

The impact of an authentic, simulated learning activity on student preparedness for work-integrated learning

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Student preparation for work-integrated learning using simulated learning experiences is an under researched field in occupational therapy. In 2013 the Deakin University occupational therapy degree introduced a simulated learning experience for students aimed at preparing them for work-integrated learning experiences. The session gave students an opportunity to practice fundamental skills of the discipline. A Likert scale survey was written and critically reviewed by the authors. Students rated the extent to which they felt that they could communicate effectively, build rapport, safely transfer clients, apply occupational health and safety principles and write case notes, prior to and after participation in the simulated learning experience. A statistically significant improvement was found for all outcomes measured. Students also reported improved confidence and valued opportunities to practice and receive feedback on skills. The results demonstrate that participation in a simulated learning activity improves confidence and skills in a range of areas that are relevant to work-integrated learning placement. (*Asia-Pacific Journal of Cooperative Education*, 2015, 16(4), 343-354)

Keywords: Simulation, occupational therapy, work-integrated learning, authentic learning

The Deakin University Bachelor of Occupational Therapy (OT) degree is an Australian based four year on-campus program with an annual intake of approximately 100 students. The degree, accredited by the World Federation of Occupational Therapy (WFOT), requires a minimum of 1,000 hours of work-integrated learning (WIL) or clinical placement experience for each student (WFOT, 2014). In 2011 a review of the Deakin OT degree led to changes in the curriculum that included a strengthening in the OT specific content. The implementation of these curriculum changes included the development of new, authentic learning activities, one of which was a simulated learning experience, for first year students. This led the academics involved in teaching of the simulation to develop the following research question:

Does participation in an authentic, simulated skills session improve first year OT students' perceived skills and confidence in relation to WIL and practical examination?

A literature review was undertaken to inform the study, and key findings of the review are reported here. Authentic learning activities are defined as experiences that have both personal meaning and purposefulness for students within an appropriate social and disciplinary framework (Sutherland & Markauskaite, 2012). Simulated learning activities are "an educational technique that allows interactive, and at times immersive, activity by recreating all or part of a clinical experience without exposing patients to associated risks" (Maran & Galvin, 2003, p. 22).

There is an increasing use of simulated learning activities within healthcare to prepare students for practical experiences and as a replacement for WIL in health settings (Maran & Galvin, 2003), however research relating to the use of simulation in OT is less frequent. Simulated learning activities can take many forms. They may involve the use of simulated patients (actors role-playing a patient), role-play where fellow students or university staff act as patients, use of mannequins, video-recorded or written case studies and interactive

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computer based programs. One or more of these processes may be used in combination and the scenario can range from a simple discrete task to a highly complex and changeable environment (Bradley, Whittington, & Mottram, 2013).

Simulated learning experiences are considered to offer advantages for students including: provision of guaranteed exposure of all students to a set range of skills that may be considered core to a profession; allowing for practice of skills within low risk environments; and, allowing for repeated practice (Rodger, Bennett, Fitzgerald, & Neads, 2010), without inconvenience or potential harm to patients. Following participation in simulation, students have reported enhanced perceptions of their knowledge, skills and motivation (Rodger, Bennett, Fitzgerald, & Neads 2010).

In their study of twenty-three second year OT students exposed to a simulated learning experience where students performed an interview with a standardized patient, Velde, Lane, and Clay (2009) found the students reported that they felt like a therapist and had opportunities to integrate and apply their knowledge and skills. Bradley et al. (2013) described the development of a simulation program designed for final year OT students using simulation activities that included assessment, decision-making and monitoring patient safety. The study aimed to consolidate the skills required for the transition from student to clinician. Students in this study reported earlier and more frequent exposure to simulation was beneficial (p.45).

The usefulness of role-play for student skill development has been demonstrated for communication skills (Nestel & Tierney, 2007), motivational interviewing (Mounsey, Bovbjerg, White, & Gazewood, 2006) and preparation for WIL (Cook & Cusick, 1998). Nestel and Tierney (2007) developed a role-play interview activity for first year medical students. Students completed pre- and post-activity questionnaires. Ninety-six percent of the 263 students who participated reported that the activity was helpful particularly in the area of communication. In short, evidence exists that supports simulated learning activities as an effective form of authentic learning that is valued by students.

There is limited literature in the field of OT that describes practical experiences in the preparation of students for WIL. Yet these practical learning opportunities are seen as an integral part of OT student education and they are essential in supporting development of professional behavior and acculturation into the profession (Kirke, Layton, & Sim, 2007). Cook and Cusick (1998) undertook one of the first OT studies that investigated the preparation of students for WIL. The authors evaluated an on-campus clinical practicum for first year OT students. Thirty students took part in weekly three-hour sessions that focused on acquisition of fundamental OT skills. Results indicated increased comfort in a range of areas including talking with patients, helping someone to sit up in bed and dealing with a patient who was unwell. Mickan (1995) investigated the preparedness of second and third year OT students for WIL in pediatric settings using informal interviews. Results indicated that preparation for placement required more than preparatory reading, and that knowledge needed to be applied alongside of skills in the form of practice, prior to a WIL experience.

Hanson (2011) explored the perspectives of placement supervisors who supervised OT students, via focus groups. Student preparedness for placement emerged as a key theme. Students perceived to be underprepared for placement caused frustration particularly if the student lacked appropriate communication skills. Experience with an underprepared student was a barrier to accepting future students for placement supervisors.

Recommendations included provision of more hands-on learning experiences, opportunities to practice describing the discipline of OT, and skill checklists that the student must complete prior to commencing WIL. James and Musselman (2005) investigated the commonalities that exist when students fail WIL. Questionnaires and interviews were administered to placement supervisors. Their research found that inadequate academic preparation was the most frequently cited reason for students failing WIL, poor clinical skills and safety concerns were also prevalent themes. Supervisors suggested active learning experiences such as case studies and role play could be used more often when preparing students for WIL. In an environment where it is increasingly difficult for universities to access adequate numbers of WIL placements for OT students, it is imperative that lack of student preparation is not the cause of supervisor reluctance to offer WIL opportunities.

The research study that this paper describes is built on these findings by investigating the use of an authentic, simulated learning experience for preparation of first year students for WIL and practical examination. The research question was investigated with the first cohort of first year students to study the new curriculum in 2013.

The focus on WIL and practical examinations stemmed from the belief that these experiences provide some of the first practically-based challenges for students. The skills and knowledge students are required to demonstrate in these instances are typically fundamental skills that underpin the profession.

Specifically, this study aimed to answer the following questions:

- a) Does participation in a simulation session increase first year OT students' perception of preparedness for WIL placement?
- b) Does participation in a simulation session increase first year OT students' perception of preparedness for practical examination?
- c) Does participation in a simulation session increase first year OT students' perception of preparedness for performing the specific skills of manual handling of clients, documentation of client notes and interviewing clients?

METHOD

Participants

The study utilized a sample of first year OT students who were enrolled in the Deakin OT program in 2013. All first year students were invited to participate in a three hour simulation session that aimed to provide students with an additional, authentic learning experience with specific, supervised practice in the areas of manual handling, interviewing, occupational health and safety and documentation. The sessions were held eight weeks into the students' first six months of study. In this eight weeks students had been exposed primarily to theoretical learning with some limited practical skills practice in large groups. At the time of the simulation session, students had had no exposure to OT in the clinical setting. This session was designed to assist them in preparation for their first exposure.

Instrument

A search of the literature failed to reveal any suitable pre-existing measurement tool, therefore the first author developed a questionnaire for this task. The questionnaire was then critically reviewed by both co-authors to ensure that questions were clear, allowed only for a single interpretation and that double-barreled questions were avoided.

There were two sections within the questionnaire. The first section consisted of an eight item Likert scale questionnaire that was answered by the students both prior to and after the simulation exercise (Table 1).

TABLE 1: Pre- and post-simulation questionnaire Likert scale items

<ol style="list-style-type: none"> 1. I have communication skills that allow me to introduce myself to a client effectively as an occupational therapy student. 2. I am able to explain to a client, in an understandable way, what Occupational Therapy is. 3. I have the communication skills required to build rapport with a client. 4. I am confident that I can safely and effectively transfer a client from a bed (supine) to chair (seated). 5. I am confident that I can safely and effectively transfer a client from lying to sitting over the edge of the bed. 6. I have a sound knowledge of occupational health and safety principles that allow me to assess the environment. 7. I have a sound knowledge of occupational health and safety principles that allow me to assess client's safety. 8. I have the ability to write basic case notes after observing in an occupational therapy session.

The eight item Likert scale questions were designed to establish the students' preparedness for WIL and for practical examinations. Likert scales are summative scales that can be used to measure attitudes or values. They are a common and well-validated method of collecting quantitative data and have been used extensively in health research (Portney & Watkins, 2009). Items in the Likert scale questionnaire focused on the students' perception of whether they could effectively introduce themselves to a client, define OT and their role as an OT student, transfer clients and complete basic documentation in case notes. These areas were directly related to the skills practiced within the simulation session (as outlined in Table 3).

The post-simulation questionnaire also asked participants to respond to three open response questions (Table 2). The open response questions sought to collect supplementary qualitative data regarding how useful students felt the session was, what could be changed to improve the session and whether they felt the session had better prepared them for WIL and practical examination.

TABLE 2: Post-simulation open response questions

<ol style="list-style-type: none"> 1. What have you found useful about the simulation session? 2. What do you think could be done to improve the simulation session? 3. Has the simulation session improved your confidence for your practical exam and future fieldwork placements?

TABLE 3: Simulation stations

Station	Description
Station 1: Interviewing (2 groups of 3 students)	A referral was provided, and as a group students conducted an initial interview with a staff member role-playing as a client. Students took turns interviewing, observing and followed a procedure that required them to introduce themselves, gain consent, describe the role of OT and elicit background information and occupational performance issues from the client.
Station 2: Manual Handling	Students practiced transferring a client from bed to wheelchair and wheelchair to bed.
Station 3: Manual Handling	Students practiced transferring a client from sitting to standing position, moving them up/down the bed and rolling them over. These skills were practiced with and without manual handling aids.
Station 4: Occupational Health and Safety	A video relating to occupational health and safety was shown. The students were then asked to respond to a series of questions.
Station 5: Documentation	A script depicting a conversation between an OT and a client was provided. Students were required to write notes in the subjective, objective, action, plan (SOAP) format based on the information provided in the script.

Procedure

Ethical approval for this study was granted through Deakin University. Prior to the simulation session the study was described to students by the principal researcher who requested their participation. A plain language statement was distributed and students who consented to participate in the study were asked to complete the pre-simulation questionnaire. Both the pre- and the post-simulation questionnaires were anonymous, with each student allocated a code number, which allowed the results of the Likert-scale of pre- and post-simulation questionnaires to be compared. Students were asked to retain possession of their responses until they had completed the simulated learning experience. At the conclusion of the experience students completed the post-questionnaire on a clean copy and provided both questionnaires to the researchers.

The simulation session was designed to address some of the most fundamental skills of the discipline. The skills were selected based on the first year OT curriculum, feedback from placement supervisors and the knowledge and expertise of the developers of the project. Placement supervisors consistently reported that although students were receiving education that exposed them to these skills, they were not arriving at placement with the confidence and skill level deemed necessary to demonstrate them.

During the simulation session students were divided into five groups, each group consisted of six or fewer students. The students then rotated through five, 25 minute stations. One or more members of the Deakin OT teaching team facilitated at each station. A description of the tasks practiced at each station is provided in Table 3.

At the manual handling and interviewing stations staff members provided students with an overview of the activities they would be practicing, provided a demonstration (where appropriate) and then closely observed students practicing the skills. Opportunities for repeated practice, correction and reflection were provided. Students rotated through different roles (e.g., observer/interviewer at the interview stations and client/OT at the manual handling stations).

Based on the authentic learning literature (Maran & Galvin, 2003; Stein, Isaacs, & Andrews, 2006) two of the stations were developed to be less defined for students, requiring greater levels of independent and peer learning. These were the occupational health and safety and documentation stations. At the occupational health and safety and documentation stations students undertook activities independently using peer support. A staff member briefly outlined each activity for the students at these stations and checked whether the students had any questions then left them to complete the task.

Data Analysis

The data were analyzed using the SPSS (Version 21) software package (IBM SPSS, 2012). Means and standard deviations were calculated for each question in the pre- and post-simulation questionnaires. Two-tailed paired t-tests were applied to each question to establish whether there was a significant difference in pre- and post-questionnaire responses. Two of the researchers independently analyzed the responses to the open-response questions using thematic analysis and then compared findings to identify the dominant concepts within the response data (Rice & Ezzy, 1999).

RESULTS

Eighty-three first year OT students participated in the simulation sessions. Of those, 72 students consented to participate in the study. Sixty-nine students (83%) completed both the pre- and post-questionnaires with an additional three providing incomplete responses that were not included in the data analysis.

Scores from all 8 pre- and post-Likert scale questions were analyzed. Responses to each question were attributed the following values: strongly agree = 5; agree = 4; neither agree or disagree = 3; disagree = 2; strongly disagree = 1. Data met homogeneity of variance requirements and assumptions of normality. Two-tailed paired t-tests were applied to each question to establish whether there was a significant difference in pre- and post-questionnaire responses. The means, standard deviation, t-test scores and p values were calculated. These are presented in Table 4. Results indicated a statistically significant improvement in all of the eight questions following participation in the simulation session. Standard deviations also reduced in all post-questionnaire responses indicating a reduction in the variation of the responses that the students provided. This demonstrates that participation in the simulation session led to statistically significant improvements in the students' perceived abilities in a range of skills relevant to WIL experiences and practical examination.

TABLE 4: Pre- and post-simulation questionnaire results

Variable	Pre		Post		t score	p value
	M	SD	M	SD		
Q1. I have communication skills that allow me to introduce myself to a client effectively as an occupational therapy student	3.94	.511	4.18	.630	-2.88	.005
Q2. I am able to explain to a client, in an understandable way, what Occupational Therapy is	3.61	.574	4.28	.566	-7.91	.000
Q3. I have the communication skills required to build rapport with a client	3.78	.591	4.28	.539	-7.00	.000
Q4. I am confident that I can safely and effectively transfer a client from a bed (supine) to chair (seated)	2.93	.792	4.26	.560	-14.21	.000
Q5. I am confident that I can safely and effectively transfer a client from lying to sitting over the edge of the bed.	3.38	.859	4.28	.765	-7.68	.000
Q6. I have a sound knowledge of occupational health and safety principles that allow me to assess the environment	3.57	.776	4.07	.626	-5.41	.000
Q7. I have a sound knowledge of occupational health and safety principles that allow me to assess client's safety	3.39	.732	4.07	.577	-8.98	.000
Q8. I have the ability to write basic case notes after observing in an occupational therapy session	3.33	.761	3.84	.699	-5.41	.000

Responses to the post-simulation questionnaire open response questions provided the following data. Students reported that participation in the simulation session allowed them to develop skills and identify gaps in their knowledge. Many of the students identified that having the opportunity to physically practice and experience the feel of the tasks was of great value. One student wrote that it “allows us to practice for our prac exams but also allows us to build on and understand clinical experience”.

Many participants identified that they valued the opportunity to seek and receive feedback from the OT staff members who facilitated the session, reporting that receiving feedback one to one or in small groups was of benefit. As another student stated, “being able to get feedback in small groups has been very beneficial”.

Students reported that they felt more confident and less anxious following the session. As first year students approaching their first practical examination of OT skills and their first

WIL placement levels of anxiety were high. However participants reported that taking part in the simulation session had allayed this anxiousness to some degree. This is how some students expressed the experience: “the hands on experience has greatly improved my confidence in all areas”, “it was very useful to settle my nerves” and “very helpful at making us feel comfortable and relaxed feel so much better”.

Students consistently demonstrated links to their evolving identity as OTs in their responses. The data indicated that although students were only in their first year of study they were already beginning to see themselves as members of the profession. Participant responses provided evidence that students felt the simulation sessions gave them a greater understanding of the profession, reassured them that the profession was the career they wanted to pursue, and also demonstrated they were looking ahead to a time when they would use these skills in practice settings as evidenced by the following student quotes. “[for me it] put into practice knowledge and skills that can be refined for future applications” and “yes, I now feel confident, as well as having a greater understanding of what OT is”

Students expressed a desire to access more opportunities for active participation within the degree for example, “more time practicing” and “maybe have it [the simulation session] more frequently (this would be an advantage)”.

Others asked for increased preparation and feedback in relation to the station that focussed on documentation. The decision to limit assistance by staff at this station was based on the need for authentic learning activities to be at times ill-defined, and the high level of staffing required for interviewing and manual handling stations. However students requested “more information on the SOAP (a documentation process used in Health) [would be useful – we were], thrown in the deep end a bit”, and “I would have liked if someone went through the documentation with us, we were left alone the entire session, we don’t know if we did anything right”.

In response to the question: has the simulation session had improved your confidence for your practical exam and WIL experiences, 54 of 56 participants reported that it had. With students stating “very much so. I now have an idea of the skill required in manual handling/interviewing etc ... Thank you so much” and “yes I now feel confident as well as having a greater understanding of what OT is”.

DISCUSSION

This study’s findings support the limited literature that has advocated the benefits of simulated learning experiences in preparing OT students for WIL experiences (Billet, 2009; Cook & Cusick, 1998; Hanson, 2011). It has demonstrated statistically significant improvements in the students’ perceived preparedness for WIL and practical examinations.

Students in this study reported that following participation in the simulation they felt less stressed and nervous in relation to their upcoming WIL and practical exam. This supports the findings of Bennett et al., as cited in Rodger et al. (2010) where the participation of 95 second year OT students, in two 45 minute simulation sessions using a simulated patient, provided a statistically significant decrease in anxiety and an increase in confidence ($p < 0.001$). Stress and anxiety can be key factors that impact on student performance during the practical activities of WIL and practical examinations. A reduction in the influence of these factors may lead to improvements in performance of students and could subsequently contribute to the development of confident and competent OT students.

Feedback, one on one or in a small group, was highly valued by participants. Boud and Molloy (2012, pg. 4) define feedback as, “a process whereby learners obtain information about their work in order to appreciate the similarities and differences between the appropriate standards for any given work, and the qualities of the work itself, in order to generate improved work”. They state that feedback should ideally involve learners as active participants in the feedback process with feedback occurring at the time of learning experiences. The typical annual intake into the Deakin OT program is approximately 100 students and tutorial groups usually consist of 30 students with one, two or occasionally three teaching staff. This, by necessity, limits both the amount and the quality of feedback provided to individuals in some instances. The challenge for educators therefore is how to most effectively deliver such highly valued individualized feedback within the logistical constraints of typical higher education teaching.

The authentic simulated learning activity in this project appeared to be an effective milieu for the early emergence of professional identity. Students’ professional identity appeared to grow as they watched seasoned staff members demonstrate tasks such as the manual handling skills, (exposing them to the norms and principles of the profession) and then had the opportunity to practice the skills with their peers. This opportunity for observation, asking questions, practising, and receiving feedback, may also have targeted the varied learning styles that are likely to exist within a cohort of 100 students. A potential future direction for this simulation activity, which may further strengthen professional identity development, could see staff members demonstrating the initial interview for students. If this demonstration took place prior to students adopting the role of client for the interview they would also be afforded the opportunity to observe these skills in action, prior to practising them.

The simulation session also brought students together to participate in smaller sub-groups of their university-based community of practice thereby offering opportunities to strengthen the development of this community. Lave and Wenger (1991) describe communities of practice as the building blocks of a social learning system. They state that communities of practice consist of three main elements; *joint enterprise*, where community members are brought together by a shared understanding and accountability; *mutuality*, where mutual engagement leads to shared learning; and, *shared repertoire* which may include language, tools, stories or styles. The development of a first year OT community of practice is important because it supports peers to learn, grow and evolve as they progress from novices to advanced students. Such evolutions are supported by peer-to-peer interactions (such as the simulation session), which allow for comparisons to be made amongst peers and challenges to be confronted together, stimulating reflection, growth and a better understanding of strengths, weaknesses and skill set (Lave & Wenger 1991).

The nature of the activities involved in such simulation sessions may also limit the phenomenon of ‘practice shock’ that some students have been reported to experience on graduation when they move from a university based community of practice to a professional one (Sutherland & Markauskaite, 2012). By providing students with early hands-on experiences their insight into the real-life practice of an OT can begin. This can then be built upon in the subsequent three and a half years of the program to support the development of competent, work-ready practitioners.

Students in this project reported concern relating to the two stations where they were required to undertake some level of self-directed learning. As Herrington, Oliver, and

Reeves (2003) described, authentic learning activities should at times be somewhat ill defined in order to mimic real world situations. However, the findings of this study suggest that some students found these stations to be more challenging and less valuable as learning activities, than those tasks that were directed by OT staff. This may be due to the year level of the participants. As first year students experiencing novel exposure to a clinical environment their confidence in undertaking these independent or ill-defined learning activities was low. Although ill-defined situations and activities are a hallmark of the student WIL experience (Herrington et al., 2003) and are part of OT practice, it appears that direction and feedback from OT teaching staff may be warranted in order for first year students to gain maximum benefit from their learning experiences.

Limited insight into the importance of self-initiated learning was a recurrent theme across participant responses, as students requested more time and more frequent opportunities for simulated learning activities. Whilst this is a testament to the value of the simulation sessions, students did not seem to consider that they might increase their exposure to these practical tasks by independently undertaking self-initiated learning activities with their peers. There are, of course logistical, time and financial factors that impact on the number of simulated learning experiences that can be provided for students, however more importantly the development of OT students into self-directed, life-long learners requires students to begin to take responsibility for their learning needs, initiating independent practice of key OT skills.

This study has contributed valuable information to the fields of WIL, simulation education and research in OT. However there are a number of limitations. The research questions and associated simulation experience were specifically related to the Deakin first year OT curriculum, first WIL experience and practical examination. As such, these results are not highly transferrable to other settings. Further research on the benefit of simulation activities as preparation for later phases of OT education would also be valuable.

The researchers involved were known to the participants and whilst the principal researcher was not involved in first year teaching, participants were aware that she might be teaching them in future. This may have introduced some level of response bias. Attempts were made to control this factor by ensuring that responses were anonymous, emphasizing that participation was voluntary and that the results of the study or non-participation would have no impact on participants' progress and experience at Deakin.

The instrument used to measure responses was developed specifically for the project, as no suitable pre-existing instrument was available. Therefore, validity and reliability was not assessed other than the review of questions undertaken by co-authors prior to administration. However feedback from the participants' indicated that the questionnaire items were clearly understood and relevant to the simulation experience which supports the credibility of the tool. The instrument focused on perceived preparedness rather than actual performance. Further investigation regarding the influence of this simulated learning activity on actual student performance on WIL placement is required.

CONCLUSION

This study demonstrated statistically significant improvements in self-perceived skill level for first year OT students who took part in a simulated learning activity. The skills practiced were some of those that are considered most fundamental to the discipline of OT. Students

reported that they valued the opportunity for practice, preparation, and receipt of feedback, and demonstrated improved confidence and links to OT identity. Students strongly reported that the experience was worthwhile and requested additional opportunities for simulated learning activities. This study adds new and valuable information to the occupational therapy WIL literature by demonstrating the efficacy of participation in simulated learning activities.

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Research reports should contain; an introduction that describes relevant literature and sets the context of the inquiry, a description and justification for the methodology employed, a description of the research findings-tabulated as appropriate, a discussion of the importance of the findings including their significance for practitioners, and a conclusion preferably incorporating suggestions for further research.

Topical discussion articles should contain a clear statement of the topic or issue under discussion, reference to relevant literature, critical discussion of the importance of the issues, and implications for other researchers and practitioners.



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