Diggers Trail Wilderness Exercise (DTWE): A work-integrated experience for paramedic students

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The aim of this study was to examine the effectiveness of a simulated wilderness exercise in the development of navigation, wilderness response and trauma care skills in senior paramedic students. Lack of skill and experience in these fields has been identified by Ambulance Victoria as a limitation of Bachelor of Paramedicine courses. The DTWE, conducted in a wilderness landscape in Central Victoria, Australia, was developed to address this identified gap.

Qualitative and quantitative research methods were used, namely, focus group, field diary and self-report survey, to give voice to students’ perception of their learning facilitated by the field exercise (n = 60).

Results identified three main themes; new understandings of self and others within the team, of professional identity and of own strength and capacity. Quantitative analysis demonstrated that DTWE provided students with more opportunity to apply knowledge and skills when compared with clinical placement with an emergency ambulance service (p < 0.01). Participants considered DTWE to be an effective alternative to clinical placement with an emergency ambulance service (p < 0.01). The DTWE offered opportunities to experience a wilderness response simulation rarely available during traditional clinical placement.

Keywords: Simulation, paramedic, clinical placement, wilderness response, ambulance, navigation

INTRODUCTION

Paramedic education in Australia has undergone significant transformation over the last decade with the delivery of education moving from an in-house, post-employment model to a university based pre-employment model (Joyce, Wainer, Archer, Wyatt & Pittermann, 2009). The resultant increase in paramedic student numbers in higher education in Victoria has put pressure on Ambulance Victoria’s capacity to provide on-road clinical experience (Joyce et al., 2009). As such, one regional Victorian university is exploring alternative clinical placement modalities, particularly the use of simulated learning environments, a pedagogical approach found to realistically bring the workplace to the learner (Williams, Wong, Webb & Borbasi, 2011).

Simulated learning environments (SLEs) are considered to be a vital component in paramedic education. SLEs have been found to improve education across healthcare disciplines (Von Wyl, Zuercher, Amsler, Walter, & Ummenhofer, 2009; Williams, Brown, & Archer, 2009; Williams, Brown, Scholes, French, & Archer, 2010). SLEs have been found to offer safe learning environments for rehearsal of psychomotor, teamwork, communication and patient care skills (Williams & Dousek, 2012), proving useful in terms of skill transfer to real patient care (Boyle, Williams, Cooper, Adams & Alford, 2008). Although well evaluated educationally, there is little research into the use of SLEs as a replacement for real-time on-road clinical experience. One study evaluated video (DVD) simulations and found them to be educationally, professionally and clinically relevant, as judged by participating students (Williams, Brown & Archer, 2009). These authors suggested that DVD simulations have the capacity to replace some clinical placement rotations and should be integrated into standard paramedic curriculum. What is missing from the research literature is evaluation of real-time SLEs as appropriate replacement for on-road clinical experience.
Context of the inquiry

The ‘Diggers Trail Wilderness Exercise’ (DTWE) project was developed to address the gap in supply of on-road clinical placements for senior undergraduate paramedicine students at a regional university in Victoria, Australia. In consultation with practising paramedics, a range of simulated clinical scenarios, drawn from real cases, was developed. Key foundational skills in search and rescue, trauma patient treatment and patient extrication in remote settings were identified through targeted learning objectives. The three-day DTWE was a busy, challenging event. Students worked in teams of up to eight and rotated through at least three extended scenarios on the first day and up to six smaller scenarios on the second day.

The research arm of the DTWE project aimed to:
1. Evaluate students’ perceptions of the development of their clinical and other skills resulting from the DTWE clinical scenarios;
2. Determine students’ opinions of the value of the DTWE as a replacement for on-road clinical placements.

METHODOLOGY

A mixed method approach was used in this study, with qualitative methods of field diary and focus group being utilised to gain participants’ deep, rich explanations and descriptions, and a self-report survey to capture numerical data (Castro, Kellison, Boyd & Kopak, 2011).

Participants

The study sample comprised a convenience sample of 3rd year paramedic students (n = 60). Data were collected in 2012 and 2013. Overall, 71 students attended the field exercise with 84.5% (n = 60) consenting to participate in the study.

Qualitative data collection and analysis

Participants were invited to keep a field diary of their personal experiences. They were instructed to use reflective journaling, that is, to record what they noticed / experienced (discuss feelings and emotions) to make sense (analyse and evaluate) and to make meaning (action plan for future development). Focus groups were conducted approximately one week after the field trip, with all conducted over 60 minutes in groups of up to 12 participants. Focus groups have been found to encourage engagement from participants in terms of contributing their attitudes, priorities and framework of understanding in open conversation (Kitzinger, 1994). All groups were audio taped and conducted by a member of the research team not involved in the field exercise.

Preliminary thematic analyses of qualitative data were conducted in small teams. The data were then examined by the entire research team (authors) for evidence of variation and/or commonality of themes. Identified themes were found to occur across all focus groups.

Quantitative data collection and analysis

The survey was based on a tool developed by Boyle, Williams, Cooper, Adams and Alford (2008) to assess paramedic students’ clinical experiences during on-road clinical placement. With the permission of authors, the survey was adapted to assess and compare participants’ clinical experiences in on-road placements with simulated clinical experiences at the DTWE. Participants were required to rate their clinical experiences using a 5-point Likert scale; with 5 representing strongly agree and 1 strongly disagree.

Survey data were analysed with SPSS version 20, descriptive statistics, chi square and a two-tailed paired-sample T-test were used.
Ethics

Following receipt of ethics approval from the University’s Human Research Ethics Committee, all students who were scheduled to attend the DTWE were invited to participate in the study.

FINDINGS - FIELD DIARY AND FOCUS GROUPS

The text-based quotes below were taken from the full complement of participants. Minor corrections have been made to the quotes to enhance readability, namely, spelling and punctuation corrections, the addition of filler words (denoted by [ ]) and the omission of side issues (denoted by …).

Several themes emerged from the analysis of field diary and focus group data, with a particular theme of relevance to the current study aim being ‘new understandings - self-awareness within the team’.

New understandings: self-awareness within the team

The clinical scenarios were challenging with often time-critical events for teams to manage. Participants recognised the existence of competitive personalities in teams, the behavior of whom stymied accurate, reliable decision-making, reported with the following statement by one participant ‘… such big personalities and everybody… wanting to lead’ (Focus Group). The excerpts below, however, show the reflective nature of participants’ responses to this ‘chaos’ (Focus Group), a self-awareness of their potential role in team performance, and the need for tolerance with each other so that team goals were achieved. The excerpt shows a participant’s realisation that his/her natural inclination to act competitively and loudly in team decision-making was unproductive. In this incident, the team was faced with a difficult extrication of a sick child (manikin) and the urgency of the clinical situation led the team to argue over exit strategies.

I have a huge competitive personality and I am loud and everyone knows that but I decided to take a step back. I thought, for this to work I can’t be all the way up high… I decided to step back. … then I decided [to start] picking the points where I was going to have an opinion (Field Diary).

The participant below also reported her/his decision to change behaviour, in this case though, s/he spoke out with conviction in a situation where s/he would normally remain quiet.

… we all had really good communication and really good team work, but we didn’t have any strong personalities that really stepped up to the lead. We were like, “oh what do you want to do?” and taking a consensus. So I said, I’m not sure what everyone else is doing, but I know I can get us out of the bush … I know where we’ve been and I know how to get home (Focus Group).

Various participants reflected on how their team developed and re-shaped itself as the experiences and challenges continued throughout the exercise. A growing awareness and respect for teamwork is clear in the following excerpt where the participant notes that the team viewed itself as a collective from which various strengths could be rallied.

And yeah, in some shape or form we all, within our own groups, we all got to a point where we delegated roles to each other. We had our strengths and we played to them, which I thought was really good [for the] team (Focus Group).

Participants’ reported a new awareness of belonging to a community of health professionals, and the beginnings of professional identity.

For me it kind of felt like we were part of it … we are part of this developing professional community. Especially having ex paramedics [retired], current paramedics and people from the wider health care setting and military and all that. … even just with the students, it kind of made this little community, which I don’t know, creates a bit more sense of belonging in the [profession]. I felt like I was contributing to something (Focus Group).
FINDINGS - QUANTITATIVE DATA

The survey was completed by predominantly female participants (68%) enrolled in the paramedicine degree ($n = 41$).

Paired sample T-tests showed statistically significant differences in evaluation of clinical experiences in on-road placement compared with clinical experiences at the DTWE. Participants indicated they were given more opportunity to participate in patient care during DTWE when compared with on-road clinical experience ($p < 0.01$), likewise they experienced more valuable learning experiences ($p < 0.01$) and gained more constructive feedback from support staff ($p < 0.01$).

Compared with on-road clinical placement, clinical scenarios at the DTWE provided significantly more opportunities to develop knowledge and skills in navigation ($p < 0.01$) and wilderness response ($p < 0.01$), to select and administer pharmacological agents ($p < 0.01$), to apply drug dose calculations ($p < 0.01$) and to understand the application of the clinical approach in paramedic practice ($p < 0.01$).

Moreover, participants found the exercise relevant to their paramedic practice, and considered the DTWE an appropriate and suitable alternative to on-road clinical placement with an emergency ambulance service ($x^2$, $p < 0.01$).

DISCUSSION

Results from this study indicate that the real-time simulated learning scenarios at the DTWE enabled participants to engage in an authentic learning experience.

Through focus group and field diary, participants recounted their learning experiences and the development of self-awareness within the team, inclusive of their own capacity to make a contribution and professional identity. This finding confirms earlier research on real-time simulation, where learning in a controlled, structured and realistic environment was found to aid the development of collaboration, leadership and communication (Ker, Mole & Bradley, 2003; Boyle, Williams & Burgess, 2007).

Survey results confirmed the value of the learning experiences afforded by DTWE, with all participants reporting clinical scenarios to be relevant to their current clinical practice. Extension of clinical skills to the wilderness response skills of navigation, search and rescue, equipment familiarity and paramedic safety were strongly endorsed by participants as necessary adjuncts to their professional role. Early research by Kilner (2004) found these important attributes of paramedic personnel to be missing from paramedic curricula. The DTWE filled this gap in paramedic students' skill base.

Participants agreed that the DTWE was an appropriate and suitable alternative to on-road clinical placements. The DTWE offered clinical scenarios that prompted students to apply university learning and to also extend their learning to new cognitive and relational skills.

CONCLUSION

The ‘Diggers Trail Wilderness Exercise’ (DTWE) was developed to address the gap in supply of on-road clinical placements for senior undergraduate paramedicine students at a regional university in Victoria. A range of simulated clinical scenarios, drawn from real cases, was provided to students over the busy and challenging 3-day event. The research arm of the project found participants to highly value the cognitive aspects of their learning, such as foundational skills in search and rescue, trauma patient treatment, patient extrication in remote settings. Participants also valued relational aspects of learning in terms of self-awareness within the team, inclusive of their own capacity to make a contribution and professional identity. Participants judged the DTWE to be an appropriate and suitable alternative to on-road clinical placements.
Further research is needed to examine a range of SLE modalities and their outcomes. This would assist the development of effective alternative or adjunct clinical experience programs that enable graduate paramedic students to be well prepared for their future professions.

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