategic plans, company performance, annual reports or competitor analysis.
3. *Reflective tasks:* these are usually completed individually and require students to maintain a blog or journal or to submit a reflective piece at the end of the simulation.
4. *Team interaction:* typically measured using conventional peer evaluation techniques or alternately by assessing videos, wikis or memos of team interactions. Teams can also be given a problem to solve in a limited time and assessment can then based on observation.
5. *Vivas:* another approach, used more commonly in medicine and applied health education is to conduct vivas based on scenarios and questions related to the simulation.

Evaluation

Implicit in our approach to this project is the need to continually evaluate whether the use of a simulation delivers the outcomes claimed by educators and students. To address the need for benchmarking and evaluation, the project has developed and shared a *Simulation Learning Barometer* for benchmarking and evaluating student engagement, learning activities and assessment, learning outcomes, team dynamics and satisfaction. It is recommended that this barometer be used alongside other feedback mechanisms such as student evaluations, focus groups and informal feedback.

A Framework for simulation-based pedagogy

We have synthesised these findings and contributions by developing a 'Framework for Simulation-based Pedagogy' (see Figure 4). This framework highlights that **learning outcomes** should be the first consideration when adopting a simulation. The framework also highlights that the **adoption** of the simulation should be embedded and supported by appropriate **pedagogy** and **assessment**. Lastly, the project has developed and shared a tool to support the **evaluation** of simulations. The five elements form the basis for the detailed ideas and tips presented in the Good Practice Guide.

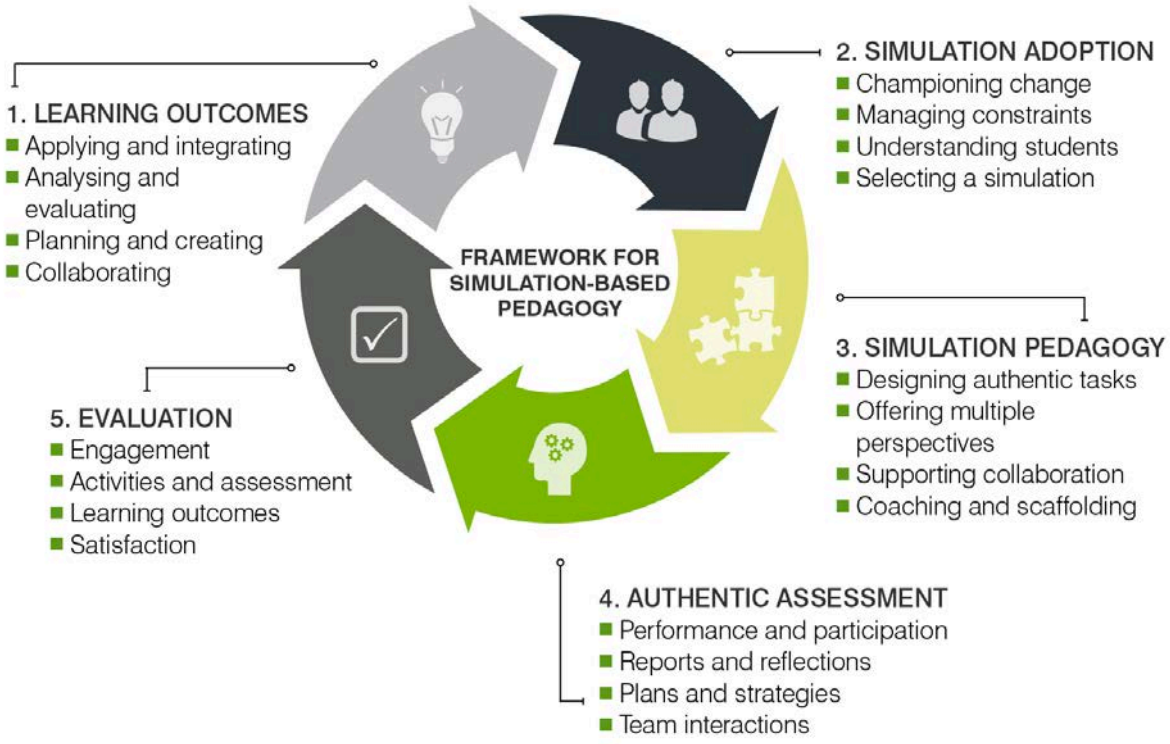

Figure 4. Framework for Simulation-based pedagogy

Chapter 5: Project impact and evaluation

This chapter provides a detailed explanation of the dissemination and engagement activities undertaken by the project team to achieve the aims of the project. The impact of project activities are reviewed using the IMPEL framework. Internal and external evaluation of the project took place throughout the project using both formative and summative indicators and these are briefly discussed at the end of this chapter.

5.1 Project dissemination

Project website

The project website (www.bizsims.edu.au) is one of the most tangible outcomes of the project and will provide an ongoing legacy of the project. The website is the main mechanism for ensuring that other educators benefit from the outcomes of the project. The website provides a range of resources that will demystify the process of adopting and embedding a simulation in a business unit. These resources include:

1. An **A-Z index** of online business simulations as well as more detailed profiles for some of the more popular simulators.
2. A series of 12 detailed **case studies** describing the key features, background, learning aims, pedagogy, assessment, resourcing and learning outcomes of simulations that have been successfully adopted in a range of business units.
3. The **Simulation Learning Barometer**, including downloadable files of survey items in various formats as well as benchmark data.
4. A **Good Practice Guide** providing background information and tips for developing simulation-based pedagogies and assessment. The guide has been professionally designed and is available as a PDF file on the project website.
5. An **assessment** section providing tips and ideas for designing assessment to optimise learning from online business simulations.
6. A **resources** section provides newsletters, videos and archived content such as videos, slides and transcriptions of the project forums and webinar.

The website makes use of Responsive Web Design (RWD) to provide an optimal viewing experience across a wide range of devices (from desktop computers to tablets and smartphones). Web analytics and other impact factors are presented in Chapter 6.

National forums

The Project Manager spent a great deal of time creating a contact database of heads of school, program directors, directors of teaching and learning, associate deans of teaching and learning and educational designers. The database included universities as well as the vocational education sector and private education providers. This database was used to introduce the project and to invite participants to the forums. The forums were also promoted through social media channels, university newsletters as well as the networks of our sister projects (funded at the same time).

An initial forum program was developed for Brisbane (hosted by Griffith University), Melbourne (hosted by William Angliss Institute) and Sydney (hosted by Sydney University) based on the theme of business graduate capabilities (see Appendix E). Rather than focussing exclusively on online business simulations the Reference Panel suggested a format that included a showcase of three projects focussed on business graduate capabilities. These projects included the Integrated Business Consulting project at UTS (presented by A/Prof

Christine Burton); the ALTC Business Capstones Project (presented by Associate Professor Janis Bailey and Dr Elizabeth van Acker); and the current project (presented by A/Prof Pierre Benckendorff). Showcase presentations were followed by a panel session and a 90 min interactive workshop focussed on the simulations project (see Appendix F for forum slides). Attendees in Brisbane and Melbourne were also able to participate in a demonstration of a business simulation. These forums were held in November and December 2014.

Following the success of these forums the project team were invited to present another forum in Adelaide in March 2015. Although the original project proposal only included three national forums the budget was able to accommodate a fourth forum in Adelaide focussed on transforming teaching and learning using simulations.

Figure 5. Dr Gui Lohmann presenting at the Adelaide Forum

In order to reach a wider audience, a webinar was organised as part of the 'Transforming Assessment' network led by Prof Geoff Crisp and Dr Mathew Hillier from The University of Queensland. The webinar included participants from around the globe and generated a great deal of 'chatter' during the 50 minute presentation. Evaluations were very positive, as the following comment illustrates: "*It was so timely for my needs! About to start looking at business simulations for online subjects, and currently know *nothing* about them, so session was perfect for me, and the project website looks just what I need to follow up on. Thanks!*"

In total, 174 academics and educational designers participated in these forums and the webinar. The forums generated further interest in the project and provided an important platform for promoting the project website and online resources. All of the forums included learning designers working with academic staff to implement teaching and learning innovations, potentially increasing the impact of the project. For example, one participant at the Adelaide forum noted on her evaluation: "*I'll take ideas back to my school on how these sims could be incorporated into courses and especially a capstone course which we are currently developing.*"

Research and publications

Given that academic papers are often written at the end of a project and the peer review process requires additional time the project team has focussed on the collection of data to support the publication of papers after the funding period. While the timelines do not allow for academic publications within the funding period, the team has been active in disseminating the project through various conference presentations. The project was

showcased at a number of national conferences and forums by supporting activities, events and sessions that raise the profile of the project. Table 2 provides a summary of completed and planned presentations, publications and reports.

Table 2. Project presentations, publications and reports

Working Title	Type	Target/Source	Status
Project Overview	Presentation	*OLT Conference, Sydney*	Presented 06/2014
Online Business Simulations	Presentation	*Joint Universities Research Symposium, SCU*	Presented 08/2014
Online Business Simulations	Presentation	*Griffith University Celebrate Teaching Week Active Learning Session*	Presented 11/2014
Online business simulations and AIRLINEOnline	Presentation	*Griffith University Celebrate Teaching Week 'Fire Up' Session*	Presented 11/2014
Technology enabled learning: Can it enhance the student learning experience?	Sharing Practice Session	*ASCILITE Conference*	Presented 11/2014
Creating educator resources for online simulation-based pedagogies in tourism and hospitality	Refereed Conference Paper	*CAUTHE Conference*	Presented 2/2015
Good Practice Guide: Online Business Simulations	Report	*Project Website*	Published 6/2015
Transforming learning and assessment with online business simulations	Full Journal Article	*Journal of Management Education*	Draft by 7/2015
Teamwork and online business simulations	Full Journal Article	*Academy of Management Learning and Education*	Draft by 7/2015
A bibliometric analysis of the business simulations literature	Full Journal Article	*Education + Training*	Draft by 8/2015
Learning outcomes of online business simulations	Full Journal Article	*International Journal of Educational Research*	Draft by 9/2015
Modelling satisfaction and academic performance associated with online business simulations	Full Journal Article	*Academy of Management Learning and Education*	Draft by 10/2015

5.2 Project engagement

A concerted effort was made to establish a project community. At the conclusion of the project this community included 170 participants from 48 different institutions and organisations, including 28 Australian universities and three New Zealand universities, five private education providers, one VET provider and eleven other companies and associations. Project team members engaged with stakeholders by undertaking a number of activities to raise the profile of the project. These activities included the national forums and webinar, the project website, conference presentations, social media and newsletters. Table 3 provides a summary of major presentations. The number of participants at the project forums far exceeded the expectations of the project team. It would be fair to say that there is considerable interest in the use of simulations in business education and that many participants had not yet implemented a simulation at their institution. More detailed evaluations for the forums held in Adelaide, Brisbane, Melbourne and Sydney are provided in Appendix G, while an evaluation report for the webinar is provided in Appendix H.

In terms of reach, the forums organised by the project in Adelaide, Brisbane, Melbourne and Sydney attracted 174 educators and learning designers. Support staff (mainly learning designers) were the largest group, accounting for 38 per cent of participants. 28 per cent of participants were lecturers and 17 per cent were senior lecturers. The academic audience included nine associate deans with teaching and learning responsibilities. Universities were well represented, with 84 per cent of the audience but our efforts to widen the project

community also attracted private education providers (6.5 per cent), VET teachers (5.6 per cent) and various other associations and organisations (4.2 per cent). Not surprisingly most participants were from New South Wales, Victoria, South Australia and Queensland but a small number of participants travelled from interstate and subsequently the forums reached participants from all Australian states as well as the ACT and New Zealand. The webinar conducted in March further widened the reach of the project.

Table 3. Major face-to-face and online engagement activities

Event	Date	Venue	Participants
OLT Conference	10-11 June 2014	Darling Harbour, Sydney	200
Southeast Queensland Joint Universities Symposium in Tourism and Hospitality	7 August 2014	Southern Cross University	17
Griffith University Celebrate Teaching Active Learning: Engaged and Engaging	5 November 2014	Griffith University	22
Griffith University Celebrate in Teaching Week 'Fire Up' Session	7 November 2014	Griffith University	76
Sydney Forum	10 November 2014	The University of Sydney	34
Melbourne Forum	11 November 2014	William Angliss Institute	55
Brisbane Forum	3 December 2014	Griffith University	25
ASCILITE	23-26 November 2014	Otago University, New Zealand	27
CAUTHE	2-5 February 2015	Southern Cross University	15
Webinar	4 March 2015	Transforming Assessment Series	27
Adelaide Forum	27 March 2015	University of South Australia	33
TOTAL PARTICIPANTS			**531**

Google Analytics was used to track engagement through our project website. Table 4 provides a summary of key web metrics. Likewise, engagement with the content (see YouTube views presented later) has been very positive.

Table 4. Google Analytics for www.bizsims.edu.au (at 4 June 2015)

Metric	Performance
Sessions	2,342
Users	1,630
Page views	8,237
Pages/Session	3.52
Avg. Session Duration	03:15
Repeat Users	30.4%
Top 5 Countries	Australia (70.0%), USA (6.9%), UK (3.3%), NZ (3.0%), Germany (1.0%)
Sources	Direct URL entry (67.7%), search engines (17.1%), referrals (10.5%), social media (4.7%)

Various strategies were used to drive traffic to the website, including flyers, presentations and posters at conferences, the national forums, social media announcements, Wikipedia entries and information posted on related websites. About half of all referrals were generated from our Wikipedia entries but websites such as acen.edu.au and transforming assessment.com were also important traffic generators. At the conclusion of the project the website was ranked 8th when searching Google for 'online business simulations' and 'business simulations'. This ranking is important because 17% of all traffic to the project website was generated from search engines. The website will continue to be hosted by the UQ Business School and will be maintained by the Project Leader until at least 2020 as required by the OLT.

A number of social media platforms were also used to engage with the project community. Engagement across most social media channels was disappointing with only seven followers on twitter, 10 members on Facebook and 17 members on LinkedIn and YouTube. A more effective social media strategy involved using existing social media interest groups (e.g. ACEN,

CAUTHE, ASCILITE) to announce project activities. In total 4.7% of all website traffic originated from social media activities, with LinkedIn accounting for the bulk of social media referrals.

Although the traditional social media platforms were less effective at engaging stakeholders YouTube proved to be very effective in communicating various aspects of the project. We have found that online videos were an effective medium for sharing case studies, demonstrations and recordings of forums and webinars. Collectively, videos from the project's YouTube channel have received over 600 views, with 56% of these views generated from the YouTube channel and the remainder generated from the project website. This view count includes 98 views for the webinar video hosted on the *Transforming Assessment* Channel. More detailed statistics are presented in Table 5.

Table 5. YouTube Metrics (at 4 June 2015)

Metric	Performance
Videos	18
Views	650
Minutes watched	1,179 minutes
Average view duration	2:08
Top 5 countries	Australia (59%), USA (5.8%), UK (5.2%), Switzerland (4.6%), Germany (2.4%)

5.3 Project impact

The impact plan was developed around the seven main prompts of the IMPEL framework.

1. Indicators of readiness for change

New tertiary education quality standards frameworks have emphasised the need for innovative pedagogies that require learners to demonstrate the application of knowledge and skills and educators are increasingly looking for new ways to engage learners. The level of engagement and enthusiasm of participants from a broad section of the business education community was an indication of the climate of readiness to change. Some of the forum attendees were educators already using simulations with an interest in improving their pedagogy and assessment but many were new to online simulations. It is evident from participant feedback that many educators were surprised by how much the sophistication of business simulations has advanced in the last 5-10 years.

Forum attendees also included program directors and learning designers who guide and support educators to implement innovative pedagogies. Here too the feedback was that this project was very timely as many institutions were reviewing programs and considering the role of simulations, particularly in capstone courses. As noted in the original proposal, there was also an acknowledgement from several participants that Work Integrated Learning was not always a practical or desirable means for learners to acquire real world experience and simulations are seen as an alternative pedagogy for achieving some of the same outcomes.

2. Impact management planning and evaluation ladder (IMPEL)

This project will benefit stakeholders at multiple levels in a number of ways. Appendix I summarises the anticipated impact of the project using the IMPEL model. Note the time horizon has been extended from two years in the original IMPEL model to five years because of the nature of this project. Most public universities operate on 3-5 year curriculum review cycles and it is anticipated that many institutions will only enact changes when programs are reviewed as part of normal internal cycles. As part of the final project debrief each team member was asked to provide an impact statement describing how the project has impacted on their own institution. Table 6 summarises the key changes that have been enacted already as a result of the project.

Table 6. Project impact at participating institutions

Institution	Impact
The University of Queensland	• Based on the project outcomes, A/Prof Benckendorff has adjusted the pedagogy and assessment in his postgraduate course to further improve the learning experience for students. • The success of this OLT project has generated other OLT grant opportunities. • Introduction of a bespoke simulation in the first year accounting course • Preparation underway to introduce a new simulation in a strategic tourism management unit.
Griffith University	• Based on the project outcomes, Dr Pratt has adjusted the pedagogy and assessment in her undergraduate graduate course to further improve the learning experience for students. • Dr Lohmann is extending his aviation management simulation to a corporate training environment. The first course is being developed for the Airport Council International (ACI), the world peak airport body, as part of their executive program delivered in November 2015.
La Trobe University	• After participating with the OLT project, Mr Strickland has made changes to the assessment in his undergraduate course to create a better blended learning experience for students.
University of South Australia	• Based on the project outcomes, Mr Reynolds has adjusted the pedagogy and assessment in her undergraduate graduate course to further improve the learning experience for students.
William Angliss Institute	• Currently developing an suite of integrated units of study based on an online hotel simulation.

In addition, several forum participants have emailed members of the project team seeking more information about various aspects of the project because they are planning to implement a simulations-based course at their institutions.

3. Stakeholder engagement

The project team coordinated a range of activities to engage with various stakeholders who might benefit from the project. These activities are described in more detail above (see Project Engagement) but in brief, engagement through face-to-face forums, conference presentations and social media discussions have been one of the highlights of the project. In some cases participants have travelled from other states and countries to attend the forums. The project has brought together associate deans, educators and learning designers to share ideas about how simulations can enhance the learning outcomes of business programs. Engagement has occurred across a wide spectrum of institutions from private education providers to Go8 universities. Presentations at international conferences such as ASCILITE and CAUTHE have profiled the project with a wider audience, often outside the business field. Likewise, the webinar has attracted interest from as far afield as the UK. Individuals who could not attend face-to-face sessions have been provided with slides, video recordings and transcripts of the forum. The project team has also engaged positively with the ABDC Teaching and Learning Network. Finally, the project website has provided a critical repository for all project materials and resources and this will be maintained well after the conclusion of the project. Statistics and attendance numbers for these various engagement activities are detailed in other parts of this report.

4. Project transfer

A 'life beyond the project' legacy arrangement is currently being considered. We have initiated discussions with the Association for Business Simulation and Experiential Learning (ABSEL) based in the USA as well as Simulations Australasia about using the community of practice that has been created around the project to create a new network. The ABDC has also indicated an interest in profiling the project on its website and as noted earlier, the project website will continue to live on as a legacy of the project.

5. Barriers to change

A number of barriers to change have been identified throughout the project and as a result of formal and informal feedback. Table 7 summarises the barriers to change in teaching and learning practice and the strategies proposed by this project to reduce the barriers.

Table 7. Barriers to change

Barriers	Strategies
Difficulty embedding standards	Reduce the workload associated with embedding simulations by creating templates, case studies, easy to use guides and shared resources. Facilitate workshops to demonstrate how simulations can be mapped and embedded into programs to enhance graduates capabilities.
Resistance to change	Simplify the process of embedding simulations and convince stakeholders of their benefits through presentations, publications and networking.
Lack of awareness	Use social media tools, existing networks and open education resource repositories to build awareness.
Lack of funds	Develop arguments that educators can use to justify the value of funding simulations

6. Tracking impact

Both formative and summative indicators were used to monitor the impact of the project. An external evaluation team was engaged to help guide projects funded in the same cluster. The online engagement metrics and the number and type of participants at forums and workshops all provide indicators for tracking impact.

7. Availability of materials

The project website will remain in place for at least five years and will be linked to key organisations including the ABDC, ACEN and other organisations. Materials and resources will be maintained and updated by the Project Leader and the website will be hosted free of charge by the UQ Business School. These resources will include case studies, simulations index, the simulation learning barometer, benchmarking data, papers and reports.

5.4 Project evaluation

Opportunities for both internal and external evaluation and formative and summative evaluation were embedded within the project's development. Internal formative evaluation of progress, content, design and deliverables occurred regularly via teleconferences. Three documents were generated for each meeting: an agenda, meeting minutes and post meeting actions (PMAs). The PMAs were reviewed at the start of the subsequent meeting to ensure that the project was progressing. Other formative evaluations have included:

- Continuous feedback from and reference panel;
- Feedback from project manager, who also has experience with other OLT projects; and
- Feedback from participants at conference presentations and forums.

An external evaluation team consisting of Professor Grace Lynch, Geoffrey Edlund and Dr Garry Allan was appointed by the OLT to evaluate the project. The evaluator's key tasks were to monitor the processes of the project and compare them against planned processes, to monitor the achievement of milestones as specified in the project plan, to continuously provide feedback that enabled the project team to make improvements (formative evaluation), and to provide a final written report to the OLT objectively assessing the merits of the project retrospectively. An evaluation framework was developed by the evaluation team in consultation with the Project Leader (see Appendix I). The external evaluators consulted with the project team by videoconference, email exchange and in person during the project, especially at milestone activities such as the national forums. The project team would like to thank the evaluators for their constructive engagement and the detailed and very helpful evaluation report presented in Appendix J.

Chapter 6: Conclusions

In concluding this report, the project team would like to draw attention to the challenges and success factors identified during the project as these may be of value to future projects. We have also identified links to other OLT projects and have suggested future opportunities both for simulations-based research and for the coordination of national teaching and learning projects. A final conclusion is provided to reiterate the key contributions of the project.

6.1 Challenges and success factors

The project team would like to highlight five challenges and lessons learned from the project:

1. *Timelines:* An initial challenge was the announcement of a successful grant outcome in early December. The search for a Project Manager commenced almost immediately in December but a capable and dedicated Project Manager was only appointed in early February. The timing of the project's commencement meant that it was difficult to get all of the team members together for the first face-to-face meeting and this resulted in a lack of momentum at the start of the project. The team overcame these timing issues by meeting in smaller teams to work on specific deliverables.
2. *Online presence:* The website was launched about four months later than originally planned and this delayed other activities because the website not only provides prompt dissemination of information, but also attracts early interest in the project. In hindsight, it would have been beneficial to prioritise the development of the website.
3. *Social Media:* We were disappointed by the lack of engagement through social media channels. In hindsight it would have been useful to establish a social media presence much earlier in the project but we were reluctant to do so before the website was launched. The key lesson is that a strategy is needed to drive traffic and engagement on social media. Given the traffic generated to our website by these different platforms we would suggest that future projects only consider LinkedIn and YouTube.
4. *Data Collection:* The initial response to the Simulation Learning Barometer in the second half of 2014 was poor. There were two reasons for this: (1) partner institutions offered fewer simulation-based courses during this time, and (2) although the barometer was available both online and in paper format most educators opted to use the online version. In order to improve the number of responses the project was extended and paper-based surveys were used more heavily, ensuring a higher response rate.
5. *Forums and conference presentations:* The single most important lesson is the need to network, to talk with colleagues, and to present ongoing work to generate momentum and build the project community. The national forums were an excellent way to generate case studies and learn about innovations and ideas but these were conducted towards the end of the project, creating many new leads to follow up in the final months.

There were also a number of factors critical to the success of the project including:

1. *Project Management:* An experienced Project Manager was appointed reasonably soon after the project commenced and this provided an opportunity for her to attend the OLT's Project Manager workshop to network with other Project Managers and OLT staff.
2. *Post Meeting Actions:* Accurate records of decisions and actions are useful for moving the project forward. The use of PMAs has been invaluable in keeping track of key tasks and responsibilities. This 'to do' list was an innovation of our Project Manager and was instrumental in holding various team members accountable for key tasks.

3. *Email Communications:* Setting up a dedicated project email using Gmail in January 2014 allowed us to contain and manage all project communications. The bizedsims@gmail.com address was used throughout the project to maintain consistency. The project inbox contained over 2,600 email messages by the conclusion of the project.
4. *Team Collaboration:* A shared Dropbox folder was used to share all documents between team members. This ensured that the most recent versions of documents were always available to everyone. The project generated over 1,600 files (30GB). Regular meetings with the project team, followed by less formal events helped to build camaraderie and respect which allowed the team to function effectively. The team also used virtual meetings and smaller face-to-face meetings to progress specific deliverables. After some trial and error *zoom.us* was selected as the virtual meeting platform.
5. *Stakeholder awareness:* Investing time in building a database of contacts that would later be used to promote the project and engagement activities. Presenting the project to the Australian Business Deans Council Teaching and Learning Network at an early stage helped in building awareness at senior levels.

6.2 Links with other OLT projects

Past ALTC/OLT projects focussing on the use of simulations and serious gaming in the health sciences and the built environment have had limited transferability to a business education context. However, a number of less obvious links with other OLT projects and fellowships have become evident during the course of the project. These include:

1. PP10-1646 Capstone courses in undergraduate business degrees: better course design, better learning activities, better assessment (2010). Simulations are often used in capstone courses and there are clear parallels between the findings of this project and some of our own findings.
2. SD12-2578 Reforming banking pedagogy with online simulation (2012). Dr Jean-Pierre Fenech's Seed Project provides a useful case in the implementation of a business simulation with a banking and finance focus.
3. Capstone curriculum across disciplines: synthesising theory, practice and policy to provide practical tools for curriculum design (2015). A/Prof Nicolette Lee's fellowship on capstone courses also links with this project for the reasons discussed above.
4. Rethinking Assessment in the Participatory Digital World: Assessment 2.0 (2011). Prof Geoff Crisp's fellowship provides much of the justification for the current project and the resources generated by this fellowship have been invaluable in supporting our activities.

The current project also links with various efforts to develop Threshold Learning Outcomes for the business fields. Based on our findings, simulations can play a critical role in developing some of the learning outcomes that are difficult to achieve with traditional pedagogies.

6.3 Future opportunities

A number of future opportunities and ideas have arisen from the current project:

1. The interest and momentum surrounding online business simulations continues to build. This project has generated a community of almost 200 interested stakeholders and there is scope to build on this by forming a network to act as a custodian for the project website and to continue the legacy of the project.

2. It is suggested that simulations and other technology enhanced learning pedagogies continue to be included and supported through future grant programs.
3. Considerable efficiencies could be realised through a more coordinated approach to national teaching and learning projects. The OLT conference, held for the first time in 2014 was a very useful activity but most projects operate in isolation. A simple online calendar listing various project events would be useful when scheduling workshops and forums to (a) avoid clashes and (b) leverage existing events. A database of experienced Project Managers would also assist in ensuring that talented individuals are not lost from the system when their projects are concluded.

6.4 Conclusion

The aims of this project were to map the features and characteristics of online business simulations; assess the challenges associated with the integration of online simulations into sustainable teaching practice in business education; evaluate the contribution of online simulations and related pedagogies to student learning outcomes; and identify and promote innovative pedagogies and strategies associated with the use of online business simulations in universities. In the process of achieving these aims the project has made several key contributions regarding the learning outcomes, adoption, pedagogy, assessment and evaluation of online business simulations. These five areas form the basis for the 'Framework for Simulation-based Pedagogy'.

1. **Learning outcomes:** Simulations are particularly effective in helping learners to integrate and apply business knowledge and skills. Our findings also indicate that simulations allow students to practise analysis, evaluation, creation and collaboration skills.
2. **Simulation adoption:** Simulation-based pedagogies require tactful management of the institutional constraints and challenges that have been identified. A champion is needed to promote and sustain the use of a simulation. Active engagement with supportive program directors, senior managers and decisions makers is a necessity. The background and needs of students should also be considered. The Good Practice Guide and companion website attempt to address the complex landscape of online business simulations by providing an online toolkit to support adoption and implementation.
3. **Pedagogy:** Key suggestions for pedagogy include the use of non-traditional pedagogy that incorporates authentic learning tasks and activities, providing learners with opportunities to experience multiple perspectives, supporting collaboration, and coaching and scaffolding learning.
4. **Assessment:** The development of higher order graduate capabilities can be encouraged by designing authentic assessment tasks that require students to practice these capabilities. Common methods included assessing team interaction; using reports and presentations to communicate proposals, plans, company performance and competitor analyses; asking students to reflect on their learning experience; or requiring students to complete a viva.
5. **Evaluation:** The project has developed a *Simulation Learning Barometer* for benchmarking and evaluating student engagement, learning activities and assessment, team dynamics, learning outcomes, and satisfaction.

Overall, this project has been an extremely positive experience. The project has brought together a team of like-minded educators who have formed strong relationships that will ensure ongoing work in this area.

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Appendix A: Certification by Deputy Vice-Chancellor Academic

I certify that all parts of the final report for this OLT grant provides an accurate representation of the implementation, impact and findings of the project, and that the report is of publishable quality.

Name: ……Date: ……

Appendix B: Student Focus Group Questions

Focus Group session to be half hour in duration. First 10 minutes to discuss Survey – "How did you find the survey questions". "Were the questions easy to understand?"

Remaining 20 minutes of focus group to focus on team dynamics and impression of simulation

1. What computer simulation did you use?
2. What were the best aspects of using the simulation?
3. What aspects of the simulation did you enjoy the least?
4. Do you think simulations are a good way to learn about business?
5. Did you develop any new skills or knowledge as a result of using the simulation? What did you learn?
6. What resources did the lecturer provide to help you with the simulation? Were these useful?
7. What other resources would have been helpful?
8. What assessment did you complete as part of the simulation? Do you have any comments about the assessment? Assessment weighting? Timelines? Marking criteria? Key tasks? Feedback from teaching staff?
9. Did you work as part of a team during the simulation? How was this experience?

Appendix C: Simulation Learning Barometer

ONLINE BUSINESS SIMULATIONS PRE-SIMULATION SURVEY

Australian Government | Office for Learning & Teaching

This survey seeks your views about the use of online simulations in business education and should take less than **15 minutes** to complete. The survey is part of an Australian Government funded project titled *Enhancing Student Learning Outcomes with Simulation-based Pedagogies*. This project will evaluate and promote pedagogies that enhance the learning outcomes of online simulations in business and related fields.

Your participation is entirely **voluntary** and you can cease completion of the survey at any time without comment or penalty. All answers are **confidential** and can in no way be linked to your personal details. Once a survey is completed it is impossible for any collected data to be withdrawn. Aggregated data and project reports may be used by the Australian Government, or their licensees, as comparative data in future projects, and will be presented in a publicly accessible online site. Individual data will not be published separately. By taking the survey you are giving **consent** to be part of this research.

This study adheres to the Guidelines of the ethical review process of The University of Queensland. Whilst you are free to discuss your participation in this study with Dr Pierre Benckendorff (contactable on (07) 3346 7089 or p.benckendorff@uq.edu.au) if you would like to speak to an officer of the University not involved in the study, you may contact the Ethics Officer on (07) 3365 3924.

1. What is your student identification number?
   Note: this information will only be used to link your pre-simulation and post-simulation surveys and will not be retained for further analysis.

➔ | | | | | | | | | | | |

GU/1/15

SECTION 1: LEARNING FROM SIMULATIONS

Read each question and mark your answers by filling the circles like this: ●

2. The following items are about your **expectations** of how the simulation may benefit your **learning**. Please rate your agreement with the following statements.

I expect that the simulation will develop my…	STRONGLY DISAGREE						STRONGLY AGREE
…problem solving skills	○	○	○	○	○	○	○
…planning skills	○	○	○	○	○	○	○
…understanding of finance	○	○	○	○	○	○	○
…understanding of marketing	○	○	○	○	○	○	○
…understanding of staffing	○	○	○	○	○	○	○
…understanding of operations	○	○	○	○	○	○	○
…understanding of strategic management	○	○	○	○	○	○	○
…understanding of how the different departments of an organization interact with each other	○	○	○	○	○	○	○
…understanding of 'real world' problems faced by organisations	○	○	○	○	○	○	○
…knowledge of key business terms, concepts and conventions	○	○	○	○	○	○	○
…ability to apply my knowledge to a business	○	○	○	○	○	○	○
…ability to analyse data	○	○	○	○	○	○	○
…ability to evaluate problems and make decisions	○	○	○	○	○	○	○
…ability to create new ideas or plans	○	○	○	○	○	○	○

3. The following items are about your **expectations** of enjoyment and satisfaction. Please rate your agreement with the following statements.

	STRONGLY DISAGREE						STRONGLY AGREE
I think the simulation will be challenging	○	○	○	○	○	○	○
I think I will enjoy learning with the simulation	○	○	○	○	○	○	○
I expect the simulation will make the course more interesting	○	○	○	○	○	○	○
I expect that the simulation will allow me to build on knowledge gained from previous courses	○	○	○	○	○	○	○
I expect that the simulation will make me more 'work ready'	○	○	○	○	○	○	○
I hope the skills and knowledge learnt during the simulation will be useful for my future career	○	○	○	○	○	○	○

SECTION 2: TEAMWORK

4. The following items are about your **attitudes** toward teamwork. Please rate your **agreement** with the following statements.

	STRONGLY DISAGREE						STRONGLY AGREE
Teamwork is an effective way to prepare for the workforce	○	○	○	○	○	○	○
Teamwork is an effective way to accomplish a task	○	○	○	○	○	○	○
I feel comfortable working in a team	○	○	○	○	○	○	○
I expect that the simulation will reinforce my understanding of the importance of teams	○	○	○	○	○	○	○
I expect that the simulation will develop my teamwork skills	○	○	○	○	○	○	○
I expect that working as part of a team during the simulation will improve my communication skills.	○	○	○	○	○	○	○
Overall, I think I learn more working in a team	○	○	○	○	○	○	○

SECTION 3: INDIVIDUAL ENGAGEMENT

5. The following items relate to your general level of **confidence**. Please rate your agreement with the following statements.

	STRONGLY DISAGREE						STRONGLY AGREE
Even when things are tough, I can perform quite well	○	○	○	○	○	○	○
In general, I can obtain outcomes that are important to me	○	○	○	○	○	○	○
I am confident I can learn the concepts taught in this course	○	○	○	○	○	○	○
I am confident that I can perform effectively in different tasks	○	○	○	○	○	○	○
Compared to other people, I can do most tasks very well	○	○	○	○	○	○	○
I am confident that I have the computer skills to complete the simulation requirements of this course	○	○	○	○	○	○	○
I am able to achieve most of the goals that I have set for myself in this course	○	○	○	○	○	○	○
I am confident of earning a good grade in this course	○	○	○	○	○	○	○
I can succeed in almost any endeavour I set my mind to	○	○	○	○	○	○	○

SECTION 4: PROBLEM SOLVING CASE STUDY

Please read the following scenario and answer the questions below. Mark only one option for each question.

Hotel Royale has experienced a drop of business over the last year resulting is a loss of $500,000. The General Manager is very concerned and has asked for your advice to assist in improving the hotel's profit in a number of areas of the hotel operations.

6. In order to improve the hotels profit, I would first recommend to:

   ◯ Increase the room rate
   ◯ Decrease the number of staff
   ◯ Decrease expenses
   ◯ Evaluate the target markets and hotel product
   ◯ Increase advertising

7. Which are the two key components of revenue management…

   ◯ Monitoring rates and monitoring room sales
   ◯ Allowing overbooking and managing late bookings
   ◯ Discounting rooms and offering packages
   ◯ Forecasting and monitoring rooms sales
   ◯ Monitoring expenses and revenue

8. The Marketing Manager's responsibility is to…

   ◯ Manage front office operations
   ◯ Promote and advertise the hotel
   ◯ Discount the hotel to sell more rooms
   ◯ Monitor room occupancy
   ◯ Implement sustainability initiatives

9. Revenue management is important because…

   ◯ Hotel rooms are perishable
   ◯ The hotel needs to make a profit
   ◯ Hotels can increase their inventory
   ◯ Customers book in advance
   ◯ Rates constantly change

10. If the General Manager decides to sack staff, what is the most important possible outcome…

    ◯ A reduction in expenses
    ◯ A reduction in service quality
    ◯ A reduction in staff turnover
    ◯ A reduction in staff training
    ◯ A reduction in occupancy

11. Which of the following occurred to Hotel Royale's Balance Sheet when their conference centre was built last year?

    ◯ Their expenses increased
    ◯ Their short term debt increased
    ◯ Their total assets increased
    ◯ Their revenue increased
    ◯ Their staffing increased

12. This month, Hotel Royale has $200,000 cash as bank, $100,000 in accounts payable and $50,000 in accounts receivable, how much money does the hotel have at the end of the month?

    ◯ $100,000
    ◯ $150,000
    ◯ $200,000
    ◯ $250,000
    ◯ $300,000

SECTION 5: ABOUT YOU

13. Please tell us, are you:

    ◯ Female
    ◯ Male

14. In what year were you born? .....

15. If you are an international student, what is your home country?

    .....

16. What is the name of your university?

    .....

17. What is the name of the degree you are completing?

    .....

18. What is the code and/or title of the course using the simulation?

    .....

19. What is your current GPA? .....

20. What year level are most of the courses you are studying this year?

    ◯ First year
    ◯ Second year
    ◯ Third year
    ◯ Postgraduate

21. Which of the following apply to you? (Select all that apply)

    ◯ I am studying part-time
    ◯ I am studying externally (distance education)
    ◯ English is not my first language
    ◯ I am an International student
    ◯ I am working casually / part-time while studying
    ◯ I am working full-time while studying
    ◯ I am an exchange student

ONLINE BUSINESS SIMULATIONS POST-SIMULATION SURVEY

Australian Government | Office for Learning & Teaching

This survey seeks your views about the use of online simulations in business education and should take less than **20 minutes** to complete. The survey is part of an Australian Government funded project titled *Enhancing Student Learning Outcomes with Simulation-based Pedagogies*. This project will evaluate and promote pedagogies that enhance the learning outcomes of online simulations in business and related fields.

Your participation is entirely **voluntary** and you can cease completion of the survey at any time without comment or penalty. All answers are **confidential** and can in no way be linked to your personal details. Once a survey is completed it is impossible for any collected data to be withdrawn. Aggregated data and project reports may be used by the Australian Government, or their licensees, as comparative data in future projects, and will be presented in a publicly accessible online site. Individual data will not be published separately. By taking the survey you are giving **consent** to be part of this research.

This study adheres to the Guidelines of the ethical review process of The University of Queensland. Whilst you are free to discuss your participation in this study with Dr Pierre Benckendorff (contactable on (07) 3346 7089 or p.benckendorff@uq.edu.au) if you would like to speak to an officer of the University not involved in the study, you may contact the Ethics Officer on (07) 3365 3924.

1. What is your student identification number?
   Note: this information will only be used to link your pre-simulation and post-simulation surveys and will not be retained for further analysis.

➔ | | | | | | | | | | | |

GU/1/15

SECTION 1: LEARNING FROM SIMULATIONS

Read each question and mark your answers by filling the circles like this: ●

2. The following items are about how the simulation has benefitted your **learning**. Please rate your agreement with the following statements.

The simulation developed my…	STRONGLY DISAGREE						STRONGLY AGREE
…problem solving skills	○	○	○	○	○	○	○
…planning skills	○	○	○	○	○	○	○
…understanding of finance	○	○	○	○	○	○	○
…understanding of marketing	○	○	○	○	○	○	○
…understanding of staffing	○	○	○	○	○	○	○
…understanding of operations	○	○	○	○	○	○	○
…understanding of strategic management	○	○	○	○	○	○	○
…understanding of how the different departments of an organization interact with each other	○	○	○	○	○	○	○
…understanding of 'real world' problems faced by organisations	○	○	○	○	○	○	○
…knowledge of key business terms, concepts and conventions	○	○	○	○	○	○	○
…ability to apply my knowledge to a business	○	○	○	○	○	○	○
…ability to analyse data	○	○	○	○	○	○	○
…ability to evaluate problems and make decisions	○	○	○	○	○	○	○
…ability to create new ideas or plans	○	○	○	○	○	○	○

3. The following items are about your **satisfaction** and **enjoyment** of the simulation. Please rate your agreement with the following statements.

	STRONGLY DISAGREE						STRONGLY AGREE
The simulation was challenging	○	○	○	○	○	○	○
I enjoyed learning with the simulation	○	○	○	○	○	○	○
The simulation made the course more interesting	○	○	○	○	○	○	○
The simulation allowed me to build on knowledge gained from previous courses	○	○	○	○	○	○	○
The simulation allowed me to learn from my mistakes through trial and error	○	○	○	○	○	○	○
I feel I am more 'work ready' after using the simulation	○	○	○	○	○	○	○
The skills and knowledge learnt during the simulation will be useful for my future career	○	○	○	○	○	○	○
I am satisfied with the online software application used for the simulation	○	○	○	○	○	○	○
Overall, I learned a lot from the simulation	○	○	○	○	○	○	○
Overall, I am satisfied with the simulation as a learning tool	○	○	○	○	○	○	○
Overall, the simulation has met my expectations	○	○	○	○	○	○	○

SECTION 2: LEARNING ACTIVITIES

4. The following items are about the **resources, learning activities and assessment tasks** related to the simulation. Please rate your agreement with the following statements.

	STRONGLY DISAGREE						STRONGLY AGREE
I am satisfied with the in-class activities which assisted my understanding of the simulation	○	○	○	○	○	○	○
I am satisfied with the assessment tasks related to the simulation	○	○	○	○	○	○	○
I am satisfied with the assessment weighting attached to the simulation	○	○	○	○	○	○	○
The assessment attached to the simulation enhanced my understanding of business operations	○	○	○	○	○	○	○
The simulation interface was easy to use	○	○	○	○	○	○	○
The learning resources (e.g. user guides, videos, tutorials) provided with the simulation enhanced my learning	○	○	○	○	○	○	○
I am satisfied with the information I received to perform my tasks with the simulation	○	○	○	○	○	○	○
There were sufficient resources (e.g. user guides, videos, tutorials) to help me learn the simulation	○	○	○	○	○	○	○
My teachers were knowledgeable about the simulation	○	○	○	○	○	○	○
My teachers worked hard to help me learn from the simulation	○	○	○	○	○	○	○
There were sufficient opportunities to ask my teachers questions about the simulation	○	○	○	○	○	○	○
Overall, I am satisfied with this **course**	○	○	○	○	○	○	○
Overall, this particular **course** has met my expectations	○	○	○	○	○	○	○
I would recommend taking this **course** to other fellow students	○	○	○	○	○	○	○

SECTION 3: TEAMWORK

5. The following items are about **team interaction** during the simulation. Please rate your agreement with the following statements.

	STRONGLY DISAGREE						STRONGLY AGREE
It was easy for the team to agree on important decisions	○	○	○	○	○	○	○
Key decisions about our company were made by the entire team	○	○	○	○	○	○	○
I was comfortable sharing my ideas with my team	○	○	○	○	○	○	○
Most of the time, members of our team asked each other for feedback on their work	○	○	○	○	○	○	○
Team members acknowledged the points of view of others	○	○	○	○	○	○	○
There was a team leader who guided the simulation	○	○	○	○	○	○	○
The contributions of other team members assisted my understanding of the simulation	○	○	○	○	○	○	○
My team had regular meetings to evaluate our performance	○	○	○	○	○	○	○
Our team performed well in the simulation	○	○	○	○	○	○	○
My team was dedicated to the task	○	○	○	○	○	○	○
My team worked well together	○	○	○	○	○	○	○
My team actively exchanged ideas using online tools	○	○	○	○	○	○	○
The unique skills and talents of each team members were fully valued and utilised	○	○	○	○	○	○	○
Our team interactions helped me to understand other points of view	○	○	○	○	○	○	○
Working as a team allowed me to work smarter, not harder	○	○	○	○	○	○	○
I was able to learn new skills and knowledge from other members in my team	○	○	○	○	○	○	○
Competition between teams motivated me to spend more time on the simulation	○	○	○	○	○	○	○
Overall, working as a team on the simulation was better than other team assessment tasks I have experienced.	○	○	○	○	○	○	○
	STRONGLY DISAGREE						STRONGLY AGREE

6. The following items are about your **attitudes** toward teamwork. Please rate your **agreement** with the following statements.

	STRONGLY DISAGREE						STRONGLY AGREE
Teamwork is an effective way to prepare for the workforce	○	○	○	○	○	○	○
Teamwork is an effective way to accomplish a task	○	○	○	○	○	○	○
I feel comfortable working in a team	○	○	○	○	○	○	○
The simulation helped me understand the importance of teams	○	○	○	○	○	○	○
The simulation helped develop my teamwork skills	○	○	○	○	○	○	○
Working in a team has improved my communication skills	○	○	○	○	○	○	○
Overall, I think I learn more working in a team	○	○	○	○	○	○	○

7. Did your team use any of the following online collaboration tools to interact? Please add any online tools not listed below if needed.
   - ○ Facebook
   - ○ Google+
   - ○ Google Docs
   - ○ Skype/Google Hangouts/Facetime
   - ○ Instant Messaging
   - ○ Other .....

8. Was the use of any of these tools particularly challenging?
   - ○ No
   - ○ Yes

   If yes, could you tell us briefly which of the tools were challenging and why?

   .....

   Which tools were the most useful? .....

SECTION 4: INDIVIDUAL ENGAGEMENT

9. The following items are about your **engagement** with the course and the simulation. Please rate your **agreement** with the following statements.

	STRONGLY DISAGREE						STRONGLY AGREE
I spent more time than usual on this course as a result of the simulation	○	○	○	○	○	○	○
I attended class regularly	○	○	○	○	○	○	○
I learned how to organize my time efficiently	○	○	○	○	○	○	○
I sought advice from teaching staff	○	○	○	○	○	○	○
I kept up-to-date with my studies	○	○	○	○	○	○	○
The effort I put into the simulation resulted in successful outcomes for my company	○	○	○	○	○	○	○
I will be able to use what I learnt in the simulation in the future	○	○	○	○	○	○	○

10. The following items relate to your general level of **confidence**. Please rate your agreement with the following statements.

	STRONGLY DISAGREE						STRONGLY AGREE
Even when things are tough, I can perform quite well	○	○	○	○	○	○	○
In general, I can obtain outcomes that are important to me	○	○	○	○	○	○	○
I am confident I can learn the concepts taught in this course	○	○	○	○	○	○	○
I am confident that I can perform effectively in different tasks	○	○	○	○	○	○	○
Compared to other people, I can do most tasks very well	○	○	○	○	○	○	○
I am confident that I have the computer skills to complete the simulation requirements of this course	○	○	○	○	○	○	○
I am able to achieve most of the goals that I have set for myself in this course	○	○	○	○	○	○	○
I am confident of earning a good grade in this course	○	○	○	○	○	○	○
I can succeed in almost any endeavour I set my mind to	○	○	○	○	○	○	○

SECTION 5: PROBLEM SOLVING SCENARIO

Please read the following scenario and answer the questions below. Mark only one option for each question.

Hotel Royale has experienced a drop of business over the last year resulting is a loss of $500,000. The General Manager is very concerned and has asked for your advice to assist in improving the hotel's profit in a number of areas of the hotel operations.

11. In order to improve the hotels profit, I would first recommend to:

    ◯ Increase the room rate
    ◯ Decrease the number of staff
    ◯ Decrease expenses
    ◯ Evaluate the target markets and hotel product
    ◯ Increase advertising

12. Which are the two key components of revenue management…

    ◯ Monitoring rates and monitoring room sales
    ◯ Allowing overbooking and managing late bookings
    ◯ Discounting rooms and offering packages
    ◯ Forecasting and monitoring rooms sales
    ◯ Monitoring expenses and revenue

13. The Marketing Manager's responsibility is to…

    ◯ Manage front office operations
    ◯ Promote and advertise the hotel
    ◯ Discount the hotel to sell more rooms
    ◯ Monitor room occupancy
    ◯ Implement sustainability initiatives

14. Revenue management is important because…

    ◯ Hotel rooms are perishable
    ◯ The hotel needs to make a profit
    ◯ Hotels can increase their inventory
    ◯ Customers book in advance
    ◯ Rates constantly change

15. If the General Manager decides to sack staff, what is the most important possible outcome…

    ◯ A reduction in expenses
    ◯ A reduction in service quality
    ◯ A reduction in staff turnover
    ◯ A reduction in staff training
    ◯ A reduction in occupancy

16. Which of the following occurred to Hotel Royale's Balance Sheet when their conference centre was built last year?

    ◯ Their expenses increased
    ◯ Their short term debt increased
    ◯ Their total assets increased
    ◯ Their revenue increased
    ◯ Their staffing increased

17. This month, Hotel Royale has $200,000 cash as bank, $100,000 in accounts payable and $50,000 in accounts receivable, how much money does the hotel have at the end of the month?

    ◯ $100,000
    ◯ $150,000
    ◯ $200,000
    ◯ $250,000
    ◯ $300,000

SECTION 6: ABOUT YOU

18. How much did you contribute to the success of your team?

    ◯ Far more than other team members
    ◯ More than other team members
    ◯ About the same as other team members
    ◯ Less than other team members
    ◯ Far less than other team members

19. How many of your classes did you attend this semester?

    ◯ 80% to 100%
    ◯ 60% to 79%
    ◯ 40% to 59%
    ◯ 20% to 39%
    ◯ Less than 20%

20. On average, how many **hours per week** did you personally spend on the simulation and related assessment?

    .....

21. On average, how many **hours per week** did you spend working with your group on the simulation and related assessment?

    .....

22. On average, how many **hours per week** did you spend on paid work this semester?

    .....

Appendix D: Educator Interview Questions

Section One: Pre-implementation of the simulation.

1. Can you provide some background information about the course and explain how the implementation of the simulation in the course came about (the history of it).
2. Did you have to lobby 'the powers that be' or make a strong case for the simulation?
3. Was financing the simulation's implementation a major concern?
4. Can you describe how the simulation fits into the course?

Section Two: Reasoning behind the choice of simulation.

1. What computer simulation do you use and why do you use it?
2. How did you first find out about the simulation?
3. Have you refined the simulation from its existing form?
4. How does the simulation assist the educator (interviewee) in the dissemination of information?
5. Do you believe the simulation that you use is an appropriate tool for student problem-based learning and is perhaps more effective than traditional learning approaches?
6. Does the simulation assist in motivating students to learn?
   - How?
7. Does the simulation assist with student experimentation through observation and feedback?
   - Explain?
8. How does the simulation assist in achieving the goals and objectives of the subject?
9. Do you believe business simulations assist in students' experiencing and reacting to situations based on knowledge and therefore retaining information?

Section three: Pedagogy attributes of the simulation.

1. How do you orientate students to the simulation?
2. What learning activities and tools do you use to support the simulation?
3. What assessment tasks are linked to the simulation?
   - How are these weighted?
   - What skills and knowledge are you seeking to develop?
4. What do you think students learn?
5. What are some of the best aspects of using a simulation?
6. What are some of the challenges?

Appendix E: Graduate Capabilities Forum Flyer

Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

INNOVATIVE PEDAGOGIES FOR DEVELOPING BUSINESS GRADUATE CAPABILITIES

We would like to invite you to a forum showcasing examples of several recent projects that have examined **innovative pedagogies for developing business graduate capabilities**. Graduate business capabilities have taken on a new importance as a result of the Australian Qualifications Framework (AQF), the development of threshold learning outcomes in several business fields as well as ongoing pressure from peak industry bodies to produce work ready graduates. The forum offers a unique opportunity to network with peers, hear the latest thinking and gain insight into the role of pedagogy in the future of business education.

Showcase Presentations

Innovative Practices in Undergraduate Business Capstones

A/Prof Janis Bailey and Dr Liz van Acker, *Griffith University*

Capstones play an important role in improving graduate capability and increasing employability. Drawing on the findings of an OLT project, we discuss the diversity of capstone offerings in Australian business schools. We canvass innovative learning and teaching strategies that fulfil the 'forward looking' aspect of capstones and thus contribute to capability and employability.

Integrated Business Consulting – Reality Driven Rigour

A/Prof Christine Burton, *University of Technology, Sydney*

A postgraduate unit, *Integrated Business Consulting* was developed as part of the Innovative Practice Trials supported by the ABDC. The aims of the unit were: to provide a proof of concept that live cases based on intensive industry engagement are sustainable in Business Schools in the long term; to investigate ways in which this unit can be expanded and adapted to advance experiential and authentic student learning globally.

Simulation-based Pedagogies in Business

Dr. Pierre Benckendorff, *The University of Queensland*

Technological advancements have improved the sophistication and range of online business simulations available to tertiary educators. Simulations can develop a range of skills and capabilities that are challenging to develop using traditional teaching and learning approaches. This presentation will showcase the resources developed by an OLT project on business simulations.

The showcase will be followed by a **Q&A Panel** and the **Online Business Simulations Workshop**.

Target Audience

The following people would benefit from this forum:

- Business educators and academics
- Learning designers and support staff
- Program Convenors, Associate Deans and Directors of Teaching and Learning

Venues

	Sydney	Melbourne	Brisbane
When	10 November 2014	11 November 2014	3 December 2014
Where	University of Sydney Business School, Room 214, Economics and Business Building (H69), Codrington Street Map	William Angliss Institute, Room A224, Level 2, Building A, 555 La Trobe Street, Melbourne Map	Griffith University South Bank Campus, Room S02_7.16, Board Room, Level 7, Webb Centre Map

Program

09:00 Showcase Presentations
10:30 Morning Tea (provided)
10:45 Online Business Simulations Workshop (concluding at 12pm)

An interactive **simulation demonstration** will be presented in the afternoon (1-3pm) in Melbourne and Brisbane and lunch will be served for those planning to stay for the afternoon session.

Registration

- **Seats are limited for this free event** – sign up now at: http://goo.gl/1cDZ1t
- This is an open invitation. Please forward to anyone who might be interested.

e: bizedsims@gmail.com **w:** www.bizsims.edu.au

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Appendix F: Graduate Capabilities Forum Slides

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BUSINESS GRADUATE CAPABILITIES FORUM

www.bizsims.edu.au

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Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

Today's Goals

- Contemplate the major challenges in developing business graduate capabilities
- Discuss the role of capstones, WIL and simulations in developing business graduate capabilities
- Explore how simulation-based pedagogies can be used to enhance business graduate capabilities

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PEDAGOGY | ASSESSMENT | LEARNING

What do we hope to gain?

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Agenda

09:05 Welcome
09:10 Interactive Activity
09:20 Innovative Practices in Undergraduate Business Capstones
09:35 Integrated Business Consulting: Reality Driven Rigour
09:50 Simulation-based Pedagogies in Business
10:05 Q&A Panel
10:30 Morning Tea
10:45 Simulations Workshop
12:00 Lunch
13:00 Simulation Demo

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What challenges do you face in developing business graduate capabilities?

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Innovative Practices in Undergraduate Business Capstones

A/Prof Janis Bailey and Dr Liz van Acker

Griffith University

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Integrated Business Consulting – Reality Driven Rigour

A/Prof Christine Burton

University of Technology, Sydney

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Simulation-based Pedagogies in Business

Dr. Pierre Benckendorff

The University of Queensland

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Challenges in Business Education

- Large cohorts
- How can students develop and practice **business capabilities**?
  - Reports and essays are limited
  - Business plans and case studies not dynamic / interactive
  - WIL experiences often focused on operational skills
  - Exams and MOOCs largely content-based
- Can we provide large cohorts with a learning experience where students sharpen their managerial skills through regular feedback?

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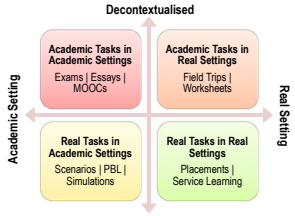
Authenticity Matrix

(Herrington, Reeves and Oliver, 2010)



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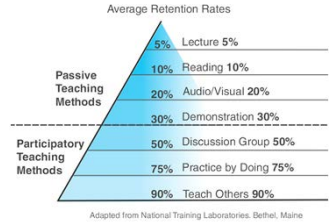
The Learning Pyramid



Online Business Simulations
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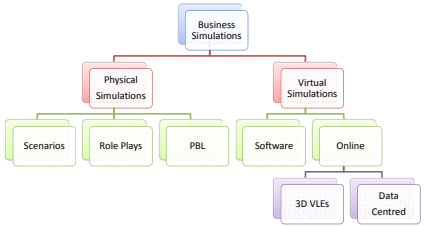
What are Online Business Simulations?



Online Business Simulations
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What are Online Business Simulations?

Complex simulations designed to teach strategy, competitive analysis, finance, marketing, HRM, cross-functional alignment, and the selection of tactics to build a successful business.

Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

Project Aims

- Map the **features** of online business simulations.
- Evaluate the contribution of simulation-based **pedagogies** to **student learning outcomes**.
- **Identify** and **promote** innovative **pedagogies** and **resources** for using online business simulations as learning tools.
- Assess the **challenges** associated with the integration of simulations into sustainable teaching practice in business.

Online Business Simulations
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Project Resources

- Simulations Audit
- Simulation Learning Barometer
- Case Studies
- Good Practice Guide
- Website www.bizsims.edu.au
- National Workshops

Online Business Simulations
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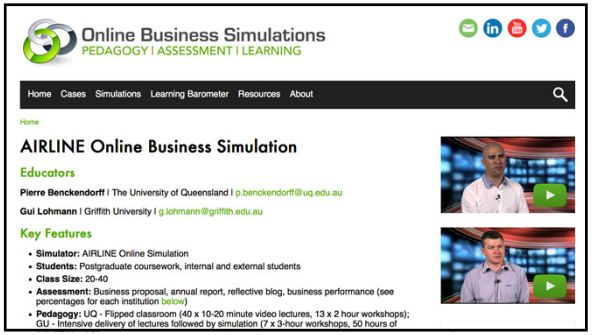

PANEL Q&A

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Why simulation-based learning?

(Biggs, 1999; Feinstein, Mann, & Corsun, 2002; Fripp, 1997)

- Applied to many different disciplines
- A technique (not a technology) to amplify real experiences
- Developing skills in a safe and risk-free environment
- Make errors that do not have real repercussions
- Encourage collaborative learning

Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

Why business simulations?

- Integrate the various elements of running a business
- Experiential/active learning environments that mirror real world problems
- Opportunity for manageable large class capstone learning experience
- Authentic and dynamic team-based learning experiences
- Develop employability skills

Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

Why online business simulations?

(Adobor & Daneshfar, 2006; Bowness, 2004)

- Apply critical thinking and decision making in a non-linear environment
- Decisions/actions lead to complex and unexpected outcomes
- Develop graduate capabilities and strategic decision making skills
- Continuous feedback to help students understand the outcomes of decisions
- Technology enabled learning available any time, any where

Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

DIY Airline Company

Spend 5 minutes designing your own airline company.

Key decisions:

- What will you name your airline?
- Where will you base your airline?
- Domestic or international?
- What cabin classes and services will you offer?
- What types of aircraft will you use?
- What pricing strategy will you adopt?

Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

What are the benefits of online business simulations for educators? For students?

Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

What do students say about bizsims?

- The best aspects of using simulation is that it is close to a **real life scenario**, but at the same time it allows us to **make mistakes**
- I think it's definitely better than any other course at the uni, because it's **practical** and **you really make something happen** and it's not only about theory
- Sometimes we had **arguments** but in the end we used the data to prove which decision was better

Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

What do students say about bizsims?

- We really had to **work closely together** because every decision made by each group member could affect our performance
- Due to the fast pace of the simulation we really develop **problem solving skills** that help us to **make decisions** quickly

Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

Simulations & PBL

Benefits of simulations	Benefits of problem based learning
grasp the interrelationships among the various functions of business	develop knowledge that can be applied in many situations
problem solving	skills in problem solving
decision making skills	evidence based decision making
self awareness	enhance intrinsic motivation
communication skills	collaboration
sense of accomplishment	self-directed lifelong learning
active and dynamic learning experience	
realism without severe risks of failure	

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Learning outcomes

Learning outcomes are considered to be multidimensional:

- Cognitive learning can be described as developing an understanding of basic facts
- Affective learning is where the simulation participants perceive that they learn, hold positive attitudes and satisfaction
- Behavioural learning can be described as simulation participants taking the facts and formulating correct decisions or actions

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Home Cases Simulations Learning Barometer Resources About

Home

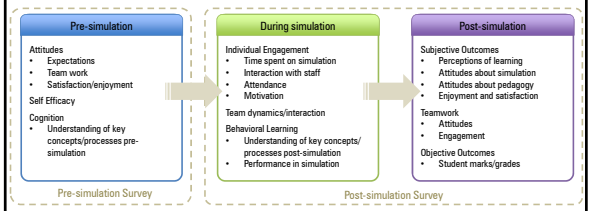
Learning Barometer

The *Simulation Learning Barometer* is a benchmarking and monitoring device for measuring changes in student perceptions of learning outcomes. The barometer also includes problem-based questions designed to measure cognitive change for a number of commonly used simulations. The barometer can also be used to monitor changes in learning outcomes following adjustments to pedagogy (e.g. assessment, learning resources).

The *Simulation Learning Barometer* consists of a pre-simulation survey and a post-simulation survey, however some survey items would be suitable for use at regular intervals to monitor learning engagement and outcomes throughout a simulation. The post-simulation survey includes a number of items and takes about 20 minutes to complete.

- Overview
- Key constructs
- Pre simulation survey
- Post simulation survey
- Benchmark data (coming soon)

Simulation Learning Barometer



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Pre-Simulation Expectations

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Post-Simulation Learning Outcomes

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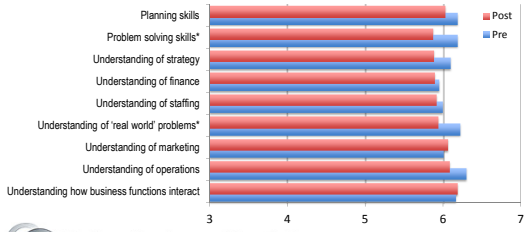
Learning Outcomes: Skills & Knowledge



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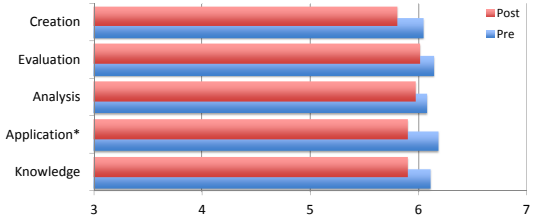
Learning Outcomes: Blooms Taxonomy



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Perceptions about Teamwork

Online Business Simulations
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Authentic online learning environments

(Herrington, Reeves and Oliver, 2010)

1. Authentic context
2. Authentic tasks and activities
3. Expert performances
4. Multiple roles and perspectives
5. Collaborative construction of knowledge
6. Reflection
7. Articulation and presentation
8. Coaching and scaffolding
9. Authentic assessment

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Simulation Pedagogies

- Map out expectations (time, team roles, instructor as a 'guide on the side')
- Give students time to learn from trial and error, trials or practice rounds
- Provide support (e.g. videos, demos, manuals, flow charts)
- Encourage collaboration (e.g. facebook, skype, wikis)
- Align learning outcomes
- Use complementary pedagogies (e.g. field trips, industry speakers, mentors, cases)
- Link curriculum to events in the simulation, use class time for debriefs
- Assess learning (not time or effort spent on the simulation)
- Aim for authentic learning and assessment (Herrington et al. 2010)

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Design an authentic assessment task to complement an online business simulation

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Assessment

Assessment aligned with learning outcomes and simulation tasks

- Team interaction (e.g. peer evaluation, video, wikis)
- Reports and presentations
  - Proposals or plans
  - Company performance
  - Competitor analysis
- Reflective assessment
- Performance metrics
- Quizzes

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Student Reflection

The simulation provided a great challenge to push myself to deal with a complex environment, project task management, leadership, problem solving and team relationship management.

Detailed planning, quick reactions, keeping cool and encouraging team members are four major skills I learned from the operation of the simulation.

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What are some of the challenges and limitations to using online simulations as learning tools?

What are the solutions?

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Some challenges…

For Educators

- Commercial packages require additional funding
- Steep initial learning curve

For Students

- Time is compressed
- Some variables cannot be simulated
- Students become too engaged
- Not a solution for all team work problems

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Office for Learning & Teaching

Appendix G: Forum & Workshop Evaluations

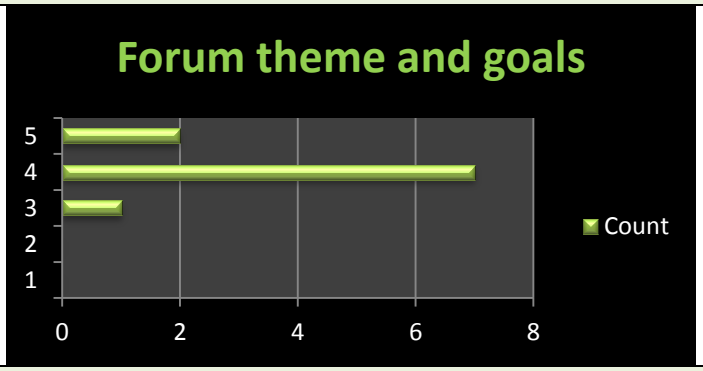
Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

INNOVATIVE PEDAGOGIES FOR DEVELOPING BUSINESS GRADUATE CAPABILITIES

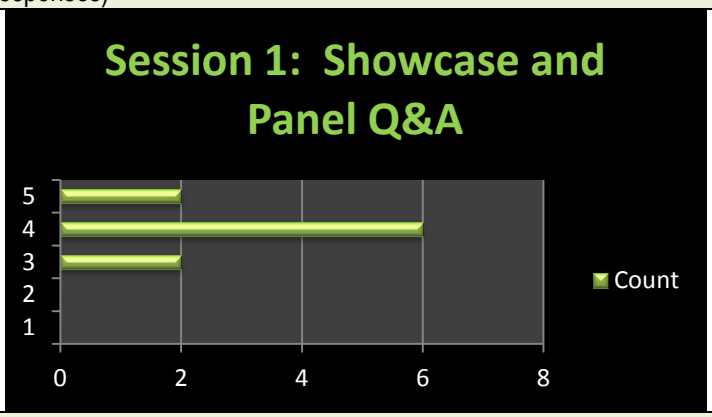
WORKSHOP

Sydney, 10 November 2014

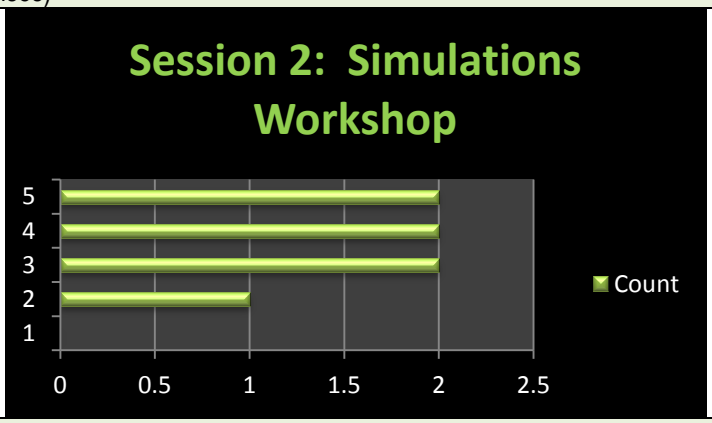
Forum theme and goals (10 responses)		
Scale	Score	Percentage
1 (poor)	0	0%
2	0	0%
3	1	10%
4	7	70%
5 (Excellent)	2	20%



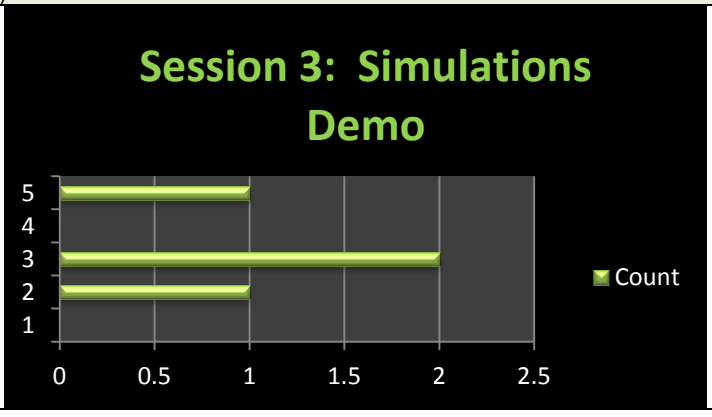
Session 1: Showcase and Panel Q&A (10 responses)		
Scale	Score	Percentage
1 (poor)	0	0%
2	0	0%
3	2	20%
4	6	60%
5 (Excellent)	2	20%



Session 2: Simulations Workshop (7 responses)		
Scale	Score	Percentage
1 (poor)	0	0%
2	1	14.5%
3	2	28.5%
4	2	28.5%
5 (Excellent)	2	28.5%

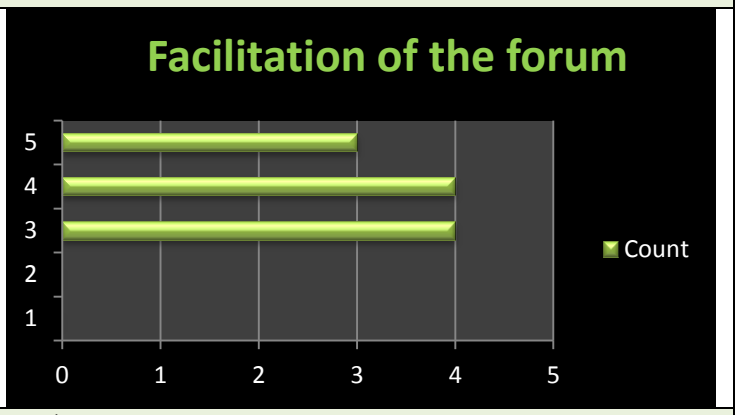


Session 3: Simulations Demo (4 responses)		
Scale	Score	Percentage
1 (poor)	0	0%
2	1	25%
3	2	50%
4	0	0%
5 (Excellent)	1	25%



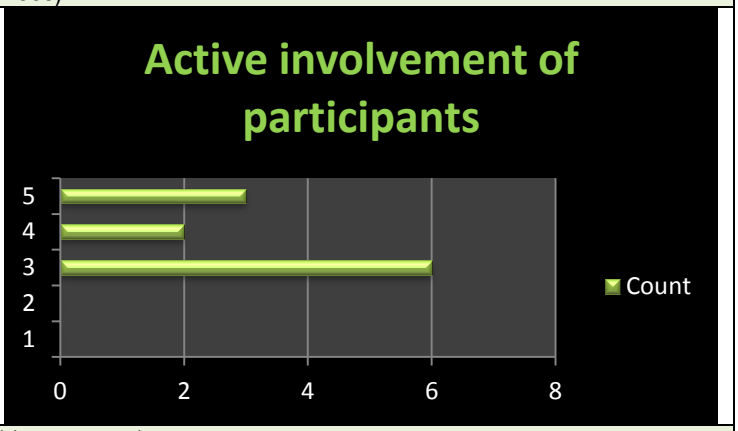
Facilitation of the forum (11 responses)

Scale	Score	Percentage
1 (poor)	0	0%
2	0	0%
3	4	37%
4	4	37%
5 (Excellent)	3	26%



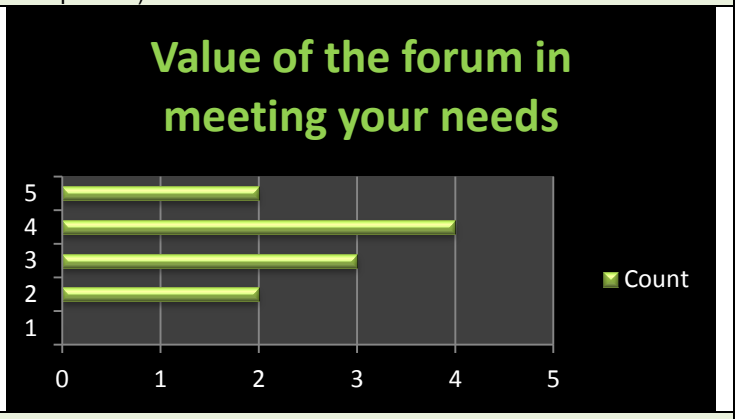
Active involvement of participants (11 responses)

Scale	Score	Percentage
1 (poor)	0	0%
2	0	0%
3	6	55%
4	2	18%
5 (Excellent)	3	27%



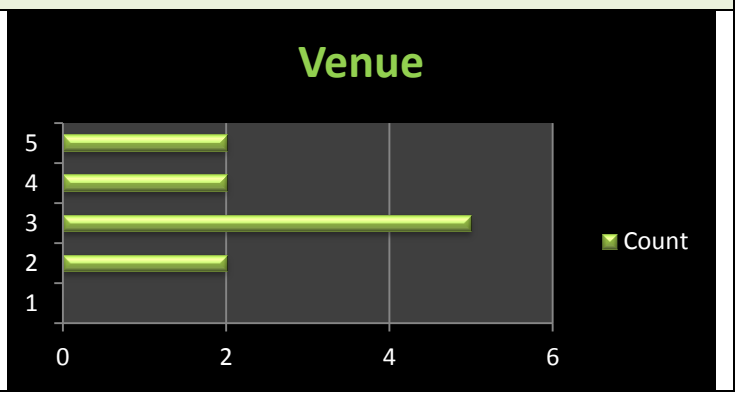
Value of the forum in meeting your needs (11 responses)

Scale	Score	Percentage
1 (poor)	0	0%
2	2	18%
3	3	27
4	4	37%
5 (Excellent)	2	18%



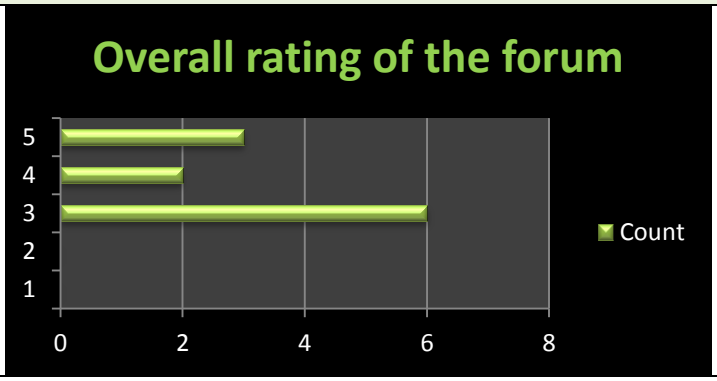
Venue (11 responses)

Scale	Score	Percentage
1 (poor)	0	0%
2	2	18%
3	5	46%
4	2	18%
5 (Excellent)	2	18%



Catering (11 responses)		
Scale	Score	Percentage
1 (poor)	0	0%
2	3	27%
3	2	19%
4	3	27%
5 (Excellent)	3	27%

Overall rating of the forum (11 responses)		
Scale	Score	Percentage
1 (poor)	0	0%
2	0	0%
3	6	55%
4	2	18%
5 (Excellent)	3	27%



The most useful aspect of the forum was

- Introduction into simulations and discussion of capstone courses
- Learning about different ways to engage students in a changing education environment. Particularly hearing about the case studies - simulations and capstone courses like at UTS.
- learning how Simulations have been applied within the course as presented by guest speakers and also seeing how the Simulation works
- For me it was just to keep in touch with what is happening to date
- Ideas from Integrated Business Consulting â€“ Reality Driven Rigour
- Links to other information and networking. Ideas and suggestions.
- The practical advice, information, simulations and website links - as well as Liz's book: thank you Liz!
- Literature used

To improve this forum, you could have…..

- You could expand the material, e.g., have participants interact on-line with a simulation, and extend the workshop over the course of a day.
- Allowed for a little more time
- spent less time waiting between instructions when learning to use the simulator.
- It would be great if there are simulations for the IT part of business as well, for eg, technology management.
- Tie the three presentations together more.
- No suggestions.
- Better venue - the room was hot, crowded and not well equipped and the catering was very average.
- Demonstrated the simulation quickly

Did you learn anything new today?

- Benefits of simulations
- Yes, I learnt about thinking of the student perspective when designing courses.
- Yes, I learnt about airline simulations
- Yes. The discussion is very good, and getting to see the demos is very interesting.
- Ideas about how to get deep involvement from industry in assignment work.
- Yes
- Yes - I learned a lot about the fact that education is now no longer about a "course of study" but needs to consider the practical and experiential aspects of learning and some approaches to helping achieve this.

A theme I would like to see addressed at a future forum is…..

- How to be a better facilitator of a capstone which is interdisciplinary
- It would be great if there are simulations for the IT part of business as well, for eg, technology management.
- How to get "non-engaging" academics to engage with business more.
- No suggestions
- Curriculum design and embedding graduate attributes and the use of technology to develop graduate attributes.

Final comment/s:

- Worthwhile workshop
- Thank you, the research and application of the research is very interesting and will be useful for my future career.
- Great work, very well organised. Thank you!
- Thank you to ALL the academics involved for sharing!

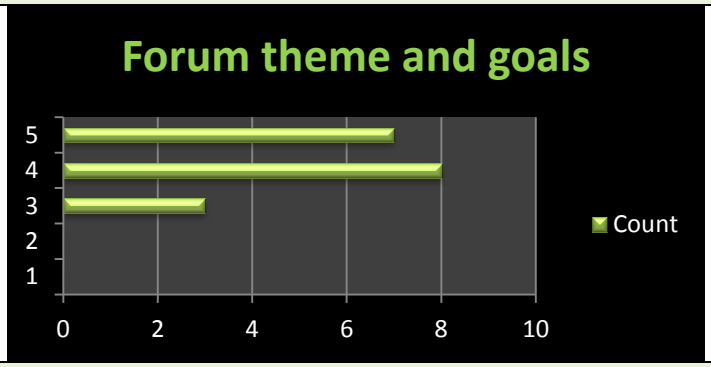
Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

INNOVATIVE PEDAGOGIES FOR DEVELOPING BUSINESS GRADUATE CAPABILITIES
WORKSHOP

Melbourne, 11 November 2014

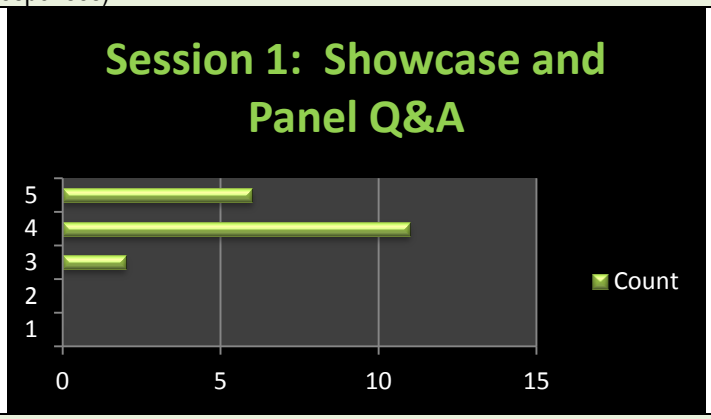
Forum theme and goals (18 responses)

Scale	Score	Percentage
1 (poor)	0	0%
2	0	0%
3	3	17%
4	8	44%
5 (Excellent)	7	39%



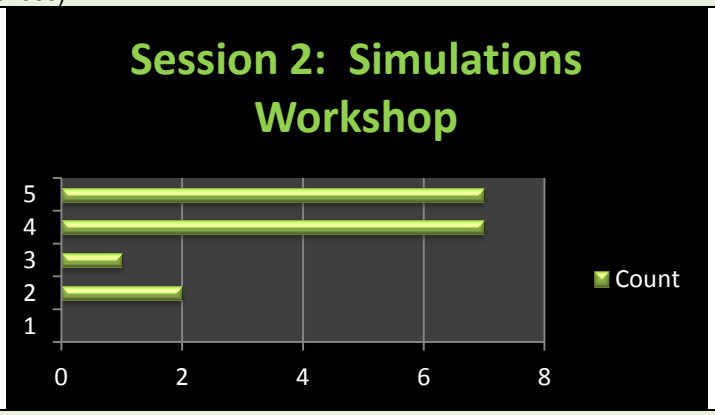
Session 1: Showcase and Panel Q&A (19 responses)

Scale	Score	Percentage
1 (poor)	0	0%
2	0	0%
3	2	10%
4	11	58%
5 (Excellent)	6	32%



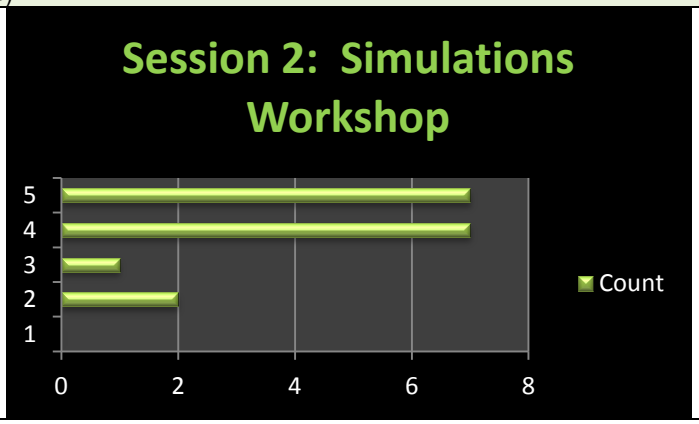
Session 2: Simulations Workshop (17 responses)

Scale	Score	Percentage
1 (poor)	0	0%
2	2	12%
3	1	6$
4	7	41%
5 (Excellent)	7	41%



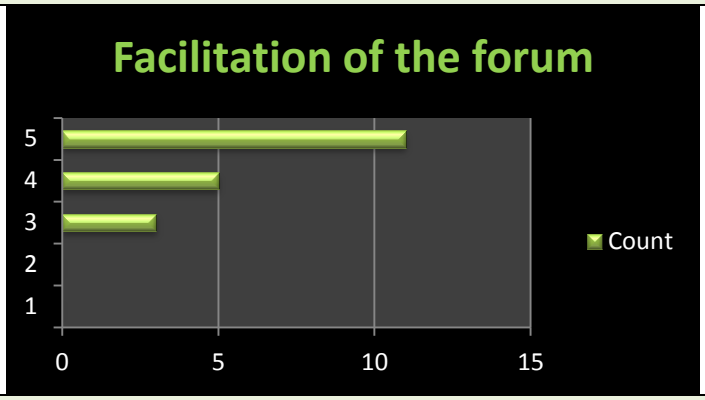
Session 3: Simulations Demo (13 responses)

Scale	Score	Percentage
1 (poor)	0	0%
2	0	0%
3	2	15%
4	8	62%
5 (Excellent)	3	23%



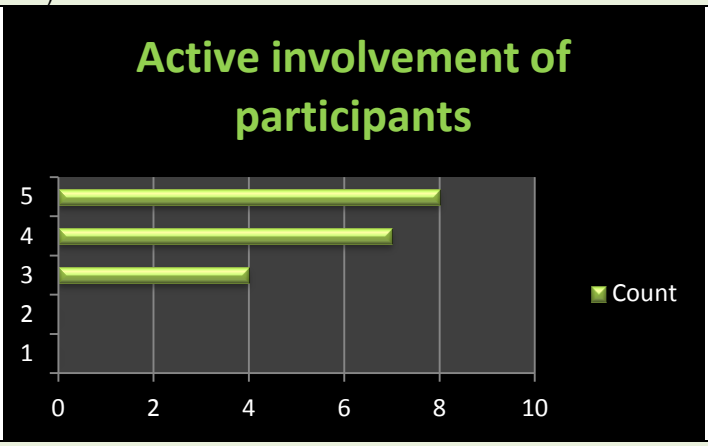
Facilitation of the forum (19 responses)

Scale	Score	Percentage
1 (poor)	0	0%
2	0	0%
3	3	16%
4	5	26%
5 (Excellent)	11	58%



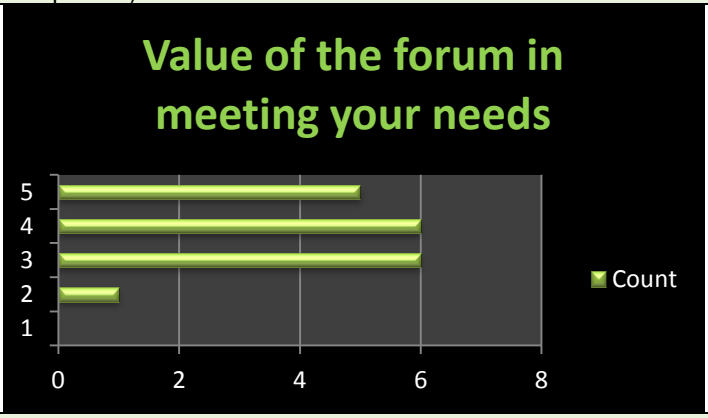
Active involvement of participants (19 responses)

Scale	Score	Percentage
1 (poor)	0	0%
2	0	0%
3	4	21%
4	7	37%
5 (Excellent)	8	42%



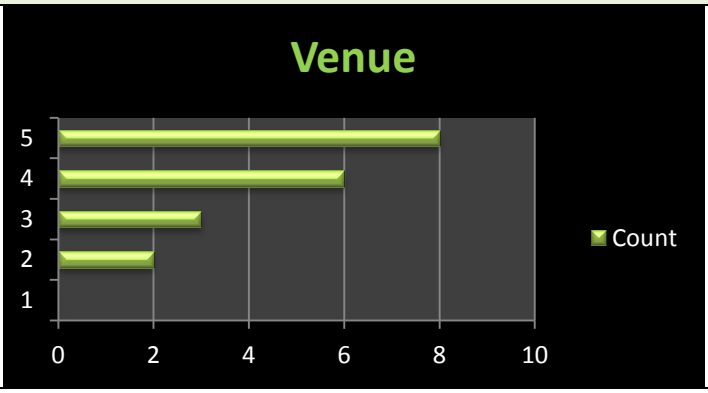
Value of the forum in meeting your needs (18 responses)

Scale	Score	Percentage
1 (poor)	0	0%
2	1	6%
3	6	33%
4	6	33%
5 (Excellent)	5	28%

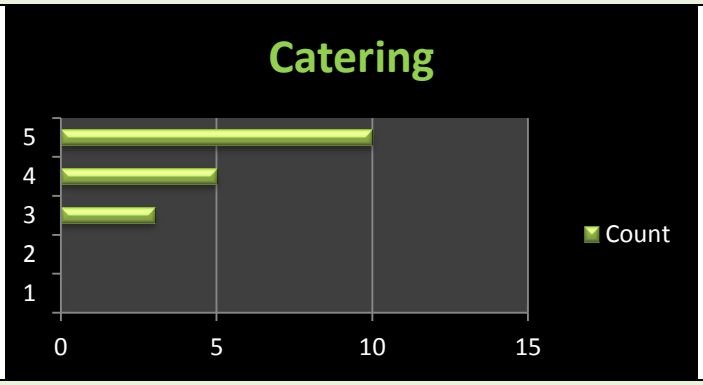


Venue (19 responses)

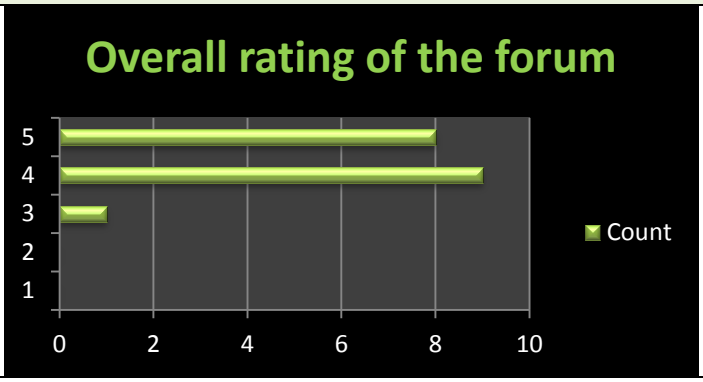
Scale	Score	Percentage
1 (poor)	0	0%
2	2	10%
3	3	16%
4	6	32%
5 (Excellent)	8	42%



Catering (18 responses)		
Scale	Score	Percentage
1 (poor)	0	0%
2	0	0%
3	3	17%
4	5	28%
5 (Excellent)	10	55%



Overall rating of the forum (18 responses)		
Scale	Score	Percentage
1 (poor)	0	0%
2	0	0%
3	1	6%
4	9	50%
5 (Excellent)	8	44%



The most useful aspect of the forum was

- Eye opening. New ideas
- Insight to simulation and application to education
- Demonstration
- Three presentations nice progression - education theory - actual application
- Playing
- Insight of others, including audience members
- Presentation regarding the IBC course at UTS. Discussion re benefits/challenges of simulations for authentic learning
- Captone and simulation
- Overview of simulation practice and pedagogies
- The experience of presenters using simulations
- Consideration of advantages and challenges
- Share experiences in capstones, simulations
- Hearing experiences of others
- Simulations Workshop
- The capstone sessions were most valuable for me.
- Simulations
- Introduction to simulations, capstone discussion had some useful points

To improve this forum, you could have:

- Talked about/related the demo to a real life situation more.
- better WiFi
- I'd like more discussion on types of features of different simulations
- Provided access to the slides
- Adhere to the timings. After a certain point, you lose the attention of the audence when they have been listening for a long time
- The specific underpinning of simulation for graduate capability development
- Mde the game more accessible using a pre-existing configuration
- More examples of problems and difficulties not just success.

- Used a more generic situation example e.g.capsim capstone
- Discussion of delivery methods (2+1, 1+2 etc)
- Maybe just do a demo of simulation
- Just fine
- The sims demo needs to show how the experience is transferable
- Slow down for us to try
- Simulations were discussed in the abstract. Examples would have helped. Advice like "speak to the sales rep for the specific simulation" is not very helpful when you don't know which simulations are available or even how to find out which simulations are available.

Did you learn anything new today?

- Yes. How an online simulation works
- Education context for simulation as a tool
- Yes
- A little mainly rewinding/repackage my current understanding
- Yes, participating in the online simulation was a completely new experience which was very informative
- Yes, the different simulations programs in business
- Lots about using simulations in class
- Breadth of simulations available
- Yes. Sims demo was more sophisticated than I expected
- That simulations are possibly not very useful because they seem to be designed to be used over an extended period. Not completely obvious how you can have good breadth of topics if you have to invest so much time in the process.

A theme I would like to see addressed at a future forum is

- More on assessment/dashboard
- More dynamic simulations
- Problems/barriers for using simulations. Innovative assessments
- Practice issues such as access to technology, training of academic staff, demonstraing value
- Assessment specific to 'surround' the simulation
- Dealing with large classes (500 + students) and multiple 5-20 streams
- Simulation of Enterprise Architecture and Strategic Business goals of Enterprises
- More of the same - simulations across different disciplines
- Yield Management for Services

Final comment/s:

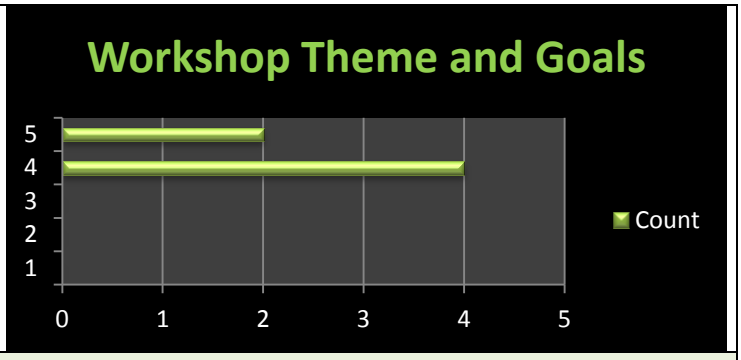
- Food for thought. Thank you!
- It would have been good to have had a longer lunch break as the morning sessions involved a lot of listening so an hour for lunch would have meant more time to revitalise.
- Thanks, was good!
- Great to have the exposure and connections.
- Overall, good forum.
- Excellent and keep it up.
- Very good
- Excellent. Thanks. Check out project enrole
- Great show

Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

SIMULATION-BASED PEDAGOGIES IN TOURISM AND HOPSITALITY EDUCATION

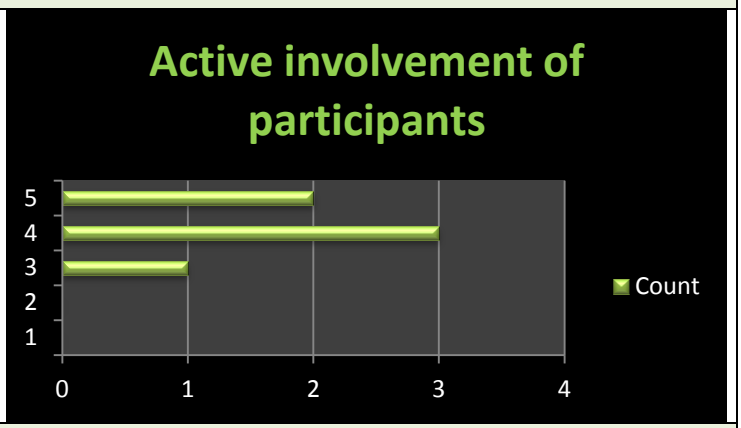
CAUTHE, 2-5 February 2015

Scale	Rating	Percentage
1 (poor)	0	0%
2	0	0%
3	0	0%
4	4	67%
5 (Excellent)	2	33%



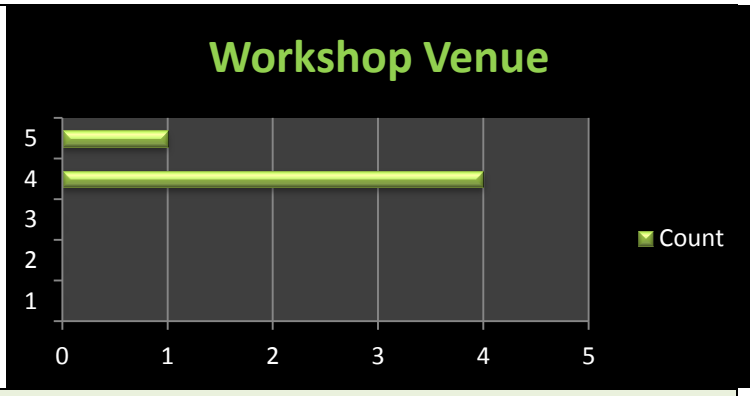
Scale	Rating	Percentage
1 (poor)	0	0%
2	0	0%
3	0	0%
4	2	33%
5 (Excellent)	4	67%

Scale	Rating	Percentage
1 (poor)	0	0%
2	0	0%
3	1	17%
4	3	50%
5 (Excellent)	2	33%



Scale	Rating	Percentage
1 (poor)	0	0%
2	0	0
3	1	17%
4	3	50%
5 (Excellent)	2	33%

Scale	Rating	Percentage
1 (poor)	0	0%
2	0	0%
3	0	0%
4	4	80%
5 (Excellent)	1	20%



Scale	Rating	Percentage
1 (poor)	0	0%
2	0	0%
3	0	0%
4	4	67%
5 (Excellent)	2	33%

Most useful aspect of workshop

- Access to new technology in learning and teaching
- Variety of simulation software available
- Learning about options and best practices
- To see examples of how simulatino is ued in the teaching and to understand the background of using it in teaching.
- Learning about simulation options and resources
- Very informative about what is out there and what is possible
- Exposure to simulations

How to improve the workshop

- More access to examples
- More demonstrations
- More time to learn more, engage and experiment with the tools

Did you learn anything new

- All the new technology and their possibilities
- Yes a lot
- Yes, I learnt what simulation means
- Yes, simulations are much more advanced and accessible these days
- I did not know that simulations for teaching were already so well developed
- Yes

What do you plan to change at your institution as a result of this workshop

- Explore ….. Them in my course or even two courses
- I am not teaching currently, so I cannot change anything. I am just interested to learn about the topic.
- Looking to integrated a simulation program at my university
- Explore publication options
- Explore what simulation options may suit my units.

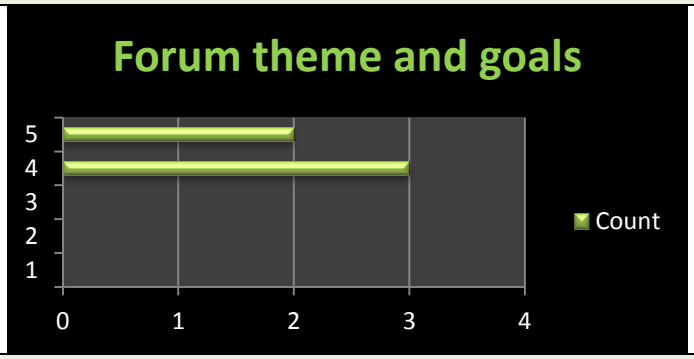
Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

INNOVATIVE PEDAGOGIES FOR DEVELOPING BUSINESS GRADUATE CAPABILITIES WORKSHOP

Brisbane, 3 December 2014

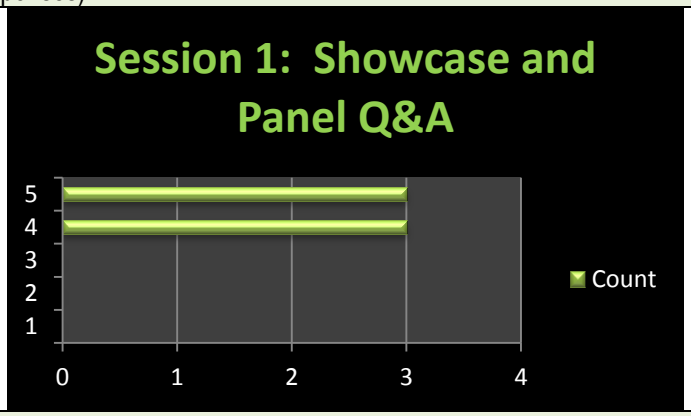
Forum theme and goals (5 responses)

Scale	Scores	Percentage
1 (poor)	0	0
2	0	0
3	0	0
4	3	60%
5 (Excellent)	2	40%



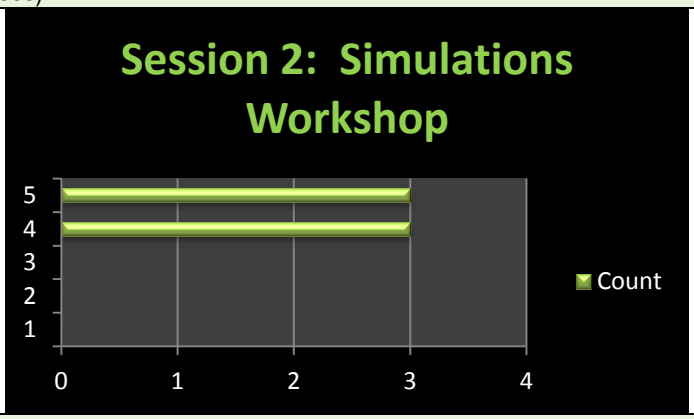
Session 1: Showcase and Panel Q&A (6 responses)

Scale	Scores	Percentage
1 (poor)	0	0
2	0	0
3	0	0
4	3	50%
5 (Excellent)	3	50%



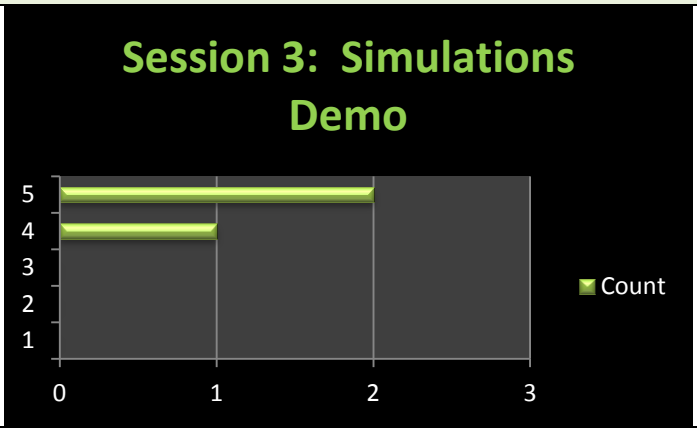
Session 2: Simulations Workshop (6 responses)

Scale	Scores	Percentage
1 (poor)	0	0
2	0	0
3	0	0
4	3	50%
5 (Excellent)	3	50%

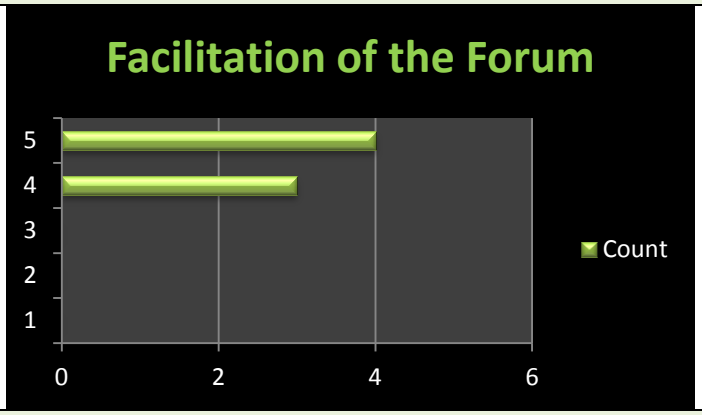


Session 3: Simulations Demo (3 responses)

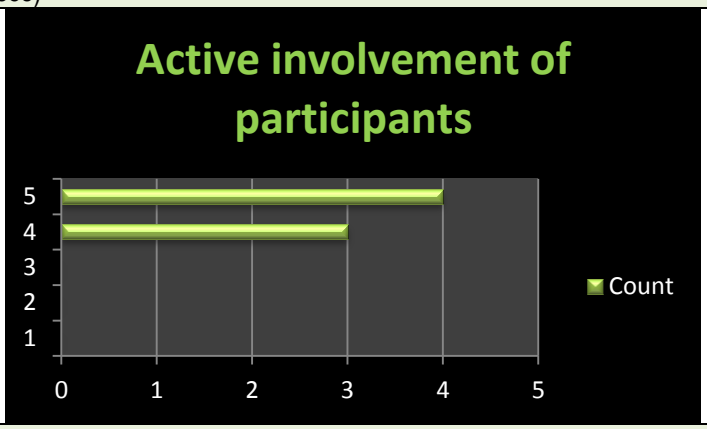
Scale	Scores	Percentage
1 (poor)	0	0%
2	0	0%
3	0	0%
4	1	34%
5 (Excellent)	2	66%



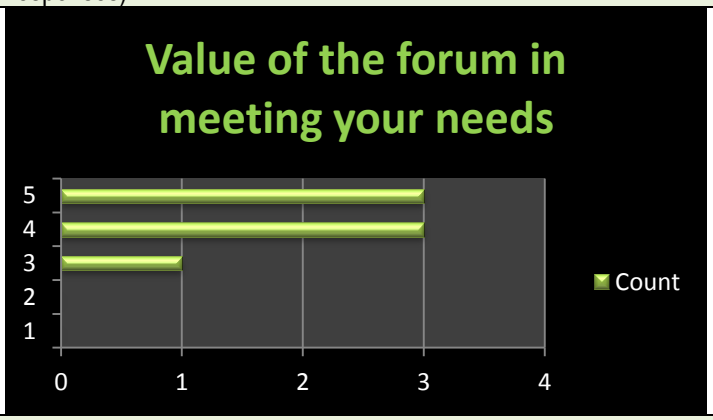
Facilitation of the forum (7 responses)		
Scale	Scores	Percentage
1 (poor)	0	0%
2	0	0%
3	0	0%
4	3	43%
5 (Excellent)	4	57%



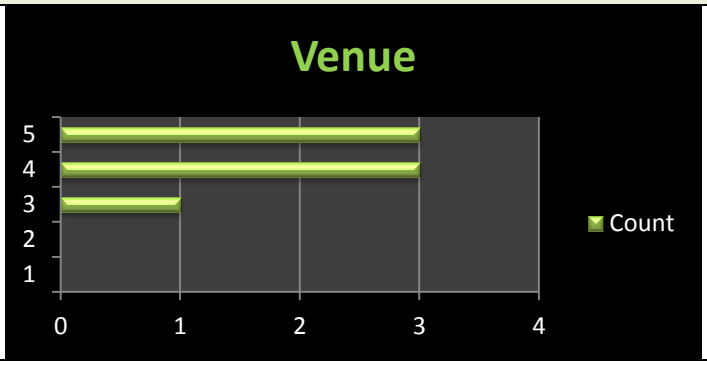
Active involvement of participants (7 responses)		
Scale	Scores	Percentage
1 (poor)	0	0%
2	0	0%
3	0	0%
4	3	43%
5 (Excellent)	4	57%



Value of the forum in meeting your needs (7 responses)		
Scale	Scores	Percentage
1 (poor)	0	0
2	0	0
3	1	14%
4	3	43%
5 (Excellent)	3	43%

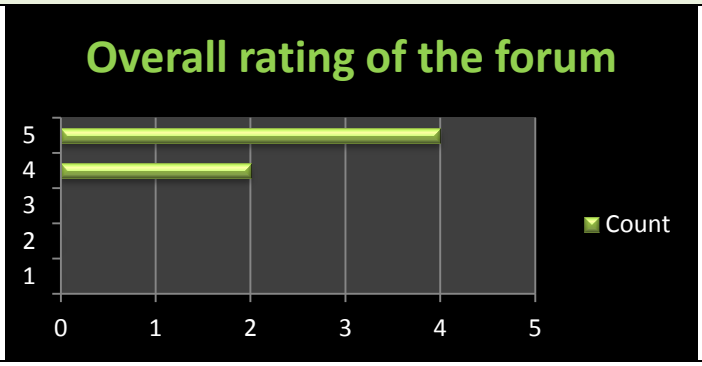


Venue (7 responses		
Scale	Scores	Percentage
1 (poor)	0	0%
2	0	0%
3	1	14%
4	3	43%
5 (Excellent)	3	43%



Catering (7 responses)		
Scale	Scores	Percentage
1 (poor)	0	0%
2	0	0%
3	3	43%
4	2	28%
5 (Excellent)	2	28%

Overall rating of the forum (6 responses)		
Scale	Scores	Percentage
1 (poor)	0	0%
2	0	0%
3	0	0%
4	2	33%
5 (Excellent)	4	67%



The most useful aspect of the forum

- Presentations on capstones/consulting etc
- How to position the 'technique' of simulation in a curriculum.
- Examples of online simulations
- Listening to outcomes of project and other universities experiences and thoughts
- Exchange of ideas and issues to consider
- Hearing what other institutions are doing
- Wasn't as relevant to me as I thought it would be - was looking forward to hearing from Janis.

To improve this forum, you could have

- Included all participants/presenters
- Extend the discussion of graduate capabilities and how to teach/learn them.

Did you learn anything new today?

- Yes. Discussion of other approaches was interesting. How to use simulations in capstone.
- The opportunity build other learning activities around simulations
- Examples of online simulations
- Yes - different assessment techniques. Latest research
- Yes a good exchange of ideas
- Different approaches to using/assessing simulations
- Yes an awareness of simulations and their current use

A theme I would like to see addressed at a future forum is

- Evidence of benefits of online simulations for students

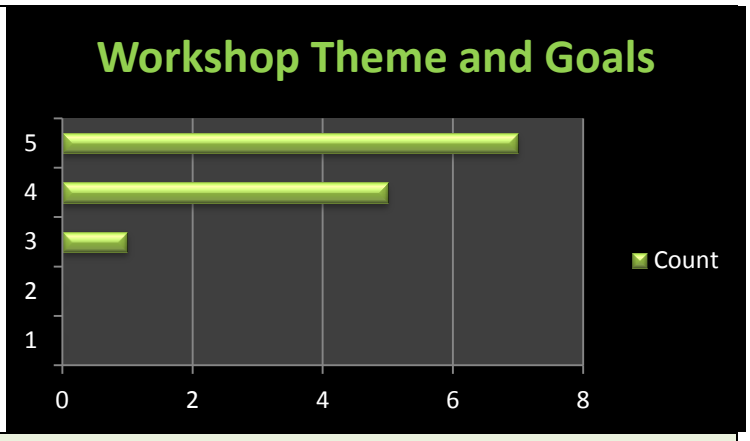
Final comment/s:

- Thanks. Very useful and the online resources look great!
- Great practical application focussed workshop
- Very useful
- Great project. Good outcomes
- Thank You.
- Well set out

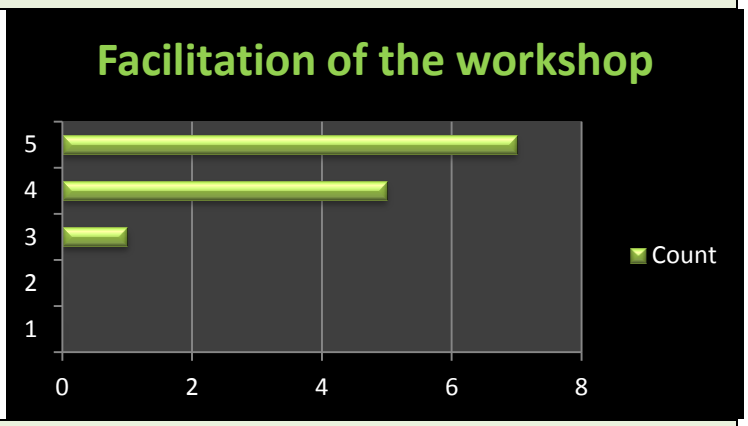
Online Business Simulations
PEDAGOGY | ASSESSMENT | LEARNING

TRANSFORMING LEARNING WITH ONLINE BUSINESS SIMULATIONS
Adelaide Workshop, 26 March 2015

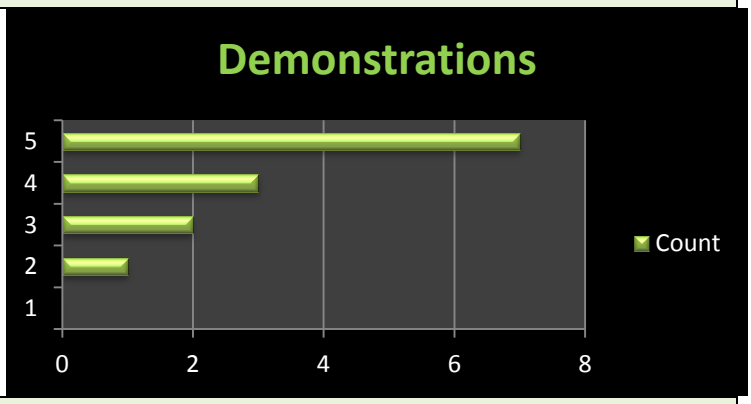
Scale	Counts	Percentage
1 (poor)	0	0%
2	0	0%
3	1	8%
4	5	38%
5 (Excellent)	7	54%



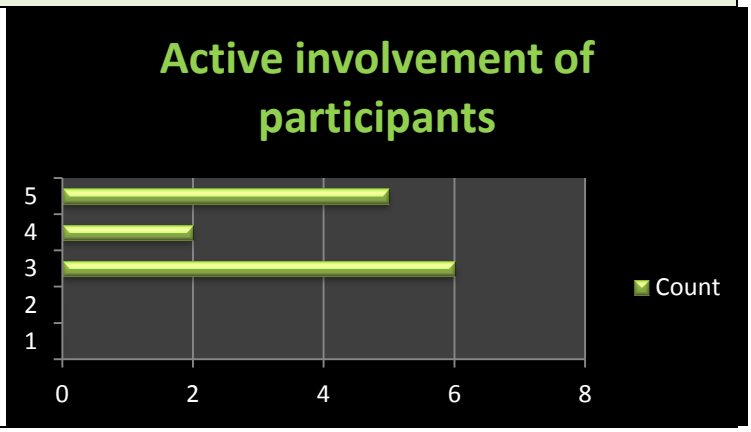
Scale	Counts	Percentage
1 (poor)	0	0%
2	0	0%
3	1	8%
4	5	38%
5 (Excellent)	7	54%



Scale	Counts	Percentage
1 (poor)	0	0%
2	1	8%
3	2	15%
4	3	23%
5 (Excellent)	7	54%



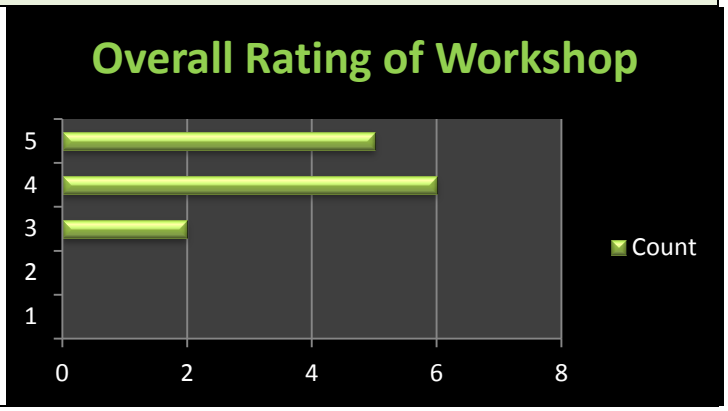
Scale	Counts	Percentage
1 (poor)	0	0%
2	0	0%
3	6	46%
4	2	15%
5 (Excellent)	5	39%



Scale	Counts	Percentage
1 (poor)	0	0%
2	1	8%
3	2	15%
4	6	46%
5 (Excellent)	4	31%

Scale	Counts	Percentage
1 (poor)	0	0%
2	0	0%
3	2	16%
4	3	25%
5 (Excellent)	7	59%

Scale	Counts	Percentage
2	0	0%
3	2	15%
4	6	46%
5 (Excellent)	5	39%



The most useful aspect of the workshop

- Demonstrations and views
- Hearing about current use of simulations
- Learning more about simulations from a business context.
- Discussion of educational purpose of simulations
- Learning about the use of simulations
- Just being able to see what is available and hear about how others are using these tools. Networking and sharing ideas
- How simulations is pedagogically structured and delivered
- There is a lot of scope for the business schools to integrate business simulations in the pedagogy
- As a manager to actually better understand the pedagogy around using sims, assessments
- Learning how data-based simulations can be used for experiential learning
- Examples
- How simulations can be used around a course or course around a simulation
- Practical demonstration of simulation

To improve this workshop, you could have

- The presenters limited to 10 min-15 min summary
- Show how simulations can be run without using "off the shelf" software packages. How to design simulations mapped to the key learning outcomes of the course using common tools available in a uni context.
- A little longer space (not so squeezy) and full day to allow more time for playing with simulations. More student perspective input
- Can't think of any but it is not what I can use in my teaching. Maybe, it's useful to articulate what kind of course this workshop can be useful
- A variety e.g simulation demonstrations in other areas: research, language learning……
- There can be hands on experience in using one of the simulations in a comprehensive manner. This might encourage others to start using the simulation
- Bit longer.
- It was great, if time permits may be some real time experience of working on simulation.
- Longer time to explore simulations and case studies

Did you learn anything new today?

- Yes, range of possibilities, issues, pros and cons
- More detail of particular sims
- How to use simulations in teaching and a range of tools for teaching.
- Yes, I've got a better understanding of the use of sims. It also helps to confirm in my mind that a sim I currently use is worthwhile
- Pedagogy focus on sim
- It was informative
- Absolutely. Better understanding of the use of sims on a broad base
- Got ideas how innovative pedagogies can be used for online simulation scenarios. Points to consider if we use simulations in our course.
- Attitudes towards sim assessment, Bringing back grads
- Yes. Haven't used simulations for authentic activities.
- Deeper understanding of range of simulations and functions

What (if anything) do you plan to change at your institution as a result of this workshop?

- Further investigation into available sims
- Share info and encourage more consideration of sims
- Run some games
- I'll take ideas back to my school on how these sims could be incorporated into courses and especially a capstone course which we are currently developing.
- Intend to apply/run sim on Interpreting Training.
- To discuss with lecturers and students and deeper analysis of how we actually use HOTS looking hollistically from all stakeholders perspectives (organisation, lecturer and student)
- I would like to collaborate with colleagues and academics, try use simulation in a couple of courses we identify. We may apply for grant to develop our own simulation platform.
- See # 4. Thank You!
- Feedback info to team I work with.
- Unsure at this point.

Appendix H: Webinar Evaluation

Transforming Assessment Webinar Feedback to Speaker

Session Details:
Enhancing student learning outcomes with simulation-based pedagogies
Wednesday, 4 Mar 2015 07:00 AM GMT

Speaker:
A/Prof. Pierre Benckendorff (University of Queensland, Australia)

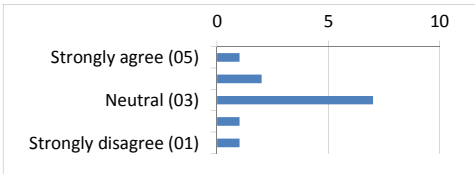
Notes:
The following data was collected via the anonymous end of session online survey.
This survey was conducted using the open source LimeSurvey package.
http://www.limesurvey.org/
The data has not been modified and is the raw data as collected.
Bar charts display counts.
The weighted result was calculated by the formula below and excludes 'no-answer' responses
((5*count_of_SA)+(4*count_of_A)+(3*count_of_Neu)+(2*count_of_D)+(1*count_of_SD))/Num_of_responses

Data Record
Number of records 12

In the questions below X =
simulations

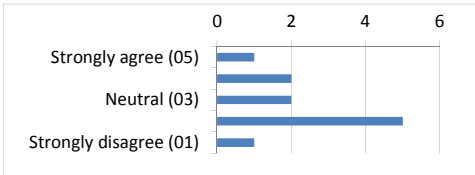
Field summary for TA0001(1)
[Prior to this session, I had a detailed knowledge of how to use X for assessment.]

Answer	Count	Percentage	Weighted result:	3.1
Strongly agree (05)	1	8.33%		
Agree (04)	2	16.67%		
Neutral (03)	7	58.33%		
Disagree (02)	1	8.33%		
Strongly disagree (01)	1	8.33%		
No answer	0	0.00%		
Not completed or Not displayed	0	0.00%		



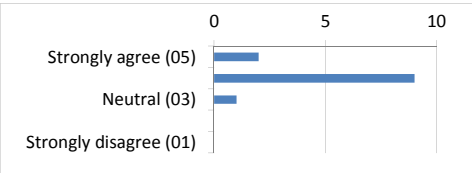
Field summary for TA0001(2)
[Prior to this session, I frequently used X for assessment.]

Answer	Count	Percentage	Weighted result:	2.7
Strongly agree (05)	1	8.33%		
Agree (04)	2	16.67%		
Neutral (03)	2	16.67%		
Disagree (02)	5	41.67%		
Strongly disagree (01)	1	8.33%		
No answer	1	8.33%		
Not completed or Not displayed	0	0.00%		



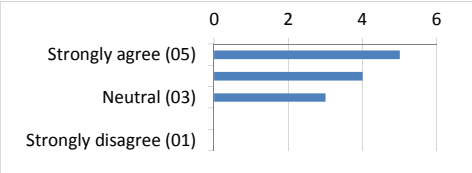
Field summary for TA0001(3)
[This session has improved my understanding of how to use X for assessment.]

Answer	Count	Percentage	Weighted result:	4.1
Strongly agree (05)	2	16.67%		
Agree (04)	9	75.00%		
Neutral (03)	1	8.33%		
Disagree (02)	0	0.00%		
Strongly disagree (01)	0	0.00%		
No answer	0	0.00%		
Not completed or Not displayed	0	0.00%		



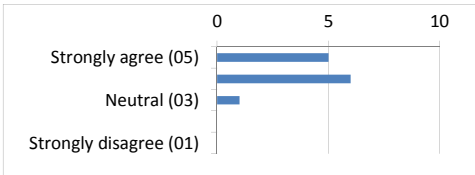
Field summary for TA0001(4)
[I plan to use information from this session in my own teaching or educational practice.]

Answer	Count	Percentage	Weighted result:	4.2
Strongly agree (05)	5	41.67%		
Agree (04)	4	33.33%		
Neutral (03)	3	25.00%		
Disagree (02)	0	0.00%		
Strongly disagree (01)	0	0.00%		
No answer	0	0.00%		
Not completed or Not displayed	0	0.00%		



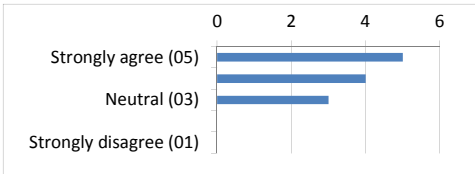
Field summary for TA0001(5)
[I would like to learn more about how to use X for assessment.]

Answer	Count	Percentage	Weighted result:	4.3
Strongly agree (05)	5	41.67%		
Agree (04)	6	50.00%		
Neutral (03)	1	8.33%		
Disagree (02)	0	0.00%		
Strongly disagree (01)	0	0.00%		
No answer	0	0.00%		
Not completed or Not displayed	0	0.00%		



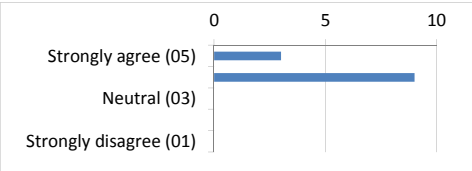
Field summary for TA0001(6)
[I think my institution should allocate more resources to assisting teaching staff to use X for assessment.]

Answer	Count	Percentage	Weighted result:	4.2
Strongly agree (05)	5	41.67%		
Agree (04)	4	33.33%		
Neutral (03)	3	25.00%		
Disagree (02)	0	0.00%		
Strongly disagree (01)	0	0.00%		
No answer	0	0.00%		
Not completed or Not displayed	0	0.00%		



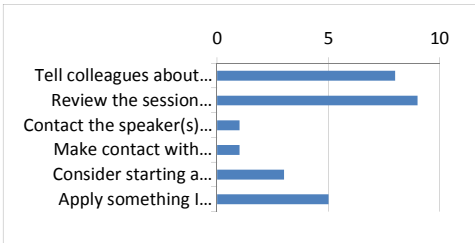
Field summary for TA0001(7)
[After this session I can see how better to use X for assessment in my discipline.]

Answer	Count	Percentage	Weighted result:	4.3
Strongly agree (05)	3	25.00%		
Agree (04)	9	75.00%		
Neutral (03)	0	0.00%		
Disagree (02)	0	0.00%		
Strongly disagree (01)	0	0.00%		
No answer	0	0.00%		
Not completed or Not displayed	0	0.00%		



Field summary for TA-followup
Following on from this session I intend to:

Answer	Count	Percentage
Tell colleagues about this sessi	8	66.67%
Review the session recording (F	9	75.00%
Contact the speaker(s) of this se	1	8.33%
Make contact with one or more	1	8.33%
Consider starting a trial or proje	3	25.00%
Apply something I have learnt fr	5	41.67%



Open response items

The best aspects of this session were:

reading the chat panels where people were sharing their own experiences

It was so timely for my needs! About to start looking at business simulations for online subjects, and currently know *nothing* about them, so session was perfect for me, and the project website looks just what I need to follow up on. thanks!

Very clear, interesting and comprehensive. Many thanks.

Tips and challenges

Good overview of the available tools. Clear explanation of core issues and benefits

This session could be improved by:

Perhaps to inform participants in advance that they need to install the "Blackboard Collaborate Launcher"- I went to this site (http://ta.vu/BCtest) in advance of the session but I was not able to join a Configuration Room to test out my equipment - it shows "Page not displayed". I wasn't aware I need to download and install the launcher until I tried to join the session.

It was fine!

Appendix I: Anticipated Impact using the IMPEL Model

	Project completion (2015)	2016	2018	2010
Team members	Project findings and expertise applied to improve teaching and learning in partner institutions. New implementations of simulations at partner institutions.		Recognition contributions to learning and teaching through promotion and awards.	Ongoing research and scholarship around simulation pedagogies
Immediate students	Enhanced learning outcomes as a result of changes at partner institutions impacting on ~700 students across five institutions.		First cohorts of students graduating from improved programs	-
Spreading the word in academia	Project website (case studies, tools) and seminars at partner universities and other universities and vocational educational institutions.	Presentations at national and international conferences. Webinars to a wider audience of interest.	Publication of book chapters and journal articles to engage the international academic community. Updated project website including links to published conference papers and journal articles.	Citation analysis of publications, teaching awards, downloads and views tracks.
Narrow opportunistic adoption	-	Other educators at partner institutions use resources and cases to embed one or more simulations into individual units		
Narrow systemic adoption	-	-	Systemic mapping and embedding of simulations as part of a broader curriculum framework at partner institution programs	Ongoing evaluation and review of the efficacy of embedding simulations into curricula
Broad opportunistic adoption	Educators already using simulations use cases and resources to improve teaching and learning		Educators at other institutions use resources and cases to embed one or more simulations into individual units.	
Broad systemic adoption	-	-	Systemic embedding of simulations into other institutions as part of internal curriculum review cycles. Ongoing evaluation and review of the efficacy of embedding simulations into curricula	

Appendix J: Evaluation Framework

Evaluation Framework for Technology Enabled Learning Cluster
Enhancing student learning outcomes with simulation-based pedagogies
University of Queensland SP13-3261

Evaluation Overview
The main purpose of the evaluation approach is to provide both formative and summative evaluation and is directly informed by the ALTC Project Evaluation Resources designed to assist projects in achieving success and to provide a judgement on the overall merit of the projects. Even though each of the individual eight projects has an individual evaluation plan, there are some common challenges and indicators across each of the three clusters. In addition, the clusters will attempt to leverage their reference groups in order to not have duplication. There is agreement within clusters to leverage their professional networks and to jointly use conferences and key events to maintain cohesive communication on the 2013 Strategic projects.

The guiding focus of the evaluation is to determine:
- the project's aims been achieved, and
- were the outcomes delivered on time and within budget.

All projects were asked to respond to the same series of questions to assist with the development of individualised evaluation plans:
1) What is the scope of the project?
2) What are the intended outcomes?
3) What are the key operational processes to achieve the outcomes?
4) What are the key drivers?
5) Who are the key stakeholders?
    a) Who are the key audiences for the results of this project?
6) What evaluation approach do you think is suitable for your project?
7) What are the key evaluation questions?
    a) What are the data sources?
    b) What types of data/information will be collected?
    c) How will the data/information be analysed?
    d) What are the criteria for making judgements about the evaluation findings?
8) What are the critical points for consultation with the evaluation team?
9) When are key project milestones and events?
10) How will the outcomes from the project be disseminated?

Project Overview
The aim of this project is limited specifically to online business simulations that encourage learners to analyse the interrelationships between the various functional areas of an organisation. The project does not seek to develop a new simulation but is concerned with innovative pedagogies that enhance the effectiveness of online simulations in universities. The role of simulation-based pedagogies in linking theory with practice and developing graduate capabilities in a business context is of particular relevance.

Outcomes
The intended outcomes are:
- Series of reports and academic papers
- Simulation learning barometer
- Project website
- Series of national workshops

Formative Evaluation
This project's formative evaluation processes will include:

- Regular team meetings and ongoing monitoring of project management activities among the leadership team (project leaders and managers).
- Inclusion of evaluator in shared team space for access to notes, minutes, timelines, etc.
- Inclusion of evaluator in key advisory group meetings
- Inclusion of evaluator in key project team meetings
- Inclusion of evaluator in all advisory group communications
- Inclusion of evaluator in all project cluster communications
- Analysis of data and evidence collection from surveys/workshops/interviews
- Regular reporting back to project leaders, project team members, advisory group
- Planned and ongoing engagement with evaluator around expectations, monitoring of achievements against milestones, risk assessment and strategies for intervention.

Summative Evaluation
The project's summative evaluation processes will involve the key evaluation questions in the table below related to the intended project's aim and outcomes:

Objective/Phase	**Key Evaluation Questions**	**Evidence**
Reports and academic papers	How many academic papers have been accepted and where?	Number of case studies Survey responses Interview responses Simulations audit
Simulation learning barometer	Was the simulation barometer developed? How is the barometer perceived by users? Does the barometer identify learning outcomes from the online simulations?	Analysis student responses to barometer.
Project Website	How many unique visitors/downloads/video views? Does the website provide a platform?	Web analytics Quality of Resources Size of community
National workshops	How many different institutions and individuals participate? How do participants evaluate the effectiveness of the workshop(s)?	Participant evaluation Feedback from Advisory Group Size of project community

The revised project timeline is in the table below on the next page.

Timelines, Project Stages and Key Tasks (Revised March 2014)

Timeline	Tasks	Responsibilities	Outcomes & Deliverables
Stage 1 Project Initialisation *January-April 2014*	1.1 Appoint a Project Manager (PM) to assist the Project Leader (PL)	PL	▪ Workshop involving all project partners ▪ Project management schedule, communications protocol & dissemination plan ▪ Collaboration framework ▪ Ethics application ▪ Briefing of reference group members and project evaluator ▪ Project website ▪ Literature review ▪ Report 1 ▪ Newsletter 1
	1.2 Appoint external evaluator (EE) and refine evaluation framework	PL	
	1.3 Conduct a full-day planning meeting of all Project Partners (PP) to establish vision, goals, financial management, contact details, timeline and meeting schedule for duration of project	PL, PM, PP	
	1.4 Complete a project management schedule, communications protocol and dissemination plan	PL, PM	
	1.5 Establish and brief a Project Reference Group (RG)	PL, PM, RG	
	1.6 Prepare an ethics application for approval	PL, PM, PP, RG	
	1.7 Establish a project website	PL, PM	
	1.8 Report progress to OLT and external evaluator	PL, PM, EE	
	1.9 Appoint a Research Assistant and conduct a literature review to identify key issues, measurement approaches and variables	PM, RA	
	1.10 Conduct a desktop audit of existing business simulations	PM, RA, RG	
	1.11 Write and Disseminate *Report 1: Online simulations in business education*	PL, PP, RA, RG	
	1.12 Liaison, engagement and dissemination to business educators	PL, PM	
	1.13 Disseminate project newsletter 1	PL, PM	
	1.14 Report progress to external evaluator	PL, PM, EE	
Stage 2 Data Collection & Analysis *March-June 2014*	2.1 Conduct a full-day meeting to workshop the design of measurement tools based on the literature and the expertise of the project partners and reference group	PL, PM, PP	▪ Workshop involving all project partners ▪ Simulation Learning Barometer ▪ Interviews with educators ▪ Student surveys ▪ Reports 2 & 3 ▪ Academic articles ▪ Newsletter 2
	2.2 Undertake a pilot study of the measurements tools to serve as an internal evaluation mechanism	PL, PM, PP	
	2.3 Review the measurement instrument with members of the Project Reference Group as an external evaluation mechanism	PL, PM, PP, RG	
	2.4 Conduct student surveys at the start and end of each semester using measurement instrument	PL, PP, PM	
	2.5 Prepare case studies based on student feedback and interviews and workshops with educators	PL, PP, PM	
	2.6 Write and Disseminate *Report 2: Learning outcomes of online simulations* and *Report 3: The use of simulations as pedagogic tools*	PL, PP	
	2.7 Disseminate project newsletter 2	PL, PM	
	2.8 Liaison, engagement and dissemination to business educators, including submission of academic papers and conference presentations at national discipline conferences and teaching and learning conferences	PL, PM	
	2.9 Report progress to OLT and external evaluator	PL, PM, EE	
Stage 3 Design of Online Toolkit	3.1 Conduct a full-day meeting to develop a framework for the online toolkit	PL, PM, PP	▪ Workshop involving all project partners
	3.2 Use information from previous stages to develop multimedia resources for the online toolkit,	PL, PM, PP	

Timeline	Tasks	Responsibilities	Outcomes & Deliverables
May-August 2014	including exemplars, sample assessments, information sheets, evaluation frameworks, video profiles and tips.		▪ Online Toolkit ▪ Newsletter 3
	3.3 Consult with the reference group and other stakeholders to refine the online toolkit	PL, PM, PP, RG	
	3.4 Disseminate project newsletter 3	PL, PM	
Stage 4 National Workshops & Dissemination *September 2014*	4.1 Liaison, engagement and dissemination to business educators	PL, PM	▪ National workshops with business educators ▪ Academic articles
	4.2 Conduct a series of national workshops with business educators and other stakeholders to: ▪ present evidence of the efficacy of online simulations ▪ present the online toolkit and promote its features and benefits ▪ embed insights from the case studies to improve teaching and learning practice ▪ form a community of practice around the use of digital simulations	PL, PP, PM, EE	
	4.3 Evaluate national workshops	PL, PM	
	4.4 Submit academic outputs including journal articles and conference papers	PL, PP	
	4.5 Report progress to external evaluator	PL, PM, EE	
Stage 5 Project Finalisation *October-November 2014*	1.1 Disseminate project newsletter 4	PL, PM	▪ Evaluation Report ▪ Final Project Report ▪ Project Website ▪ Newsletter 4
	1.2 Evaluate the Project	PL, PM, PP, RG, EE	
	1.3 Final Project Report to OLT	PL, PM	
	1.4 Financial Acquittal Statement	PL, PM	
	1.5 Disseminate Final Project Report to the Project Reference Group, business educators and other stakeholders	PL, PM	
	1.6 Ongoing dissemination of the project outcomes through the project website, academic articles and conference presentations	PL, PM	

Appendix K: Evaluation Panel Report

Evaluation Reflections
University of Queensland – SP13-3261
Enhancing student learning outcomes with simulation-based pedagogies

Background

The aim of this project was limited specifically to online business simulations that encourage learners to analyse the interrelationships between the various functional areas of an organisation. The project did not seek to develop a new simulation but rather was concerned with innovative pedagogies that enhance the effectiveness of online simulations in universities. The role of simulation-based pedagogies in linking theory with practice and developing graduate capabilities in a business context was of particular relevance.

The guiding focus of the evaluation was to determine if the project's aims were achieved, and outcomes delivered, within budget and on time.

The purpose was to gather and disseminate good practice in the design of simulation-based units, including the design of pedagogy and assessment.

The intended aims were to:

- Map the features and characteristics of online business simulations;
- Assess the challenges associated with the integration of online simulations into sustainable teaching practice in business education;
- Evaluate the contribution of online simulations and related pedagogies to student learning outcomes; and
- Identify and promote innovative pedagogies and strategies associated with the use of online business simulations in universities.

These outcomes were intended to be accomplished via the following demonstrable outputs:

- Simulation learning barometer
- Online toolkit
- Series of national workshops
- Published papers and reports

Evidence

The first interactions between the Project and Evaluation Teams were at the OLT workshop for the 2013 Strategic Commissioned Projects, conducted in April 2014. Within the Technology Enabled Learning Cluster, there were three projects, with this project being led by Associate Professor Pierre Benckendorff from University of Queensland, with partner institutions – Griffith University, La Trobe University, University of South Australia and William Angliss Institute – including team members Gui Lohmann, Marlene Pratt, Paul Reynolds, Paul Strickland and Paul Whitelaw. There was also a dedicated project manager Lainie Groundwater who provided support and guidance to the project team and reference group.

In order to identify that the project's aims were achieved and outcomes delivered both formative and summative evaluation strategies were utilised. The Evaluation team was

provided with access to the key documentation via Dropbox from the project team and were included in significant project team communications. In addition, a member of the evaluation team was a participant in virtual and face to face project team and reference group meetings which facilitated input and advice throughout the project lifecycle.

The Evaluator found several key factors that contributed to the successful achievement of the project aim and goals. These factors include:

- Regular meetings of the project team with the Evaluator and Reference Group from the beginning of the project, which were well supported by project plan updates and reports on activities. This ensured that the team were provided formative feedback to further enhance the proposed project outcomes.
- Active and sustained communications between project team members from the partner institutions.
- Strong project management, as demonstrated by extensive and appropriate documentation and insightful input to the project from the project manager.
- Appropriate knowledge of institutional structures and priorities, ensuring that the activities undertaken related to institutional strategies and requirements in this emerging field.
- Establishment and maintenance of a genuine team approach to the project. This was exemplified in the breadth of contribution made by project team members not only at the national workshops but throughout the project.
- Diversity of skill set in the project team, which ensured a range of perspectives, breadth of analytical skills, and variation of insight into the project communication requirements.

Project Management

It has been documented that effective project management has the following elements:

- Identifying requirements,
- Establishing clear and achievable outcomes,
- Balancing the competing demands for quality, scope, time and cost,
- Managing the expectations of various stakeholders, and
- Adapting plans to overcome challenges.

From a Project Management perspective, the project was well managed and all stakeholder groups were involved. There was effective and significant communication with all members of the project team and involvement of the reference group assisted with project execution and promulgation of project outputs. From the evaluator's perspective the coordination with the Reference Group was the most effective involvement of any OLT project evaluated to date and was comprised of national and international experts in their fields who contributed enthusiastically to the success of this project.

This project had clear goals and strategies and adapted along the way to increase data gathering and engagement with students and business academics.

The leadership from Associate Professor Pierre Benckendorff along with the capable and conscientious oversight of Lainie Groundwater as Project Manager, were key factors in the success of this project. This facilitated a collaborative team environment with a clear and ongoing focus on the project deliverables. Inclusion of a member of the Evaluation Team in key project discussion provided formative evaluation and input throughout the project and was facilitated by the project leader in a positive and generative manner.

Achievement of Outcomes

The key summative evaluation questions centred on the development of simulation learning barometer, engagement with national workshops, project website and online resources and published academic papers.

Over 530 participants from 48 organisations attended project forums, webinars and presentations at conferences. The project website received over 2,100 visits from more than 1,400 users and the project's YouTube videos received over 600 views. Forum participants included educators and learning designers from public and private institutions as well as representatives of associations/companies. It is anticipated that within the next two years over 700 students per year will benefit from curriculum changes as an impact from this project. The Online Toolkit will continue to have an impact beyond the life of the project.

This project has generated a community of almost 200 interested stakeholders and there is scope to build on this by forming a network to act as a custodian for the project website and to continue the legacy of the project.

The simulation learning barometer was developed and trialled to measure the impact of simulation based pedagogies in business education. A range of cohorts using simulations across 7 universities were sampled – a total of 711 pre-simulation and 450 post-simulation surveys were completed. The project team addressed the challenge of a lower than expected response rate and extended the time to gather data from students.

A framework for implementing a simulation based pedagogy was developed that clearly highlights learning outcomes should be the first consideration with adopting a simulation. To assist users in implementing and evaluating simulations a good practice guide was developed.

A number of presentations on the outcomes from the project have been made and several journal articles are in the development stages.

Summary

The project activities, and in particular the website and national workshops ensured that a large number of stakeholders were integrally involved with the project and the project adapted with input received. Overall the evaluators appreciated the opportunity to work with such a capable and enthusiastic project team. The extent of interest in the online resources, the active nature of the workshops, and the ongoing positive inter-institutional dialogue is reflective of the value of this project.