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Using a 3D simulated environment to enhance patient care and communication skills of radiation therapy students and health care practitioners in cancer care settings

Background

Project background

In the cancer care setting, radiation therapy students and radiation oncology registrars often struggle in the area of patient communication skills. Student exposure to clinical settings is limited, ad-hoc and variable. While it is appropriate for practitioners to handle difficult communication scenarios, this further limits student/registrar learning opportunities. Although the traditional mode of face-to-face role play remains in use in some undergraduate curriculum for developing student communication skills, an alternative mode of simulated learning presents additional multiple advantages.

Project aims

* To provide a structured approach to developing clinical competency in patient communication skills;
* To enhance the quality of learning for students/registrars by exposing them to a diverse and challenging range of communication scenarios in the cancer care setting;
* To develop a three‐dimensional (3D) simulated learning training resource package to enhance the communication skills of radiation therapy students, radiation oncology registrars and practitioners in cancer care setting;
* To enable all radiation therapy students, radiation oncology registrars and radiation therapists access to 3D simulated learning resource;
* To provide a collaborative approach to developing patient communication skills in cancer care setting across Victoria;

To introduce and engage the radiation therapy community in Victoria to innovative simulated learning techniques.

Problems/drivers

Main driver

To increase clinical training capacity by improving the quality and consistency of patient communication skills training in radiation oncology setting

All health professionals are expected to have excellent communication skills. Given the sensitivity of oncology setting, students often struggle to learn to communicate effectively with patients. To compound the situation, student exposure to clinical settings is often limited, ad-hoc and variable. Hence, the ability to provide authentic learning in a safe learning environment, without having students to ‘practise’ and learn on real patients is paramount in ensuring clinical competency in communication.

A 3D simulated learning environment such as Second Life, enhances student learning by facilitating problem solving, critical thinking and communication skills while promoting constructivist learning (Clark & Maher, 2003; Macedo & Morgado, 2009; Robbins, Roby & Johnson, 2007). Three-dimensional simulated learning has been used in medical education, business and health sciences education (Bloomfield, 2008; More & Burrow, 2008; Wiecha et al. 2010). Learning outcomes reported by students in the 2010, 2011 and 2012 RMIT virtual simulation learning projects included increased confidence in dealing with patients, developing empathy and being more reflective in their learning (Bloustien and Wood, 2011; Sim et.al., 2011a; Sim et al., 2011b, Sim et al., 2012). Second Life also has the advantage of being a reusable (University of Portsmouth, 2008) infrastructure. Learning objects developed in the RMIT projects were used to build on and develop this project with implications on reduced cost of delivery.

Arriving at a solution

A Second Life island was purchased to develop a 3D clinical learning platform in Second Life. Thirteen laptops with Second Life installed were purchased to enable radiation therapy centres across Victoria to have access to Second Life within the clinical setting. Students and practitioners participated in virtual role-play simulations that developed and enhanced their communication skills within the oncology setting. Case-based scenarios were used to contextualise student and practitioner learning. A range of cases ranged from simple to complex and were developed according to themes, such as cultural communication, radiation treatment side effects, social issues and dealing with life and death. Participants were encouraged to record their virtual role-plays to enable learners to reflect on their learning with practitioners assisting to debrief students.

Implementation process

The project was divided into two phases. The first pilot phase (2012) involved RMIT and three major clinical centres, Barwon Health Geelong, Austin Health and Ballarat Austin Radiation Oncology Centre. The pilot project enabled us to overcome and determine strategies to deal with technical issues associated with the use of Second Life platform and to finalise details of delivery of simulation activities within clinical departments. Phase 2 was a statewide implementation that included RMIT and the major oncology centres in Victoria (January to June 2013).

Table 1: Implementation plan

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| --- | --- |
|  | Description of activities |
| Phase 1: Pilot project 2012 | Planning stage |
| Ethics application |
|  | Case-based scenarios development |
|  | Workshops delivery: preparing and engaging stakeholders |
|  | Roll-out of simulation activities across pilot sites |
|  | Action cycle: Review, reflect, evaluate and re-plan |
| Phase 2: Statewide implementation | Workshops delivery: preparing and engaging stakeholders |
| Roll-out of simulation activities across Victoria oncology centres |
|  | Action cycle: Review, reflect, evaluate and re-plan |
|  | Final stakeholder meeting: Review, reflect, evaluate and thank you |

Outcomes

As there was no prior 3D simulation activities delivered in the radiation oncology setting in Victoria, in 2011, the baseline measure for simulated education hours was zero. Once the project was implemented in June 2012, there was a significant rise in simulated education hours delivered and there was a further increase in the first-half of 2013 (see Table 1 below).

Table 2: Total simulation hours delivered by 30 June 2013

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| --- | --- | --- |
| Dates | Description of activities | Total |
| Simulation hours | Participants |
| 2011 (Baseline) | Baseline | 0 | 0 |
| 1 January – 31 May 2012 | Preparation for simulation activities to commence on 1 June 2013 | 0 | 0 |
| 1 June – 31 December 2012 | Phase 1: Pilot project | 127 | 31 |
| 1 January - 30 June 2013 | Phase 2: Statewide implementation | 250 | 41 |
|  | TOTAL | 377 | 72 |

Initially, there were more simulation hours delivered to practitioners; however, as the project progressed by 2013 there were a greater number of simulation hours delivered to entry-to-practice students. Over the project period, interprofessional learning hours made up approximately 20% of the education activity time, with the remaining 80% made up of oncology related communication interactions.

The ratio of rural and remote participation to metropolitan was approximately 1:2. Therefore, for every two metropolitan participants there was one rural/remote participant. This equated to the 143 simulation learning hours being delivered in rural and remote Victoria and 234 hours delivered in metropolitan areas across the project period.

In terms of project management, feedback from participants indicated that the project was well organised, project instructions were clear, goals were clearly defined, project components and expectations were well understood by participants.

The project successfully achieved all project aims. Participants were provided with a structured framework of engaging in the simulation activities. Participants found Second Life to be an easy to use platform. As the project drew upon the knowledge of senior cancer care practitioners to develop case-based scenarios, participants were exposed to a wide diversity and simple to challenging situations encountered in oncology settings. The project succeeded in increasing the clinical training capacity by enhancing the quality of patient-practitioner communication competencies. This is evidenced from participants’ comments that the simulated learning activities assisted in “improving communication skills” of participants and “increased and reinforced the importance and depth of reflection” around communicating with patients.

The role-play simulations provided opportunities for interactions and communication that may not otherwise be possible. The inclusion of reflective activities enabled participants to think and reflect more deeply about communication scenarios in the cancer care setting. Overall, the comments from participants reflected an affirmation towards this form of virtual learning, as a means of developing and enhancing communication skills. This represents the beginning of a possible shift in perception of practitioners towards simulation learning. There was a common theme in the findings that this project was most beneficial for students and that the best learning outcomes occurred when a student and practitioner were paired together for the project activities. All learning resources created for this project are available in MP4 format, thereby making the resources equally accessible to regional, rural and metropolitan cancer care facilities.

Barriers

While Second Life is a readily available free website on home computers, it is viewed by hospitals and universities as a gaming site with firewalls installed to prevent access. Hence, we anticipated that our greatest obstacle would be access to the virtual Second Life platform in hospitals. The Information Technology (IT) departments were; therefore, required to perform firewall configuration and data point access specifically for this project. Hence, a considerable amount of time was included in our project plan to address access issues. Our Second Life designer was able to advise IT staff from clinical centres how to circumnavigate the firewall issues. Our pre-planning and effective liaison with IT enabled us to successfully address problems associated with Second Life access.

A challenge that surfaced in our pilot project was time release for practitioners to participate in the project. To this end, we actively obtained support from radiation therapy chiefs and clinical educators to allocate time for practitioner participation as part of their ongoing continuing professional development.

Future directions

Our virtual simulation project was pedagogically sound, well designed and appropriately structured to meet the clinical oncology settings. More importantly, based on the positive feedback from participants, this project marks a possible mind-set shift for practitioners towards simulation learning and the beginning of a possible cultural change.

The RMIT project lead has led a number of successful simulation learning projects in university setting. Findings from this project enabled the project team to combine the best of simulation learning in clinical settings with the best of simulation learning in university settings. The project team has been successful in securing the next round of HWA SLE project funding (2013/002/019\_VIC). The next project builds on the successes of the 2012 HWA project and continues to consolidate existing aims by including radiation therapy, as well as five more eligible professions: medical imaging, nuclear medicine, songography, chiropractic and nursing. The 2013 project is also a cross-university collaboration, including Monash and Central Queensland University with participation from Victorian medical radiations clinical centres. Such cross-institutions collaboration with multiple stakeholders’ involvement has the best possible chances of successfully embedding simulation learning into pre-registration curriculum. This 2012 HWA project, therefore, has provided the groundwork in enabling us to progress the HWA simulation learning agenda.

Further information

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