Use of Simulated Learning Environments in Nursing Curricula

November 2010

Report prepared by:
Professor Cobie Rudd, Pro-Vice-Chancellor (Health Advancement), Edith Cowan University
Ms Kirsty Freeman, Interprofessional Learning Senior Project Officer, Edith Cowan University
Ms Amanda Swift, Senior Lecturer Nursing SLE Project, Edith Cowan University
Dr Peter Smith, Psychologist / Consultant, Thirdforce Consultancy Services Pty Ltd
Executive Summary

Health Workforce Australia (HWA) is a national health workforce agency that forms part of the $1.6 billion health workforce package agreed to by the Council of Australian Governments (COAG) in November 2008. HWA was established in order to devise solutions that effectively integrate workforce planning, policy and reform with the necessary and complementary reforms to education and training. The Simulated Learning Environments National Project focuses on enhancing the capacity of clinical placements through the use of Simulated Learning Environments (SLEs). The planning process for the distribution of SLEs will be guided by a nationally developed and endorsed approach as to what aspects of the various professions' curricula are suitable for simulated learning. This Phase Two project the Use of Simulated Learning Environments in Nursing Curricula, will form part of a broader discussion paper including all participating professions.

A Project Governance Group was established and the project methodology refined. The following five phases to the project were developed:

Phase 1 Literature Review
- An extensive literature review was conducted into the use of simulation in nursing. The literature review identified opportunities for expanded use by highlighting the body of research (national and international) that indicates the efficacy of SLEs in a disparate range of settings.

Phase 2 Head of Schools Survey
- Heads of Schools (HoS) were surveyed (n=34) to develop an overview of the pre-registration nursing degree course in their School and to determine the extent to which there were activities that could be complemented by Simulated Learning Programs (SLPs), and if they considered there were any activities that could be replaced by SLPs. The process also identified scope for future opportunities for simulation and identified potential issues (e.g., benefits, challenges and risks) in introducing simulation from both a School of Nursing perspective, and from a broader profession/industry perspective.

Phase 3 Stakeholder Consultation
- Ongoing formal and informal consultation occurred throughout the project period with key stakeholders. Following a formal call for submissions, responses (n=12) were integrated into the report.

Phase 4 Electronic Survey
- Nominees identified by Heads of Schools from each accredited School of Nursing/School of Nursing and Midwifery/other (with Australian Nursing and Midwifery Council (ANMC) accredited undergraduate/entry to profession nursing programs) located in Australia were sent an electronic survey that enabled a mapping process to occur that identified current utilisation of SLEs and the associated benefits and challenges. In addition this phase identified skills/areas that were perceived to have the potential to be delivered (with funding) via simulated learning environments, which could meet national competency standards. Forty-seven responses were received (response rate of 78%).

Phase 5 Consultations on Findings
- Finally, a consultation phase occurred with the ANMC. The final Executive Summary and draft recommendations were canvassed with the ANMC prior report submission and feedback incorporated into the report. It was acknowledged that tight timeframes precluded a more thorough response, however, the ANMC were supportive and are looking forward to the project entering its next phase.

Project Findings
Despite rapidly increasing use of simulation based teaching methods, there is little robust research on the effect of simulation-based facilities on learning outcomes in nursing. While acknowledging the evidence supporting the use of simulation to facilitate the transfer of knowledge to performance is in

1 As this report was finalised the ANMC changed names to the Australian Nursing and Midwifery Accreditation Council (ANMAC). For present purposes the term ANMC will be utilised throughout the report.
its infancy, responses indicate that simulation is perceived to be a valuable method of learning, which has a positive effect on the clinical effectiveness of students approaching the transition to registered nurses. No studies definitively identify opportunities to expand the use of SLPs to achieve learning outcomes of clinical placements.

The report identified a core set of challenges and benefits to the introduction of SLEs and identified the need to ensure strategies are in place to guarantee sustainability past the initial implementation phase. In addition it was considered the appropriate utilisation of SLEs is predicated on the appropriate education and development of faculty, instructors, and operations personnel, and appropriate investment must therefore be made in funding positions that are vital to ensure sustainability. The project clearly highlights the inability of programs to utilise equipment in which they have currently invested. Forty-one percent of nominees state they have simulation equipment that is sitting idle or is underutilised. While to an extent this can be attributed to student timetabling, for the most part, it is due to a lack of knowledge (knowing what to do with what they have) and the lack of personnel (who will do what needs to be done). Strategies are required to ensure current capabilities are optimised.

There is a lack of professional development (training) programs to up-skill instructors/staff that work in SLEs, and 69% of nominees believe there is a need for certification/credentialing, or a required level of training/understanding, to ensure there is an understanding of the fundamentals of simulation terminology and concepts. Evaluations of current SLE activity are primarily through reports of student satisfaction, although this is captured in many instances through broader scores, such as unit satisfaction. There is a clear need for more comprehensive research and evaluation in the area.

Heads of School, stakeholders and nominees all consider there is scope to develop a more collaborative approach to SLEs, where resources and knowledge are shared and partnerships formed.

There is a very strong appreciation in the ability of SLEs to augment students’ preparation for practice, yet it remains axiomatic that “real” exposure to the idiosyncratic presentation of patients, hospital or healthcare environments and fellow healthcare workers, can only be gained within the milieu in which nurses are trained to work. Despite the strong sense that simulation can enhance but not replace simulation, 37% of HoS responses indicate that there are activities that could be replaced by SLPs. SLEs may also better prepare students for their clinical time, thus becoming an invaluable part of their clinical continuum.

There is discontent and frustration with the lack of clinical placements, and the data collected indicates a desire to utilise SLEs for unavailable clinical experiences or events, to foster greater levels of interprofessional practice and to enable the more efficient use of clinical placements. Data also suggests that there is potential related to all of the identified 21 Skills Areas (Crookes & Brown, 2010) to reach competency standards and/or meet clinical placement objectives. The five Skills Areas considered to have the greatest potential to be effectively delivered are:

- Medications and IV products
- Clinical monitoring and management
- Communication and documentation
- Clinical interventions
- Teamwork and multidisciplinary team dynamics

From a list of 59 specific skills, the top ten skills considered by respondents to have the highest potential to be delivered (with funding) via simulated learning environments and could meet competency standards, were:

1. Basic life support
2. ECG
3. Bed making
4. Vital signs
5. IM/SC/IV injections
6. Documentation (incl prog notes/charting)
7. IV therapy
8. Medication administration
9. Inhaled medications/oxygen therapy
10. Bed bath
Overall, simulation is viewed with both excitement and apprehension. In many cases the potential of this modality remains fettered by a lack of resources and knowledge of how to utilise equipment optimally, and a fear that “real” clinical experience will be denuded. Not surprisingly SLEs are viewed as a complement to clinical experience. Until further experience is gained there is reluctance to qualify them as a replacement of clinical. This is not unexpected as should be considered a natural part of the sequence towards its incorporation into nursing curricula. Despite the advancing levels of technology, SLEs cannot replace “real” clinical experience. People do want to find effective ways to utilise the inherent potential SLEs offer, without encroaching on valuable clinical time to help students become competent and effective nurses.

PROJECT RECOMMENDATIONS

The data in this report is rich and provides a valuable window into the state and understanding of simulation in nursing. The data is not dissimilar to data obtained in other countries. Specifically there is wide variance in the use and implementation of simulation-based education. The mental models for simulation are not uniform. This is multi-factorial and associated with issues such as funding, instructor experience, implementation strategies, executive buy-in, and poor curricular integration/standardisation.

This Phase Two project in the SLE National Project must appropriately inform forthcoming phases to ensure that sustainable strategies are prioritised and implemented. To this end, the Infrastructure and Development Phase (Phase Three) must be mindful of the challenges/risks identified within this report. More specifically, “buy first, and think later” models will almost certainly perpetuate and exacerbate the current high levels of SLE equipment underutilisation highlighted in this report. To avoid this in the future, funding should be deliberate and associated with a sustainable plan by the funding petitioner. Funding criteria and priorities that are most likely to ensure sustainable integration must be established. From the data and information collected in this phase the following recommendations should be considered:

1. Recommendation One: DEVELOP STRATEGY TO INCORPORATE SITE VISITS

   1.1. The current state of simulation varies across institutions. The level and quality of simulation-based education across sites is not uniform and as such local and regional site visits should be considered an immediate short-term goal. This process would gather vital information to determine the “simulation readiness” of each location. The process would concurrently both gather and provide site-specific information that would enhance the locations implementation ability and inform a State/National strategy. It is clear from international experience that a single uninformed national approach for a country the size of Australia is unlikely to succeed.

   1.2. Site-visits would have the added benefit of providing further regional education, initiate regional/local discussions on program development, facilitate program growth, and address sustainable practice at state/local levels.

   1.2.1. It is important that the site visits conducted during the initial implementation phase are undertaken by a recognised entity with relevant simulation credentials and who are authorised by key stakeholder groups (for example ANMC and/or CDNM).

2. Recommendation Two: INVEST APPROPRIATELY IN HUMAN RESOURCES

   2.1. The appropriate utilisation of SLEs is predicated on the appropriate education and development of faculty, instructors, and operations personnel (n.b., including standardised patients).

   2.2. The need to have staff capable of writing scenarios is axiomatic, however, it is essential that people understand the methodology of the different simulation tools, and that they are capable of implementing them efficiently and effectively. Education should not just be
focused on those who will become simulation instructors, but also to the faculty at large as curricular integration is essential.

2.3. It is crucial to invest in multiple layers of people to ensure the endeavour is sound, sustainable, and efficient. Regional redundancy will help ensure an adequate workforce for delivery of simulation-based education.

2.4. Sites with more advanced instructors should be encouraged to allow developing faculty to apprentice with them so that they have role models that they may work with as they develop. A structured apprentice model should be considered to ensure consistency and quality across all relevant sites.

2.5. Consider a state-based simulation instructor development system to effectively ensure that faculty and educators can be trained while respecting regional and geo-political issues.

3. Recommendation Three: PROVIDE APPROPRIATE FINANCIAL RESOURCES

3.1. A lack of space to deliver simulation-based education is evident in some universities. Specific space requirements will be determined by the volume, frequency, type of simulation, and curricular need. As this can consume a great deal of available capital it is important to be innovative in developing the needed space to achieve the stated increase in simulation activity.

3.2. Funds should be made available for the development of SLPs, maintenance of equipment and replacement of the (ongoing need) for consumables, but not necessarily high fidelity equipment. The report identifies a guide to potential resource requirements but would need to be based on, and informed by, the specific requirements of each location.

3.3. Resource allocation must be mindful that many universities have, thus far, made significant financial investment in SLEs and this must be taken into consideration so they are not disadvantaged.

3.4. Ensure funding is available beyond the initial allocation for infrastructure and resources to ensure the sustainability of SLEs.

4. Recommendation Four: ENSURE RESOURCES ARE SHARED / ENHANCE COLLABORATION

4.1. Development of a pool of ‘best practice’ resources for general use (e.g. may include common simulation-embedded course-ware, infrastructure tools that facilitate shared product accessibility – inter-operable databases and systems built on a common platform and structure).

4.2. The development of common course ware/tools is essential in areas where placement needs are unmet through clinical placement experience / areas that are underserved (e.g., primary health care and dementia related skills).

4.3. Development of community practice networks where staff can share experiences and learn from experience of others.

4.4. Important that a central (state or national) clearinghouse be developed where simulation can be monitored and effective implementation assured at a local level. A national clearinghouse would ensure consistency across the country. This relates to item 2.4.

4.5. The notion of shared resources should be paramount and be respectful of diversity and historical relationships yet encourage the development of new coalitions. Development should encourage and foster the development of SLEs through partnerships.

5. Recommendation Five: ENHANCE INTER-PROFESSIONAL LEARNING

5.1. It is important that a heightened level of streamlining of simulation activity occurs with other professions. This could include the expansion of existing IPL programs and facilities in universities and the development of inter-professional simulation centres across universities, with integration with health services.

5.2. Work with other core professions to include IPL at the executive, faculty and student level.

5.3. Leverage existing simulation infrastructure from different professions to evolve out of traditional silos and to promote appropriate consolidated inter-professional activity.
5.4. Create a permanent inter-professional advisory council for the SLE project.

6. **Recommendation Six: IMPLEMENT APPROPRIATE LEVEL OF RESEARCH/EVALUATION**
   6.1. Metrics are required (and developed where necessary) to ensure appropriate evaluation of processes to monitor the implementation phase (Phase 5: Infrastructure Development Phase) and documents effectiveness in relation to:
   - Faculty outcomes
   - Student outcomes
   - Learning outcomes
   - Patient outcomes
   - Clinical capacity changes/shocks
   - Return on investment at each phase of the project

7. **Recommendation Seven: ENSURE EQUITY IN ACCESS TO SLEs AND THEIR POTENTIAL**
   7.1. Develop a mechanism through which rural and less funded programs have access to the SLEs and their potential (e.g., physical and electronic means)
   7.2. This includes the provision/upgrade of:
       7.2.1. IT equipment and access for students in rural and remote areas
       7.2.2. Mobile resources for rural and remote areas (to include postgraduate study and post qualification up-skilling).
       7.2.3. Links to expertise with regional universities, areas and programs where simulation resources are unavailable.

8. **Recommendation Eight: CREDENTIALING OF INSTRUCTORS AND ACCREDITATION OF SLPs**
   8.1. A significant amount of training/understanding is required so that simulation-based methods can be effectively applied as an educational strategy to maximise utilisation of equipment, maximise capacity increases, and maximise learning outcomes for students.
   8.1.1. Develop a shared vision of core competencies related to simulation instruction across all professions. This will ensure that appropriate standards are put into place to address issues relating to quality, development, and sustainability.
   8.1.2. Identified clinical skills/simulation centres would have responsibility for credentialing instructors (e.g., certificate course, advanced certificate course, apprentice programs) and would operate across disciplines.
   8.1.3. Simulation instructor courses and the workers in those centralised, large-scale simulation centres should undergo a formal accreditation process.
   8.1.3.1. Any formal accreditation process that occurs that involves Nursing should be done in concert with the ANMAC and the CDNM (point 8.1.3.1. will require further discussion with relevant bodies).
   8.2. Although Schools of Nursing would not be required to undertake accreditation, the courses that their instructors attend and the instructors conducting the courses would be accredited and certified, respectively.
   8.2.1. Staff in Schools of Nursing would be encouraged to avail themselves of training conducted in accredited environments as they would with other elements of their role as part of their ongoing professional development.
   8.3. The issue of accreditation or endorsement of actual simulation programs should be a consideration in the future. This may have significant political and fiscal implications that will need to be discussed further as the SLEs develop. This is consistent with international trends.
   8.4. If accreditation is considered, the procedure must align with the ANMC processes and be endorsed by ANMC and/or CDNM.
   8.5. Adopting the process described in this section will provide additional interprofessional opportunities.
9. **Recommendation Nine: SLEs DELIVERING ON SOME CORE CAPABILITIES DEVELOPMENT**

9.1. For those programs that offer more than 800 placement hours, a small component of that extra time, over and above the 800 hours, may be delivered via SLEs. A nominal block of 40-hours may be achieved via SLEs in any of the following competency/skills areas deemed by project respondents to have the greatest potential to be effectively delivered via SLEs and reach competency standards and/or meet clinical placement objectives:

- Medications and IV products
- Clinical monitoring and management
- Communication and documentation
- Clinical interventions
- Teamwork and interprofessional practice
Table of Contents

Executive Summary .......................................................................................................................... 2
Table of Contents .......................................................................................................................... 8
Abbreviations ................................................................................................................................. 9
Chapter One: Background ............................................................................................................. 10
Chapter Two: Methodology .......................................................................................................... 12
Chapter Three: Literature Review ............................................................................................... 15
Chapter Four: Heads of School Feedback ................................................................................... 29
Chapter Five: Stakeholder Consultation ....................................................................................... 35
Chapter Six: Electronic Survey .................................................................................................... 37
Chapter Seven: Conclusion .......................................................................................................... 61
References .................................................................................................................................... 63
Appendix 1: Heads of School Letter ............................................................................................. 72
Appendix 2: List of Stakeholders Consulted .................................................................................. 74
Appendix 3: Contributors ............................................................................................................. 76
Abbreviations

AACN    American Association of Colleges of Nursing
CDNM (ANZ)  Council of Deans of Nursing and Midwifery (ANZ)
ALTC    Australian Learning and Teaching Council
ANMAC   Australian Nursing and Midwifery Accreditation Council
ANMC    Australian Nursing and Midwifery Council
ASPE    Association of Standardised Patient Educators
ASSH    Australian Society for Simulation in Healthcare
BSN     Bachelor of Science Degree in Nursing
CASN    Canadian Association of Schools of Nursing and Canadian Nurses Association
CDNM    Australia and New Zealand Council of Deans Nursing and Midwifery
COAG    Council of Australian Governments
DEWR    Department of Education Employment and Workplace Relations
FIU     Florida International University
FIBN    Florida State Board of Nursing
HRSA    Health Resources and Services Administration
HWA     Health Workforce Australia
INACSL  International Nursing Association for Clinical Simulation and Learning
IOM     Institute of Medicine
NCSBN   National Council of State Boards of Nursing
NHWT    National Health Workforce Taskforce
NMC     Nursing and Midwifery Council (U.K.)
NYCNECT New York City Nursing Education Consortium in Technology
SESAM   Society in Europe for Simulation Applied to Medicine
SIAA    Simulation Industry Association of Australia
SLE     Simulated Learning Environment
SSH     Society for Simulation in Health Care
UK NAMS UK National Association for Medical Simulators
Chapter One: Background

National Health Workforce Taskforce and Health Workforce Australia
In 2006, the Council of Australian Governments (COAG) agreed to a significant national health workforce reform package to enable the health workforce to better respond to the evolving care needs of the Australian community, while maintaining the quality and safety of health services.

The COAG package included the establishment of the National Health Workforce Taskforce (NHWT) to undertake projects which inform development of practical solutions on workforce innovation and reform. The NHWT is hosted by the Victorian Department of Health. The NHWT was a time limited project-based entity tasked to action and coordinate the achievement of agreed COAG requirements. Health Workforce Australia (HWA) is a newly-established national health workforce agency that forms part of the $1.6 billion health workforce package agreed to by the Council of Australian Governments (COAG) in November 2008. HWA was established in order to devise solutions that effectively integrate workforce planning, policy and reform with the necessary and complementary reforms to education and training.

Simulated Learning Environments Project
As part of the health workforce reform package, COAG announced that capital and recurrent funding would be available to build and operate new, or enhance current, Simulated Learning Environments (SLEs). The project is managed by HWA and focuses on enhancing the capacity of clinical placements through the use of SLEs. The project includes a focus on increasing accessibility to clinical training for regional and rural centres, e.g. via mobile SLEs and insitu programs that can be developed as a means of providing these training opportunities in the more remote locations. The distribution and configuration of the SLEs will be finalised following a national planning process.

The planning process for the distribution of SLEs will be guided by a nationally developed and endorsed approach as to what aspects of the various professions’ curricula are suitable for simulated learning. Once there is national agreement on the aspects of the curriculum that can be delivered via SLEs, a planning and implementation process will commence, that will determine how the investment in new or expanded infrastructure will ensure equitable access by all students to SLEs. The implementation plan will ensure that existing centres are maximised and that new investment effectively and efficiently utilised, in addition to adopting sustainable business models to ensure ongoing viability.

The SLE National Project includes the following five-phases:

- Phase 1: Project initiation
- Phase 2: Identifying and sourcing SLE curriculum
- Phase 3: Infrastructure development phase
- Phase 4: Research, knowledge management and evaluation plan
- Phase 5: Implementation plan

This Phase Two Project aims to identify and source SLE curriculum and it is anticipated the Nursing Simulation Curricula Report developed as an output will form part of a broader discussion paper including all participating professions. The overall final discussion paper developed by HWA will summarise and describe the agreed aspects of all the participating healthcare professional curricula which will meet clinical placement objectives and building clinical training capacity and capability

Project Scope
In fulfilling the goals and objectives for this project the report will feature the following:

- Map of Simulated Learning Programs (SLPs) currently being delivered at each accredited School located in Australia based on project research and information from the NHWT university survey. The map will include the current use of SLPs in the clinical training of students and the potential future use.
• Literature review including opportunities for expanded use of SLPs to achieve learning outcomes of clinical placements using national and international examples, supported by evidence, where available.
• Report on the outcome of stakeholder consultation including responses and issues raised
• Curricula elements that could, by accredited schools, be delivered via SLPs. These curricula elements should meet clinical placement objectives and therefore contribute to increased clinical placement capacity.
• The level of agreement from each accredited school and respective accreditation body on:
  ➢ The curricula elements identified in (d) that could be integrated into the curricula and that would meet the accreditation standards;
  ➢ Any perceived barriers to this curriculum being recognised and adopted for clinical training purposes;
  ➢ The likely impact on clinical training days required in the course should these curricula elements be delivered through SLPs; and
  ➢ The likely timeframes for implementation should these curricula elements be adopted.
• Recommendations encompassing:
  ➢ Priority elements of the curriculum that could be supported by the SLE national project
  ➢ Approaches to address barriers to effective utilisation and expansion of the use of SLEs in delivering the priority elements of the curriculum
Chapter Two: Methodology

A Project Governance Group (the Steering Group) was established as part of the Request for Quote submission process. ECU partnered with international centres and individuals involved in nursing education policy review and simulated learning programs in nursing education, at entry to profession as well as postgraduate level. Membership of the Steering Group is as follows:

- **Professor Cobie Rudd**, Pro-Vice-Chancellor (Health Advancement), and Chair in Mental Health, Edith Cowan University;
- **Associate Professor Tracy Levett-Jones**, Deputy Head of School (Teaching and Learning), School of Nursing and Midwifery, University of Newcastle;
- **Adjunct Associate Professor Catherine Stoddart**, Chief Nurse and Midwifery Officer, Department of Health Western Australia;
- **Professor Rhonda Marriot**, Pro-Vice-Chancellor (Faculties), Murdoch University;
- **Associate Professor Linda Starr**, Flinders University;
- **Emeritus Professor Bonnie Driggers**, Consultant SimHealth Consulting Services LLC in the U.S.A.; and
- **Associate Professor Michael Seropian**, President Elect Society for Simulation in Healthcare and CFO, Oregon Health & Science University. SimHealth Consulting Services LLC, U.S.A.;
- **Professor Patrick Crookes**, Chair of the Australian and New Zealand Council of Deans of Nursing and Midwifery;
- **Ms Louise Horgan**, Nursing and Midwifery Board of Australia representative;
- **Ms Katie Walker**, Project Manager, Simulated Learning Environments, Health Workforce Australia.

The ANMC has been briefed on the Use of Simulated Learning Environments in Nursing Curricula Project from the outset. The ANMC was invited to participate on the Project Governance Group and has elected to receive timely Project updates and comment on the final recommendations, rather than serve on the Project Governance Group. The ANMC Board has conveyed:

“After much discussion, the Board reached the view that it would not be appropriate for ANMC to be represented on the Steering Committee for either project as it may be perceived as a conflict of interest. However, the Board did recognise the importance of the work being conducted and have requested that ANMC be given the opportunity to receive a briefing early in the preparation of the projects’ report on their outcomes, finding and recommendations (eg at the point of interim report) to enable ANMC to comment on these.”

Gaining National Consensus

The engagement with the ANMC is such that the ANMC Board has reviewed the Project’s progress at their September and November Board meetings and agreed to comment on the draft recommendations out of session given the Project timelines. (see Phase 5 Consultations on Findings below).

In July and October, the Project Team presented to the full Australian and New Zealand Council of Deans of Nursing and Midwifery (CDNM). As well, the CDNM, through the Chair, has been instrumental in facilitating dissemination of Project information/updates and the administration of the surveys.

Project Intent

In response to the discussion at the July 2010 Council Meeting for the Australian and New Zealand Council of Deans of Nursing and Midwifery, the Project Lead sought clarification from HWA regarding

---

2 The project working group included Professor Cobie Rudd, Kirsty Freeman, Amanda Swift, and Dr Peter Smith.
the overarching project intent. On 30 July 2010, following personal communication with HWA, clarification was obtained indicating that the Project was not about how many clinical contact hours students have, but rather;

- It is about common agreement about where some areas of the curricula can be effectively delivered via SLEs;
- HWA has no role in determining the number of clinical hours;
- HWA is not trying to change curricula or the way clinical education is delivered to students;
- HWA simply wants some guidance on how to spend on infrastructure and thus how SLEs can help deliver some parts of curricula – once the funding is made available, universities will choose if they want to apply;
- HWA wants schools of nursing and the accrediting body (ANMC), via this project, to identify the sorts of things that could be delivered via SLEs to guide spending on infrastructure – not about changing curricula or clinical training hours.

Although the five project phases occurred in a linear process, at times the processes were concurrent, and included:

**Phase 1 Literature Review (Chapter Three)**
- An extensive literature review was conducted into the use of simulation in nursing. The literature review identified opportunities for expanded use by highlighting the body of research (national and international) that indicates the efficacy of SLEs in a disparate range of settings.

**Phase 2 Head of Schools Survey (Chapter Four)**
- Heads of Schools were surveyed to develop an overview of the pre-registration nursing degree course in their School. The process also determined the extent to which there were activities that could be complemented by SLPs, and if they considered there were any activities that could be replaced by SLPs. The process also identified scope for future opportunities for simulation and identified potential issues (e.g., benefits, challenges and risks) in introducing simulation from both a School of Nursing perspective, and from a broader profession/industry perspective. Lastly, Heads of School were asked to comment on how funding may be spent and if they considered they were providing innovative and/or high quality simulation in nursing.

**Phase 3 Stakeholder Consultation (Chapter Five)**
- Ongoing formal and informal consultation occurred throughout the project period with key stakeholders and included:
  - Attendance at key meetings (initial presentation of project, preliminary findings, consultation on findings)
  - Call for submissions from stakeholders explaining the purpose of the project, defining its scope
Phase 4 Electronic Survey (Chapter Six)

- Each accredited School of Nursing/School of Nursing and Midwifery/other (with ANMC accredited undergraduate/entry to profession nursing programs) located in Australia was sent an electronic survey that enabled a mapping process to occur that identified current utilisation of SLEs and the associated benefits and challenges. In addition this phase identified skills/areas that were perceived to have the potential to be delivered (with funding) via simulated learning environments, which could meet competency standards.

Phase 5 Consultations on Findings

- Finally, a consultation phase occurred with the ANMC. The final Executive Summary and draft recommendations were canvassed with the ANMC prior report submission and feedback incorporated into the report. It was acknowledged that tight timeframes precluded a more thorough response, however, the ANMC were supportive and are looking forward to the project entering its next phase.

Ethics approval

A submission was made to the ECU Ethics Review Board for the project: Simulated Learning Environments in Nursing Curricula and the study was approved (Project Number: 5862 RUDD).

Reporting of data

Quantitative statistics are reported in tables within each section area, or they are embedded in the sentence structure. The process of qualitative data analysis utilised Miles & Huberman's\(^3\) interactive process of data reduction, data display and conclusion drawing/verification. Emerging thematic categories were constantly checked and verified. Finally, information was synthesised into the structure contained in the report.

Grammatical modifications (e.g., changing personal and possessive pronouns) were made where necessary to enhance clarity and ensure anonymity. Verbatim comments in the report will be reported in the following four ways:

As stand alone text:

“I felt simulation was a natural way to teach students”

Embedded in the sentence structure:

For others, the training process was thought to be tedious and it was not thought to be an “easy way to learn” and seemed to be “anxiety provoking” rather than calming.

As textual exemplars:

For others, it was less burdensome and considered helpful (“it was easy to feel like it was a real situation”) and risk free (“I knew I could make a mistake and just do it all again if I needed to”).

As listed quotes in tables:

- I would like to know more about the student’s background
- I feel my knowledge would be enhanced with more training
- I didn’t know how to deal with it when I realised the scenarios needed to be developed

Chapter Three: Literature Review

Background
The landscape in which nursing is situated has changed remarkably since Florence Nightingale wrote Notes on Nursing: What it is, and what it is not in 1860 (Nightingale, 1860). The wider range of roles and responsibilities and complexity of the arena into which the graduate nurse steps 150 years later, requires nurse educators to prepare graduates to deliver safe and effective health care to patients, be technically skilled, capable of theoretically driven problem solving and decision making, have a sophisticated understanding of human behaviour and work in interprofessionally diverse circumstances. To ensure nurses are able to address the increasing complexity, educators are searching for innovative teaching strategies that will optimise clinical learning in an evolving health care delivery system (Elfrink, Kirkpatrick, Nininger, & Schubert, 2010). In addition, in many ways “today’s students are no longer the people our educational system was designed to teach” (Prensky, 2001, p. 1), and Brooks, Moriarty, Welyczko (2010) caution that in order to prepare nursing students to be suitably trained and qualified practitioners, educational approaches to teaching and learning must be responsive to these environmental changes. Business as usual in clinical nursing education is not regarded as an adequate response to the challenges that nurse educators face today (Benner, Sutphen, Leonard & Day, 2009; Glasgow, Niederhauser, Dunphy & Mainous, 2010).

One such critical issue faced by nurse educators, which requires immediate attention, is to ensure nursing students receive appropriate clinical experience. Clinical experience is required by nurses so theoretical knowledge is applied in “real” settings in order that they become safe, competent practitioners (Baxter et al., 2008). The challenges to providing appropriate levels of clinical experience are manifold and this paper will review the use of simulation learning environments as a means to address the situation.

The nursing shortage of varying severity is problematic in Australia (Department of Employment and Workplace Relations, 2006), across the United States (American Association of Colleges of Nursing, 2007, 2009) and Canada (Canadian Association of Schools of Nursing, 2010), and an increase in demand for graduates is expected (Preston, 2006). Nurse educators are confronted with an increasing number of student enrolments (DEWR, 2006) and it has been said that the employment of nurses is expected to grow much faster than many other professions (AACN, 2007). The current and anticipated growth places extreme demand on systems to provide adequate clinical practice experiences for students. Relative to the 2005 academic year, it is expected that the growth in demand for clinical placements in Australia will mean 613,750 additional nursing placement days will be required per annum by 2013 (National Health Workforce Taskforce, 2008).

Many of the issues affecting the quantity and quality of clinical experiences are not specific to Australia and have been reported extensively in the literature and include: availability of clinical sites, increased enrolment, nursing faculty shortages, a lack of physical space, lack of standardisation of clinical competence, fatigued clinical settings, reluctance of health professionals to supervise clinical practice, increased workloads and stress in nursing staff, shortened patient acuity and length of stay and competition for preceptors (Baxter et al., 2009; CASN, 2007; Institute of Medicine, 2010; Mitchell, 2003; Moore, 2005; Tanner, 2006).

The demands required of nursing graduates is increasing as the need for nursing graduates becoming greater, yet this situation is occurring in a context where there is a limited availability of sites where students can gain valuable clinical experience. The many obstacles students face has led to creative alternatives to ensure that nursing students receive the necessary experiences to develop and practice their clinical skills (Baxter et al., 2009). One such alternative has been through the increased utilisation of simulation learning environments (SLEs).

What Is Simulation?
Although nursing has a long history with simulation, Gaba (2004) attributes the growing interest in simulation to its use in the high-risk areas of commercial aviation, nuclear power production, and the military. Simulation has been defined by Gaba (2004, i2) as “…a technique, not a technology, to replace or amplify real experiences with guided experiences, often immersive in nature, that evoke or
replicate substantial aspects of the real world in a fully interactive fashion.” Fibson (1985) similarly highlights the essence of simulation as “a replication of the essential aspects of reality so that reality can be better understood, controlled and practiced.” Although there is as yet no common classification system for simulation, researchers have produced their own simulator typologies (Decker, Sportsman, Puettz, & Billings, 2008; Reznick & MacRae, 2006; Seropian, Brown, Gavilanes & Driggers, 2004).

While adhering to any specific terminology for “fidelity” has been avoided in this Project so as not to constrain, or compartmentalise thinking, it is important that the literature review reflect the history and application of the term. The level of realism or “fidelity” of simulation lies on a continuum (Lammers, 2007). There are three primary categories of simulation; low-fidelity simulators which are simple mannequins or static models and are useful for introducing psychomotor skills. Moderate fidelity simulators are mannequins with heart and breath sounds and provide greater realism than low fidelity models. High fidelity simulators realistically simulate patients in appearance and response and to enable users to relate to the simulator in as similar a manner as possible to that they may encounter in real life.

Table 1 Summary of Simulation Typology (Decker et al., 2008)

<table>
<thead>
<tr>
<th>Simulation Typology</th>
<th>Definition</th>
<th>Recommended use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial task trainers</td>
<td>Models or mannequins used to learn, practice, and gain competency in simple techniques and procedures</td>
<td>To learn, develop, and evaluate competency in a specific skill (e.g., venipuncture, lumbar puncture, or central line insertion); patient scenarios can be integrated into the learning experience to promote learners’ development of critical thinking</td>
</tr>
<tr>
<td>Peer-to-peer learning</td>
<td>Peer collaboration used to develop and master specific skills</td>
<td>To learn, develop, and evaluate competency in basic health and physical assessment</td>
</tr>
<tr>
<td>Screen-based computer simulations</td>
<td>Computer programs used to (1) acquire knowledge, (2) assess competency of knowledge attainment, and (3) provide feedback related to clinical knowledge and critical-thinking skills</td>
<td>To learn, develop, and evaluate competency in a specific skill (e.g., auscultation of heart and lung sounds and dysrhythmia interpretation) and integrate this knowledge and skill into patient care scenarios that require critical thinking</td>
</tr>
<tr>
<td>Virtual reality</td>
<td>Combines a computer-generated environment with tactile, auditory, and visual sensory stimuli provided through sophisticated partial trainers to promote increased authenticity</td>
<td>To learn, develop, and evaluate competency in a specific skill (e.g., intravenous catheter insertion and performing a bronchoscopy)</td>
</tr>
<tr>
<td>Haptic systems</td>
<td>A simulator that combines real-world and virtual reality exercises into the environments</td>
<td>To develop and evaluate competency in a specific skill with real-time tracking of the practitioner’s performance</td>
</tr>
<tr>
<td>Standardized patients</td>
<td>Uses case studies and role playing in the simulated learning experience; individuals, volunteers, or paid actors are taught to portray patients in a realistic and consistent manner</td>
<td>To develop and validate competency related to communication skills while completing an interview, performing a physical assessment, and devising a plan for a patient</td>
</tr>
<tr>
<td>Full-scale simulation (medium to high fidelity)</td>
<td>Simulation that incorporates a computerized full-body mannequin that can be programmed to provide realistic physiologic responses to a practitioner’s actions; these simulations require a realistic environment and the use of actual medical equipment and supplies</td>
<td>To integrate and evaluate competencies, critical thinking, and clinical judgment related to the synthesis of knowledge, technical and communication skills, and interdisciplinary team in the management of patients with complex problems</td>
</tr>
</tbody>
</table>

Although a lack of consistency and definitions in the use of the terms simulation and fidelity has lead to much confusion (Bradley, 2006), “fidelity” is described as the extent to which the appearance and behaviour of the simulator/simulation match the appearance and behaviour of the simulated system (Farmer, van Rooij, Riemersma, Joma, & Morall, 1999). Beaubien and Baker (2004) emphasise the psychological, environmental and equipment fidelity as all playing a part in determining level of realism, but stress psychological fidelity is possibly the most important in making the simulation real for students.
Low tech simulators, such as mannequins, together with role plays and peer-to-peer learning (see Table 1) have been the foundation of simulation activities through which nurses have for many years learnt, practiced, and gained competency in simple techniques and procedures. The more recent development of high-fidelity simulated learning, according to Reilly and Spratt (2007), is to provide the student with the cues required to “suspend disbelief as they immerse themselves in a realistic, dynamic, hands-on, complex situation, requiring critical thinking, problem solving and decision making capabilities” (p.544). Advances in technology have assisted in making simulated learning environments more realistic in nature. High-fidelity human patient simulators are computerised mannequins that look like real patients and are programmed to respond physiologically and, to a lesser extent, behaviourally to students’ actions (Decker et al., 2008). When integrated into simulated scenarios, human patient simulators with their responsive computerised physiological functions provide a great degree of realism (Baker et al., 2008). In order to respond appropriately the student is required to integrate knowledge and attitudes, and then to observe the outcomes of their clinical decisions and actions (Baker et al., 2008). Full-scale simulations that are often possible in clinical simulation centres provide a recreated clinical environment (Waldner & Olsen, 2007), close to lifelike yet simulated environment, that have a great many of the features and equipment students would experience in a “real” hospital situation. To add another dimension to enhance the reality of the learning experience, community actors are often used as standardised patients (Massias & Shimer, 2007). Kyle (2004) highlights the similarity between high-end medical simulation and theatre where:

Clinical simulation facilities are theatres where plays of illness and treatment are imagined, written, rehearsed, staged, and criticised . . . [S]imulation scenarios need all the components of “real” theatrical productions: scripts, costumes, lines and action cues for all the participants (including the patient simulator), props, and a rehearsal audience for constructive criticism. (p. 96)

Simulation is a Burgeoning Area

The impact simulation has had on nursing cannot be overstated. Although in their review of nursing over the last 40 years, Nehring & Lashley (2009) described the use of anatomical models in nursing in 1874, it is only in the last 10-15 years that simulation-based healthcare education is said to have undergone extraordinary expansion (Issenberg, 2006). Nehring (2008) describes the contemporary integration of simulation as a “paradigm change,” Seropian et al., (2003) consider simulation education to be “flourishing,” and Jeffries (2009) considers clinical simulation in nursing education to be a “hot topic.”

It was as recent as 2006 that Simulation in Healthcare was established as the first journal devoted entirely to the topic of simulation and, in 2008, Clinical Simulation in Nursing was launched. Other journals have devoted entire editions to simulation research and articles. There is a literal boom in the amount of literature that is currently available in nursing and other health care journals. It is apparent that simulation use has gone beyond the initial stages of addressing technological issues and accessibility and is beginning to embrace the research opportunities that exist in this area (Harder, 2010).

The use of simulation is becoming well developed and this can be observed through the large number of simulation centres that now exist around the world, and through the development of national and international societies and associations and their meetings dedicated to simulation learning such as SESAM (Society in Europe for Simulation Applied to Medicine), UK NAMS (UK National Association for Medical Simulators), INACSL (International Nursing Association for Clinical Simulation and Learning), ASSH (Australian Society for Simulation in Healthcare), SSH (Society for Simulation in Health Care), SIAA (Simulation Industry Association of Australia), and ASPE (Association of Standardised Patient Educators) which is the international organisation for professionals in the field of simulated and standardised patient methodology.

Simulation in the United States

Last year in the United States, the Enhancing SIMULATION (Safety in Medicine Utilising Leading Advanced Simulation Technologies to Improve Outcomes Now) Act of 2009 was introduced (GovTrack.us. 111th Congress, 2009). The bill (S. 616) intends to amend the Public Health Service
Act to authorise medical simulation enhancement programs which extends the benefits of advanced medical simulation technology to the civilian health care system; and will enhance the deployment of simulation technologies and the incorporation of such technologies and equipment into medical, nursing, allied health, podiatric, osteopathic, and dental education and training protocols.

Most states in the U.S. require a specific number of hours of clinical experience and state boards of nursing prescribe the number of "clinical" hours a student must complete. However, few define what must actually occur during that clinical time, are not prescriptive about the strategies used to achieve educational goals and the proportional use of simulations as a substitute for clinical experience varies from state to state (NCSBN, 2005; Nehring, 2008; IOM, 2010). In 2005, the NCSBN examined clinical instruction in pre-licensure programs and recommended that "nursing education programs shall include clinical experiences with actual patients; they might also include innovative teaching strategies that complement clinical experiences" (NCSBN, 2005, p. 1). The report concluded that the use of simulation is seen as a complement to authentic clinical experience with patients, and not a substitute for it.

Simulation has been recognised by the Florida State Board of Nursing (FSBN) as an alternative to live clinical experiences and is now included in the Florida Nurse Practice Act and up to 25% of clinical hours can be utilised in patient simulation (Florida State Board of Nursing, 2007). Wood (2010) reports that Rasmussen College students in Florida spend 25 percent of their clinical time working with simulators, Florida International University (FIU) has built a virtual hospital with simulators, and students spend between 10 percent and 15 percent of their time working in simulation used primarily for developing teamwork, including interdisciplinary collaboration. Texas Tech is reported (Wood, 2010) to be anticipating an increase from 30 percent of its clinical experiences being simulated to 50 percent. It offers a special program for nurses from rural areas, allowing them to rotate through simulation training and weeks in their community with a nurse mentor (Wood, 2010).

In their recent descriptive study in the United States, Katz, Peifer, & Armstrong (2010) targeted National League for Nursing-accredited Bachelor of Science Degree in Nursing (BSN) schools with an online survey related to the current use of simulation in course curriculum. Their response from 78 schools (37.3% response rate) indicated that approximately 31% of schools reported using high-fidelity scenarios in more than 51% of their clinical courses.

Simulation in the United Kingdom
The Nursing and Midwifery Council (NMC) implemented a simulation and practice project, to inform a review of the pre-registration nursing curriculum that included 4600 equally divided theory and practice hours delivered across the programme. The review consulted on how best to ensure competence in practice and the need to look more closely at how simulation could support the development of direct care skills needed for safe and effective nursing practice. Thirteen educational providers participated in a pilot study to research the use of designated practice hours for simulation (see pilot site report Moule, Wilford, Sales, & Lockyer, 2008). The project outcomes regarded simulation positively and indicated that simulated learning “helps students achieve clinical learning outcomes, provides learning opportunities that may not be available in a clinical setting, and increases students’ confidence in clinical environments” (NMC, 2006). Following recommendations from the Nursing and Midwifery Council Simulation and Practice Learning project (2007), up to 300 of the 2300 clinical placement hours may now be replaced with simulation (McCallum, 2007; NMC, 2006). The use of simulated practice as a teaching and learning strategy within the education of health care professionals has been acknowledged by the Nursing and Midwifery Council in the U.K. as complementary to placement learning (NMC, 2007).

Developing Competent/Confident Practitioners
As Decker et al. (2008) correctly assert, nursing competence is a process that requires the development of psychomotor skills and relevant knowledge, and the subsequent ability to appropriately apply the skills and knowledge. Despite the years of education, many graduate nurses do not consider they are sufficiently prepared to enter the workplace (Lambert & Glacken, 2006). This transition process into the workplace for the newly qualified nurse has long been identified as a difficult process (Kramer, 1974), and more recent research shows the process for newly qualified
nurses can be daunting (Leigh, Howarth, & Devitt, 2005). For student nurses, the transition into the generally unfamiliar nursing environment can be a frightening experience, and Morgan (2002) explains that this apprehension is due to a fear of harming patients. While this may be the case, the clinical setting itself is a complex socio-cultural entity that presents numerous opportunities to engage or disengage in learning (Newton, Jolly, Ockerby, & Cross, 2010) and may not be the most favourable environment in which to learn (McKenna, French, Newton, Cross, Carbonnel, 2007; Ward-Smith, 2008). Students report not being valued (Bradbury-Jones, Sambrook & Irvine, in press) in a context where clinical staff may not be aware of students’ learning needs (McKenna & Wellard, 2004). Students on placement, or new graduates, are in some cases regarded as a burden to registered nurses, and at its extreme, the term “horizontal violence” has been applied (Curtis, Bowen & Reid, 2007; Longo, 2007) to an environment that can be very harsh on its young. While clinical staff make a critical contribution to nursing students’ education and determine how the clinical experience will contribute to the ongoing education of the student/graduate (Levett-Jones, Fahy, Parsons, & Mitchell, 2006), it is vital that students entering the clinical arena are as confident and competent as practicable.

More than one-half of new nurse graduates will leave within two years, and approximately 30 percent will leave their first job within 12 months (Bowles & Candela, 2005). Given such high levels of staff churn it is vital that students are optimally prepared for their placement experience. Levett-Jones and Lathlean (2009) highlight the importance of competence, but also how it is predicated on the successful integration of their previous needs for safety and security, belongingness, healthy self-concept and learning have been met. Furthermore, Levett-Jones and Lathlean (2009) cogently state:

The future of the nursing profession depends upon the development of confident, competent professionals with a healthy self-concept and a commitment to patient-centred care and self-directed learning… the realisation of this goal is strongly influenced by the extent to which students’ clinical placement experiences promote and enhance their sense of belonging. (p. 2870)

SLEs provide an environment where students can become more proficient in many of the skills and functions required of them in the clinical situation, which may make their clinical experience more enjoyable, and therefore discourage students from dropping out (Ward-Smith, 2008). This prior experience that has heightened students’ preparedness for the workplace is also thought to be advantageous to relieve the pressure on mentors/preceptors during clinical placements (Moule et al., 2008).

**Simulation and Risk**

Gantt and Webb-Corbett (2010) describe the irony, where the same 21st Century hospital system provides both life-saving technologies and the potential for life-threatening errors. Simulation provides a context in which students can repetitively rehearse skills in a safe environment and as such promotes safe practice in an increasingly litigious society (Murray, Grant, Howarth, & Leigh, 2008) without the fear of harming a live patient (Dillard et al., 2009; Schoening, Sittner, & Todd, 2006). Simulation has been found to afford opportunities to increase knowledge, practise and develop skills in a safe environment (Moule et al., 2008; Strouse, 2010), improve medication calculations skills (Hutton et al., 2010), teach important patient safety principles and competencies (Henneman, Cunningham, Roche, & Curnin, 2007; Ironside, Jeffries, & Martin, 2009), develop skills in safe patient handling (Kneafsey, 2007) and teach hand washing and patient identification skills (Gantt & Webb-Corbett, 2010). Students who have performed unsatisfactorily during clinical placement that require remediation can use SLEs to practice their skills to minimise the likelihood of error prior to returning to a clinical setting (Haskvitz & Koop, 2004).

**Simulation and Clinical Situations Otherwise Not Encountered**

In his review of a 25 year longitudinal study (1978-2003) of hospital ward clinical learning environments in the United Kingdom, Lewin (2007, p. 245) noted that, based on student perceptions, “the architecture supporting the student nurse clinical learning experience” had improved over time. Despite this overall improvement, Lewin’s data collected in 2003 also indicated “persisting haphazardness in practical instruction and experience” (2007, p. 246) and “unacceptable variations in
clinical learning opportunity (2007, p. 245). Clinical placements can often result in missed opportunities for learning (Andrews et al., 2006), and in the pressured clinical environment clinical staff can easily become unaware of students’ learning needs and may not provide sufficient opportunities for students to apply their skills (McKenna & Wellard, 2004). The simulation environment importantly provides students with the opportunity to participate in varying clinical situations that they may not have experienced, or would not otherwise be encountered. High-risk low-volume experiences provide little opportunity for students to validate their skills and simulated experiences provide an avenue to provide students with exposure to potentially life-threatening clinical situations that are rarely experienced until the actual situation arises (Berndt, 2010). Simulation enables faculty to provide structured simulation lab experiences to ensure students are offered a range of learning opportunities not always available in practice (Nehring, Ellis & Lashley, 2001; Moule et al., 2008). The ability to guarantee students’ have experiences through SLEs they might otherwise not encounter during their clinical placement is crucial.

Human Factors / Interprofessional Learning
Traditionally simulation has been utilised to enhance psychomotor skills and clinical procedures, however it is increasingly being used to teach and assess a greater variety of non-procedural clinical skills (Flanagan, Clavisi, & Nestel, 2007). The focus on psychomotor skill and development of high-tech solutions has to some extent been promoted over other aspects of practice, such as communication and interpersonal skill development (Wellard 2007). What may be termed soft-skills or human factors have utilised simulated environments to help students anticipate personal reactions and develop appropriate coping mechanisms in end-of-life education (Hamilton, 2010), enhance work organisation and people management skills (Warland, in press), improve decision making processes (Haigh, 2007) and to teach relational skills in family nursing (Eggenberger & Regan, 2010). Simulated environments through their ability to create multidisciplinary environments also play an important part in helping to bridge silos (Baker et al., 2008) and studies indicate multidisciplinary team skills teaching in simulated environments, improves medical emergency team performance (DeVita, Schaefer, Wang & Dongilli, 2005), and fosters collaborative practice through interprofessional learning (Jeffries, McNeilis & Wheeler, 2008; Reese, Jeffries & Engum, 2010). The collaborative approach is consistent with the World Health Organisation (1988) proclamation that interprofessional approaches are a key area of health professional development.

Detractors – Challenges to Overcome
While students’ perceptions of simulation are most often extremely positive, their experience is inextricably linked to the manner in which they are introduced to the concept of simulation and how subsequent sessions are conducted (Alinier, 2005). Some students are excited by the technology and the challenges that it affords, and others are willing to use it on the condition that it does not cause them discomfort or anxiety (Baxter et al., 2009). Students do not always believe that simulation increases their confidence (Baxter et al., 2009) and some students have described feeling uneasy when interacting with a lifeless mannequin that they consider is “not the real thing” (Decarlo, Collingridge, Grant, & Ventre, 2008) preferring to talk to a “real” person (Bantz, Dancer, Hodson-Carlton, & Van, 2007). Students have also highlighted the need for learning experiences within clinical simulation to be more authentic (Pike & O’Donnell, 2010). The lack of specific physiological and any emotional responses has been seen to be a clear disadvantage to holistic patient care (Hicks, Coke, & Li, 2009). The overuse of automated equipment has been thought to have the potential to de-skill future generations of nurses (Shepherd, McCunnis, Brown, & Hair, 2010) and some educators maintain that the spotlight on simulations detracts from time spent in real-world clinical settings (Nehrig & Lashley, 2004). Research on the development of skill acquisition through laboratories and simulation repeatedly indicates that simulation could complement, but not replace the clinical experience (Gomez & Gomez 1987; Hallal & Welch, 1984; Jeffries, Rew & Cramer, 2002; Love, McAdams, Patton, Rankin & Roberts, 1989; Morgan, 2006; Sabin, 2001). Other concerns regarding the implementation of SLEs are the lack of supporting theory and evidence-based research supporting the use of simulation; and the time-consuming nature of creating scenarios, setting up the lab, and planning for role plays for already overwhelmed instructors (Sanford, 2010) initial cost and sustainability (Harlow & Sportsman, 2007; Pattillo, Hewett, McCarthy, & Molinari, 2010), and competence levels of simulation instructors (Dieckmann, Rall, & Sadler, 2008).
Resistant - Training of Faculty
It is vital that faculty/trainers are themselves fully competent in the simulation skill they are utilising and aware of the strengths and limitations of any training medium they use (Maran & Glavin, 2003). It is important that faculty/trainers are able to combine elements of explaining, refereeing, coaching and discussing (Schoening et al., 2006), adequately prepared to provide simulation training with clear guidelines on designing, developing, running and evaluating simulation (Alinier, Hunt, Gordon, & Harwood, 2006; Shepherd et al., 2007), and allow students to learn from their mistakes (Alinier et al., 2006).

Faculty are considered vital to the ongoing uptake of effective simulation-based education, although some faculty members are resistant to utilising simulation as a learning tool (Starkweather & Kardong-Edgren, 2008; IOM, 2010). A recent study by Adamson (2010) identified a lack of both time and support, and the lack of appropriate equipment as barriers nursing faculty experience when integrating simulation into their courses. Similarly Arthur, Kable, & Levett-Jones, (2010) in their review cited staff training and staffing as the greatest limiting factors to the implementation of simulation and simulation related technologies. Although simulation has been purported to ease some of the burden on preceptors (Moule et al., 2008), many faculty find simulation to be a very time-intensive teaching method (Lammers, 2007). The importance of dedicated faculty to champion simulation has been highlighted (Katz et al., 2010), and appropriate means to support faculty include the provision of appropriate resources, additional training and support from colleagues and administrators, and financial incentives (Adamson, 2010). Importantly, it has been stated that simulation is only as good as the faculty who use it (Fowler Durham & Alden, 2008). In a similar manner, Jeffries states that the most significant barrier to the use of technologies is “convincing faculty to use them” (IOM, 2010 p.22).

Underutilisation
Adamson (2010) considers there to be a surfeit of research on the use of simulation in nursing education, but little addressing the possible underutilisation of equipment. King, Moseley, Hindenlang and Kuritz, (2008) in their exploration of faculty beliefs acknowledge underutilisation as a curricular issue, but also one that is linked to resource allocation. Maran and Glavin (2003) highlight the number of new simulators that are purchased annually, yet lie under-utilised due to the lack of faculty who are aware of the educational principles that underpin simulation, and posit contemporary advances in technological innovation have eclipsed advances in instructional design and suggest this disconnect must be addressed. Nursing programs are thought to spend a disproportionately large amount of money on the initial investment in simulation equipment relative to the ongoing spending on maintenance and support and, as a consequence, simulation resources often not used to optimise their full potential (Adamson, 2010).

Call To Improve Knowledge Base
Despite rapidly increasing use of simulation-based teaching methods, there has been surprisingly little research on the effect of simulation-based facilities on learning outcomes. McFetrich (2006) highlighted that most evaluations used observation or self report satisfaction questionnaires and more evidence of the educational and clinical value of simulators is needed. The adoption of new simulation initiatives requires adequate resources, time and attention to be successful (Baxter et al., 2009) although the time and resource intensive nature of embedding simulation into curricula precludes many nurse educators from taking the time necessary to implement controlled research studies to evaluate programs appropriately (Radhakrishnan, Roche, & Cunningham, 2007). Lewis, Davies, Jenkins, and Tait (2001) highlight that many research conclusions are invalidated due to research design flaws (e.g., lack of control groups, small sample sizes), which they consider does not invalidate simulation learning, but rather requires a more critical approach when implementing results. It has been said the research methods utilised in nursing education research are underdeveloped (Schmitt, 2002) and determining the effectiveness of simulation education difficult due to a lack of robust evidence in the nursing literature (Cant & Cooper, 2010). Nehring and Lashley (2009, p. 529) importantly highlight the challenges inherent in “measuring performance in a controlled setting as compared to the real life clinical setting where unpredictable and simultaneous events occur, preventing control of all extraneous variables.” A recent review of currently published evaluation instruments for human patient simulation suggests the lack of valid and reliable instruments is
impeding the uptake of simulation in nursing education (Kardong-Edgren, Adamson & Fitzgerald, 2010).

Flanagan et al., (2007) in their review on the efficacy and effectiveness of simulation-based training in health care highlight the preponderance of research in medicine relative to nursing. In their review of simulation in healthcare the vast majority (95%) of the articles they reviewed evaluated simulation in medical populations (e.g. medical students, trainees), and a much lesser number (13%) evaluated nursing (Flanagan et al., 2007). Similarly, in the more recent U.S. Department of Health and Human Services publication on patient safety and quality evidence-based education for nurses, Fowler-Durham and Aiden (2008) stated:

Evidence in the literature related to the use of patient simulation in nursing education and practice is ever increasing, although still sparse in comparison to the medical literature. The majority of articles in the nursing literature are descriptions of how patient simulation is utilised in a particular setting. There is a definite paucity in actual research studies that have been conducted about patient simulation. (p. 9)

Although medicine enjoys a broader consumption of simulation techniques and a more outcome oriented and evidence-based research agenda than nursing (Schiavenato, 2009), nursing is not alone in their lack of evidence for best practice and use of the simulation to achieve optimum learning outcomes. In their recent critical review of 32 research studies on the effect of practice on standardised learning outcomes in simulation-based medical education, McGaghie, Issenberg, Petrusa & Scalese (2010) contend that to advance the field of medical education research more rigorous methods and more rigorous journal editorial policies are essential. It has been suggested there is a dearth of funding for research into nursing education (Dikelmann & Ironside, 2002; CASN, 2010), and the call for more research to determine best practices and use of the simulator to achieve optimum learning outcomes is resounding (Branan, White, & Bezanson, 2008; Zungalo & Corcoran, 2003, Borneuf & Haigh, 2010; CASN, 2010; IOM, 2010)

Acker (2008) acknowledges the lack of data to prove the validity of the tools and techniques used in simulation-based education, but asserts “many of the tools educators currently use have ever been validated” (pp. 63). Similarly, Ward-Smith (2008) recognises the lack of evaluative research data to support simulation, claiming that this lack of evidence is not unique and states “there are many interventions in nursing that are not yet supported by research” (p. 473).

Simulation Literature

Notwithstanding the research limitation previously described, a significant body of literature identifies how students feel about using simulation and its strengths and limitations in their nursing education. Studies evaluating simulation-based on students’ perceptions are overwhelmingly positive (Baxter et al., 2009; Jeffries & Rizzolo, 2006; Johnson, Zerwic, & Theis, 1999; Ker, Mole, & Bradley, 2003; Mole and McClafferty, 2004). Through the use of simulators, especially medium and high fidelity simulators, students and faculty describe an elevation in student’s self-confidence/self-efficacy (Bremner, Adudell, Bennett, & VanGeest, 2006; Bantz et al., 2007; Linder & Pulsipher, 2008; Nickless, 2010; Pike & O’Donnell, 2010; Schoening et al., 2006). Research exploring the experience of student nurses also indicates that simulation leads to an increase in critical thinking, knowledge, decision making (Lasater, 2007; Nehring & Lashley, 2004; Schoening et al., 2006; Ravert, 2008; Reilly & Spratt, 2007) and students feel engaged in their learning because it reflects reality (Lasater, 2007; Nehring & Lashley, 2004; Reilly & Spratt, 2007).

Recent research has indicated the efficacy of SLEs in a disparate range of settings including: to prepare students to competently measure blood pressure in real-world environments (Bland & Ousey, 2010), paediatric resuscitation (Childs & Seppeles, 2006), prioritisation of nursing interventions and documentation (Linder & Pulsipher, 2008), emergency preparedness (Morrison & Catanzaro, 2010) and skills in enhancing communication in potentially difficult acute care situations (Rosenzweig et al., 2008).

More specifically:
Ravert (2002) conducted a review of medical and nursing literature to identify quantitative studies related to determine the effect of computer-based simulation on learning. Of 513 references that met the inclusion criteria four studies were conducted by registered nurses using samples of nurses. Across both medical and nursing studies, seventy-five percent of the studies indicated positive effects of simulation on knowledge acquisition and/or skills training.

Cant and Cooper (2010) in their recent review of the quantitative evidence for medium to high fidelity simulation in nurse education relative to other educational strategies found that all studies showed simulation techniques were a valid method of education. Although only half of the studies that employed control groups found additional gains in knowledge, critical thinking, perceived clinical confidence or satisfaction. Although they acknowledge the limitations of their research, where best practice guidelines are adhered to and relative to other strategies for teaching and learning (e.g., case studies, student group interactions) simulation may have some advantages over other methods (Cant and Cooper, 2010).

Harder (2010) in her systematic review of health care education identified 23 articles published between 2003-2007 relating to the effectiveness of high-fidelity patient simulators as an education tool for clinical skills and performance. The review noted 10 studies were conducted with practicing health care professionals and 13 with students. Overall, 16 were conducted in nursing, six in medicine, and one in an interdisciplinary environment (i.e., nursing, medicine, respiratory therapy). Simulation, as opposed to other education and training methods (e.g., traditional psychomotor skills laboratory sessions with task trainers, computer-based programs, and lecture classes), in the majority of the studies increased the students’ clinical skills. Three studies indicated there was no difference between traditional teaching modalities and simulation, although none of the studies identified there was a decrease in the simulation group.

Lapkin, Levett-Jones, Bellchambers, & Fernandez, (2010) conducted a review of the effectiveness of Human Patient Simulation Mannequins (HPSMs) in teaching clinical reasoning skills to undergraduate nursing students. Their review included 8 studies conducted between 1999 and 2009 that met inclusion criteria. They conclude that there was evidence to indicate the use of HPSMs significantly improves three learning outcomes fundamental to clinical reasoning (i.e., knowledge acquisition, critical thinking, ability to identify deteriorating patients), although inconclusive in regard to the effectiveness of using HPSMs in the teaching of clinical reasoning skills. They note there were significant methodological limitations in the papers reviewed (i.e., none of the papers directly measured clinical reasoning).

McCaughey and Traynor (2010) conducted a descriptive survey of 153 third year undergraduate nursing students, who were approaching the transition from nursing student to staff nurse, to evaluate the role of medium to high fidelity simulation in the preparation for clinical nursing practice. Seventy-two percent (n=67) of nursing students who agreed that SLE experience prepared them for the transition from student to qualified nurse and 92.5% (n=86) acknowledged their confidence was enhanced. They conclude that their study strengthens the case to utilise simulation as a means of linking theory to practice.

Simulation and Practice Learning
Tanner (1987) questioned whether the judgements made during simulation were representative of the process that would occur in actual clinical practice. There are very few studies that definitively demonstrate transfer of simulation-based learning into the clinical environment and limited empirical evidence to support its effect on clinical practice (Murray et al., 2008), and the degree to which simulation can enhance practice learning is under consideration. In his report on simulation in healthcare Flanagan et al., (2007) concluded:

There are very few studies that demonstrate transfer of simulation-based learning into the clinical environment.
• There is little in the way of rigorous research on the use of simulation to explore decision-making, communication and teamwork/leadership skills

• In terms of professional groups there is almost no research in terms of the use of simulation for allied health professionals, and relatively little in nursing compared to medicine

• The role of simulation in continuing professional development, competency assessment and remediation is still relatively under-explored

While acknowledging the evidence supporting the use of simulation to facilitate the transfer of knowledge to performance is in its infancy, findings indicate that simulation is perceived to be a valuable method of learning, which has a positive effect on the clinical effectiveness of students approaching the transition to registered nurses (McCaughey & Traynor, 2010). However, it is the actual, rather than perceived, impact of simulation on placement performance that is yet to be established (Baillie and Curzio, 2009). The degree to which skills acquired during simulation transfers to practice is often supported only by anecdotal evidences (Alinier et al., 2006).

Despite the dearth of studies to show transfer of skills from simulation-based activities to clinical practice, there are a number of studies that have addressed the issue both directly and indirectly.

• Alinier et al., (2006) conducted a study of undergraduate nursing students (N=99) and compared the performance of students in traditional clinical settings with those that received clinical experience (control) and clinical plus simulation experience (experimental). Results using the Objective Structured Clinical Examination (OSCE) indicated that students in both groups improved their clinical performance; although, the experimental group improved their performance on the OSCE 14 to 18 percentage points (95% CI 12.52-15.85) compared to seven to 18 points (95% CI 5.33-9.05) in the control group. In this study Alinier et al. compared clinical experience with clinical experience plus simulation, and not clinical experience and simulation.

• Radhakrishnan et al. (2007) conducted a study of the learning outcomes of students using the Laerdal SimMan HPS. A convenience sample of second-degree, senior baccalaureate nursing students was utilised to compare their clinical performance with and without HPS exercises. Students were randomly assigned to the intervention or control group. Students involved in the study had previously completed 320 hours of internships. Performance addressed safety, basic assessment, prioritisation, problem-focused assessment, appropriate interventions, delegation, and communication. Results indicated that in safety and basic assessment, students in the intervention group scored higher, although the control and intervention groups’ performances were similar in other categories (e.g., focused assessment, interventions, delegation, and communication (Radhakrishnan et al., 2007).

• Moule et al., (2008) conducted a study with 69 adult and children’s pre-registration first and third year nursing students. Their research question was “Can the use of simulation support pre-registration nursing students in familiarising themselves with clinical skills before consolidating them in practice settings” (Moule et al., 2008, 791). As a Nursing and Midwifery Council pilot site they were commissioned to investigate the extent to which designated practice hours for simulation would support the development of a range of clinical skills (e.g., basic life support, manual handling, infection control, clinical decision making and managing violence and aggression) amongst pre-registration nursing students. The group attended five simulation sessions and Moule et al. (2008) assert that quantitative and qualitative results indicate that “simulation can support the development of knowledge and skills in a range of clinical practice scenarios, offering opportunities for skill rehearsal, feedback and testing prior to consolidation in practice” (2008, p796).

• Baillie and Curzio (2009) conducted a study with 88 control students who undertook their usual clinical placements and 179 students that undertook a simulation programme. Students that participated in simulation stated that it increased their ability and confidence and reported not feeling disadvantaged by the reduced clinical placement hours. Both facilitators and students rated the simulation programmes very positively. Although at the completion of the placement most simulation students reported feeling confident in their skill level, at the completion of the
placement period there was no significant difference between the confidence of the simulation and control group. Baillie and Curzio (2009) conclude that simulation is at least as effective as a conventional practice placement.

- Hicks et al. (2009) conducted a randomised controlled study of undergraduate nursing students (N=58) taking a critical care nursing course. The aim of the study was to examine differences between traditional clinical experience and simulation as teaching methods, and identify how simulation learning affects knowledge, clinical performance, and self-efficacy compared to those with traditional clinical experiences. Students were randomly assigned to either simulation alone (30 hours), clinical alone (30 hours), or a combination of simulation and clinical (15 hours each). Results indicated that all groups had statistically significant decreases on knowledge scores although the simulation group appeared to retain the least. Hicks et al found the differences in clinical performance were not statistically significant, although the simulation group did not perform as well as the combination and clinical groups. Students in the simulation and combination groups had statistically higher self-confidence scores than students in the clinical group. Although the evaluation showed significant increase in self-confidence and perceived abilities by the students, Hicks et al highlight that this perception is not enough in determining higher level problem solving, decision making, and psychomotor skills and conclude that the effects of simulation on the clinical performance of nursing students remain inconclusive.

- Williams, French and Brown (2009) conducted a study with second year Bachelor of Nursing students (N = 191) and two focus groups (N = 7). Students watched a range of interprofessional education (IPE) DVD simulations that utilised actors to focus on professional roles and interdisciplinary teamwork. Students valued the experience and considered the modality was useful as clinical placement preparation, and stated that DVD simulations could replace elements of clinical education placements. Students considered the experience would have been enhanced with real-life cases, more realism and increased interaction.

**Research and Development**

No high reliability organisation has had data equivalent to a randomised clinical trial proving the benefits of simulation training, despite decades of use and regular assessment of individual and team performance both in real work and during simulations. Pioneering centres in health care are starting to take the leap of long term application with less than absolute proof of benefit. Even greater leaps may be required in the future (Gaba, 2004). Two such studies are as follows:

- In August 2010, the American Association of Colleges of Nursing (AACN, n.d.) identified that the Hunter-Bellevue School of Nursing was recently awarded a five-year Faculty Development: Integrated Technology into Nursing Education and Practice grant from the Health Resources and Services Administration (HRSA). A consortium of 12 nursing schools in community and senior colleges within the New York City Nursing Education Consortium in Technology (NYCNECT) will conduct a study to increase the use of simulation, informatics, telehealth, and other technologies as teaching and learning tools to prepare nursing students. The study will utilise an innovative faculty development model and prepare over 350 nurse educators to use a disparate range of educational technology.

- In October 2010, the National Council of State Boards of Nursing (NCSBN, n.d.) is conducting a national, multi-site (10 Schools), longitudinal study of simulation use in pre-licensure nursing programs across the United States. Students (approx 1000 students) will be randomly placed into 1 of 3 groups differing in hours spent in clinical vs. hours spent in simulation (NCSBN, n.d.). The three study groups include:
  - 10% clinical substitution with simulation
  - 25% clinical substitution with simulation
  - 50% clinical substitution with simulation

The study will also identify translational outcomes of simulation and follow students into their first year in the workforce. Overall, the study will follow the cohort to:
Use of Simulated Learning Environments in Nursing Curricula
Health Workforce Australia
November 2010

- Evaluate the learning occurring with varying amounts of simulation substituting for clinical hours
- Evaluate new graduates ability to translate nursing knowledge and skills into the workplace
- Highlight best practices in simulation use
- Establish a recommended simulation curriculum

It is thought that “simulation will probably never replace the primacy for training of the apprenticeship system of supervised work on real patients” (Gaba, 2004, pp i6). In preparing nurses for their role in practice simulation does not replace clinical practice but complements other teaching and learning approaches (Murray et al., 2008). Simulation can help prepare clinically proficient health care professionals (Harder, 2010) and has been embraced by “early adopters” (Flanagan et al., 2007), yet as with any new initiative, the adoption of simulation technology requires adequate time and resources to be successful (Baxter et al., 2008).

The research surrounding the efficacy of simulation is largely inconclusive, and as Schiavenato (2009 p.392) notes, “little is known about which simulation among competing methods is best in a given setting” and finding the most appropriate balance of traditional learning, simulation-based learning, and actual patient care experience is a significant important challenge (Gaba, 2004). Despite the lack of definitive evidence to support its value, the drivers to augment simulation are robust (Flanagan et al., 2007). Simulation has an as yet unexplored potential range of applications (Gaba, 2004), and as Nehring (2009) qualifies:

The future use of simulation in nursing education and practice has great potential; we see no bounds to the direction that this technology can lead educational efforts….The caution lies in the quality of its use. (p. 544)

Application to Learning and Teaching
Alignment of simulation to national developments in the context of Interprofessional Learning and the National Safety and Quality Framework, is expected to be increasingly paramount, so that the following can be realised:

- Facilitating that all clinicians participate in quality and safety education, both during their initial training and throughout their professional practice
- Ensuring that staff are skilled and have the correct tools and environment to deliver safe care and recognise and manage risks due to workforce shortages
- Training clinicians to recognise that encouraging questions makes health care safer, and assisting clinicians to identify and support patients with lower health literacy
- Investing in clinician recruitment and training so that there are a sufficient number of appropriately skilled clinicians to provide safe, high quality care to all Australians
- Teaching and assessing skills for communicating and shared decision-making in health care curricula
- Teaching patients methods to improve their personal safety that have proven effectiveness
- Providing clinicians with education in cultural safety, to help them understand how healthcare is experienced by patients, and how to reduce the risks that arise when shared respect, meaning and knowledge are not present
- Ensuring that training programs for clinicians include opportunities to work with Indigenous and other culturally and linguistically diverse populations
- Ensuring that at every handover there is transfer of critical information and professional responsibility and accountability for patient care. Clinicians need the necessary communication skills to ensure that this occurs and to enlist assistance from other clinicians when patients require this
- Ensuring that clinicians use an agreed handover method and regularly check its effectiveness
- Making patients, consumers and the broader community aware of patients’ rights and how to seek support to ensure the rights are respected
• Educating patients, consumers and clinicians about health care partnership. This would help to build trust by enabling both parties understand what is expected of them and what to expect from the other
• Regularly conducting, reporting and using patient experience surveys to improve patients’ experiences of health care
• Clinicians understanding that their responsibilities for safety and quality go beyond caring for individual patients and include, for instance, participation in on-call rosters,
• Providing prompt opinions on referred patients and supervising and educating other staff
• Routinely offering formal open disclosure to all patients, in both the public and private sectors, who experience harm while receiving health care. In accordance with the National Open Disclosure Standard, the disclosure should include:
  ➢ An expression of regret;
  ➢ A factual explanation of what happened;
  ➢ The potential consequences; and the
  ➢ Steps being taken to manage the event and prevent recurrence.

There is universal agreement that clinical experience is integral to the completion of education and training of all health professional groups. In recognition that many of the graduate educational outcomes need to be met in settings where a quality clinical placement can be difficult to secure, universities are increasingly focussing on the role of simulated learning to meet this gap – across health disciplines. As well, given many in the higher education sector have the shared objective of providing new clinical training and professional development opportunities that model the real world and deliver an optimal learning experience, not surprisingly they are considering simulated learning environments (SLEs) and interprofessional learning (IPL) environments as being inextricably linked. As a result, some universities are using both IPL and SLEs to complement traditional clinical placement activities that are aligned to national core competencies / capabilities / skills areas and thus deliver:
• Capacity to expose students to authentic experiences in a safe and supported setting;
• Tailored cognitive and attitudinal skills development challenges;
• Opportunities for non-technical skills development such as leadership and teamwork;
• A means to learn how to build positive workplace cultures, including voicing concerns, cross-checking colleagues, identifying mistakes, and intervening to avoid near misses or adverse events;
• An avenue for students to become aware of the best tools and environments needed to deliver safe team-based care and recognise and manage risks due to workforce deficiencies;
• A focus on human factors, including teaching and assessing skills for communicating and shared decision-making within scopes of practice; and
• Exposure for students to the role of all health professionals in supervising and educating other staff.

Industry and Skills Development Initiatives (including Credentialing and Accreditation)
Some universities are now delivering a range of short courses and “train-the-trainer” programs in simulation for healthcare providers.

At present, in Australia, there is a potential danger of wasted resources and potential inefficiencies in simulated learning environments. For instance, multiple simulation providers with limited resources (e.g. “a mannequin in a cupboard”) and inadequate simulation training, can not only mean limited impact but also detrimental educational outcomes. Poorly conducted and debriefed simulations can be damaging to the learner, the team and the educator. Simulation facilities need to be established on sound business principles and an in-depth knowledge around simulation. At present, there is limited access to train the trainer programs using simulation as a core educational strategy.
In the immediate future, increasing access to clinical training and up-skilling for simulation practitioners will be particularly instrumental in creating a new career path for clinical facilitators in simulation, thus expanding the potential facilitator pool.
To this end, a strategy to address credentialing and certification of both simulation instructors and simulation centres will need to be devised. In Australia, currently anyone can develop and run an SLP with no requirement for a level of training/understanding around simulation and its methodologies. Without certification, there is no way to determine who is truly qualified to implement SLPs. Building capacity of the simulation field and workforce needs to be a parallel strategy to any future infrastructure development phase and should focus on achieving broad industry development in the areas of:

- Understanding the fundamentals of simulation terminology and concepts;
- Appreciation of simulation organisations and applications in Australia;
- Developing a structured approach to recognition of simulation knowledge and expertise (e.g. beginner to advanced levels);
- Providing opportunities for professional development;
- Promoting participation in the simulation community;
- Developing clear career pathways for those wishing to focus on simulation; and
- Providing sustainable workforce which will be required for the continued use of SLP/SLEs.

It is important to note the importance of the above, because as funding flows from Health Workforce Australia for more simulated learning environments/programs, consumers will require providers of SLPs to have certified employees and programs, so that they have a reasonable expectation of competency and professionalism. As well, for SLP/SLEs to be recognised by registering authorities as a adjunct to clinical placement hours, providers and programs will undoubtedly need to be accredited at some point in the future.

Thus, consideration is needed of who can best develop train the trainer hubs in order to create a sustainable and shared model of simulated learning will be critical to sustained effectiveness of any investment. That is, building the simulation clinical facilitator (“instructor”) workforce so they are capable of delivering simulation education programs aligned to national core competencies will perhaps be as important to success as other factors. It is important to note that to achieve this, a set of common standards and capabilities will be required – presently an area of critical shortage in Australia in the SLE field and important at this juncture as standards here will help create reproducible events and models.

Certainly models for credentialing of instructors are available (and tested) elsewhere (e.g., the U.S.) For instance, curricula for simulator instructors in training and tools that facilitate an assessment process that can result in instructor credentialing exist, such as train the trainer programs that differentiate between advanced beginners and competent proficient instructors (i.e. developing trainers of the trainers). This model for progression of the instructors’/supervisors’ development is based on a tool based on simulation instructor core competencies and this same tool is then used for credentialing or certifying.
Chapter Four: Heads of School Feedback

Method
After Heads of Schools Nursing were sent a communiqué from Health Workforce Australia on 13 August 2010 informing them of the project, a letter was sent to each Head of School (N=34) requesting their assistance and involvement in the project. The letter to each Head of School:

- Identified the project team;
- Highlighted the aims and objectives of the project;
- Explained future phases of the project;
- Explicated the project timeline;
- Reminded them of their involvement in the process thus far (the Project Managers participation/presentation at a previous Council of Deans meeting);
- Requested their specific feedback as Heads of School in providing high level feedback;
- Requested they provide a nominee from their School for each entry to; and
- Profession/pre-registration nursing program to complete a forthcoming electronic survey.

Questions
Nine questions were developed that required qualitative and quantitative responses. The set of questions was purposely kept brief to ensure maximum participation. The questions were as follows:

- Please provide (or attach) an overview of the pre-registration nursing degree course in your School (name of course/s, duration, total number of hours that comprise clinical education / assessment)
- Do you think that there are any activities that can be complemented by simulated learning programs (SLPs)?
- Do you think that there are any activities that can be replaced by SLPs?
- What skills/attributes can only be taught in clinical environments?
- Where do you see the opportunities for simulation in the future?
- What do you think would be the benefits, challenges and risks in introducing simulation from a School of Nursing perspective?
- What do you think would be the benefits, challenges and risks in introducing simulation from the broader profession and industry perspective?
- Funding for infrastructure development and implementation for simulation is being made available. How do you think it might be best spent?
- Do you consider you are providing something innovative and or high quality in simulation in nursing?

Results
Twenty-nine responses were received (85% response rate) and the data is presented below.

<table>
<thead>
<tr>
<th>Name of Course</th>
<th>Length</th>
<th>N</th>
<th>Clinical Ed/Assess Hrs (Mean)</th>
<th>Clinical Ed/Assess Hrs (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Nursing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Nursing</td>
<td>3 yrs</td>
<td>26</td>
<td>1 082 hrs</td>
<td>800 – 2 000 hrs (median 1 026 hrs)</td>
</tr>
<tr>
<td>Bachelor of Science(Nursing)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Nursing Science</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Entry Nursing</td>
<td>3.5 yrs</td>
<td>1</td>
<td>1 135 hrs</td>
<td>n/a</td>
</tr>
<tr>
<td>Master of Nursing Science</td>
<td>2 yrs</td>
<td>4</td>
<td>1 001 hrs</td>
<td>866 – 1 058 hrs</td>
</tr>
<tr>
<td>Master of Nursing Practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Double Degrees

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Duration</th>
<th>Nursing Hours</th>
<th>Other Hours</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Nursing/Bachelor of Exercise &amp; Movement Science</td>
<td>4 yrs</td>
<td>1 930 hrs (nursing)</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Bachelor of Nursing/Bachelor of Health Science (Public Health)</td>
<td>4 yrs</td>
<td>1 930 hrs (nursing)</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Bachelor of Nursing/Bachelor of Health Science (Paramedic)</td>
<td>4 yrs</td>
<td>1 930 hrs (nursing)</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Bachelor of Nursing/Bachelor of Behavioural Science (Psychology); Bachelor of Nursing/Psychology</td>
<td>4 yrs</td>
<td>2 885 hrs (nursing)</td>
<td>840 – 930 hrs</td>
<td></td>
</tr>
<tr>
<td>Bachelor of Nursing/Bachelor of Midwifery; Bachelor of Science (Nursing)/Bachelor of Science (Midwifery); Bachelor of Nursing Science/Bachelor of Midwifery</td>
<td>4 yrs</td>
<td>5 1 799 hours (nursing + midwifery total)</td>
<td>1 550 – 2 120 hours</td>
<td></td>
</tr>
<tr>
<td>Bachelor of Nursing/Health Promotion</td>
<td>4 yrs</td>
<td>1 840 hrs (nursing)</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Combined Degree (B Health Science/MN; B Arts/MN; B Science/MN) Year 1 undergraduate component only, yrs 2 &amp; 3 both undergraduate and MN, year 4 MN only</td>
<td>4 yrs</td>
<td>1 1 085 hrs (nursing)</td>
<td>n/a</td>
<td></td>
</tr>
</tbody>
</table>

Accelerated Programs

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Duration</th>
<th>Nursing Hours</th>
<th>Other Hours</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Nursing (Accelerated Graduate Entry)</td>
<td>2 yrs</td>
<td>1 820 hrs</td>
<td>n/a</td>
<td></td>
</tr>
</tbody>
</table>

Postgraduate Programs

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Duration</th>
<th>Nursing Hours</th>
<th>Other Hours</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Nurse Practitioner</td>
<td>1.5 yrs</td>
<td>1 321 hrs</td>
<td>n/a</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 details the Head of School survey responses regarding the pre-registration/entry to profession courses offered in each school/faculty, the course duration and the number of hours that comprise clinical education/assessment. The table indicates the various categories of pre-registration courses offered and includes both the mean clinical education/assessment hours and range of clinical education/assessment hours for courses within each category.

Nursing clinical education/assessment hours:

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Laboratory</td>
<td>121 hours</td>
<td>50 – 240 hours</td>
</tr>
<tr>
<td>Simulation</td>
<td>53 hours</td>
<td>8 – 141 hours</td>
</tr>
<tr>
<td>Clinical Placements</td>
<td>954 hours</td>
<td>680 – 2 000 hours</td>
</tr>
<tr>
<td>Other (e.g. online simulation, theory, or not specified)</td>
<td>609 hours</td>
<td>10 – 1 422 hours</td>
</tr>
</tbody>
</table>

Table 3 identifies the combined clinical education/assessment hours for all pre-registration/entry to profession courses.

Do you think that there are any activities that can be complemented by simulated learning programs (SLPs)?

<table>
<thead>
<tr>
<th>Yes Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

All respondents considered there were activities that could be complemented by simulated learning programs.
Do you think that there are any activities that can be replaced by SLPs?

<table>
<thead>
<tr>
<th>Yes</th>
<th>Examples</th>
</tr>
</thead>
</table>
| 37% | • SLPs may provide a more rigorous and consistent learning and assessing environment than some clinical placements  
• Cases that require a safe and standardised approach to a problem  
• Experiences that cannot be planned for in the clinical setting (e.g. dealing with distressed relatives)  
• Assessment of key competencies |

<table>
<thead>
<tr>
<th>No</th>
<th>Examples</th>
</tr>
</thead>
</table>
| 63% | • SLPs are an adjuvant to clinical experiences, but not a replacement  
• Because of the changing nature, complexity and acuity of clinical environments  
SLPs support students in preparing for their clinical placements but have limitations as a substitute for actual clinical experiences  
• SLPs help students develop basic competency for application and development in the clinical environment |

What skills/attributes can only be taught in clinical environments?

<table>
<thead>
<tr>
<th>Predominant themes</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Teaching vs learning | • It is difficult to imagine any clinically-related skills that can be learned without “real world” practice as, in the main, real patient situations are multi-dimensional and rarely fit a “standardised” picture  
• Competencies within the “Provision and coordination of care” and “Collaborative and therapeutic practice” domains |
| Time management and prioritisation of care | • Students need to learn and demonstrate a range of skills and attributes in real time on real patients within a clinical environment  
• Based on level of acuity and environmental activities  
• Reality of complex patient care, coordination and the “pace” of the clinical environment  
• Immersion in the complexity and context of a clinical environment changes the responses by students and this cannot be replicated in an artificial setting |
| Interdisciplinary team work | • Immersive complex interprofessional case management  
• Holistic interdisciplinary care  
• Developing and sustaining effective working relationships with team members |
| Other themes | • |
| Understanding of nursing and health culture | • Socialisation with the profession |
| Critical care/emergency skills | • Managing arrest |
| Interaction with patients, family and significant others | • Responding to the ongoing needs of patients and their families |
| Experiences that cannot be replicated | • Death of a patient |
| Accountability with consequences | • Students will still need the opportunity to take full responsibility for patient care in real clinical settings |

Where do you see the opportunities for simulation in the future?

<table>
<thead>
<tr>
<th>Predominant themes</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Increasing student confidence and competence prior to clinical placements (and therefore the potential to decrease demand on clinical placements) | • Simulation has the ability to offer deliberate, repetitive practice that could familiarise nursing students to new technology in a safe environment, without harm to patients  
• The role of simulation will be to enable learners to attain competency in a quicker time frame so the demand for clinical placement for each individual learner is less  
• Better preparing students for clinical practice  
• Greater use of learning opportunities to maximise practice experience  
• Due to a range of factors (relating to clinical placements) universities will be looking at identifying competencies that can be demonstrated within SLPs |
| Interprofessional learning | • Provide opportunities for interdisciplinary education  
• The opportunity to introduce/evolve interprofessional education amongst the health professions  
• Collaborative approaches to clinical learning across disciplines – although a risk is that separate disciplines are not willing to participate in collaborative learning |
### Assessment and feedback
- Evaluation of learning and competence
- Constructive/critical feedback in a timely manner
- More seamless ways in which students can record their behaviours – leading to more effective reflection on action
- The opportunity for equitable assessments

### Difficult/rare opportunities
- Managing challenging behaviour
- Clinical situations that are not encountered frequently, eg. paediatric
- Working with vulnerable groups, eg. Child protection issues
- Community and mental health areas

### Mobile/remote learning
- Mobile simulation vans which "reach" to pre-service students and current staff in rural/remote locations
- Remote course delivery using a virtual environment

### What do you think would be the benefits, challenges and risks in introducing simulation from a School of Nursing perspective?

#### Benefits – Predominant themes | Examples
---|---
Safe learning environment | Student focused learning in a safe environment
| Prepares students for practice in an environment that is safe for them and patients
Planned learning opportunities | Management of scenario to meet learning needs of curriculum
| Evidence based/best practice
| Opportunities for student reflection/self-appraisal
| Opportunities for students to receive immediate/critical feedback
| Standardised experiences/equity of learning experience
Preparation for practice | Students will potentially be more confident and competent before clinical placement
| Improve integration of theory and practice
| Practice (management of) life threatening situations
| Opportunities for multidisciplinary work
Clinical placement issues | Overcome variation in quality of role models
| Reduce competition for clinical sites
| Maximise preceptor utilisation
| Reducing the burden in the off campus clinical setting

#### Challenges – Predominant themes | Examples
---|---
Cost | Equipment (purchase/maintenance/updating)
| Staff
| Administration
| Time consuming and initially expensive to set up
Resources (physical) | Ensuring access to appropriate learning spaces
Resources (staff) | High staffing needs
| Increased workloads
| IT/technical support
| Staff education/up-skilling
Logistics | Space requirements
| Student numbers too large to be able to immerse equally into simulation
Uptake | Acceptance by students
| Achieving buy-in (shared vision) from all teaching team
| Change management
| Integration into curricula

#### Risks – Predominant themes | Examples
---|---
Quality | Lack of evidence r/t SLPs in health care to support that they are a reliable and valid teaching approach
| Quality management
| Fitting properly with curriculum design
| Time for staff development, including modelling and trialling developed scenarios
Reduction in clinical placement time | Over reliance on SLPs as a teaching strategy could erode requirements/duration of clinical practicums
| Reputation of programs if public perception sees clinical hours replaced with on campus learning
Use of Simulated Learning Environments in Nursing Curricula
Health Workforce Australia
November 2010

- Pressure to replace clinical placement hours with simulation due to lack of placements available, rather than expanding clinical experience via simulation
- Diminished credibility of graduates as “work ready”

<table>
<thead>
<tr>
<th>Equipment/technology issues</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Equipment malfunctioning</td>
</tr>
<tr>
<td></td>
<td>Equipment obsolescence</td>
</tr>
<tr>
<td></td>
<td>Poorly selected resources that result in an expensive and underutilised resource</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Engagement (staff and student)</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Student stress/distress</td>
</tr>
<tr>
<td></td>
<td>Insufficient preparation/debriefing for students</td>
</tr>
<tr>
<td></td>
<td>Failure to recognise increased staff workloads</td>
</tr>
<tr>
<td></td>
<td>Reluctance of staff unfamiliar with simulation to incorporate into their teaching</td>
</tr>
</tbody>
</table>

What do you think would be the benefits, challenges and risks in introducing simulation from the broader profession and industry perspective?

### Benefits – Predominant themes

#### Preparation of students/graduates for practice
- Nursing students will be better prepared for each clinical placement reducing the time students require to “settle” into health care settings
- Remediation for students who do not meet competencies in during placement, before returning to the clinical setting
- Potentially increase the workplace readiness of graduates

#### Up-skilling of hospital staff
- Hospitals can use simulation activities conducted in universities to up-skill staff
- Shared feelings between students and staff, i.e. both exposed to simulation
- Staff feeling as though they are “up to speed” with the latest resources
- Ongoing professional development

#### Interprofessional learning
- Interdisciplinary engagement
- Opportunities for IPL – teamwork and communication – safety and quality of practice
- Role-swapping – better understanding of roles
- Learning how to respond appropriately to human needs with the correct mix of technical and non-technical skills in an interprofessional team based environment
- Breaking down barriers between professional groups

#### Research
- Opportunities for research and evaluation on the effectiveness of simulation
- Clear evidence that successful simulation builds knowledge, skills and confidence in a safe, supportive environment

### Challenges – Predominant themes

#### Resources
- Initial and ongoing costs/ funding
- Appropriate staffing and equipment to implement true simulation otherwise students will see it as “not real”
- Sufficient equipment/technology/maintenance/
- space to manage number of students involved
- Recruiting/retaining staff capable of working/teaching in a simulation environment

#### Credibility/acceptance
- Accreditation/certification by accrediting bodies
- Convincing industry that this is a valid form of clinical experience
- Acceptance by public/patients of students trained in this way
- Acceptance of simulation as a replacement for some clinical hours
- Acceptance by students (not “real” clinical)

### Predominant themes – Risks

#### Resources
- An initial bolus of funds with no/inadequate ongoing funding
- Non/misuse of equipment
- Maintenance of equipment
- Insufficient ongoing funding to provide equity of access across geographical locations will increase the divide between metropolitan and rural and remote health services
- Cost – resources and time

#### Reduction in clinical placement time
- Clinical experience is replaced with simulation by the bean counters
- There is a risk of focusing on technical competence rather than developing student capability in a broad range such as clinical decision-making, communication etc.
Impact on students
- Confidentiality issues
- Student psychological distress
- Insufficient preparation and debriefing

Funding for infrastructure development and implementation for simulation is being made available. How do you think it might best be spent?

<table>
<thead>
<tr>
<th>Predominant themes</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Physical resources | • Clinical environments for simulation  
• Appropriate spaces for simulation and debriefing  
• Creative and authentic learning opportunities within a simulated environment does not necessarily require the purchase of high end “big ticket items”  
• To manage the sustainability of the technologies into the future  
• Funds for replacing consumables and maintenance of resources |
| Human resources | • Education of clinical/academic staff to implement simulation  
• Standardised patients for clinical learning  
• Ongoing technical support  
• Lab managers  
• Support staff |
| Shared resources | • Developing a pool of “best practice” resources for general usage  
• Facilitating a community of practice network where staff can share experiences and/or learn from the experiences of others  
• Development of resources such as case scenarios  
• Funding should be such that it benefits a collective group so the infrastructure is shared as much as possible  
• Software  
• The development of interprofessional SLP centres across universities with integration with health services |
| Expansion | • To support and expand existing university programs where simulation has been successfully integrated  
• To link existing expertise with regional universities, areas and programs where simulation is yet to be utilised  
• Transportable unit |
| Research | • Evaluation of effectiveness in relation to student outcomes  
• This is a step ahead of where the evidence is and there needs to be more evidence of the best way forward |

Do you consider you are providing something innovative and/or high quality in simulation in nursing?

<table>
<thead>
<tr>
<th>Yes = 60%</th>
<th>Examples</th>
</tr>
</thead>
</table>
| • Use of standardised patients and actors for scenarios  
• Using scenarios which are also used by students online in a virtual hospital  
• Clinical laboratories that replicate functional health service units: staffed by experienced clinical staff; students undertake a “shift” and manage a case load under the supervision of a RN  
• DVD simulations of acute behavioural disturbances in the ED. Developed in conjunction with Melbourne Health and the Victorian Dept of Health  
• Program designed to focus on the development of skill transitions as the learner moves through the program, beginning with technical procedural skills and transitioning to non-technical skills in the later part of the program. In 3rd year “Structure Clinical Program” replaces 3 days of placement  
• Establishment of a Simulation Interest Group (SIG) led by staff with considerable experience and expertise in the area  
• Multidisciplinary scenarios preparing nursing and medical students for rural and regional service  
• Developed and successfully delivered a 2 day short course “Getting started with health care simulation” for academic and nurse educators  
• Support Bachelor of Engineering internship program by employing a student as a simulation technician  
• International consultancy work |

<table>
<thead>
<tr>
<th>No = 29%</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Not yet, only just developing</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N/A = 11%</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>• N/A</td>
<td></td>
</tr>
</tbody>
</table>
Chapter Five: Stakeholder Consultation

Method

A comprehensive list of stakeholders was developed (see Appendix 2) and a call for submissions was sent to each stakeholder requesting their assistance and involvement in the project. The letters were sent to each stakeholder that:

- Identified the project team;
- Highlighted the aims and objectives of the project;
- Explained future phases of the project;
- Explicated the project timeline; and
- Requested their participation.

Twelve responses were received.

Questions

Three questions were developed that required qualitative responses. The set of questions was purposely kept brief to ensure maximum participation. The questions were as follows:

- Funding for infrastructure development and implementation for simulation is being made available. How do you think it might be best spent?
- Do you see any opportunities for your organisation to partner with a university to participate in a simulated learning program?
- Any further comments?

Stakeholder Submission Analysis

Funding for infrastructure development and implementation for simulation is being made available. How do you think it might best be spent?

<table>
<thead>
<tr>
<th>Themes</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration</td>
<td>We would recommend an approach in which simulation facilities are co-located on university affiliated health service/hospital campuses, so as to foster multi-professional initiatives and university/hospital collaboration in the development and use of simulated learning initiatives.</td>
</tr>
<tr>
<td></td>
<td>System wide support with hub arrangement for partnerships of education and health partners.</td>
</tr>
<tr>
<td></td>
<td>Funding would need to be allocated to each nursing facility to set up appropriate laboratories, associated education or teaching staff and consistent teaching methods. Although some hospitals already have clinical medical simulation laboratories, if partnerships were encouraged this would allow sharing of facilities and expertise. Shared learning experiences might also allow for more collaborative practice between health professionals in practice.</td>
</tr>
<tr>
<td>Resources</td>
<td>Funding ought to be made available for staff training in the correct use of simulation technologies – anecdotally, I understand that there are many cardboard boxes sitting in store rooms around the country containing expensive simulation equipment that is not being used, or being used in a very limited way, because staff have not been properly trained in how to use it!</td>
</tr>
<tr>
<td></td>
<td>Universities who have not previously made commitments to good quality simulation areas, equipment and teachers shouldn't be given this new money to make up, as this disadvantages universities who have previously funded simulation.</td>
</tr>
<tr>
<td></td>
<td>In the first instance the funding would be best used to establish simulation capacity in all universities offering nursing programs. Such capacity building should certainly include the establishment and maintenance of clinical practice simulation laboratories, but these should not be restricted to development of the high fidelity simulation end of the spectrum of simulation education approaches. One of the often overlooked aspects of simulation is that much can be achieved with low to medium fidelity simulation, and this may be more cost effective in terms of producing quality educational outcomes in some areas of nursing</td>
</tr>
</tbody>
</table>
practice where the desired teaching and learning outcomes are not likely to involve the use of mannequins such as Sim Man etc. – mental health nursing is one such area.

Research

- Allocation of funding towards the evaluation of simulated learning, when compared with other forms of learning (e.g. work place).
- Can simulation take the place of industry-based experience? Are the outcomes the same? What are the implications for nursing & midwifery education?
- Building the evidence-base for simulated learning including efficacy as a clinical learning tool, impact on sustained learning outcomes, cost effectiveness; and benefits for learners, training providers, clients, services and patients.

Access

- Improving access to both high and low fidelity SLE for all disciplines, particularly in rural areas.
- Provision of/upgrade of IT equipment and access for students, especially rural and remote.
- Mobile resources for country areas to assist postgraduate study and skills upgrades (placement of country students in metro hospitals – especially in specialist areas – creates pressure on overall placement capacity.

Do you see any opportunities for your organisation to partner with a university to participate in a simulated learning program?

Yes – 100%

- Yes, most definitely and mandatory. Collaboration between education and service providers will assist reduce duplication and overall costs and wastage. Location of the SLE will also be important - mobile and stationary units based on need and student numbers.
- We count among our members many academics and professors of mental health nursing and in collaboration with these colleagues, the College actively supports and advocates for mental health clinical learning opportunities for undergraduate nurses and midwives. We are happy to express in-principle agreement to supporting and partnering with consumers and appropriate organisations to ensure that effective and meaningful mental health learning experiences are incorporated into the simulated learning programs. Among other things, the ACMHN could contribute greatly to the development of teaching/learning principles and practices surrounding the effective use of simulation in mental health nursing education.
- SA Health has more than 70 service delivery organisations. About 10 simulation learning areas (of varying complexity) exist in health service sites. We would like to see collaborative use of simulation environments across education programs and providers (including VET for ENs).
- The Nursing and Midwifery Office is a non clinical organisation, but represents nursing and midwifery in NSW. There would be a number of public facilities and education units who would be willing to participate, especially in situations where the simulated learning would enhance the competency of all nursing staff and not just students, for example CPR training.

Any further comments?

Examples

- Simulation is a fantastic tool that enhances capability, provides confidence in skills acquisition and is effective in skills maintenance
- Simulation provides a perfect medium for IPL to occur by simulating real time events allowing participants to learn from each other and establishing trust and understanding of each others’ roles and responsibilities, enhancing team performance
- There is much more to simulation than the use of high fidelity computerised mannequins and it is crucial that sufficient funding be made available to support the development and refinement of medium and low fidelity simulation approaches which are likely to be used widely in important areas of nursing such as mental health and aged care nursing
- SLEs are supported, providing that the current clinical placements for students remain the supervised time when students are exposed to real life experiences and critical decision making.
- There might be benefit in the ECU project team engaging with the health practitioner regulatory boards as the use of simulated learning has been a point of tension in the past. For optimal use of SLE in training programs for registration purposes, it is essential that the health practitioner accrediting and registering authorities have confidence in the evidence that supports the suitability and efficacy of simulated learning as a clinical learning strategy and have sufficient flexibility in course accreditation standards to allow integration of innovative practice in the area of simulated learning.
Chapter Six: Electronic Survey

Participants

In a previous phase of this research (Head of School Survey) Heads of School were requested to provide a nominee for each nursing entry to profession/pre-registration program at their University. Follow-up requests were sent to Heads of School that had not provided nominees in the first instance. Emails were sent to the identified nominees (N= 63) and invited to participate in the survey. Nominees that had not completed the survey by the due date received a follow-up email requesting they please complete the survey. Three nominees were unable to respond due to health/holidays and 13 did not complete the survey. Forty-seven responses were received which is a response rate of 78%.

Questions

The development of the survey was part of an iterative process that incorporated:
- Feedback received from University Heads of School in a separate consultation phase of this project
- A previously unpublished survey provided by SimHealth Consultants, LLC, and was developed by Emeritus Professor Bonnie Driggers and Associate Professor Michael Seropian from the Oregon Health and Science University (OHSU), U.S.A.
- Previously commissioned work by the Australian Learning and Teaching Council (ALTC) in developing a new nationally-agreed competency assessment tool for nursing graduates. The 21 competencies/skills areas developed by Crookes & Brown (2010) identify what an entry level practitioner could reasonably be expected to demonstrate in clinical areas
- The Skills list was developed from previous unpublished HWA survey data that identified how SLEs were utilised to develop skills in Australian Schools of Nursing. The skills identified in that report were expanded for the purposes of this project

The electronic survey questions (see Table 4) included the following modalities:

- General simulation demographics
  - Utilisation
  - Training of simulation staff
  - Evaluation
- Current Use/Benefits/Challenges
- Curricula/skills delivery via simulation
- Enhancing the capacity of clinical placements through simulation

Table 4 Electronic survey questions

<table>
<thead>
<tr>
<th>Question Modalities</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>General simulation demographics</td>
<td>• Please identify what types of simulation your program has used in the last 12 months</td>
</tr>
<tr>
<td></td>
<td>• Your school uses simulation (e.g., as “skills-lab” time but not as clinical hours, as additional direct clinical patient care clinical practicum hours)</td>
</tr>
<tr>
<td></td>
<td>• Do you currently have a dedicated simulation suite?</td>
</tr>
<tr>
<td></td>
<td>• If you do not currently have a dedicated simulation suite, are you intending to develop one?</td>
</tr>
<tr>
<td></td>
<td>• In what range of locations do your simulation activities occur?</td>
</tr>
<tr>
<td>Utilisation</td>
<td>• Does your program have simulation equipment that is sitting idle or is underutilised?</td>
</tr>
<tr>
<td>Training of simulation staff</td>
<td>• The number of individuals/instructors in your school who have been trained to lead/facilitate simulation:</td>
</tr>
</tbody>
</table>

Use of Simulated Learning Environments in Nursing Curricula
Health Workforce Australia
November 2010

- The number of individuals in your school with expertise sufficient to train others to lead/facilitate simulation:
- Do you currently have a professional development (training) program to up-skill instructors/staff that work in your simulation learning environment?
- Do you consider there is a need for certification/credentialing, or a required level of training/understanding, to ensure the delivery of simulation and its methodologies is not compromised?
- What do you consider would be the potential benefits of trainer/staff certification/credentialing?

**Evaluation**
- How does your school currently evaluate simulation experiences?

**Current Use/Benefits/Challenges**
- Please check all that apply with respect to how you are currently, or would like to utilise simulation
- Please indicate the extent to which you consider the following are benefits to introducing SLEs:
- Please rate the extent to which you are concerned about the following challenges to the introduction of SLEs.

**Curricula/skills delivery via simulation**
- Of the following competencies/skills areas recently developed by Crookes & Brown (2010), please identify which you are currently delivering via simulated learning environments?
- Please identify which of Crookes & Brown’s (2010) competency/skills areas have the greatest potential to be effectively delivered via SLEs and reach competency standards and/or meet clinical placement objectives.
- Please identify which of the following skills that you currently deliver for which the learning outcomes can be met via a simulated learning environment.
- Of the following skills that you have the potential to deliver (with funding) via simulated learning environments, which do you feel could meet competency standards?

**Enhancing the capacity of clinical placements through simulation**
- How likely is it that embedding simulation in nursing curricula will enhance the capacity of clinical placements?
- How will embedding simulation in curricula effect/enhance your capacity to provide clinical placements?
- How can simulated learning environments be best utilised to increase the capacity of clinical placements?

**Data Analysis**
The survey included qualitative and quantitative questions. Responses to the qualitative questions were thematically analysed and included herein. A more detailed explication of the qualitative data analysis process is included in the methodology section (Chapter Two).

The Rating Averages (Rating Average) reported in the body of the report are a means to hierarchically organise the likert scale responses. Rating Averages are the weighted average across all responses to each question. A response of Strongly Disagree receives a score of 1, and Strongly Agree receives a score of 5. A Rating Average of 4.75 means that this falls to the right of Agree and closer to the Strongly Agree rating (see below). A rating of 3.25 therefore indicates that the rating average falls to the right of Unsure. The greater the rating average, the greater the level of agreement with the given statement or question.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>R</td>
<td>S</td>
<td>VO</td>
<td>A</td>
</tr>
<tr>
<td>S/D</td>
<td>D</td>
<td>N/U</td>
<td>A</td>
<td>SA</td>
</tr>
<tr>
<td>NP</td>
<td>SI</td>
<td>N</td>
<td>SP</td>
<td>VP</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RA=1</th>
<th>RA=2</th>
<th>RA=3</th>
<th>RA=4</th>
<th>RA=5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Very Often</td>
<td>Always</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neither / Unsure</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>Not Probable</td>
<td>Somewhat Improbable</td>
<td>Neutral</td>
<td>Somewhat Probable</td>
<td>Very Probable</td>
</tr>
</tbody>
</table>

Table 5 Likert scales utilised and their corresponding rating averages
Electronic Survey: Results

Type of entry to profession/pre-registration program identified by respondents:

<table>
<thead>
<tr>
<th>Program identified by survey respondents</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Nursing</td>
<td>35</td>
</tr>
<tr>
<td>Bachelor of Science (Nursing)</td>
<td>3</td>
</tr>
<tr>
<td>Bachelor of Nursing Science (Graduate Entry to Profession)</td>
<td>1</td>
</tr>
<tr>
<td>Bachelor of Nursing Practice</td>
<td>1</td>
</tr>
<tr>
<td>Bachelor of Nursing Practice and Bachelor of Midwifery</td>
<td>1</td>
</tr>
<tr>
<td>Master of Nursing Science</td>
<td>3</td>
</tr>
<tr>
<td>Advanced Learning Masters</td>
<td>1</td>
</tr>
<tr>
<td>Masters of Nursing (Graduate Entry to Profession)</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total Programs</strong></td>
<td><strong>N=47</strong></td>
</tr>
</tbody>
</table>

Types of simulation your program has used in the last 12 months (N=46)

<table>
<thead>
<tr>
<th>Simulation type</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Very Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-to-peer (e.g., role plays) (N=45)</td>
<td>4.4%</td>
<td>2.2%</td>
<td>48.9%</td>
<td>42.2%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Low technology (e.g., sponges for teaching injection) (N=45)</td>
<td>2.2%</td>
<td>6.5%</td>
<td>17.4%</td>
<td>52.2%</td>
<td>21.7%</td>
</tr>
<tr>
<td>Screen-based computer simulations (N=45)</td>
<td>11.1%</td>
<td>24.4%</td>
<td>44.4%</td>
<td>17.8%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Hybrid simulations combining partial/part task trainers with standardised patients (N=44)</td>
<td>29.5%</td>
<td>18.2%</td>
<td>18.2%</td>
<td>31.8%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Hybrid simulates with high fidelity mannequin and standardised patients (N=46)</td>
<td>39.1%</td>
<td>19.6%</td>
<td>26.1%</td>
<td>13.0%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Low fidelity mannequins (N=45)</td>
<td>-</td>
<td>6.7%</td>
<td>11.1%</td>
<td>53.3%</td>
<td>28.9%</td>
</tr>
<tr>
<td>Medium fidelity mannequins (N=45)</td>
<td>15.6%</td>
<td>8.9%</td>
<td>24.4%</td>
<td>28.9%</td>
<td>22.2%</td>
</tr>
<tr>
<td>High fidelity mannequins (N=44)</td>
<td>34.1%</td>
<td>13.6%</td>
<td>29.5%</td>
<td>22.7%</td>
<td>-</td>
</tr>
<tr>
<td>Full scale simulation using students as standardised patients (N=45)</td>
<td>28.9%</td>
<td>17.8%</td>
<td>31.1%</td>
<td>20.0%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Full scale simulation using community members as standardised patients (N=45)</td>
<td>51.1%</td>
<td>28.9%</td>
<td>11.1%</td>
<td>6.7%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Full scale simulation using professional actors as standardised patients (N=45)</td>
<td>77.8%</td>
<td>22.2%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Internet based simulations (N=44)</td>
<td>45.5%</td>
<td>22.7%</td>
<td>27.3%</td>
<td>4.5%</td>
<td>-</td>
</tr>
<tr>
<td>Avatars/immersive multi-user virtual environments (N=45)</td>
<td>88.9%</td>
<td>8.9%</td>
<td>2.2%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Virtual reality procedural task trainers (N=45)</td>
<td>86.7%</td>
<td>13.3%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mobile simulation service (N=43)</td>
<td>100.0%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The most frequently reported SLEs utilised over the previous 12 month period were low fidelity mannequins and those that required low technology (see Figure 2). Eighty-two percent of respondents reported they utilised low fidelity mannequins either very often or always in the previous 12-months, and 74% of respondents reported utilising low technology (e.g., sponges for teaching injection) either very often or always in the previous 12-months. High fidelity mannequins were reported to have been never (34.1%) or rarely (13.6%) utilised in the previous 12-months (see Table 7). Forty-four percent of respondents stated they utilised screen-based computer simulations very often, and 17.8% reported utilising them always.

Students were utilised most often as standardised patients during full-scale simulation (sometimes - 31.1%, very often - 20.0%), and professional actors as standardised patients were reported to be never (77.8%) or rarely (22.2%) utilised.

Avatars/immersive multi-user virtual environments were never (88.9%) or rarely (8.9%) utilised, although marginally more than virtual reality procedural task trainers that were never (86.7%) or rarely (13.3%) utilised. No respondent reported utilising mobile SLEs over the previous 12 month period.
Forty-four percent of respondents stipulated that they currently have a dedicated simulation suite, and 51% stated that they do not. One respondent asked for a definition of a simulation suite and two other respondents were almost reluctant to define their facility as a simulation suite, stating:

**Figure 2 Rating averages indicating type of simulation used over previous 12 months**

**Table 8 How simulation is utilised**

<table>
<thead>
<tr>
<th>Description</th>
<th>Rating Averages</th>
</tr>
</thead>
<tbody>
<tr>
<td>As “skills-lab” time but not as clinical hours</td>
<td>3.50</td>
</tr>
<tr>
<td>As additional direct clinical patient care clinical practicum hours</td>
<td>4.00</td>
</tr>
<tr>
<td>As a substitute for direct clinical patient care clinical practicum hours</td>
<td>3.50</td>
</tr>
<tr>
<td>Don’t know</td>
<td>3.50</td>
</tr>
<tr>
<td>Other</td>
<td>3.50</td>
</tr>
</tbody>
</table>

Ninety-three percent of respondents stipulated that they use simulation as “skills-lab,” and 8% stated SLEs are utilised as additional direct clinical patient care clinical practicum hours (see Table 8). Four percent stated they utilise simulation as a substitute for direct clinical patient care clinical practicum hours. It is also utilised as an educational and assessment medium around issues of teamwork, communication and decision-making.

**Do you currently have a dedicated simulation suite? (N=45)**

<table>
<thead>
<tr>
<th>Response</th>
<th>Rating Averages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>44.4%</td>
</tr>
<tr>
<td>No</td>
<td>51.1%</td>
</tr>
<tr>
<td>Unsure</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

Forty-four percent of respondents stipulated that they currently have a dedicated simulation suite, and 51% stated that they do not. One respondent asked for a definition of a simulation suite and two other respondents were almost reluctant to define their facility as a simulation suite, stating:
• We have a clinical skills lab which I would be reluctant to describe as a simulation suite...we are able to offer the most basic of mannequins and scenarios
• Very basic, one room with a medium fidelity mannequin

If you do not currently have a dedicated simulation suite, are you intending to develop one? (N=27)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>51.9%</td>
</tr>
<tr>
<td>No</td>
<td>22.2%</td>
</tr>
<tr>
<td>Unsure</td>
<td>25.9%</td>
</tr>
</tbody>
</table>

Fifty-two percent of respondents stipulated that they do not currently have a dedicated simulation suite, but are intending to develop one, and 22% stated that they were not. Twenty-six percent of respondents to this question were unsure, commenting that up-grades were planned (“traditional nursing skills lab is in the process of redevelopment”) new facilities were in progress (“a dedicated suite is currently under construction for 1/2011”) and resources were being shared (“the dedicated simulation suite will be a divisional not school based resource at this point in time”).

In what range of locations do your simulation activities occur? (N=46)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional learning lab</td>
<td>95.7%</td>
</tr>
<tr>
<td>On-site simulation facility</td>
<td>26.1%</td>
</tr>
<tr>
<td>Dedicated simulation suite</td>
<td>41.3%</td>
</tr>
<tr>
<td>Off-site simulation facility (e.g., outsource to health service)</td>
<td>10.9%</td>
</tr>
<tr>
<td>In-situ (e.g. in an actual patient room)</td>
<td>8.7%</td>
</tr>
<tr>
<td>Classroom setting</td>
<td>41.3%</td>
</tr>
<tr>
<td>Mobile facility</td>
<td>0.0%</td>
</tr>
<tr>
<td>Other</td>
<td>2.2%</td>
</tr>
</tbody>
</table>

Ninety-five percent of respondents stipulated that simulation occurs in traditional leaning labs. Forty-one percent state that simulation occurs in a dedicated simulation suite and 41% also state it occurs in classroom settings. No respondent stated that they utilise a mobile facility. One respondent stated that simulation occurred in the “campus car park.”

Does your program have simulation equipment that is sitting idle or is underutilised? (N=46)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>41.3%</td>
</tr>
<tr>
<td>No</td>
<td>50.0%</td>
</tr>
<tr>
<td>Unsure</td>
<td>8.7%</td>
</tr>
</tbody>
</table>

Forty-one percent of respondents identified they have equipment that is sitting idle or underutilised. Respondents describe a plethora of reasons equipment is underutilised. While “downtime” in the use of simulation is experienced as a consequence of student requirements and course structure, the primary reasons are the difficulty experienced actually embedding simulation into the program, a lack of knowledge around how to achieve it, a lack of technical skills to ensure the equipment is operational and lack of resources to ensure existing equipment is utilised effectively.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge around embedding into curriculum</td>
<td>• Curriculum not accommodating of simulation</td>
</tr>
<tr>
<td></td>
<td>• Absence of integration into curriculum</td>
</tr>
<tr>
<td></td>
<td>• They are underutilised due to lack of staff knowledge and training on how to set up and use these simulation experiences effectively so as to facilitate student learning</td>
</tr>
</tbody>
</table>
Many staff struggle with how to implement simulation into their intensive teaching periods...feels like the blind leading the blind - not enough staff available to assist with running simulation exercises
• Curriculum does not lend itself to simulation exercises
• Lack of faculty knowledge of how to apply simulators into curriculum

Lack of FTE
• No designated staff to run the simulator
• Lack of staff to assist

Apathy
• Lack of interest by Unit (subject) coordinators
• Apathy - we organise training sessions for staff but only 2 or 3 attend

Lack of champions
• Lack of “dedicated” leadership capacity to develop this kind of pedagogy

Financial
• Although things are improving equipment is still underutilised due to under-funding for dedicated staffing
• Resourcing to run the simulator

Modulating needs
• Depends on subject requirements over the year. Context changes so some equipment is not required at all times
• Nature of curriculum
• Used fully in teaching times but used less often between semesters although we have some initiatives in place e.g. hiring to others
• Down time in teaching/student contact

Lack of knowledge / skills
• Lack of formally trained staff in simulation education pedagogy and lack of faculty knowledge re how to use simulators
• Staff inexperienced with how to teach like this
• Lack of technological skills to program the simulators
• Lack of faculty awareness of use of simulator or lack of skills in debriefing
• Lack of other required skills such as facilitation and debriefing
• Difficulty is recruiting skilled lab/simulation manager

Program in progress
• Developing high fidelity program and still trying to get the technology right
• Underutilised at this stage, however with changes to current practice based learning activities it is anticipated that simulation equipment will be fully utilised

Other
• There was equipment purchased over the last few years that was bought placed into a storeroom, staff changed and the equipment was not registered, it then became outdated and subsequently remained packed in the storeroom
• Lack of space
• Inappropriate equipment for the learning activity

The number of individuals/instructors in your school who have been trained to lead/facilitate simulation (N=46)

<table>
<thead>
<tr>
<th>Number of Individuals</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10.9%</td>
</tr>
<tr>
<td>1 to 5</td>
<td>71.7%</td>
</tr>
<tr>
<td>6 to 10</td>
<td>8.7%</td>
</tr>
<tr>
<td>Other</td>
<td>8.7%</td>
</tr>
</tbody>
</table>

Four respondents (8%) identified they have between 11 and 20 individuals/instructors in their school who are trained to lead/facilitate simulation. The depth of experience is, in some cases limited (“twenty staff have completed an introductory course”) and the training received in some cases informal (“so many have recently been exposed to simulation but not formally trained). Three respondents identified an extensive training program and skill base within their institution and noted they variously have employed specialty clinical simulation staff/expert coordinators, with one stating a staff member is currently completing post-graduate research in the field of simulation.

The number of individuals in your school with expertise sufficient to train others to lead/facilitate simulation (N=45)

<table>
<thead>
<tr>
<th>Number of Individuals</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>26.7%</td>
</tr>
<tr>
<td>1 to 5</td>
<td>64.4%</td>
</tr>
<tr>
<td>6 to 10</td>
<td>6.7%</td>
</tr>
<tr>
<td>Other</td>
<td>2.2%</td>
</tr>
</tbody>
</table>
Sixty-four percent of respondents identified they have between 1 and 5 individuals in their school with expertise sufficient to train others to lead/facilitate simulation, and 26% identified they had no-one. It was considered by some that a more sustained approach may be required (“a couple have been to one-day workshops but need a more sustained approach to simulation training”), and considered “ad-hoc.”

Do you currently have a professional development (training) program to up-skill instructors/staff that work in your simulation learning environment? (N=46)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>17.4%</td>
</tr>
<tr>
<td>No</td>
<td>76.1%</td>
</tr>
<tr>
<td>Unsure</td>
<td>6.5%</td>
</tr>
</tbody>
</table>

Seventy-six percent of respondents state they do not currently have a professional development (training) program to up-skill instructors/staff, although a number of respondents stated training programs were currently in development (“working on one”), or that it was on the horizon (“this is a goal of our discipline”).

Do you consider there is a need for certification/credentialing, or a required level of training/understanding, to ensure the delivery of simulation and its methodologies is not compromised? (N=46)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>69.6%</td>
</tr>
<tr>
<td>No</td>
<td>19.6%</td>
</tr>
<tr>
<td>Unsure</td>
<td>10.9%</td>
</tr>
</tbody>
</table>

Sixty-nine percent of respondents consider there is a need for certification/credentialing or a required level of training/understanding, to ensure the delivery of simulation and its methodologies is not compromised, and 19% consider there is no need.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Deterrent               | • This may put people off - the more that are involved in simulation the better. I think credentialing is important to have for some simulation teachers to train colleagues  
                          • Generate interest first through non-credentialing activities                                                                         |
| Why the formality       | • I’m not clear why we would single this kind of pedagogy out for certification - and not others?  
                          • Training but not convinced about credentialing  
                          • All academic teachers are professionals able to access suitable training - just need motivation  
                          • It does not necessarily promote participation - this should not be limited to credentialed persons. It does not guarantee a clear career pathway - not appropriate for academics. It does not guarantee a sustainable workforce |
| Yes                     | • Yes, so the staff teaching have a full understanding of the potential benefits to the students and their learning  
                          • I think this is very important, as it is a complex area - to be used effectively requires education to ensure it is appropriately applied as an educational strategy, and the underlying philosophic and educational principles of use are understood and effectively applied to enhance/maximise student learning  
                          • Would provide a level of quality for centres as well as setting a clear standard for people to attain (ie: encourage buy-in from Heads of School)  
                          • I agree that a range of training will need to be provided to staff to support the development of situational learning activities – and in the case of our program how this links to inquiry based learning as the program framework  
                          • The definition of simulation includes a wide range of activities, technologies, fidelities and strategies. It would be useful to have a framework which the collective considers the standard in the delivery of simulation training based on evidence informed practice |
What do you consider would be the potential benefits of trainer/staff certification/credentialing? (N=42)

- Ensures an understanding of the fundamentals of simulation terminology and concepts 92.9%
- Provides an appreciation of simulation organisations and applications in Australia 54.8%
- Provides a concrete base for their knowledge and expertise 81.0%
- Opportunities for professional development 83.3%
- Promotes participation in the simulation community 71.4%
- Clear career pathways for those wishing to focus on simulation 50.0%
- Provides sustainable workforce which will be required for the continued use of SLP/SLEs 66.7%
- Other 2.4%

Although respondents considered there were a number of benefits to trainer/staff certification/credentialing, the primary benefits were that it would ensure an understanding of the fundamentals of simulation terminology and concepts (92%), provide opportunities for professional development (83%) and provide a concrete base for knowledge and expertise (81%).

How does your school currently evaluate simulation experiences? (N=46)

- Student satisfaction surveys 80.4%
- Faculty satisfaction surveys 19.6%
- Patient outcome/error data 0.0%
- Student confidence tools 8.7%
- Student competence tools 32.6%
- Empirically-supported (evidence-based) 13.0%
- None 15.2%
- Other 6.5%

Schools’ currently evaluate simulation experiences primarily through student satisfaction surveys (80%) although some respondents consider this method does not necessarily specifically capture simulation in the evaluation process. Student competence tools are also considered a means to evaluate simulation (32%).

<table>
<thead>
<tr>
<th>Themes</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course/unit/program evaluation</td>
<td>• I do not think simulation evaluation is data that is specifically captured in the universities unit satisfaction survey's</td>
</tr>
<tr>
<td></td>
<td>• Subject evaluations and university quality assurance process</td>
</tr>
<tr>
<td></td>
<td>• The whole unit is evaluated but not the individual simulation within it</td>
</tr>
<tr>
<td></td>
<td>• Teaching team analysis of use in terms of teaching and learning, undertaken through course preparation, implementation and evaluation</td>
</tr>
<tr>
<td>Internal assessment</td>
<td>• We use our low level mannequins as the basis of a range of OSCE type tests</td>
</tr>
<tr>
<td>Internal research</td>
<td>• Currently undertaking a Teaching Improvement Performance funded project titled Enhancing student’s effective acquisition of skills for healthcare practice: development, implementation and evaluation of a best practice teaching and assessment model - using simulation</td>
</tr>
</tbody>
</table>

Please indicate the extent to which you consider the following are benefits to introducing SLEs (N=45)

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither/Unsure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment (N=45)</td>
<td>2.2%</td>
<td>2.2%</td>
<td>6.7%</td>
<td>53.3%</td>
<td>35.6%</td>
</tr>
<tr>
<td>Uncommon clinical experiences or events (N=45)</td>
<td>2.2%</td>
<td>8.9%</td>
<td>8.9%</td>
<td>46.7%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Benefit</td>
<td>R/A</td>
<td>Benefits</td>
<td>R/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
<td>--------------------------------------------------------------------------</td>
<td>------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Increase student confidence</td>
<td>4.57</td>
<td>22. Ensure graduates are more work-ready</td>
<td>4.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Opportunity for students to reflect on perf</td>
<td>4.56</td>
<td>23. Standardised experiences</td>
<td>4.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Improve clinical reasoning rather than rote learn</td>
<td>4.49</td>
<td>25. Address issues raised by our practice partners</td>
<td>4.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Increase student competence</td>
<td>4.47</td>
<td>26. Enhance understanding of CALD issues</td>
<td>4.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Better prepare students for clinical environment</td>
<td>4.42</td>
<td>27. Uncommon clinical experiences or events</td>
<td>4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Increase critical thinking</td>
<td>4.42</td>
<td>28. Remediation</td>
<td>3.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Enhance clinical judgment</td>
<td>4.42</td>
<td>29. Manage risk</td>
<td>3.89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Avenue to promote non-technical skills</td>
<td>4.36</td>
<td>31. Enable more efficient use of clinical placements</td>
<td>3.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Integrating knowledge/skills in a realistic setting</td>
<td>4.29</td>
<td>32. Improve inter-rater reliability in assessment</td>
<td>3.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Support/anchor the application of theory content</td>
<td>4.25</td>
<td>33. Promote a more ICT competent graduate</td>
<td>3.70</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9: Rating Averages indicating benefits of SLEs hierarchically from greatest to least benefit
13. Unavailable clinical experiences or events 4.24  34. (Almost) replicates pressures of workplace 3.67
14. Assessment 4.18  35. Most situations are able to be replicated 3.62
15. Focus on human factors 4.16  36. Increase program capacity 3.53
17. Learn how to build positive workplace cultures 4.13  38. Students requiring minimal clinical make-up 3.42
18. Foster interprofessional practice 4.11  39. Increase student retention 3.36
19. Managing challenging behaviours 4.06  40. Reduce the burden on clinical settings 3.31
20. Instil appropriate professional attributes 4.05  41. Decrease preceptor burnout 2.98
21. Otherwise unsafe clinical exp or adverse events 4.04

Respondents identified the following five items as benefits of simulated learning environments (in order from the greatest benefit):

- Increase student confidence
- Opportunity for students to reflect on performance
- Reflective practice development
- Improve students' clinical reasoning skills rather than rote learn
- Increase student competence

Please rate the extent to which you are concerned about the following challenges to the introduction of SLEs (N=45)

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither/ Unsure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial set-up costs (N=45)</td>
<td>8.9%</td>
<td>6.7%</td>
<td>15.6%</td>
<td>31.1%</td>
<td>37.8%</td>
</tr>
<tr>
<td>Cost – equipment (N=44)</td>
<td>6.8%</td>
<td>4.5%</td>
<td>11.4%</td>
<td>36.4%</td>
<td>40.9%</td>
</tr>
<tr>
<td>Cost – human (N=45)</td>
<td>4.4%</td>
<td>8.9%</td>
<td>2.2%</td>
<td>40.0%</td>
<td>44.4%</td>
</tr>
<tr>
<td>Ongoing costs running SLE (issues of sustainability) (N=45)</td>
<td>2.2%</td>
<td>4.4%</td>
<td>6.7%</td>
<td>42.2%</td>
<td>44.4%</td>
</tr>
<tr>
<td>Administrative load required to operate SLE (N=45)</td>
<td>2.2%</td>
<td>11.1%</td>
<td>4.4%</td>
<td>44.4%</td>
<td>37.8%</td>
</tr>
<tr>
<td>Education/training of staff that work in SLE (N=45)</td>
<td>-</td>
<td>11.1%</td>
<td>2.2%</td>
<td>42.2%</td>
<td>44.4%</td>
</tr>
<tr>
<td>Insufficient number of dedicated technical/support staff (N=45)</td>
<td>4.4%</td>
<td>4.4%</td>
<td>4.4%</td>
<td>33.3%</td>
<td>53.3%</td>
</tr>
<tr>
<td>Time management (N=45)</td>
<td>2.2%</td>
<td>15.6%</td>
<td>13.3%</td>
<td>44.4%</td>
<td>24.4%</td>
</tr>
<tr>
<td>Student numbers too large to adequately engage them equally into simulation (N=45)</td>
<td>6.7%</td>
<td>8.9%</td>
<td>2.2%</td>
<td>28.9%</td>
<td>53.3%</td>
</tr>
<tr>
<td>Ensuring students have high quality learning experiences through SLE (N=45)</td>
<td>4.4%</td>
<td>6.7%</td>
<td>6.7%</td>
<td>51.1%</td>
<td>31.1%</td>
</tr>
<tr>
<td>Space requirements (N=45)</td>
<td>6.7%</td>
<td>11.1%</td>
<td>4.4%</td>
<td>40.0%</td>
<td>37.8%</td>
</tr>
<tr>
<td>Time for developing scenarios (N=45)</td>
<td>-</td>
<td>13.3%</td>
<td>4.4%</td>
<td>44.4%</td>
<td>37.8%</td>
</tr>
<tr>
<td>Integration into curriculum (N=45)</td>
<td>13.3%</td>
<td>17.8%</td>
<td>4.4%</td>
<td>42.2%</td>
<td>22.2%</td>
</tr>
<tr>
<td>Achieving buy-in (shared vision) from teaching team (N=45)</td>
<td>8.9%</td>
<td>24.4%</td>
<td>11.1%</td>
<td>35.6%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Maintaining staff interest (N=45)</td>
<td>17.6%</td>
<td>20.0%</td>
<td>13.3%</td>
<td>35.6%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Running effective debriefings (N=45)</td>
<td>17.8%</td>
<td>15.6%</td>
<td>13.3%</td>
<td>26.7%</td>
<td>26.7%</td>
</tr>
<tr>
<td>Acceptance by students (N=45)</td>
<td>31.1%</td>
<td>35.6%</td>
<td>15.6%</td>
<td>17.8%</td>
<td>-</td>
</tr>
<tr>
<td>Academics concern with their own clinical currency (N=45)</td>
<td>11.4%</td>
<td>20.5%</td>
<td>18.2%</td>
<td>40.9%</td>
<td>9.1%</td>
</tr>
<tr>
<td>Insufficient numbers of trained staff to run simulation (N=45)</td>
<td>2.2%</td>
<td>15.6%</td>
<td>8.9%</td>
<td>35.6%</td>
<td>37.8%</td>
</tr>
<tr>
<td>Identifying and supporting champions to drive the innovation (N=45)</td>
<td>20.0%</td>
<td>11.1%</td>
<td>11.1%</td>
<td>40.0%</td>
<td>17.8%</td>
</tr>
<tr>
<td>Student dissatisfaction (N=45)</td>
<td>31.1%</td>
<td>26.7%</td>
<td>20.0%</td>
<td>13.3%</td>
<td>8.9%</td>
</tr>
<tr>
<td>Lack of sufficient evidence-base to support it as a reliable/valid approach to develop core competencies (N=45)</td>
<td>15.6%</td>
<td>35.6%</td>
<td>15.6%</td>
<td>24.4%</td>
<td>8.9%</td>
</tr>
<tr>
<td>Underutilisation of equipment (N=45)</td>
<td>15.6%</td>
<td>20.0%</td>
<td>11.1%</td>
<td>35.6%</td>
<td>17.8%</td>
</tr>
<tr>
<td>Insufficient level of training/understanding among those that deliver simulation (N=45)</td>
<td>4.4%</td>
<td>17.8%</td>
<td>6.7%</td>
<td>40.0%</td>
<td>31.1%</td>
</tr>
<tr>
<td>Perception that clinical hours may be reduced as a result of SLEs (N=45)</td>
<td>8.9%</td>
<td>15.6%</td>
<td>15.6%</td>
<td>24.4%</td>
<td>35.6%</td>
</tr>
<tr>
<td>Simulation will be seen as a substitute for real-life experiences (N=45)</td>
<td>8.9%</td>
<td>17.8%</td>
<td>15.6%</td>
<td>24.4%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Insufficient database of (rigorous) evidence to prove efficacy of simulation (N=45)</td>
<td>13.3%</td>
<td>17.8%</td>
<td>22.2%</td>
<td>33.3%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Diminished credibility of graduates as ‘work ready’ (N=45)</td>
<td>18.2%</td>
<td>25.0%</td>
<td>20.5%</td>
<td>27.3%</td>
<td>9.1%</td>
</tr>
</tbody>
</table>
Table 11 Rating Averages indicating challenges of SLEs hierarchically from greatest to least

<table>
<thead>
<tr>
<th>Challenge</th>
<th>R/A</th>
<th>Challenge</th>
<th>R/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Insufficient number of dedicated technical/support staff</td>
<td>4.27</td>
<td>22. Clinical hours may be reduced as a result of SLEs</td>
<td>3.62</td>
</tr>
<tr>
<td>2. Ongoing costs running SLE (issues of sustainability)</td>
<td>4.22</td>
<td>23. Simulation seen as substitute for real experiences</td>
<td>3.56</td>
</tr>
<tr>
<td>3. Education/training of staff that work in SLE</td>
<td>4.20</td>
<td>24. Integration into curriculum</td>
<td>3.42</td>
</tr>
<tr>
<td>4. Student numbers too large engage into simulation</td>
<td>4.13</td>
<td>25. Achieving buy-in (shared vision) from teaching team</td>
<td>3.33</td>
</tr>
<tr>
<td>6. Time for developing scenarios</td>
<td>4.07</td>
<td>27. Identifying and supporting champions</td>
<td>3.24</td>
</tr>
<tr>
<td>7. Administrative load required to operate SLE</td>
<td>4.04</td>
<td>28. Underutilisation of equipment</td>
<td>3.20</td>
</tr>
<tr>
<td>8. Cost – equipment</td>
<td>4.00</td>
<td>29. Academics concern with their own clinical currency</td>
<td>3.18</td>
</tr>
<tr>
<td>9. Ensuring high quality learning experiences through SLE</td>
<td>3.98</td>
<td>30. Insufficient database of (rigorous) evidence</td>
<td>3.16</td>
</tr>
<tr>
<td>10. Space requirements</td>
<td>3.91</td>
<td>31. Maintaining staff interest</td>
<td>3.07</td>
</tr>
<tr>
<td>11. Insufficient numbers trained staff to run simulation</td>
<td>3.91</td>
<td>32. Diminished credibility of graduates as ‘work ready’</td>
<td>2.84</td>
</tr>
<tr>
<td>12. Initial set-up costs</td>
<td>3.82</td>
<td>33. Lack of sufficient evidence-base to support it as a reliable/valid approach to develop competencies</td>
<td>2.76</td>
</tr>
<tr>
<td>13. Insufficient training/understanding among deliverers</td>
<td>3.76</td>
<td>34. Student dissatisfaction</td>
<td>2.42</td>
</tr>
<tr>
<td>14. Time management</td>
<td>3.73</td>
<td>35. Acceptance by students</td>
<td>2.20</td>
</tr>
</tbody>
</table>

Respondents identified the following five items (see Table 11 Table 1) as their greatest challenges to simulated learning environments (in order from the greatest challenge):

- Insufficient number of dedicated technical/support staff
- Ongoing costs running SLE (issues of sustainability)
- Education/training of staff that work in SLE
- Student numbers too large engage into simulation
- Cost – human
How you are currently, or would like to utilise simulation:

Figure 3 How programs currently, or would like to utilise simulation

Figure 3 identifies the how programs currently, or would like to utilise simulation, highlighting how respondents would like to utilise simulation hierarchically, from least to greatest. The ten most frequent ways in which respondents identify how programs currently, or would like to utilise simulation in programs is listed below.

Currently doing

<table>
<thead>
<tr>
<th>Currently doing</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Increase student confidence</td>
<td>N=37</td>
</tr>
<tr>
<td>2. Provide opportunity for students to reflect on their own</td>
<td>N=36</td>
</tr>
<tr>
<td>performance</td>
<td></td>
</tr>
<tr>
<td>3. Assessment</td>
<td>N=34</td>
</tr>
<tr>
<td>4. Support/anchor the application of theory content</td>
<td>N=33</td>
</tr>
<tr>
<td>5. Increase critical thinking</td>
<td>N=32</td>
</tr>
<tr>
<td>6. Improve students’ clinical reasoning skills rather than rote learn</td>
<td>N=32</td>
</tr>
<tr>
<td>7. Better prepare students for clinical environment</td>
<td>N=32</td>
</tr>
<tr>
<td>8. Reflective practice development</td>
<td>N=31</td>
</tr>
<tr>
<td>9. Opportunity to evaluate students performance in a safe environ prior to</td>
<td>N=31</td>
</tr>
<tr>
<td>placement</td>
<td></td>
</tr>
<tr>
<td>10. Integrating prior knowledge/skills in a realistic clinical setting</td>
<td>N=31</td>
</tr>
</tbody>
</table>
The three primary reasons respondents currently utilise simulation is to increase the confidence of students, provide an opportunity for students to reflect on their own performance and for assessment. How they are currently utilising SLEs differs significantly from how respondents would like to utilise SLEs. The three primary reasons stated are to utilise simulation for unavailable clinical experiences or events, to foster greater levels of interprofessional practice and to enable the more efficient use of clinical placements.

<table>
<thead>
<tr>
<th>Would like to do</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Unavailable clinical experiences or events                                                   N=30</td>
<td></td>
</tr>
<tr>
<td>2. Foster greater levels of interprofessional practice                                           N=28</td>
<td></td>
</tr>
<tr>
<td>3. Increased simulation will enable more efficient use of clinical placements                    N=26</td>
<td></td>
</tr>
<tr>
<td>4. Opportunities for cross disciplinary work                                                     N=26</td>
<td></td>
</tr>
<tr>
<td>5. Provide situations that can (almost) replicate the pressures of working in a dynamic workplace</td>
<td>N=25</td>
</tr>
<tr>
<td>6. For students requiring minimal clinical make-up to satisfy registration requirements          N=25</td>
<td></td>
</tr>
<tr>
<td>7. Improve inter-rater reliability in assessment                                                 N=24</td>
<td></td>
</tr>
<tr>
<td>8. Manage risk                                                                                    N=23</td>
<td></td>
</tr>
<tr>
<td>9. Address issues raised by our practice partners (practice-education gap)                       N=22</td>
<td></td>
</tr>
<tr>
<td>10. Decrease preceptor burnout                                                                   N=22</td>
<td></td>
</tr>
</tbody>
</table>

Of the following competencies/skills areas recently developed by Crookes & Brown (2010), please identify which you are currently delivering via simulated learning environments? (N=44)

Table 12 Percentages of currently delivered competency/skill areas

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Very Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical interventions - preparing, assisting during and after care (such as investigations/surgery/diagnostic) (N=44)</td>
<td>2.3%</td>
<td>6.8%</td>
<td>38.6%</td>
<td>40.9%</td>
<td>11.4%</td>
</tr>
<tr>
<td>Clinical monitoring and management - use of assessment tools (e.g., haemodynamic/respiratory assessment, MMSE, RUDAS). All forms of assessment are included here (N=44)</td>
<td>2.3%</td>
<td>-</td>
<td>38.6%</td>
<td>40.9%</td>
<td>18.2%</td>
</tr>
<tr>
<td>Communication and documentation such as verbal (including handovers) and nonverbal (including documentation such as communication of care, appropriate and accurate use of documentation) (N=43)</td>
<td>4.7%</td>
<td>-</td>
<td>37.2%</td>
<td>39.5%</td>
<td>18.6%</td>
</tr>
<tr>
<td>Community/primary care to include health education and promotion strategies (N=44)</td>
<td>11.4%</td>
<td>47.7%</td>
<td>31.8%</td>
<td>2.3%</td>
<td>6.8%</td>
</tr>
<tr>
<td>Coordinating care as an entry level practitioner within a reasonable time frame to include urgent and non-urgent clients (N=44)</td>
<td>15.9%</td>
<td>29.5%</td>
<td>31.8%</td>
<td>18.2%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Cultural competence, for example, cultural diversity or trans cultural care, culturally safe and appropriate practice (N=44)</td>
<td>11.4%</td>
<td>34.1%</td>
<td>38.6%</td>
<td>9.1%</td>
<td>6.8%</td>
</tr>
<tr>
<td>Dementia-related skills such as managing behavioural and psychosocial symptoms of dementia and the ability to differentiate other causes of confusion such as delirium (N=44)</td>
<td>27.3%</td>
<td>25.0%</td>
<td>36.4%</td>
<td>6.8%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Demonstrated teaching/educator skills that promote a learning and development culture by acting as a resource and role model, for example, using appropriate teaching and learning strategies in practice (N=44)</td>
<td>13.6%</td>
<td>13.6%</td>
<td>27.3%</td>
<td>29.5%</td>
<td>15.9%</td>
</tr>
<tr>
<td>Evidence-based practice such as clinical reasoning and ability to incorporate findings from assessments into care delivery (N=44)</td>
<td>4.5%</td>
<td>11.4%</td>
<td>20.5%</td>
<td>47.7%</td>
<td>15.9%</td>
</tr>
<tr>
<td>Management and leadership, supervisory skills, for example, conflict management resolution and acknowledging this is an entry level practitioner (N=44)</td>
<td>13.6%</td>
<td>27.3%</td>
<td>40.9%</td>
<td>11.4%</td>
<td>6.8%</td>
</tr>
<tr>
<td>Medications and IV products (e.g., safe and appropriate administration of medications); legal and safe medication administration storage and disposal (N=44)</td>
<td>-</td>
<td>-</td>
<td>13.6%</td>
<td>45.5%</td>
<td>40.9%</td>
</tr>
<tr>
<td>Mental health nursing care: application of assessment tools, care strategies and interventions (N=44)</td>
<td>15.9%</td>
<td>27.3%</td>
<td>22.7%</td>
<td>29.5%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Personal care-provision and coordination of care - the ability to assess, plan, implement and evaluate nursing care of clients across a range of settings and</td>
<td>4.7%</td>
<td>4.7%</td>
<td>30.2%</td>
<td>39.5%</td>
<td>20.9%</td>
</tr>
</tbody>
</table>
across the lifespan using a holistic, comprehensive nursing model such as RLT (N=43)

<table>
<thead>
<tr>
<th>Professional nursing behaviours: includes collaborative approaches to care such as advocacy, scope of practice, being aware of oneself (N=44)</th>
<th>13.6%</th>
<th>20.5%</th>
<th>36.4%</th>
<th>20.5%</th>
<th>9.1%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion of self care eg specific gender and lifespan-related information and strategies (N=44)</td>
<td>18.2%</td>
<td>36.4%</td>
<td>20.5%</td>
<td>15.9%</td>
<td>9.1%</td>
</tr>
<tr>
<td>Respect for privacy and dignity of clients/patients (N=44)</td>
<td>4.5%</td>
<td>11.4%</td>
<td>13.6%</td>
<td>34.1%</td>
<td>36.4%</td>
</tr>
<tr>
<td>Teamwork and multidisciplinary team: working in a team (e.g., team member and leadership roles, conflict management, resolution, negotiation skills) (N=44)</td>
<td>9.1%</td>
<td>20.5%</td>
<td>40.9%</td>
<td>20.5%</td>
<td>9.1%</td>
</tr>
<tr>
<td>Technology and informatics: incorporating standards (e.g., IVI management systems, patient information systems) (N=44)</td>
<td>6.8%</td>
<td>13.6%</td>
<td>43.2%</td>
<td>25.0%</td>
<td>11.4%</td>
</tr>
<tr>
<td>Therapeutic nursing behaviour/respectful of personal space/dealing with emotional people such as other professionals, clients, relatives, nurses – psychotherapeutic skills/therapeutic communication (N=43)</td>
<td>4.7%</td>
<td>23.3%</td>
<td>41.9%</td>
<td>14.0%</td>
<td>16.3%</td>
</tr>
<tr>
<td>Understanding the different roles of RNs in different treatment or care settings (e.g., aged care, rural and remote, acute, mental health and child) (N=44)</td>
<td>18.2%</td>
<td>31.8%</td>
<td>34.1%</td>
<td>13.6%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Uses opportunities for learning such as the experiences of the client/patient by listening to their stories/experiences (N=44)</td>
<td>9.1%</td>
<td>38.6%</td>
<td>36.4%</td>
<td>11.4%</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

The hierarchical list of rating averages (see Figure 4) identifies Medications and IV products as the most frequently reported competency/skills area to be delivered via SLEs. Table 12 highlights that Medications and IV products are currently delivered via SLEs very often (45.5%) or always (40.9%). Dementia-related skills were the least frequently identified skills area to be delivered via SLEs. Fifty-two percent of respondents identified they rarely or never delivered dementia-related skills via SLEs, and 36% identified they sometimes deliver them via SLEs.

![Hierarchical list of rating averages that are currently being delivered via simulated learning environments](image)
Please identify which of Crookes & Brown’s (2010) competency/skills areas have the greatest potential to be effectively delivered via SLEs and reach competency standards and/or meet clinical placement objectives (N=43)

Table 13 Percentages of greatest potential competency/skill areas

<table>
<thead>
<tr>
<th>Skills Area</th>
<th>Very Probable</th>
<th>Somewhat Probable</th>
<th>Neutral</th>
<th>Somewhat Improbable</th>
<th>Not Probable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Clinical interventions - preparing, assisting during and after care (N=43)</td>
<td>60.5%</td>
<td>32.6%</td>
<td>4.7%</td>
<td>2.3%</td>
<td>-</td>
</tr>
<tr>
<td>2. Clinical monitoring and management - use of assessment tools (N=43)</td>
<td>65.1%</td>
<td>32.6%</td>
<td>2.3%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3. Communication and documentation such as verbal (including handovers) and nonverbal (including documentation such as communication of care, appropriate and accurate use of documentation) (N=43)</td>
<td>69.8%</td>
<td>23.3%</td>
<td>4.7%</td>
<td>2.3%</td>
<td>-</td>
</tr>
<tr>
<td>4. Community/primary care to include health education and promotion strategies (N=43)</td>
<td>25.6%</td>
<td>41.9%</td>
<td>16.3%</td>
<td>14.0%</td>
<td>2.3%</td>
</tr>
<tr>
<td>5. Coordinating care as an entry level practitioner within a reasonable time frame to include urgent and non-urgent clients (N=43)</td>
<td>34.9%</td>
<td>48.8%</td>
<td>7.0%</td>
<td>9.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>6. Cultural competence, for example, cultural diversity or trans cultural care, culturally safe and appropriate practice (N=43)</td>
<td>23.3%</td>
<td>48.8%</td>
<td>23.3%</td>
<td>4.7%</td>
<td>-</td>
</tr>
<tr>
<td>7. Dementia-related skills such as managing behavioural and psychosocial symptoms of dementia and the ability to differentiate other causes of confusion such as delirium (N=43)</td>
<td>23.3%</td>
<td>58.1%</td>
<td>14.0%</td>
<td>4.7%</td>
<td>-</td>
</tr>
<tr>
<td>8. Demonstrated teaching/educator skills that promote a learning and development culture by acting as a resource and role model, for example, using appropriate teaching and learning strategies in practice (N=42)</td>
<td>40.5%</td>
<td>45.2%</td>
<td>9.5%</td>
<td>4.8%</td>
<td>-</td>
</tr>
<tr>
<td>9. Evidence-based practice such as clinical reasoning and ability to incorporate findings from assessments into care delivery (N=43)</td>
<td>46.5%</td>
<td>48.8%</td>
<td>4.7%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10. Management and leadership, supervisory skills, for example, conflict management resolution and acknowledging this is an entry level practitioner (N=43)</td>
<td>32.6%</td>
<td>51.2%</td>
<td>14.0%</td>
<td>2.3%</td>
<td>-</td>
</tr>
<tr>
<td>11. Medications and IV products (e.g., safe and appropriate administration of medications); legal and safe medication administration storage and disposal (N=43)</td>
<td>81.4%</td>
<td>18.6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12. Mental health nursing care: application of assessment tools, care strategies and interventions (N=43)</td>
<td>32.6%</td>
<td>48.8%</td>
<td>14.0%</td>
<td>4.7%</td>
<td>-</td>
</tr>
<tr>
<td>13. Personal care-provision and coordination of care - the ability to assess, plan, implement and evaluate nursing care of clients across a range of settings and across the lifespan using a holistic, comprehensive nursing model such as RLT (N=42)</td>
<td>59.5%</td>
<td>26.2%</td>
<td>11.9%</td>
<td>4.7%</td>
<td>-</td>
</tr>
<tr>
<td>14. Professional nursing behaviours: includes collaborative approaches to care such as advocacy, scope of practice, being aware of ones self (N=42)</td>
<td>45.2%</td>
<td>28.6%</td>
<td>11.9%</td>
<td>14.3%</td>
<td>-</td>
</tr>
<tr>
<td>15. Promotion of self care eg specific gender and lifespan-related information and strategies (N=43)</td>
<td>32.6%</td>
<td>34.9%</td>
<td>16.3%</td>
<td>16.3%</td>
<td>-</td>
</tr>
<tr>
<td>16. Respect for privacy and dignity of clients/patients (N=43)</td>
<td>51.2%</td>
<td>37.2%</td>
<td>7.0%</td>
<td>4.7%</td>
<td>-</td>
</tr>
<tr>
<td>17. Teamwork and multidisciplinary team: working in a team (e.g., team member and leadership roles, conflict management, resolution, negotiation skills) (N=43)</td>
<td>58.1%</td>
<td>30.2%</td>
<td>9.3%</td>
<td>2.3%</td>
<td>-</td>
</tr>
<tr>
<td>18. Technology and informatics: incorporating standards (e.g., IVI management systems, patient information systems) (N=43)</td>
<td>53.5%</td>
<td>34.9%</td>
<td>11.6%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>19. Therapeutic nursing behaviour/respectful of personal space/dealing with emotional people such as other professionals, clients, relatives, nurses – psychotherapeutic skills/therapeutic communication (N=43)</td>
<td>51.2%</td>
<td>27.9%</td>
<td>7.0%</td>
<td>14.0%</td>
<td>-</td>
</tr>
<tr>
<td>20. Understanding the different roles of RNs in different treatment or care settings (e.g., aged care, rural and remote, acute, mental health and child) (N=43)</td>
<td>27.9%</td>
<td>30.2%</td>
<td>25.6%</td>
<td>16.3%</td>
<td>-</td>
</tr>
<tr>
<td>21. Uses opportunities for learning such as the experiences of the client/patient by listening to their stories/experiences (N=43)</td>
<td>39.5%</td>
<td>30.2%</td>
<td>18.6%</td>
<td>11.6%</td>
<td>-</td>
</tr>
</tbody>
</table>

The skills area with the greatest potential to be effectively delivered via SLEs and reach competency standards and/or meet clinical placement objectives was ‘medications and IV products.’ Respondents considered it is very probable (81.4%) or probable (18.6%) that the ‘medications and IV products’ skills area could be effectively delivered via SLEs and reach competency standards and/or meet clinical placement objectives. The skills area with the least potential was the skills area ‘understanding...
the different roles of RNs in different treatment or care settings.’ Only 27.9% of respondents considered it very probable and 30.2% probable that ‘understanding the different roles of RNs in different treatment or care settings’ could be effectively delivered via SLEs and reach competency standards and/or meet clinical placement objectives.

Comparative data highlighting competency/skills areas that are currently being delivered, and those that have the greatest potential to be effectively delivered (see Figure 5) indicates respondents perceive there is potential in every competency/skills area to be effectively delivered by SLEs. The five areas with the greatest potential as identified by respondents were:

- Medications and IV products
- Clinical monitoring and management
- Communication and documentation
- Clinical interventions
- Teamwork and multidisciplinary team

![Figure 5 Rating averages of skills areas currently doing, and those with the greatest potential to be effectively delivered via SLEs and reach competency standards and/or meet clinical placement objectives](image-url)
Please identify which of the following skills that you currently deliver for which the learning outcomes can be met via a simulated learning environment (N=45)

Table 14 Skills currently delivered for which the learning outcomes can be met via a simulated learning environment

<table>
<thead>
<tr>
<th>Skills delivered</th>
<th>%</th>
<th>Skills delivered</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Basic life support</td>
<td>95.6%</td>
<td>31. Pain assess (e.g., pain scores)/intervention</td>
<td>71.1%</td>
</tr>
<tr>
<td>2. IM/SC/IV injections</td>
<td>91.1%</td>
<td>32. Assistance with feeding</td>
<td>68.9%</td>
</tr>
<tr>
<td>3. IV therapy</td>
<td>91.1%</td>
<td>33. Perioperative skills</td>
<td>68.9%</td>
</tr>
<tr>
<td>4. Vital signs</td>
<td>91.1%</td>
<td>34. Use of bed pans/urinals</td>
<td>68.9%</td>
</tr>
<tr>
<td>5. Cardiac/respiratory/chest pain assessment</td>
<td>88.9%</td>
<td>35. Enteral feeding</td>
<td>66.7%</td>
</tr>
<tr>
<td>6. Male/female catheterisation/catheter care/perineal care</td>
<td>88.9%</td>
<td>36. Other assessment tools (e.g., GCS, NVO)</td>
<td>66.7%</td>
</tr>
<tr>
<td>7. Bed bath</td>
<td>86.7%</td>
<td>37. Team work</td>
<td>66.7%</td>
</tr>
<tr>
<td>8. Bed making</td>
<td>86.7%</td>
<td>38. Mobility</td>
<td>64.4%</td>
</tr>
<tr>
<td>9. ECG</td>
<td>86.7%</td>
<td>39. Stoma care</td>
<td>64.4%</td>
</tr>
<tr>
<td>10. Clinical decision making</td>
<td>82.2%</td>
<td>40. Exercise and ambulation</td>
<td>62.2%</td>
</tr>
<tr>
<td>11. Documentation (including progress notes/charting)</td>
<td>82.2%</td>
<td>41. Assistance with toileting</td>
<td>60.0%</td>
</tr>
<tr>
<td>12. Hygiene</td>
<td>82.2%</td>
<td>42. Elimination</td>
<td>60.0%</td>
</tr>
<tr>
<td>13. Inhaled medications/oxygen therapy</td>
<td>82.2%</td>
<td>43. Eye and ear care</td>
<td>60.0%</td>
</tr>
<tr>
<td>14. Activities of Daily Living (ADLs)</td>
<td>80.0%</td>
<td>44. Mental health assessment</td>
<td>60.0%</td>
</tr>
<tr>
<td>15. Health assessment and physical examination</td>
<td>80.0%</td>
<td>45. Suppositories/enemas</td>
<td>60.0%</td>
</tr>
<tr>
<td>16. Manual handling</td>
<td>80.0%</td>
<td>46. Critical care skills</td>
<td>57.8%</td>
</tr>
<tr>
<td>17. Medication administration</td>
<td>80.0%</td>
<td>47. Professional practice</td>
<td>57.8%</td>
</tr>
<tr>
<td>18. Admission and discharge documentation</td>
<td>77.8%</td>
<td>48. Working in a legal and ethical framework</td>
<td>57.8%</td>
</tr>
<tr>
<td>19. Post operative care</td>
<td>77.8%</td>
<td>49. Continence management</td>
<td>51.1%</td>
</tr>
<tr>
<td>20. Risk assessment/safety (e.g., pressure areas/ulcers)</td>
<td>77.8%</td>
<td>50. Nutrition</td>
<td>51.1%</td>
</tr>
<tr>
<td>21. Wound management: simple/complex dressings</td>
<td>77.8%</td>
<td>51. Time management/prioritisation of care</td>
<td>51.1%</td>
</tr>
<tr>
<td>22. Medical/surgical nursing skills</td>
<td>75.6%</td>
<td>52. Care of a baby</td>
<td>48.9%</td>
</tr>
<tr>
<td>23. Oral hygiene</td>
<td>75.6%</td>
<td>53. Mental health nursing skills</td>
<td>46.7%</td>
</tr>
<tr>
<td>24. Oral medication preparation and administration</td>
<td>75.6%</td>
<td>54. Leadership skills</td>
<td>44.4%</td>
</tr>
<tr>
<td>25. Advanced life support</td>
<td>73.3%</td>
<td>55. Paediatric assessment</td>
<td>44.4%</td>
</tr>
<tr>
<td>26. Care of drains</td>
<td>73.3%</td>
<td>56. Venipuncture</td>
<td>44.4%</td>
</tr>
<tr>
<td>27. Communication skills</td>
<td>73.3%</td>
<td>57. Alcohol and drug assessment</td>
<td>42.2%</td>
</tr>
<tr>
<td>28. Hand-over (including end of shift report) skills</td>
<td>73.3%</td>
<td>58. Triage assessment</td>
<td>37.8%</td>
</tr>
<tr>
<td>29. Recognition and management of a deteriorating patient</td>
<td>73.3%</td>
<td>59. ICT skills</td>
<td>35.6%</td>
</tr>
<tr>
<td>30. Critical thinking</td>
<td>71.1%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ninety-five percent of respondents identify basic life support as a skill that they currently deliver for which the learning outcomes can be met via SLEs. Of the 50 skills, the skill that they currently deliver for which the learning outcomes were least likely to be met via a SLE was ICT skills (35%).

Of the following skills that you have the potential to deliver (with funding) via simulated learning environments, which do you feel could meet competency standards? (N=45)

Table 15 Skills respondents consider they have the potential to deliver (with funding) via SLEs

<table>
<thead>
<tr>
<th>Skills</th>
<th>Very probable</th>
<th>Somewhat probable</th>
<th>Neutral</th>
<th>Somewhat improbable</th>
<th>Not probable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities of Daily Living (ADLs) (N=39)</td>
<td>46.2%</td>
<td>33.3%</td>
<td>10.3%</td>
<td>7.7%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Admission and discharge documentation (N=39)</td>
<td>46.2%</td>
<td>46.2%</td>
<td>2.6%</td>
<td>5.1%</td>
<td>-</td>
</tr>
<tr>
<td>Advanced life support (N=40)</td>
<td>67.5%</td>
<td>20.0%</td>
<td>10.0%</td>
<td>-</td>
<td>2.5%</td>
</tr>
<tr>
<td>Alcohol and drug assessment (N=39)</td>
<td>41.0%</td>
<td>46.2%</td>
<td>10.3%</td>
<td>2.6%</td>
<td>-</td>
</tr>
<tr>
<td>Assistance with feeding (N=38)</td>
<td>50.0%</td>
<td>36.8%</td>
<td>5.3%</td>
<td>5.3%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Assistance with toileting (N=38)</td>
<td>42.1%</td>
<td>31.6%</td>
<td>13.2%</td>
<td>7.9%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Basic life support (N=40)</td>
<td>80.0%</td>
<td>20.0%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bed bath (N=39)</td>
<td>59.0%</td>
<td>38.5%</td>
<td>-</td>
<td>2.6%</td>
<td>-</td>
</tr>
<tr>
<td>Bed making (N=40)</td>
<td>77.5%</td>
<td>20.0%</td>
<td>2.5%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cardiac/respiratory/chest pain assessment (N=39)</td>
<td>59.0%</td>
<td>35.9%</td>
<td>5.1%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Care of a baby (N=38)</td>
<td>42.1%</td>
<td>34.2%</td>
<td>10.5%</td>
<td>13.2%</td>
<td>-</td>
</tr>
<tr>
<td>Care of drains (N=39)</td>
<td>53.8%</td>
<td>33.3%</td>
<td>7.7%</td>
<td>5.1%</td>
<td>-</td>
</tr>
<tr>
<td>Communication skills (N=40)</td>
<td>42.5%</td>
<td>40.0%</td>
<td>12.5%</td>
<td>2.5%</td>
<td>2.5%</td>
</tr>
</tbody>
</table>
### Table 16 Skills that have the potential to be delivered (with funding) via simulated learning environments, which could meet competency standards

<table>
<thead>
<tr>
<th>Skills delivered</th>
<th>R/A</th>
<th>Skills delivered</th>
<th>R/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Basic life support</td>
<td>4.80</td>
<td>31. Assistance with feeding</td>
<td>4.26</td>
</tr>
<tr>
<td>2. ECG</td>
<td>4.80</td>
<td>32. Eye and ear care</td>
<td>4.26</td>
</tr>
<tr>
<td>4. Vital signs</td>
<td>4.68</td>
<td>34. Clinical decision making</td>
<td>4.25</td>
</tr>
<tr>
<td>5. IM/SC/IV injections</td>
<td>4.65</td>
<td>35. Stoma care</td>
<td>4.23</td>
</tr>
<tr>
<td>6. Documentation (incl prog notes/charting)</td>
<td>4.63</td>
<td>36. Team work</td>
<td>4.22</td>
</tr>
<tr>
<td>7. IV therapy</td>
<td>4.58</td>
<td>37. Communication skills</td>
<td>4.18</td>
</tr>
<tr>
<td>8. Medication administration</td>
<td>4.58</td>
<td>38. Critical thinking</td>
<td>4.18</td>
</tr>
<tr>
<td>10. Bed bath</td>
<td>4.54</td>
<td>40. Use of bed pans/urinals</td>
<td>4.18</td>
</tr>
<tr>
<td>11. Cardiac/respiratory/chest pain assessment</td>
<td>4.54</td>
<td>41. Activities of Daily Living (ADLs)</td>
<td>4.13</td>
</tr>
<tr>
<td>12. Advanced life support</td>
<td>4.50</td>
<td>42. Critical care skills</td>
<td>4.13</td>
</tr>
<tr>
<td>13. Oral medication prep and admin</td>
<td>4.49</td>
<td>43. ICT skills</td>
<td>4.13</td>
</tr>
</tbody>
</table>
The 10 most frequently identified skills that have the potential to be delivered (with funding) via simulated learning environments, which could meet competency standards were:

- Basic life support
- ECG
- Bed making
- Vital signs
- IM/SC/IV injections
- Documentation (incl prog notes/charting)
- IV therapy
- Medication administration
- Inhaled medications/oxygen therapy
- Bed bath

How likely is it that embedding simulation in nursing curricula will enhance the capacity of clinical placements? (N=45)

<table>
<thead>
<tr>
<th>How likely</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely unlikely</td>
<td>2.2%</td>
</tr>
<tr>
<td>Unlikely</td>
<td>17.8%</td>
</tr>
<tr>
<td>Unsure/neutral</td>
<td>35.6%</td>
</tr>
<tr>
<td>Likely</td>
<td>26.7%</td>
</tr>
<tr>
<td>Extremely likely</td>
<td>17.8%</td>
</tr>
</tbody>
</table>

A total of 44% percent of respondents consider it is either likely (26%) or extremely likely (17%) embedding simulation in nursing curricula will enhance the capacity of clinical placements. Twenty percent consider it unlikely (17%) or extremely unlikely (2%). Thirty five percent of respondents are unsure. Overwhelmingly, the qualitative responses indicate that respondents consider students’ will be better prepared for their clinical placement as a consequence of their experience in SLEs.
Use of Simulated Learning Environments in Nursing Curricula
Health Workforce Australia
November 2010

- Simulation should complement/enhance a range of learning activities and provide a setting where some skill sets can be assessed – but will not be used in our program as a substitute for clinical placement
- I see it as a way to better prepare student for the clinical environment so they can make better use of their limited time. The NMB still expects students to have a minimum time in the clinical environment
- I believe that if you can create a sufficient level of reality so the fundamental skills and knowledge can be gained within an embedded simulation environment using patient scenarios, and convince students of this reality then they can make better use of the clinical placement to apply the theory and enhance the skills by responding to the real patient safely and with quality care
- Simulation will prepare the student for the real world of practice, and it will provide us with opportunity to assess competence safety before progressing to clinical placements, enhances the ability of the student to readily engage with and participate in the clinical placement. I think the phrase ‘enhance capacity of clinical placements is ambiguous

Minimise the burden
- Providing a more work ready student for their year level. This minimises the burden of supervision. Practice areas more likely to take on students of nursing from your university
- Student better prepared and more able to work effectively - staff more willing to work with students
- If students are better prepared agencies may be able to take more students

Unsure
- I'm not sure that a SLE will improve capacity of clinical placements. What it will do is enhance the potential for students to be prepared for the reality of clinical practice - so it will equip them well to engage with and participate within the placement. Capacity of clinical placements means what resources industry can offer to take our students, provide suitable quality learning environment
- At this time, I am not sure the simulation will actually increase our clinical placement capacity. Although we are developing more simulation, the standard to which we will have in the coming years is unlikely to replace any clinical placement time
- It may enhance the quality of the student experience and students being able to be better prepared but not capacity per se

Supervision rather than competence
- The capacity of clinical placements in my experience is about numbers and capacity for supervision rather than competence

Dependent on Industry
- Will depend on how much the clinical industry trust the teaching and credibility of the nursing and midwifery curricula

If there is equivalence
- If simulation is seen as equivalent to practice then likely

How will embedding simulation in curricula effect/enhance your capacity to provide clinical placements?

Qualitative analysis indicates that a small number of respondents were unclear how embedding SLEs could affect/enhance their capacity to provide clinical placements, and others considered it was unlikely to affect capacity.

Others considered SLEs would enhance capacity through “replacing some clinical hours” or “could reduce placement time by several days” but also considered it would be dependent on the quality of the experience (“unless it is done to a very high level”). Some regarded it as a means to “enhance students’ capacity to participate in clinical placement, but not necessarily the University’s capacity to provide such placement.”

Simulation was very much regarded as preparatory and its influence on placement capacity was indirect, through improving students’ “skills,” “confidence,” “critical thinking,” “clinical judgement,” and “increased ability to work in teams.” Given simulation engenders a more competent, confident student, it was considered hospitals would “view requests for places more favourably” and “more clinicians will be prepared to support students who they know are well prepared and function safely within a variety of clinical settings.” A more capable student would “not just increase their workload.”

<table>
<thead>
<tr>
<th>Themes</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared for placement</td>
<td>Simulation does not currently replace clinical hours nor are there plans for it to do so. The benefits include teaching &amp; learning and assessment of skills prior to clinical, and increased student confidence, Identification of students needing</td>
</tr>
</tbody>
</table>
Use of Simulated Learning Environments in Nursing Curricula
Health Workforce Australia
November 2010

remedial tuition or skills development prior to clinical prac and assist academic staff and clinical supervisors in flagging these students and intervening at an earlier stage. This maximises the opportunity to assist the student to reach their competencies and assist the staff in identifying and objectively assessing students

• Students better prepared and likely to be able to enter into more areas of practice
• Increasing preparedness for the clinical environment
• Ready student for ‘real’ clinical area including challenges of horizontal violence

Reducing burden

• If we can reduce the burden of supervision of preceptors by having students go on placement who can demonstrate very early their capacity to provide safe care for their level then this will have a flow on effect when wards are asked to provide placement opportunities

Standardised experiences

• Through ensuring standardised experiences in preparation for clinical placements

Remediation / reduce removal

• Simulation could provide the opportunity for remediation where needed - reducing the load on placement areas
• Enabling students to experience problems they may have encountered (remediation) and potentially reduce the need to remove students from placement

More able to focus on other areas

• Students will be better prepared for clinical placements and able to focus on the more complex areas of critical thinking, clinical judgement, working in teams etc

Hospitals more accepting

• If establishments feel we are preparing students more effectively by enhancing assessment and critical thinking skills, then we are providing a more confident and knowledgeable student
• Perhaps more clinicians with be prepared to support students who they know are well prepared and function safely within a variety of clinical settings - and not just increase their workload
• Hospitals may view requests for places more favourably if they perceive students have had broad simulation experiences

Complement not enhance

• It will complement the clinical placement
• It will enhance students capacity to participate in clinical placement but not necessarily the University's capacity to provide such placement

Possibly replace some hours

• It is possible that with really good simulation we could replace some clinical hours - it would not increase our capacity but decrease the strain on capacity by requiring less placements in the system
• It will give the students a better foundation to start clinical placement. Unless it is done to a very high level, it won't replace clinical placement time. If the resources can be provided to create sustained simulation experiences for students, it could reduce clinical placement time
• May well provide the introductory sessions prior to placement and final assessment after placement and could reduce placement time by several days

Dependent on other factors

• Our ability to provide clinical places which is what 'capacity of clinical placements' means to me, is limited by the places industry has to offer, our/their human and material resources to support students and competition for places between various educational bodies (tertiary/TAFE/other health disciplines/private providers)
• If clinical facilities accept the level of student preparation, the quality of student placements should improve. Students should be invited to engage more with direct pt care rather than be the unpaid workforce proving their worth by competing all the menial work

More knowledge needed

• Need to look at how use of SLEs can prepare students and those supporting them to make effective, efficient use of the clinical placements that are provided by the Health care facilities

Will not affect capacity

• Clinical placements will not affect our capacity to provide clinical placements but it will affect the student’s experiences while out on clinical placement
• Simulation is already embedded but has no appreciable difference to ability to provide placements
• I do not believe that simulation will enhance clinical placements. It will support students in preparation for the clinical perhaps, but not capacity to provide it

Unsure

• This is unclear at this time
• I don't have any indication at present that it will lead to this kind of outcome
How can simulated learning environments be best utilised to increase the capacity of clinical placements?

<table>
<thead>
<tr>
<th>Themes</th>
<th>Examples</th>
</tr>
</thead>
</table>
| **Staffing** | Have expert staff available to work with students  
Provide time for staff to write/engage in the simulation |
| **Become an accepted part of the learning environment** | Become accepted part of the learning environment for students before they go on placement and therefore the students are able to integrate more quickly into the ward/unit environment and be seen as a bonus rather than more work  
Setting up learning environments that support student participation  
Integrating into teaching |
| **Make it real** | Using real clinical cases and the supporting documentation  
Having a limited number of clinical cases that students are introduced to in the first year of the program that increase in complexity and have contacts with different areas of health care service and delivery |
| **Resource** | Financially supported to cycle all students through an immersive, team based simulation encounter prior to clinical placement, each semester (at least once) of their 3 year program  
That the simulation is effective enough to convince the students that this about getting them to a level of preparedness for practice and they will be able to make an effective contribution to patient care - they are not observers but are ready to take a patient load from the very beginning of their clinical placement (obviously within their scope of practice for the level of the course)  
Simulation needs to occur prior to clinical placement to give the student the confidence and skills to fully participate in the clinical environment. It will also enhances our ability to assess students prior to placement so students not placement ready will not be sent on placement  
I don't think there is sufficient use of simulated information systems because of the cost and lack of educational support from the various vendors |
| **How it is utilised** | By providing a range of simulated experiences from basic skills to more complex scenarios and working in teams  
By better preparing students for the clinical experience eg: role play of hand over, team work, leadership roles as well as simulation to enhance clinical skills  
Focussed simulation specific to the needs of the placement - be more directed in the topic and focus of the sim  
Students spend time in clinical learning at a higher level as they have already conquered the basic learning and contextualisation elements  
Having well planned, real life clinical cases that are used to inform theory rather than adapting writing clinical cases around already developed theory |
| **Standards** | Until there are standards regarding what constitutes clinical versus simulated time and quality of facilities, probably only in preparation |
| **Better use of its capacity** | Simulation will also provide better opportunities for remedial activities and re-assessment of students who may be at risk before proceeding onto clinical placement  
I would like to see more use in nursing of the standardised patient and actors  
I don't think there is sufficient use of simulated information systems because of the cost and lack of educational support from the various vendors |
| **Appropriate facilities for volume of students** | Simulation may help to better prepare students before clinical however, the number of students requiring access to simulation is the deciding factor - this would occur with higher level areas (ICU / EXC / OT) placements  
I say larger facilities for two reasons - one is the need for adequate beds to provide such an experience, the second is to cope with large student numbers |
| **Hospitals will not take more students** | Simulation has the ability to increase the individual nurses capacity to perform tasks learned at university however I don't believe that it will mean that hospitals can take more students |
| **Potential to decrease placement hours** | It would decrease the number of placements required - SLE could replace some of the placement hours required in the course thus relieving the strain on a limited system  
Difficult to know for sure with a lack of evidence, certainly helps with preparation therefore perhaps may be an efficient substitute in some scenarios  
I see in the new curricula SLE being included in students overall clinical time. When they are on clinical I see them then being better prepared for the hospital environment.  
Eventually with higher levels of research in the area of SLEs it would be reasonable to include simulation as part of the professional experience placement  
If SLE's 'hours' can be counted as Clinical time as occurs in other countries this could potentially increase capacity |
| **Rethinking how we do things** | The most exciting aspect of SLEs is their ability to enhance existing learning |
opportunities. If we get good enough at the preparatory work it may be in the future that we can assign greater levels of timing to placements, as above a 4 week cardiac nursing placement might become a 1 week SLE with 3 week of placement - the 1 week provides for core skill practice the 3 weeks allows students to focus their learning on the patient experience and not on trying to get the dots (ECG) on the right spots!

<table>
<thead>
<tr>
<th>Complement - not replace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simulation is best used to complement - not replace - experience in real world settings</td>
</tr>
<tr>
<td>Simulation does not replace or replicate human interaction or contact or the ability to foresee certain situations that as a nurse you may encounter. I believe it is an effective method to assist with the development of assessment and critical thinking skills that are an essential part of nursing practice as preparation for clinical placement and eventually nursing practice</td>
</tr>
<tr>
<td>Simulation can do many things but these skills and attributes can only be further developed in the clinical setting, to be exposed to the unpredictability of the human beings</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Research and planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorporation needs to be very well planned so that the potential is maximised</td>
</tr>
<tr>
<td>There is a real danger of it being adopted because people see it as a panacea for all the challenges of preparing students for practice and to address the issues faced in providing quality clinical placements and that it is the latest fad in health professional education. Use of SLE needs to be well thought out planned and based on evidence. At the moment it is being adopted as a whole of practice based education approach - I think we need to spend more time on thinking where and how is this approach best used to maximise student learning for professional practice</td>
</tr>
<tr>
<td>More research is also needed to justify the huge expenditure required to be seen to be effective - but is it and to what extent? Also need to understand the pedagogy that underlies the use of simulation as a teaching strategy and method</td>
</tr>
<tr>
<td>Questions that need to be addressed are: how can this approach be used to maximise student engagement, with preparation for and participation in practice based learning. How is it best to use the approach to achieve the desired learning outcomes for practice? What considerations need to be taken into account? How is it maximised as a learning strategy? Where is it best placed in the curriculum? Are all practice based learning sessions full SLE or is the approach planned at key points in practice based learning/assessment? What are our goals in implementing the approach, how is this being evaluated?</td>
</tr>
</tbody>
</table>

**Electronic Survey: Discussion**

The most frequently reported SLEs utilised over the previous 12 month period were low fidelity mannequins and those that required low technology Students were utilised most often standardised patients during full-scale simulation and professional actors reported to be never (77.8%) or rarely (22.2%) utilised. Almost all respondents identified that they use simulation as “skills-lab,” and less than half (44%) of the respondents stipulated that they currently have a dedicated simulation suite. Of those that reported they did not have a dedicated simulation suite, half (52%) identified that they are intending to develop one. Simulation occurs in traditional leaning labs for nearly all respondents (95%) and almost half (41%) identified they have equipment that is sitting idle or underutilised. Equipment is underutilised due to student ‘downtime’ as a consequence of student requirements and course structure, although the primary reasons are the difficulty experienced actually embedding simulation into the program, a lack of knowledge around how to embed it, a lack of technical skills to ensure the equipment is operational, and a lack of resources to ensure existing equipment is utilised effectively. Three quarters of the respondents state they do not currently have a professional development (training) program to up-skill instructors/staff and many (69%) consider there is a need for certification/credentialing or a required level of training/understanding. The primary benefits to up-skilling instructors/staff are to ensure they have an understanding of the fundamentals of simulation terminology and concepts, to provide opportunities for professional development, and to provide a concrete base for knowledge and expertise. Currently, Schools’ evaluate simulation experiences primarily through student satisfaction surveys and to a much lesser extent through student competence tools.
Of interest is that none of the five items that identified how simulation is currently utilised (i.e., increase student confidence, provide opportunity for students to reflect on their own performance, assessment, support/anchor the application of theory content, increase critical thinking) were identified as how they would like to utilise SLEs (i.e., unavailable clinical experiences or events, foster greater levels of interprofessional practice, increased simulation will enable more efficient use of clinical placements, opportunities for cross disciplinary work, provide situations that can (almost) replicate the pressures of working in a dynamic workplace).

The greatest challenges to implementing SLEs was having an insufficient number of dedicated technical/support staff, the ongoing costs involved in running SLEs (issues of sustainability), the education/training of staff that work in the SLE, student numbers that are too large engage into simulation, and the human cost.

**General skills areas**

Of the Crookes and Brown competency/skills areas that are currently being delivered via simulated learning environments, the five areas identified most often were:

- Medications and IV products (e.g., safe and appropriate administration of medications); legal and safe medication administration storage and disposal (86% very often or always)
- Respect for privacy and dignity of clients/patients (70% very often or always)
- Clinical monitoring and management - use of assessment tools (e.g., haemodynamic/respiratory assessment, MMSE, RUDAS). All forms of assessment are included here (59% very often or always)
- Communication and documentation such as verbal (including handovers) and nonverbal (including documentation such as communication of care, appropriate and accurate use of documentation) (58% very often or always)
- Personal care-provision and coordination of care - the ability to assess, plan, implement and evaluate nursing care of clients across a range of settings and across the lifespan using a holistic, comprehensive nursing model such as RLT (60% very often or always)

Of the Crookes and Brown competency/skills areas that have the greatest potential to be effectively delivered via SLEs and reach competency standards and/or meet clinical placement objectives, the five areas identified most often were:

- Medications and IV products (e.g., safe and appropriate administration of medications); legal and safe medication administration storage and disposal (100% very probable or somewhat probable)
- Clinical monitoring and management - use of assessment tools (e.g., haemodynamic/respiratory assessment, MMSE, RUDAS). All forms of assessment are included here (97% probable or somewhat probable)
- Communication and documentation such as verbal (including handovers) and nonverbal (including documentation such as communication of care, appropriate and accurate use of documentation) (93% probable or somewhat probable)
- Clinical interventions - preparing, assisting during and after care (such as investigations/surgery/diagnostic) (93% probable or somewhat probable)
- Teamwork and multidisciplinary team: working in a team (e.g., team member and leadership roles, conflict management, resolution, negotiation skills) (88% probable or somewhat probable)

**Specific skills**

At least 70% of respondents considered it was either very probable, or somewhat probable, that each of the specific skills identified that could meet competency standards, have the potential to delivered (with funding) via simulated learning environments. Basic life support was identified as having the greatest potential (80% probable, 20% somewhat probable). The skill with the lowest rating average was continence management (36% probable, 34% somewhat probable).
Chapter Seven: Conclusion

General Discussion

The notion of SLEs being used to replace clinical placements is a contentious issue. A range of responses was received from Heads of School and Nominees, and although 37% of Heads of School consider there are elements of the clinical placement that can be replaced via SLEs, similar to other research findings (CASN, 2007), the majority of responses were disapproving of such a move. The predominant view was that simulation enhances the clinical experience through the almost endless array of preparatory benefits it provides the student. The ability of SLEs to augment students' preparation is axiomatic, yet "real" exposure to the idiosyncratic presentation of patients, hospital or healthcare environments and fellow healthcare workers can only be gained within very milieu in which nurses are trained to work. SLEs have the potential to provide a strong foundation upon which the student nurse gains confidence and competence. Determining "how much simulation is enough?" remains an unanswered and divisive question. It is vital that simulation is utilised, yet there is real concern that it does not impede on clinical training to the point where it is relied on too heavily and begins to have a deleterious impact on the student nurses preparation. Work started in October 2010 by the National Council of State Boards of Nursing (NCSBN, n.d.) may illuminate matters in this regard.

This research has identified specific skills areas, (many of which are psychomotor) that have the greatest potential to be effectively delivered via SLEs and reach competency standards and/or meet clinical placement objectives. Of possibly more importance are the more general Crookes and Brown (2010) competency/skills areas. The five skills/competency areas identified that have the greatest potential to be effectively delivered via SLEs and reach competency standards and/or meet clinical placement objectives were:

- Medications and IV products (e.g., safe and appropriate administration of medications); legal and safe medication administration storage and disposal
- Clinical monitoring and management - use of assessment tools
- Communication and documentation such as verbal (including handovers) and nonverbal (including documentation such as communication of care, appropriate and accurate use of documentation)
- Clinical interventions - preparing, assisting during and after care
- Teamwork and multidisciplinary team: working in a team (e.g., team member and leadership roles, conflict management, resolution, negotiation skills)

Although the benefits to SLEs are evident, a significant number of challenges loom as monumental barriers. While cost is an obvious barrier, and perceived as prohibitive for those whose symbolic representation of simulation is restricted to high-end mannequin technology and state-of-the-art simulation suites, much can also be achieved with low-tech high fidelity processes. Even low-end simulations do however require specialist dedicated staff to write scenarios, curriculum writers to ensure pedagogical integrity is achieved and learning outcomes are not compromised. The barriers to embedding simulation into curricula are not insurmountable, but they can appear as such when they are so prolific and the process under-resourced.

While the report indicates some Universities have advanced SLEs, others are limited in what they can offer. The purchase and ongoing maintenance of equipment (not necessarily high fidelity) is a significant issue, as is having an appropriate space in which simulation and debriefing can occur. In addition to initial equipment, funds to replace the continual array of consumables that are necessary to support SLE are also essential. The skills identified in this report that have the potential to be delivered (with funding) via SLEs highlighted areas of need that may of course differ according to the specific requirements of each University.

A significant challenge in so many cases has been a lack of skilled/specialist workers that fully understand SLEs, or support those that do have an understanding of SLEs potential. Appropriate implementation requires academic and clinical staff (or the most appropriate personnel depending on...
specific situations) to be up-skilled to write scenarios and implement simulation, the provision of ongoing technical, laboratory, and general support staff.

The report has highlighted the need for enhanced collaboration. Shared resources are essential to facilitate the development of a pool of “best practice” resources for general usage (e.g., scenarios, software) and where a community (practice network) of personnel can share experiences and learn from the experience of others. The benefits of working together are highlighted through the relatively recent focus on interprofessional learning. Future developments must, out of necessity, include the expansion of existing IPL programs and facilities in universities and the development of interprofessional simulation centres across universities and health services.

The uptake of simulation could be easily attributed to theories that divide people into those that are quick to take on new ideas (early adopters) and those at its antipodal position, the laggards, who are more resistant to change. In the field of simulation, laggards are a source of frustration to early adopters and through their questioning of the new ideas may be considered luddites. To some extent this caution in the field of simulation is valuable, warranted and necessary. Many of the pedagogical frameworks upon which simulation sits are yet to be fully understood and articulated, and research investigating the extent to which learning in a simulated environment translates into improved ability, where it counts in actual practice, is humbly limited. Rigorous research is not easy to conduct and yet the field is desperate to know of “what works.” Evaluations highlighting the effectiveness of simulation in relation to student outcomes and the development of an adequate evidence base are warranted, as are studies identifying the impact of simulation on sustained learning outcomes.

Regional and remote areas are consistently denied access to opportunities available to more populated areas and in relation to SLEs the situation is no different. A need exists for the provision of/upgrade of IT equipment and access for students in rural and remote areas, mobile resources (to include postgraduate study and post qualification up-skilling) and stronger linkages of SLE expertise between regional universities and healthcare providers, and the provision of SLE to areas and programs where simulation resources are currently unavailable.

Project Limitations

There are a number of factors, all of which affect the study’s validity and reliability, which must be taken into account when interpreting these findings. The survey itself was long and no doubt onerous for some participants. The electronic survey was based on two primary instruments. The skills list was developed from a previous HWA survey, and not all of the skills listed were in fact skills. The list was, however, derived from information provided by nurse academics that had previously participated in previous research by HWA, and time limitations precluded the development of other materials. The Crookes and Brown (2010) Skills Areas was unknown to many respondents and still in development. Yet, the development process of the instrument thus far has been rigorous and it provides a breadth of information that permitted this study to move away from the specifics of particular (psychomotor) skills. There were some respondents (n=2) that were unsure of what the term ‘capacity’ meant and some (n=1) that perceived the font utilised in the survey was too small.

There are a number of anomalies that exist among the data itself and this may be to a large extent due to the above constraints, and also may be attributable to the lack of real understanding regarding the relatively new field of SLEs. Advancing technologies bring with them as yet undiscovered capabilities and making sense of the technologies and discovering how we can utilise them most appropriately can be challenging.
References


Appendix 1: Heads of School Letter

Dear Head of Nursing School

RE: Use of Simulated Learning Environments in Nursing Curricula Project

Following the recent communiqué you have received from Health Workforce Australia dated 13th August 2010 informing you of the above initiative, I am writing to seek your assistance and involvement in this project.

ECU has formed a project team of Australian and international academics with experience in simulated learning programs to provide the project governance and the team is seeking to work closely with all Schools of Nursing in Australia and other stakeholders during this process.

The Project Steering Committee is as follows:

- Professor Cobie Rudd, Associate Dean – Health and Chair in Mental Health Nursing, Edith Cowan University;
- Associate Professor Tracy Levett-Jones, Deputy Head of School (Teaching and Learning), School of Nursing and Midwifery, University of Newcastle;
- Adjunct Associate Professor Catherine Stoddart, Chief Nurse and Midwifery Officer, Western Australian Department of Health;
- Professor Rhonda Marriot, Pro Vice Chancellor (Faculties), Murdoch University;
- Associate Professor Linda Starr, Flinders University;
- Emeritus Professor Bonnie Driggers, Consultant SimHealth Consulting Services LLC in the US; and
- Associate Professor Michael Seropian, President and CFO, SimHealth Consulting Services LLC in the US;
- Professor Patrick Crookes, Chair of the Australian and New Zealand Council of Deans of Nursing and Midwifery;
- Ms Louise Horgan, Nursing and Midwifery Board of Australia representative;
- Ms Katie Walker, Project Manager, Simulated Learning Environments, Health Workforce Australia; and
- Australian Nursing and Midwifery Council Limited (ANMC) nominee (to be confirmed).

The Nursing Simulated Learning Environment (SLE) Project aims to identify and gain national agreement on which aspects of nursing curricula might be able to be effectively delivered via SLEs. The project’s final report will focus on opportunities where clinical placement objectives can be met via the use of simulated learning environments and thus opportunities to expand clinical training capacity. The report will draw on national and international research in the area.

For the purpose of this letter, simulation will be described as:

An educational technique in which elements of the real world are appropriately integrated to achieve specific goals related to learning or evaluation. Simulation is an educational strategy, not a technology.

(Adapted from Gaba 2004)\(^5\)

Each School of Nursing / Nursing and Midwifery across Australia is being invited to participate in and inform this project. The project's findings are intended to inform HWA’s infrastructure development and implementation phase for SLEs in nursing. It is envisaged that universities and other centres will

----

be able to apply for funding to develop simulated learning environments or to apply to have their facilities upgraded in light of the outcomes of this project.

Initial timelines for the project are as follows:

- Information gathering: 16 August - 10 September 2010
- Draft findings: 13 September - 24 September 2010
- Consultation on findings: 27 September - 25 October 2010
- Lodge Report: 10 November 2010

The Steering Committee for this project, as per the discussion at the Council of Deans of Nursing and Midwifery meeting on 30 July 2010, is keen to tap into your personal views and future gazing, as a Head of School. Hence the first stage of our methodology is a series of high level questions for Heads of Schools, as per Attachment A; there will be a forthcoming electronic survey request that you may wish to delegate to relevant senior staff.

As an initial step, I would be grateful if you could complete Attachment A (questions) and Attachment B which asks for contact details for a lead nursing academic staff member whom we could approach to complete the electronic survey on behalf of your School. If your School offers more than one program leading to entry to profession nursing endorsement, could you please forward the contact details of the lead nursing academic/s who coordinate/s each program.

As the project timeline is short I would be grateful for your prompt attention to these requests and ask that both the completed attachments please be returned by Friday 27 August to Kirsty Freeman via email SLEProject@ecu.edu.au.

Thank you for considering this request.

Yours sincerely

Professor Cobie Rudd
Project Lead
Use of Simulated Learning Environments in Nursing Curricula Project

for HWA - Use of Simulated Learning Environments in Nursing Curricula Project

Enc:
1. Attachment A – questionnaire for Deans/Heads of School to complete
2. Attachment B – nomination of lead nursing academic/s for each program for the electronic survey
Appendix 2: List of Stakeholders Consulted

Consumer Health Forum (CHF)
Ms Carol Bennett, Executive Director
PO Box 3099
Manuka ACT 2603

Australian Commission on Safety and Quality in Healthcare
Mr Bill Beerworth, Commission Chairman
GPO Box 5480
Sydney NSW 2001

Nursing and Midwifery Board of Australia
Ms Anne Copeland, Chair
G.P.O. Box 9958
Melbourne VIC 3001

Australian Nursing and Midwifery Council (ANMC)
Professor Jill White, Chairperson
PO Box 873
Carlton South VIC 3053

Royal College of Nursing Australia (RCNA)
Ms Stephanie Fox-Young FRCNA, President
PO Box 219
DEAKIN WEST ACT 2600

Australian Nursing Federation (ANF)
Ms Coral Levett, Federal President
Unit 3, 28 Eyre Street
Kingston ACT 2604 Australia

National Enrolled Nurse Association (NENA)
Ms Lynne Geri, President
P.O Box 39
Mt Martha, VIC 3934

Australian Practice Nurses’ Association (APNA)
Ms Julianne Badenoch, President
PO Box 55
Carlton South
VIC 3053

Australian College of Mental Health Nurses (ACMHN)
Adj. Associate Professor Kim Ryan, Chief Executive Officer
PO Box 154
Deakin West ACT 2600

ANZ Council of Deans of Nursing and Midwifery (CDNM)
Professor Patrick Crookes, CDNM Chair
Head, School of Nursing, Midwifery and Indigenous Health
Dean, Faculty of Health and Behavioural Sciences
University of Wollongong

Northfields Avenue
WOLLONGONG NSW 2522

Council Remote Area Nurses Australia (CRANA)
Ms Carole Taylor, Chief Executive Officer
78 Bath Street,
PMB 203, Alice Springs, NT 0872

Congress of Aboriginal and Torres Strait Islander Nurses (CATSIN)
Mrs Sally Goold, Chairperson
14 Cassia Avenue
Banksia Beach, Bribie Island
Queensland, 4507

Office of Health Review (OHR) WA
Ms Anne Donaldson, Director
GPO Box B61
PERTH WA 6838

Health Quality and Complaints Commission QLD (HQCC)
Ms Cheryl Herbert, Chief Executive Officer
GPO Box 3089
Brisbane QLD 4001

Government of Western Australia Department of Health
Adjunct Associate Professor
Catherine Stoddart, Chief Nurse and Midwifery Officer
Nursing and Midwifery Office
Department of Health
PO Box 8172
Perth Business Centre WA 6849

State Government of Victoria, Department of Health
Adjunct Professor Belinda Moyes, Principal Nurse Advisor / Director, Nurse Policy Branch
Department of Human Services
50 Lonsdale Street
Melbourne VIC 3000

Government of South Australia, Department of Health
Adjunct Professor Jenny Beutel, Chief Nurse
PO Box 287
Rundle Mall
Adelaide SA 5000

NSW Government, Department of Health
Adj Prof Debra Thoms, Chief Nursing and Midwifery Officer
73 Miller Street
North Sydney NSW 2060
Department of Health and Human Services Tasmania

Adj Assoc Prof Fiona Stoker, Chief Nursing Officer
GPO Box 125
Hobart TAS 7001

Queensland Government, Department of Health
Adj Assoc Prof Pauline Ross, Chief Nursing Officer
GPO Box 48
BRISBANE QLD 4001

Northern Territory Government, Department of Health and Families
Dr Greg Rickard, Principal Nursing Advisor
PO Box 40598
Casuarina NT 0811

Australian Capital Territory Department of Health
Ms Veronica Goom, Chief Nurse
GPO Box 825
Canberra ACT 2601

Australian Government Department of Health and Ageing
Ms Rosemary Bryant, Chief Nurse
GPO Box 9846, Canberra ACT 2600

Australian Private Hospitals Association (APHA)
Mr Michael Roff, Chief Executive Officer
PO Box 7426
Canberra BC 2610

Australian Healthcare and Hospitals Association (AHHA)
Ms Prue Power, Executive Director
PO Box 78
Deakin West ACT 2600

Aboriginal Medical Services Alliance Northern Territory (AMSANT)
Ms Stephanie Bell, Chairperson
GPO Box 1624
Darwin NT 0801

Nurses and Midwives Board of WA
Adjunct Associate Professor Robyn Collins, Chief Executive Officer
Locked Bag 6
East Perth Western Australia 6892

Aboriginal Health Workers Board of the Northern Territory
Mr Peter Pangquee, Chair
GPO Box 4221
Darwin NT 0801

Clinical Excellence Commission NSW
Use of Simulated Learning Environments in Nursing Curricula
Health Workforce Australia
November 2010

Professor Clifford F Hughes, Chief Executive Officer
GPO Box 1614
Sydney NSW 2001

Coalition of National Nursing Organisations (CONNO)
C/- ANF, Level 1, 365 Queen Street,
Melbourne, Victoria 3000
Adj. Associate Professor Kim Ryan,
Chair Melbourne, Victoria 3000
C/- ANF, Level 1, 365 Queen Street,
Melbourne, Victoria 3000

C/- ANF, Level 1, 365 Queen Street,
Victoria 3000
Mental Health Council of Australia
Mr David Crosbie, Chief Executive Officer
PO Box 174
DEAKIN WEST ACT 2600

Public Health Association of Australia
Professor Mike Daube, President
PO Box 319
Curtin ACT 2605

Victorian Quality Council
Dr Sherene Devanesen, Chair
GPO Box 4541
MELBOURNE VIC 3001

WA Council for Safety and Quality in Health Care (OSQH)
Professor Bryant Stokes, Chairman
GPO Box 8172
Perth WA 6849
Appendix 3: Contributors

For their contributing remarks to inform the literature review we would like to thank:

- **Sharon Elliott**, Senior Lecturer Simulation/Centre Co-ordinator, School of Nursing Midwifery and Healthcare, Faculty of Health and Human Sciences, Thames Valley University, United Kingdom
- **Joyce P. Griffin-Sobel**, Assistant Dean, Curriculum & Technology, Professor and Director, Undergraduate Programs, Hunter College - Bellevue School of Nursing, New York, USA
- **Angela Hope**, Senior Lecturer/Practice and Skills Co-ordinator, University of Huddersfield, United Kingdom
- **Kim Leighton**, Dean of Educational Technology, Executive Director of The Center for Excellence in Clinical Simulation, President, INACSL, BryanLGH College of Health Sciences, USA
- **Garth Long**, Professional Advisor, Nursing and Midwifery Council, United Kingdom
- **Dr Pam Moule**, Reader in Nursing and Learning Technologies, Bristol, University of the West of England, United Kingdom
- **Nancy Platt**, Year 1 Coordinator & Lecturer, Arthur Labatt Family School of Nursing, University of Western Ontario, Canada
- **Steve Prescott**, Senior Lecturer (Adult Nursing), University of Huddersfield, United Kingdom
- **Nigel Wynne**, Senior Academic L&T, Birmingham City University, United Kingdom