Live and Virtual: A Model for Taking the Classroom to the Field

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ABSTRACT

Educating law enforcement officers for the volatile, complex environment in which they operate challenges educators to provide timely, effective, relevant, cost efficient training solutions. Developing training programs which build key skills for problem solving whilst situating the learner within their field of operation offers a solution to the fiscal, human resourcing and education key performance indicators across a range of security and emergency service professions.

The traditional approach to education and training in these core domains has often seen the siloed classroom learning separated from the practical field based experience. This paper presents the design and evaluation of a training program which leverages on the affordances of portable technology to take the classroom to the field.

In late 2015 two cohorts of New South Wales Police Force Officers participated in a four day training program and evaluation study. The results indicate that participants registered 100% agreement that the simulation scenarios were realistic, immersive and contributed to building their confidence and capacity for developing the core skills critical for problem solving in their operational practice. The evaluation identified the simulation exercises were central to the transfer of knowledge acquisition to field based application. From a management perspective the cost efficiency of the program whilst achieving positive learning outcomes has validated the roll out of the program more widely across the 16,500 member organisation.

The design framework for the program based on portability and distributed simulation based learning exercises offers opportunity for application for training domains beyond the policing world. The learning delivery design is replicable in part or in whole to optimize contextualization of field based education programs. The design will have resonance; in particular for organisations where highly refined problem solving skills are essential in the often complex, unpredictable and volatile reality of the operational environment.

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BACKGROUND

Universally, organisations continue to define and refine the design of education and training programs for field based operational staff. A key challenge for organisations is balancing the training demands to maintain currency and optimize learning opportunities with ever present fiscal and logistical considerations. A pivotal consideration is to develop learning experiences which aid the transfer of learning from the 'classroom' to the field of operation. The affordances of digital technology are continuing to support innovative learning delivery designs to meet the goals and expectations of learners, trainers and organisations. The NSW Police Force Management Programs Unit sought to resolve this balancing dilemma in the design of a leadership training program which scaffolds on simulation based learning exercises delivered through portable technology. This paper discusses the training delivery design and the role of the simulation features in aiding the transfer of learning from the classroom to the field of operation.

Training Program Design

The 'Take the Lead' training program is 4 working days in length divided into back to back Day 1 and 2, followed one month later by Day 3 with Day 4 is undertaken a further eight weeks after Day 3. The learning objectives for the course are the development of officers' confidence and competence in application of a combination of skills for problem solving in the field. Participants are drawn to a central location within the officers' work based territory. The cohort numbers approximately 20-22 operational police officers who are divided into four groups in the training environment. The learning delivery design for Days 1 and 2 comprises sessions of initial knowledge acquisition and activities enabling application of learning followed by two simulation-based scenario exercises. It is the simulation-based learning exercises which are the focus of this paper and specifically the relationship between the portable simulation based exercises and the sense of realism, engagement, immersion and learning transfer experience by the learners.

Appreciatively, there are elements of the simulation based learning in the Take the Lead program which resemble established recognized delivery models. The 'desktop' technology based scenario is a well-established learning tool (McCoy, et. al., 2015) and provides the basis of the portable simulation model discussed here. Similarly, the concept of collaborative group work using technology enhanced learning tools, such as simulated scenarios is not unique (Jeong & Hmelo &Silver, 2016).The point of difference with the model under discussion here is its portability and simplicity whilst at the same time offering an authentic situated learning experience which participants identify immerses and engages the learner. The specific feature of the product which sets it apart from its predecessors is the bespoke live streaming of elements as the simulated incident unfolds, individualised for each group dependent on the groups' decision- making during the exercise. The individual groups whose members maintain their operational policing role in the simulation exercise are placed in separate locations in the training venue, and provided with a laptop. One of the benefits of the training design is the limited equipment and venue requirements – a set of 5 laptops, a training room, and two trainers. The preference is to create distance between the groups so that they do not interfere or disturb each other. The model allows for scaling to increase or decrease cohort numbers and by default, groups. Figure 1 depicts the portable environment under discussion in this paper.

Additional monitoring of a team's progress is offered via digital devices (in this case, I-pads) for subject matter experts and/or additional trainers to observe the individual team members and the team work. From the central laptop the instructor forwards (feeds) via the internet (Wi-Fi) a live streaming policing incident scenario. As the policing scenario unfolds the instructor is able to customize the feeds to each group dependent on the actions/ decisions taken by the group to resolve the policing incident. The 'feeds' of information are comprised telephone calls, text messages, media broadcasts, police radio calls, all of which simulate a 'typical' incident as it would

unfold in the reality of a police incident response. Two trainers monitor the groups and process the live feeds, the live feeds having been pre- recorded and stored ready for release if and when required.

Figure 1 Portable training environment

At a selected time the exercises are brought to a halt and the officers participate in an exercise debrief aligned to the prior learning/knowledge acquisition objectives. Two separate simulation exercises were included in the evaluation, the first a Domestic Violence incident response followed by a community emergency of rising flood waters. The participants work as they would in their real time police roles to manage the police response presented by the scenario making decisions as they would in the field. An example drawn from observation of a group during evaluation aids visualizing the exercise: As the scenario begins to roll out on the laptop, the group discusses the key features of the event, determining the potential resources required and the order of initial actions. At this point if the group identifies they require further information regarding what prior knowledge is known about the occupants of the house (Domestic Violence response), the instructors monitoring that group may choose to live feed a police radio call into the scenario to offer intelligence held by police records on the location and/or occupants of the house.

The monitoring of the group/s decision making process, their use of communication and establishment of their approach to the scenario and how these align with the prior knowledge acquisition session provides the reference points for the debrief of the exercises by the instructors. There is no formal assessment attached to the exercises, the purpose is to enable opportunity for the officers to apply their learning and understand the consequences of their decisions and actions on the progress of resolving a policing incident. Following the debrief, the group/s are presented with a second simulation-based learning exercise the focus of which is to provide opportunity for the participants to reflect on the feedback on their earlier performance and build their confidence and competence in the application of their learning.

Of note is the purposeful instructional design of the scenarios and their associated delivery. The problems are, from an instructional perspective ill-defined. This design choice is reflective of real world, unpredictable and often chaotic policing incidents. There are no pre-determined absolute correct actions for the teams to apply. A fundamental policing response approach to the incidents in the scenarios is anticipated, it is the decisions and actions which are associated with the approach which vary from team to team. The pre-built bank of data (e.g. phone calls, police radio calls, media announcements) which can be live streamed to a team as it takes actions is designed to accommodate the potential variations.

The design approach adopted for the program has two central learning tenants. Firstly, the inclusion of opportunity for participants to 'practice' and apply their knowledge acquisition in a simulated policing situation. This approach is cognizant of the underpinning concepts of situated and authentic learning in providing learner experiences which are contextualized and reflective of real world application (Brown, Collins, & Duguid, 1989; Burden & Kearney, 2016; Eiseman, 2001; Herrington, Oliver, & Reeves, 2003; Herrington, Reeves & Oliver, 2014; Ke, Lee & Xu, 2016; Sharma & Bains, 2015). As suggested by Eiseman (2001, p. 1)

> …situated learning advocates a greater recognition of the importance of context in learning, arguing that learning embedded in relevant context, provides both motivation for learning, and in particular heightened learning outcomes. Of particular focus in situated learning is learning for the acquisition and development of the knowledge, skills and attitudes required for professional practice.

Secondly, the notion of reflective practice (see Rodgers & LaBoskey, 2016; Husebø, O'Reagan & Nestel, 2015) is embedded in the design approach for the learning experience. The simulation-based learning exercises offer the participant the opportunity to reflect-in-action. This concept is explained by the seminal work of Schön (1983) as the learner continuously reflecting on their actions in order to modify/adjust their next action. The latter work of Dewey (1916, p.107) offers the suggestion that reflection is about connecting what went before, what comes after and reflecting in the moment of activity, thereby influencing future activity.

Whilst the design concepts of the simulated learning exercises and the program in its entirety resonate with educational best practice it lies with the evaluation of the design and delivery of the program to validate the learning approach.

EVALUATION

This paper presents a component of the evaluation study conducted with the first two iterations of the Take the Lead Training program. The evaluation design was premised on the following:

1. to develop an understanding of what new knowledge was learned;
2. to develop an understanding of what skills were developed or improved;
3. to develop an understanding of the impact of and transfer of the training on an officers field based practice; and
4. to develop an understanding of the elements of the training program which support transfer of learning from the classroom to field based application.

To consider the educational value of the portable simulation environment approach it is appropriate to understand the participants' view of the realism of the simulation exercises and their subsequent engagement and immersion experienced in the simulation environment. Consideration of the influence of the simulation exercises on operational practice provides contextualization of the subsequent participants' view of the influence of the learning experience of the transfer of learning to operational practice.

Methodology

A mixed method approach to data collection for the evaluation was applied. The rationale for employing both qualitative and quantitative data collection methods is founded on the concept of triangulation of data collection by Erzberger and Kelle (2003). The qualitative methods offering the potential to give voice to the participants' experience and richness of meaning and more explicit understanding of the impact of the learning experience (Miles & Huberman, 1994). Incorporating qualitative and quantitative data enables validity of the findings to be established through comparing and cross checking the findings from one collection method with the other (Bryman, 1988; Denzin & Lincoln, 2008).

Data Collection Tools and Process

The data collection tools and process included two online surveys and two interviews (one for participants and one for the participants' supervisor/s) as presented in Table 1. Participation in the research project was voluntary in compliance with Human Ethics in Research protocols. The inherent fluent nature of police officer postings/deployment often impacts on participant availability to complete surveys and or participate in interview. As indicated in Table 1 the potential participation rate is higher than the actual participation rate due in the main to (a) voluntary nature of participation in the research; and (b) the staff movements at the time of the evaluation – the time frame coinciding with the summer holiday period. Whilst the reporting here is considered preliminary in nature due to the limited numbers, the data is invaluable in providing key indicators for the future development and application of the portable simulation-based learning program.

The data collection provides in the main for the capture of the participants' experience, quantitative measurement of the effectiveness of the training in terms of transfer of learning to the field was not captured in the data collection design. The interviews conducted with the participants' field based supervisor/s contributed to the qualitative measurement of the demonstrated transfer of learning.

Table 1 Data Collection Tools and Process

TOOL	DESCRIPTION	RESPONSES	
		Group 1 *n*=20	Group 2 *n=22*
Survey 1	An online survey, (Survey monkey™) completed after Day on return to the field and two weeks prior to participating in Day 3. The rationale for the timing was to allow the participants to respond to the survey from an informed field based perspective whilst at the same time preparing them for the Day 3 training. The survey comprised Likert Scale and open ended questions. This survey focused on the participants' learning experience from both the knowledge acquisition and the simulation-based learning exercise components.	8	16
Survey 2	An online survey, (Survey monkey™) six weeks post Day 4 of the training program. The survey comprised Likert Scale and open ended questions. This survey focused on the Day 3 and 4 learning experience of the participants. The survey included questions which sought to understand the influence of the program on the participants' current operational practice.	8	16
Interview 1	Semi-structured interviews with participants 8-10 weeks post Day 4 of the training program. These field based interviews were designed to inform on the transfer of learning from the program to operational practice.	8	16
Interview 2	Semi-structured interviews with participants' supervisors 8-10 weeks post Day 4 of the training program. Field based supervisors of participants were interviewed to understand, from an organisational perspective, the influence of the program learning on the participants and their colleagues.	3	2

DATA ANALYSIS

To contextualise the respondents' identification of the elements of the simulation which contributed to creating a realistic, engaging and immersing environment it is valuable to acknowledge to what extent the participants agreed these three elements were experienced. As indicated in Figure 2, 100% of the respondents from Groups 1 and 2 were in 100% agreement that the simulation exercise was realistic and created an environment which engaged and immersed them in the exercise.

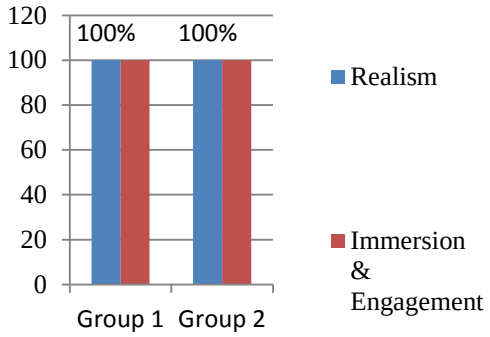

Figure 2. Level of Realism, Engagement and Immersion

Realism Elements

The following data has been collated from the responses to survey questions designed to capture the elements the participants considered contributed to the realism of the Simulation 1 – Domestic Violence and Simulation 2 Flood Emergency. The responses from Groups 1 and 2 have been combined in Tables 2, 3, 4 and 5. Interestingly the elements and the participants' comments associated with the identification of the elements reveal a set of common themes across the two groups and the two simulations.

The key elements which participants identified as contributing to the realism of the simulation were: the scenario depicting a situation acknowledged as typical of situations in the real world of policing; the visual and more specifically the audio feeds and the timing of such feeds; and the unfolding of the scenario and accompanying audio feeds occurring in real time. These key elements were consistent across Simulation 1 and 2 as indicated in Tables 2 and 3.

Table 2 Realism Elements for Simulation 1

Realism Domestic Violence Simulation		
Element	**Group 1 (*n*=20) Number of responses**	**Group 2 (*n*=22) Number of responses**
Realistic scenario replicates 'normal' everyday policing incident responses	7	16
Example comments: *Reality based scenarios directly related to our duties (Participant 1); It felt realistic because of the visual effects/video of the situation unfolding plus the phone ringing with updates of the changing scenario (Participant 3); Common DV job experienced by frontline police (Participant 2);*		
Visual aspects and phone calls replicate real jobs and how it occurs in the field	8	15
Example comments: *Having the visual aspect and using the radio an phone calls as well as breaks in the simulation along the way as opposed to being fed all the information at once is how it happens in the field provides a real life situation where information does not come all at once but is 'fed' in just as it happens in the field (Participant 9);*		
Timing of 'feeds' realistic	8	16
Example comments: *It felt realistic because of the visual effects/video of the situation unfolding plus the phone ringing with updates as we worked through, this is how it happens in the real world of responding to incidents (Participant 12);*		

Table 3 Realism Elements for Simulation 2

Realism Emergency Flood Simulation		
Element	**Group 1 (*n*=22) Number of responses**	**Group 2 (*n*=20) Number of responses**
Realistic scenario relates to prior experience	5	10
Example comments: *I was able to imagine being in the actual situation again being reminded of previous similar jobs I have attended (Participant 14); It related to a previous real life experience attending as the officer at a flood emergency (Participant 25); Bega has had many flood situations and this scenario is not uncommon (Participant 13);From my past experience with floods as a Police Officer I was aware of what actually occurs during such a situation in real life and this scenario was reflect of this.*		
Visual aspects and phone calls replicate real jobs and how it occurs in the field	8	12
Example comments: *Having the maps and the simulation feeding very realistic phone calls, this is what happens in my work(Participant 29);*		
Timing of 'feeds' realistic	8	12
Example comments: *The continual updating and feeding in of changing conditions is just as it happens in the field (Participant 9); very realistic the live feeds, first-hand information, staff roster and maps provided (Participant 21);*		

Engagement and Immersion

There is a wealth of literature dedicated to discussion of the definitions for presence and immersion in virtual and or simulated environments. In this study, the use of the terms engagement and immersion was purposeful as they are recognizable by the participants. To avoid any confusion and potential distortion of the data, the term presence and the associated collection of participants' experience of presence was not included. It was determined critical to understanding the participants' simulation experience to also understand their perception of immersion in the simulated environment. Dede (2009, p. 66) suggests a helpful definition of immersion as:

> Immersion is the subjective impression that one is participating in a comprehensive, realistic experience ... immersion in a digital experience [for example, Simulation 1 and 2] involves the willing suspension of disbelief, and the design of immersive learning experiences that induce this disbelief draws on sensory, actional and symbolic factors.

Similarly Sadowski and Stanney (2002) suggested that the feeling of immersion, whether physical or psychological in nature, offers opportunity for the user to engage with the sense of belief that they have left the real world and are now present in the virtual or simulated environment. The design of Simulation 1 and 2 offers an alignment with the concept of immersion as proffered by Witmer and Singer (1998, p. 227) who concluded that::

> Immersion is a psychological state characterized by perceiving oneself to be enveloped by, included in, and interacting with an environment that provides a continuous stream of stimuli and experiences.

The comments provided by participants in relation to their experience of engagement and immersion in the two simulation environments indicates an alliance with the concepts as offered by Sadowski and Stanney (2002), Witmer and Singer (1998) and Dede (2009). Tables 4 and 5 present the core elements identified by the participants as influencing their sense of engagement and immersion in the simulation environments as: the realism of the scenario; visual and audio features; timing of the audio and information feeds; ability to work collaboratively in real time; and for some their prior experience in real time situations represented in the simulation exercises.

Table 4. Engagement and Immersion in Simulation 1

Engagement and Immersion Domestic Violence Simulation		
Element	**Group 1 (*n*=22) Number of responses**	**Group 2 (*n=20)* Number of responses**
Realism of the scenario and environment	8	16
Example comments: *The entire scenario, as I regularly work alone I could imagine myself doing what the officer was doing as I watched the officer walk up to the door (Participant 4);*		
Visual aspects, phone and radio calls	8	16
Example comments: *The video and audio clips such as the radio calls coming in and the phone calls were very good at keeping me engaged and immersed in the task (Participant 28);I felt engaged with the visual element of the scenario unfolding in front of the group e.g. knocking on the door and then seeing the father sitting drinking, all real life confrontations for police (Participant 5);*		
Timing of 'feeds' realistic	8	16
Example comments: *Having the live feeds gives the impression you are actually there dealing with the job first hand (Participant 6);*		
Being able to talk face to face with the team	4	8
Example comments: *Being able to discuss the job with my fellow officers face to face makes it real and expedient (Participant 9)*		
Working in an unfamiliar team	2	7
Example comments: *Working in a unfamiliar team keeps you on your toes and engaged it what is unfolding and the discussion and decisions*		

Table 5 Engagement and Immersion in Simulation 2

Engagement and Immersion Flood Emergency Simulation		
Element	**Group 1 (*n*=22) Number of responses**	**Group 2 (*n=20)* Number of responses**
Real time experience of similar situations	7	16
Example comments: *As I have had previous experience working in emergency management I felt engaged as I could relate to the job (Participant 22); It reflected what actually happened in our Local Area Command in 2010 giving a real world context which was engaging and I immersed myself in the simulated job (Participant 29);*		
Visual aspects, phone and radio calls	8	16
Example comments: *This made it more engaging because you had to listen, absorb and reflect on the information being conveyed (Participant 9);the visual and audio affects gave a real life feel like a real life situation unfolding and what can occur that causes extra problems if everything is not covered e.g. the children to be collected by their parents rather than take by a bus to another area (Participant 30);*		
Situational changes	4	10
Example comments: *The live feeds added a realistic time frame to the situation and how the situation changes (Participant 4); how things kept changing you had to keep engaged (Participant 15); the way other policing jobs kept coming in while we were dealing with the main scenario, it is just as it happens at the station and you get immersed in it (Participant 19);*		

It is noteworthy that in response to the survey questions seeking suggestions for changes to the mobile simulation exercises and environment to enhance realism, engagement and immersion there were nil suggestions. Comments in response to the question were of a supportive nature towards the simulation exercises and environment.

TRANSFER OF LEARNING

As indicated above an aim of the research was to develop an understanding of the influence of the simulation exercise experience on the operational practice of the participants. Two data collection tools, Survey 2 and the field based interviews provided a depth of data from which to draw conclusions as to the influence of the mobile simulation learning environment on professional practice.

The respondents commented in respect of the influence of the learning experience on the three core skill areas. The level to which the respondents agreed the simulation exercise influences the transfer of learning to operational practice is presented in Figures 3 and 4.

The chief influence related to building confidence in the three domains and by default increasing preparedness to step forward as a leader.

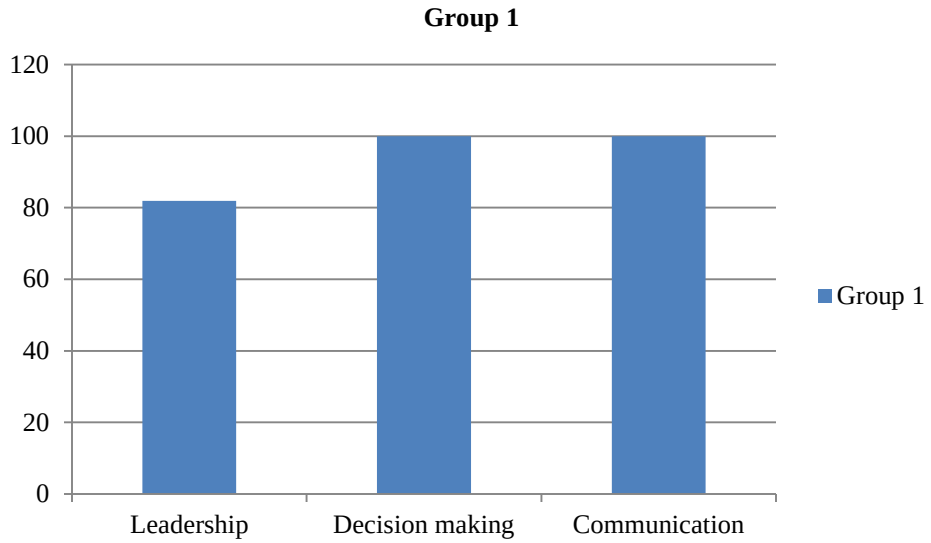

Figure 3. Level of Agreement the simulation develops and influences transfer of learning to operational practice Group 1

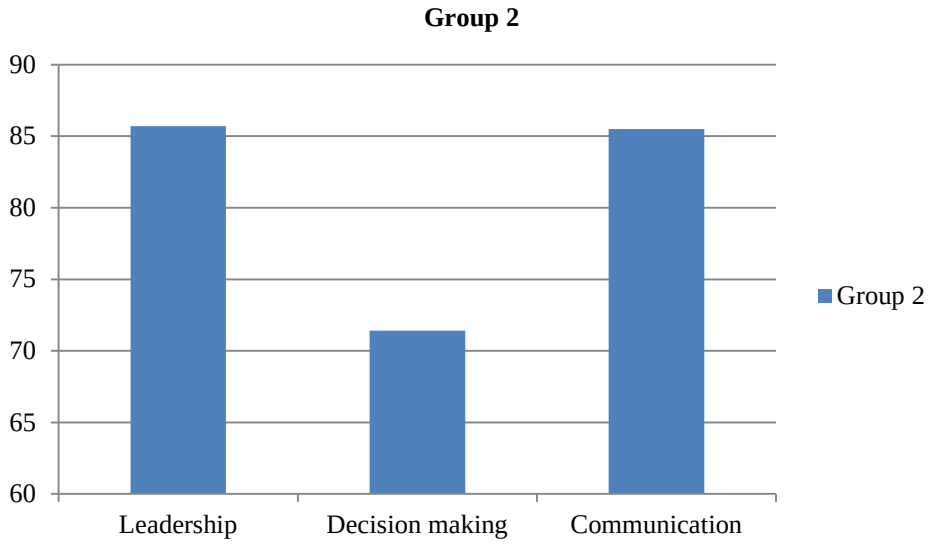

Figure 4. Level of Agreement the simulation develops and influences transfer of learning to operational practice Group 2

It is helpful here to provide an explanation of the lower response rate for Group 2 in relation to decision making. A level of 71.42% was recorded for the positive influence for learning experienced by the respondents in relation to the desktop exercises focused on decision-making. Two respondents (28.5%) suggested the exercises did not add to

their learning in this domain. Table 6 offers a sample of the comments participants offered in explanation of the manner in which the simulation exercise learning experience has influenced their operational practice.

Table 6 Operational practice areas influenced by the simulation exercise learning experience

Increased leadership initiative • *Learned to be more positive, direct and proactive;* • *I have sought out to be a leader in ways that I would not have previously;* • *I now am more likely to assume a leadership role rather than allow someone else to;* • *Through my learning I have been more confident to lead and make decisions* • *I am more focused on leadership now and will continue to use what I have learnt*
Leadership of team members and junior staff • A little more positive towards work mates, • Working with my peers strengths to utilise the and myself to best accomplish tasks;
Reflection on own leadership style • More mindful of how people process information and therefore the style you need to lead with; • Look for strengths of team members to help with weaknesses of myself

Field Supervisor Assessment

An important source of data offering validity to the participants' perception of their development of communication, decision-making and leadership skills is the perspective offered by their field based Supervisors. Further, the Measurement of the application of these skills by the participants centred on the interview responses provided by their respective Supervisors.

The Supervisors were unanimous in their identification of the increase in the demonstrated skill base in all three domains displayed by the participants on their return to the filed post training. The following comments from three independent Supervisors offer examples supporting this perspective:

> …It is very clear that participants are more confident to step up and volunteer to take leadership roles for both simple and complex tasks. To date these have resulted in good organizational outcomes;
>
> …My staff who undertook the course are demonstrating more confidence in their decision making and this is influencing their increased leadership competence.
>
> …the course has had a range of positive impacts for my staff, not only are they personally demonstrating an increase in the leadership capacity they are also mentoring more junior staff in a similar manner and this is resulting in an increase in skill base for the team more broadly.

CONCLUSION

The data presented from the learning experience of Group 1 and 2 participants in the Take the Lead Leadership development program indicates the design concept for the portable simulation learning program provides an immersive, realistic learning environment. Further, such environment aids the development and transfer of learning to the field of operational practice. Whilst the concept of mobility/portability in the simulation based learning arena is not new, it is the unique nature of the live streaming feeds into the 'desktop' scenarios, bespoke to individual groups which is both innovative and a pivotal element in achieving realistic authentic situated learning experiences. As indicated previously, the research presented is preliminary in nature due to the low return numbers for surveys however, in 2016 the roll out of the program more widely across the NSW Police Force organisation with a simultaneous evaluation program was commenced. The data from the 2016 evaluation is anticipated to endorse the findings presented here and further validate the innovative approach to field based training which is financially and logistically expedient whilst maintaining educational rigour and learning outcomes. Importantly, an increase in research participant numbers will be included and a measurement of field based outcomes utilizing both quantitative and qualitative data collection tools. The portable design is replicable and scalable for practice based, field based education and worthy of consideration in the wider education and training community.

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