Due Fri 19 Feb

<table>
<thead>
<tr>
<th>Project title</th>
<th>The Research of Simulated Learning Practice Across RMIT, Resulting in a Resource to Assist Teachers in Designing and Implementing Simulated Work Based Projects in Support of the RMIT WIL policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project leader</td>
<td>Noel Maloney</td>
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</tbody>
</table>
| Team members                   | **Project Management Team:**  
                                | Sherridan Maxwell, Academic Development (VET), SEH  
                                | Noel Maloney, Senior Advisor, Learning and Teaching (VET), DSC  
                                | Mark Mossuto, Teaching and Learning Coordinator, Business TAFE  
                                | **Research Officer:**  
                                | Marilyn Capper  
                                | **Reference Consultant:**  
                                | Barbara de la Harpe, DSC College  
                                | **Acknowledgements:**  
<pre><code>                            | We would like to thank Friederika Kaider, for her assistance in developing the LTIF application for this project and John Milton, for his advice on developing project outcomes and designing the Blackboard resource. |
</code></pre>
<p>| Funds approved                 | $25,091                                                                                                                                                                                         |
| Funds acquitted (Appendix 1, financial statement) | $25,766 |</p>
<table>
<thead>
<tr>
<th>Introduction</th>
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<tbody>
<tr>
<td>Simulations in education range from sophisticated, virtual worlds through to simple, real-time class-based activities. When integrated with good learning design, supported with a work integrated learning (WIL) approach and managed effectively, they offer students a collaborative and safe environment in which to practice capabilities, to be assessed effectively and to prepare for professional and vocational work.</td>
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<td>Simulated learning activity is widely used across RMIT. More than 80% of teachers in advanced diploma and diploma qualifications, and more than 70% of teachers in bachelor degrees have indicated that they include some form of simulated activity in their program (Milton and Jones, 2008).</td>
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<tr>
<td>However, little is known about the range and type of simulations being offered at RMIT or about the developmental, management and learning and teaching problems teachers and students experience when they are used.</td>
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Detailed project description and outline of what was done

1. FOCUS OF STUDY

This project aimed to:

- Undertake a literature review of simulation taxonomies and of learning theory which could then be applied to the review or use of simulations;
- Through a two stage interview methodology, profile the types of simulation being used in learning and teaching across RMIT in order to identify advantages, problems and best practice, with a specific focus on learning design;
- Develop an online learning and teaching resource to assist teachers in developing, delivering, assessing and reviewing simulations more effectively;
- Develop strategies for disseminating this resource and;
- Support staff to embed simulations into their existing courses/programs and offer further support with mentoring and possible professional development.

1.1 User Focus

A major outcome of the project was the development of a learning and teaching resource to assist teachers in the development and management of simulations. This was originally intended for use primarily by teachers.

However, early on concerns were raised about the
dissemination of the resource and the likelihood of its uptake by teachers. Recent research suggests that teachers may respond better to learning and teaching resources if they are offered through conversations with others, through mentoring or through structured professional development activities (Knight, Tait & York, 2006).

It was agreed, by both the management team and reference group, that the resource may be more successful if targeted to staff in academic development groups to use with teachers, rather than just directly offered to teachers. This then underpinned the approach subsequently adopted in the project.

2. STAGES OF PROJECT

2.1 PROJECT MANAGEMENT COMMITTEE FORMED
A project committee including Mark Mossuto from School of Business TAFE, Noel Maloney, DSC College and Sherridan Maxwell SEH College was formed to administer and manage the project.

The committee met fortnightly for the first three months of 2009 to develop and advise on the aims, focus and methodology of the project. It then met monthly through to the project's conclusion in December 2009.

2.2 RESEARCHER APPOINTED
The management committee appointed Marilyn Capper as research officer. Marilyn's brief was to undertake the literature review and produce an annotated bibliography, identify educational simulations in use across RMIT, structure interview questionnaires and undertake the interviews, write three additional best-practice case studies, produce a taxonomy of simulation terms and create an annotated list of resources.

2.3 PROJECT OUTCOMES
The initial phase of the project comprised a review of the literature on educational simulations and relevant contemporary learning theory. Attention was also given to the considerable work already done within RMIT on the use of Virtual Situated Learning
Environments (VSLEs).

Once the review was completed, 17 simulations were researched across RMIT. From this research, a directory of these simulations was developed for inclusion in a learning and teaching resource on Blackboard. In addition, three of these simulations were profiled in more detail as best practice case studies, and are also included in the resource.

2.3.1. LITERATURE REVIEW

A literature review was undertaken with particular attention to taxonomies of simulations as well learning theories to underpin their use in education.

The field is broad and complex but several dominant themes were identified from the literature, namely:

- the potential of virtual situated learning environments to add ‘real world’ quality to the use of role play (Jones, 2007);
- the differences between instructional design and learning design in the development of simulations (Magee, 2006); and
- the application of constructivist methodologies to the design of online role plays and the promotion of learner-centred education (Douglas & Ogilvie 2007; Lainema 2009).

The types of simulations described in the literature tend to be mainly online environments and comprise role plays, simulated procedures, game playing or complex virtual environments, such as Second Life. Real time role plays, emulated environments or projects modeled on industry conditions receive scant attention.

From the literature on simulations in teaching and learning in higher education, three broad categories emerged:

**Procedural simulations**: these are simulations that are used to teach, or train, students in the operation of equipment or the management of a process. They are common to positivist disciplines such as medicine or engineering.
**Tactical simulations:** these are simulations that are usually game-based. They may either be focused on task competencies, or they may offer learning that is more ambiguous. They may be focused on creativity, thinking and decision making (Magee, 2008).

**Social process simulations:** these are simulations that tend to use role plays to develop skills in complex processes, for example supervision or mediation. These may either be offered online, in real time or through a combination of both. Within this definition are subgroups, including Virtual Simulated Learning Environments (VSLEs) and Virtual Worlds that will allow students a complex, immersive experience. In particular, VSLEs promote collaborative learner-centred environments that offer opportunities for knowledge construction through concretized experience, reflection and analysis (Jones, 2008).

From the review of the literature a simple taxonomy was developed. This taxonomy was then tested in the profiling of simulations and best practice case studies identified at RMIT (see section 3).

In addition, a range of learning theories was reviewed in order to determine which might be best used to underpin simulations, including constructivism, objectivism, problem-based learning and experiential learning.

A summary of these theories was developed and then used to analyse and link to the directory and best practice case studies of simulations identified across RMIT (see section 3).

**3. PROFILE OF SIMULATIONS AT RMIT AND DEVELOPMENT OF BEST PRACTICE CASE STUDIES**

**3.1 Selection**

In selecting the simulations to profile, the project aimed to represent both VET and HE, the three RMIT colleges, a range of disciplines, as well as a cross section of simulation types.

Given that the project was designed to take a broad view of simulation, it was decided to include online, blended and real time models. The subsequent profile
included several projects that either used a blend of online and real time play, such as the Virtual Enterprise project in the School of Business TAFE, or that enrolled students into a real time or synchronous project that mimicked industry conditions, such as The Story Room project in the Advanced Diploma of Screenwriting. In addition, what might be termed ‘hybrid’ simulations were also included in the survey, such as the Music Industry Project (MAVIS). Teachers involved in this project initially questioned whether it was a simulation, given that it produced a live music event. However, it was agreed that at certain points in the project’s life, industry conditions were simulated rather than ‘live’.

Gibbons (2001) proposes that definitions of simulations are formed within a broader constructivist practice of ‘model-centred instruction’. His model may be a useful way of theorising hybrid projects, as well as offering a productive approach to considering simulation in general. Gibbons’ model promotes a flexible notion of simulation that responds to the changing learning needs of participants and instructors and can encompass face-to-face, online or blended delivery.

3.2 Format
Seventeen simulations were researched through a two-stage interview process.

In stage one, teachers were asked to describe in simple terms the content and purpose of the simulation together with how it was delivered, learning assessed and managed. In stage two, they were asked to assess the simulation’s effectiveness as a teaching and learning tool.

A profile of each simulation was then developed in an easy to read, postage stamp format for inclusion on the Blackboard site. The intention was to give some overview of the range of simulations being used across RMIT.

The best practice case studies were designed in a narrative format to provide a more in-depth discussion of the development, management and learning and teaching issues involved.

4. ONLINE LEARNING AND TEACHING
The resource has been developed on Blackboard with both teaching and learning advisors, instructional designers and teachers in mind. The resource includes:

- a directory that offers simple, easy to read profiles of simulations across RMIT. The purpose of this directory is to communicate the breadth of simulation currently in use, common problems, challenges and successes;

- four case studies that discuss in greater depth, the teaching and learning issues involved in developing and managing simulations;

- a range of learning theories which teachers can readily apply to developing or diagnosing simulations;

- a series of key questions that advisors can use when assisting teachers to develop or manage simulations more effectively;

- a simple taxonomy of simulation types;

- a summary of RMIT policies related to the development and management of simulations;

- an annotated bibliography; and

- an annotated list of online resources.

These tools and resources were assembled and placed on a blackboard site. The site has been developed for both academic advisors and teachers.

In February of this year, teaching and learning advisors in DSC, SEH and the LTU reviewed the resource and several changes have been recommended, including;

- clarify purpose of the different components of the resource and;
Attach the full and detailed report and evaluation of your project outcomes including evidence of the impact the project has had. Also make reference to how the outcomes address the five key objectives: Improved student learning experiences, outcomes and employment opportunities Innovation Strategic alignment University wide application Value for money

- more signposting to improve navigation.

![SIM MAN PATIENT SIMULATOR](https://example.com/sim_man_patient_simulator.png)

**SIM MAN PATIENT SIMULATOR**

School of Health Sciences
Bachelor of Nursing

Sim Man is a patient dummy that is interactive and programmable for all sorts of clinical situations and functions. Students work in nursing teams to resolve clinical issues. The dummy also has a webcam and microphones that catch students actions and responses.

Figure 2: from the simulation directory, *Simulations: A Learning and Teaching Resource* (RMIT Blackboard)

This project has evidenced work currently done in the area of simulations at RMIT. A further evaluation of the impact of the project will take place later in 2010.

Below is an overview of how the project has addressed the five key LTIF objectives:

1. **Improved student learning experiences, outcomes and employment opportunities**

   It is anticipated that student learning experiences will be enhanced through the promotion of a more considered learning design approach to the development and management of simulations as a result of providing teachers with examples of best practice in simulation design.

2. **Innovation**

   The profile of simulations across RMIT, is the first attempt to quantify the types of simulations undertaken at RMIT, and to identify common problems in instructional and learning design.

3. **Strategic alignment**

   The outcomes of the project align strongly to all of RMIT Strategic plan priorities. However the project is particularly aligned to the priorities described below.

   *Align teaching and learning activity with the needs of*
key industries (RMIT Strategic Plan Priority 2):

The simulations profiled in this study varied according to their use of industry to validate and advise. While some teachers argued that the simulation they used was industry relevant there was often no formal industry engagement to ensure this. The learning and teaching resource encourages teachers to build links with their industry committee, and to validate their simulation within a WIL framework.

Expand and enhance opportunities for work integrated learning. (RMIT Strategic Plan Priority 2):

The best practice case studies and the directory of simulations offer strong examples of working integrated learning. The resource directs teachers to use WIL guidelines in the development and management of simulations.

Sustain high levels of graduate employability and ensure achievement of strong outcomes across our educational programs. (RMIT Strategic Plan Priority 2)

Each of the best practice case studies provides good examples of how a combination of appropriate learning design and work integrated learning promotes employability.

Promote students’ positive learning experiences and ensure they are engaged with staff, curriculum and learning methodologies (RMIT Academic Plan):

A major focus of the teaching and learning resource is on effective learning design. A key recommendation in the guidelines is that simulations be developed, when appropriate, with a whole of school approach to optimise engagement and delivery.

Promote learning across sectors, as the recent Channel 31 project (Applied Comm, Creative Media) demonstrated (RMIT Academic Plan)

This project reports on the use of simulation in both sectors. The online resource is designed to promote learning within and across sectors through the use of both VET and HE simulation examples for all staff explore, regardless of the sector. The guidelines for developing learning design are relevant to both competency and capability outcomes. A key outcome of the project is for a community of
practice to be formed for those teaching and learning advisors and teachers interested in sharing their experiences in trialing the resource, and in working with simulations.

*Promote student-centred learning (RMIT Academic Plan)*:

The learning and teaching resources developed for this project promote a student-centred learning focus. All three case studies use a student-centred paradigm to reflect on the use of simulations.

Promote use of online technologies (RMIT Academic Plan):

In the learning and teaching resource, there are several strong exemplars of simulations using a variety of online technologies that are underpinned with good learning design.

4. **University wide application**

The case studies and interviews were designed to have relevance to both TAFE and HE. The pedagogical models, while designed primarily for teaching and learning advisors, have been described in language that is accessible to a wide range of teaching staff.

5. **Value for money**

The project has resulted in an enduring resource that will have relevance to a majority of programs across RMIT, in both sectors.

It will also have particular relevance for VET and HE programs wishing to make productivity gains. Several programs are investigating the use of simulation as an opportunity to improve teacher staff ratios, and this resource will help promote flexibility and good program design.

Access to the blackboard resource will be given to all teaching staff across RMIT. In addition academic development teams in the three Colleges will lead the dissemination of the resource.

As part of the dissemination strategy, the School of Design has agreed to pilot the resource by using it to assist in the creation of a virtual retail outlet in the Diploma of Visual Merchandising. The pilot will form another case study which will be published on the
website later in 2010.

In addition, academic developers across RMIT have agreed to identify opportunities in 2010 to pilot and add to the online resource.

**Summary of the project, outcomes, impacts and dissemination**

As RMIT shapes its educational difference through a focus on work integrated learning (WIL), it is anticipated that the use of simulation in learning and teaching will grow. Educational simulations offer distinct advantages in being able to replicate industry conditions while at the same time offering students a safe, collaborative in which to practice capabilities and employability skills, to be assessed effectively and to prepare for professional and vocational work.

This LTIF project researched the dominant types of simulations in the current literature and then reviewed those that are commonly used in teaching across a range of both HE and TAFE programs at RMIT. It also reviewed learning models appropriate to the critique and development of simulation.

The project took a broad view of simulation. It examined online environments including simulated procedures, game playing and complex virtual environments. It also examined real time or synchronous simulations including role-plays, emulated work environments and projects modeled on industry conditions, such as the Story Room project in the Advanced Diploma of Screenwriting.

As well, the project profiled a number of projects that used a blend of online and real time delivery such as the Virtual Enterprise project in the School of Business TAFE. It also considered what might be termed 'hybrid' simulations such as the Music Industry...
Project. While these projects produced actual events such as live music nights and television broadcasts, at certain points in the life of these projects industry conditions were simulated rather than 'real' or 'live'.

The outcome of this project is a learning and teaching resource on Blackboard designed to inspire, inform and assist instructional designers, academic advisors and teachers in the development and management of educational simulations. The resource contains a directory of simulations in use across RMIT, more detailed best practice case studies, pedagogical models, guidelines, taxonomy of simulation types and an annotated bibliography.

The project outcomes, and the Blackboard learning and teaching resource will be promoted through, VET Link and through academic development groups. It is recommended that academic advisors will own this resource and that they form a community of practice to facilitate its application. A pilot application of this resource is planned in the School of Design TAFE this year.
REFERENCES:


APPENDIX 1: FINANCIAL STATEMENT

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<th>YTD Actuals</th>
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<td>Cost Element Total</td>
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- Employee Entitlements: 128-
- Superannuation & Pension Schemes: 1,766
- Payroll Tax: 1,216
- Workers Compensation: 295
- Oncosts: 3,150
- Total Salaries & Oncosts: 25,766

Total Operating Expenses: 25,091

Operating Result: 25,091

Cost Element Total: 25,091