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SIMULATION-BASED TRAINING – EXAMINING NEW APPROACHES TO 'BUSHFIRE BEHAVIOUR' TRAINING

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Introduction

The aim of this research is to understand how simulation-based training improves the training possibilities and workplace outcomes for bushfire fighters. The focus is on the work of trainers, at the Department of Sustainability and Environments (DSE), who are developing their practices with a new training tool, the 'bushfire simulator table'. This simulator table was first developed by trainers at QFRS[1] and is a portable, adjustable table that allows the demonstration of the effects of fuel, weather & topography on bushfire behaviour, the principles of combustion and the science of fire components. This research focuses on the early adoption phase of this new training tool in the General Fire-fighter course.

Literature supporting simulation-based training in complex workplaces

Fighting bushfires is a complex work environment characterized by high stress, often ambiguous situations and dynamic working environments. Providing effective training for those who work under these time pressured, and often dangerous situations, is a critical challenge for the fire-fighter training sector. Simulation-based training provides unique opportunities to improve learning outcomes for training in these complex workplaces.[2] Empirical research has demonstrated that simulation-based training provides effective outcomes for building:

- New knowledge and skills
- Team building skills
- Situational awareness
- Complex skills

Not a panacea – whilst simulations offer great potential, a number of challenges for effective training remain, as well as some critical gaps in what the research tells us about simulation training. Some of these gaps provide the focus for this study and these include ….

• better understanding of the effective use of the new tools (the pedagogic design),
• how this changes the curriculum, teaching practices and the learning outcomes,
•how trainer knowledge and skills develop when using new training tools, and
•how to measure the changes in worker performances after training.

A conceptual framework for studying 'simulation' design. This table provides the first three of the six major phases for instructional design required for effective simulation-based training. The first row presents the three phases, the second row provides a summary of the major points for each phase and the third row provides a summary of preliminary findings , i.e. how the trainers effectively used the training tools, how it improved upon traditional methods and the new learner outcomes. N.B the results for the remaining phases (monitor, diagnose, adapt instruction) will be included in further research publications.

Phases	1. Instructional goals triggers effective learning strategies & motivation	2. Present information	3. Develop practice environments
Major points	•Ability of trainers to elaborate instructional goals to learners, leads to effective learning and motivation. •The importance of connecting with prior knowledge and making the material relevant to learners.	•Ability to demonstrate exemplary problems and scenarios to build learner knowledge of domain. •Opportunities to incorporate scaffolding to enhance learner performance. •To guide trainees acquisition of knowledge as well as involve and motivate the trainees.	•Skill development is enhanced when learners' are provided with a realistic context to practice targeted material. •Authentic representation of the real phenomena helps to meet learning objective. •Scenario building around specific phenomena provides a chance to practice knowledge & to test/challenge principles.
Prelim. findings	•Changes in group dynamics lead to more opportunities for learners to 'air' knowledge & background. •'Table' presented triggers for trainers to provide clearer articulation of goals. •Higher levels of learner motivation leads to trainees connecting the content to their prior knowledge.	•Effective demonstrations of problems /scenarios lead to improved trainees' knowledge of 'fire ground' scenarios. •Multiple approaches are used to build knowledge about fire components & 'combustion' concepts. •Higher levels of learner activity /motivation lead to better learner' outcomes.	•Learners experience a range of 'simulated' fire suppression techniques. •Use of 'simulated' fuel, weather and topography provides scope to examine the effects of the physical phenomena. •Learners demonstrated better understanding of the principles of fuel, weather, topography.

Hot News

Since the first 'table' session in late 2008 , developments with the table has included.....

• 37 DSE trainers undertaking 'table' training and gaining presenter accreditation,
•40 US trainers/fire-fighters undertake initiation workshops at the DSE,
•'Table' designers presented on the ABC's 'New Inventors',
•DSE Fire training division nominated for the 2010 Victorian Fire Awareness award, based on this initiative,
•Awarded 'Best demonstration' at the Victorian Emergency Awareness show and
•'table' used in wider training/education; e.g. Ops. officer training, refresher courses, community education program.

Building confidence and knowledge

This research provides an evidence-based approach to understanding how simulation-based training improves performance. Whilst there is a growing body of research in this area, little is known about the how simulation training actually works. By building this evidence-base, this research contributes to building confidence and know-how for trainers and organisations within this industry. Specifically, the findings of this research provides knowledge about trainers capabilities and training rationales; models for best practice and how contextual factors, like curriculum and trainer roles, shapes training approaches.

References **1.** QRFS – Queensland Fire and Rescue Service; 2. Cannon-Bowers & Bowers, 2010.

Want to know more?
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