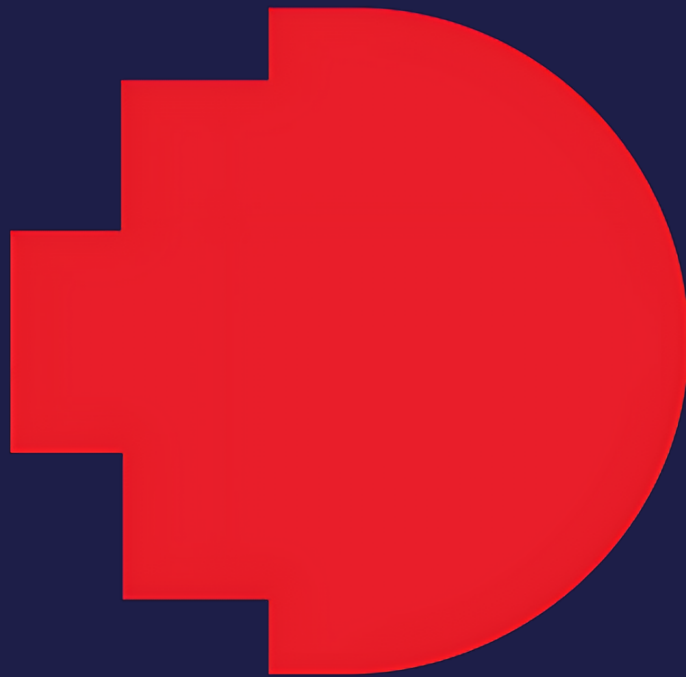


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**Conversations about life, health, and safety:
Social supports for young construction
workers' health and safety**

Research to practice report



**Construction Work Health and Safety
Research @ RMIT**

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Young construction workers need support

The Australian construction industry is facing a serious shortage of skilled workers, threatening its long-term productivity and performance. Completion rates for construction apprenticeships are falling, with national data showing only 54% of trade apprentices commencing in 2017 completed by the end of 2021, and one in three dropped out in their first year [1]. Having good interpersonal relationships at work has been identified as an important factor in apprentice retention and training program completion [2].

Some young workers experience bullying in the workplace [3] and are reluctant to report this behaviour when it occurs [4]. This has also been linked to suicide and it is noteworthy that 15-24-year-old construction workers are 2.39 times more likely to die by suicide than young Australian men [5].

Young workers are also a high-risk group for work-related injury. National data show that between 2016-17 and 2020-21, the number of serious claims (involving total absence from work for one week or more) for Australian apprentices and trainees increased by 41%, even though the number of apprentices and trainees increased by only 13% [6].

Positive communication in the workplace not only enables effective learning of skills, but it is also important in creating workplaces in which young workers' health, safety and wellbeing are protected. Apprentices who feel supported are more likely to complete their apprenticeships [7].

Supervisors play a particularly important role in shaping workplace health and safety learning and behaviour [8]. Moreover, when supervisors are perceived to be unapproachable, young workers are more likely to take safety risks at work.

“Fostering a culture of open and effective communication is vital to maintain safe and healthy workplaces in the construction industry. Our goal is to support innovations that will positively impact the construction industry and particularly young workers and apprentices, who are at more risk of sustaining workplace injuries.”

– icare General Manager, Segments,
Surayez Rahman

Poor communication in the workplace has been consistently identified as a contributing factor to the high attrition rate among apprentices and young workers' experiences of workplace safety incidents and mental ill-health. To address these issues, we developed a digital role-playing game (RPG) designed to improve communication between young workers and supervisors.



Figure 1: A screenshot of the digital role-playing game

A communication training tool

The training tool we developed is a digital role-playing game (RPG) in which the player makes communication-based decisions on virtual construction sites. Within the game, players are able to experiment and learn valuable lessons about how to interact with others in the workplace to achieve positive work health and safety outcomes.

The RPG is comprised of three scenarios which focus on different learning goals. Every scenario has several possible outcomes, some positive and some negative. These outcomes are determined by the decisions of the player and every outcome is designed to demonstrate the importance of good communication at work.

Each scenario has its own cast of characters, portrayed by actors who were animated using motion capture technology. The RPG can be played on any computer or mobile device, such as a phone or tablet.

Role play is a well-established approach to developing interpersonal skills, including being able to initiate potentially difficult conversations and recognising the emotional impact of an interaction on oneself and others. Digital RPGs can help to improve communication and have been used to train people whose work sometimes involves having difficult conversations (e.g. medical professionals) [9].

There are several benefits of using digital game-based training over traditional training approaches. Digital games can be powerful learning tools for young, digitally literate learners, who are accustomed to a media-rich environment for communication and information processing [10]. Moreover, digital game-based learning can create stronger emotional, cognitive and behavioural connections with training content, increasing participant engagement and improving learning outcomes [11].



Figure 2: An example of an apprentice RPG decision

Every scenario involves making decisions for both supervisor and apprentice characters, encouraging players to understand communication from the perspective of both roles.



Figure 3: An example of a supervisor RPG decision

1. AGAINST THE GRAIN

Assertiveness & approachability

2. ALL DUE RESPECT

Emotional intelligence & empathy

3. THIS TIME IT'S PERSONAL

Negotiating work/life boundaries



Figure 4: Scenario names and learning goals

Participatory design

In order to ensure that the RPG effectively addressed end-user needs, it was created using a participatory design approach. During the first stage, 41 interviews were conducted with NSW construction workers (30 with apprentices and 11 with supervisors). These interviews identified characteristics of effective communication for both apprentices and supervisors, shown in Figure 5.

These characteristics became the learning goals of the RPG. For example, participants identified that supervisors' approachability is important for apprentices who may not be confident in asking for help or additional guidance. Participants also identified respect and civility as critical to creating a work environment in which young workers can learn effectively. Anecdotes from the participants were incorporated into the stories of the three scenarios.

Construction apprentices and supervisors were consulted throughout the RPG development to ensure the accuracy, relevance and realism of the scenarios.

"He's pretty easy to talk to and an approachable sort of a man. A couple of times, when I got confused on safety or just general stuff...he just explains it again, nice and thoroughly."

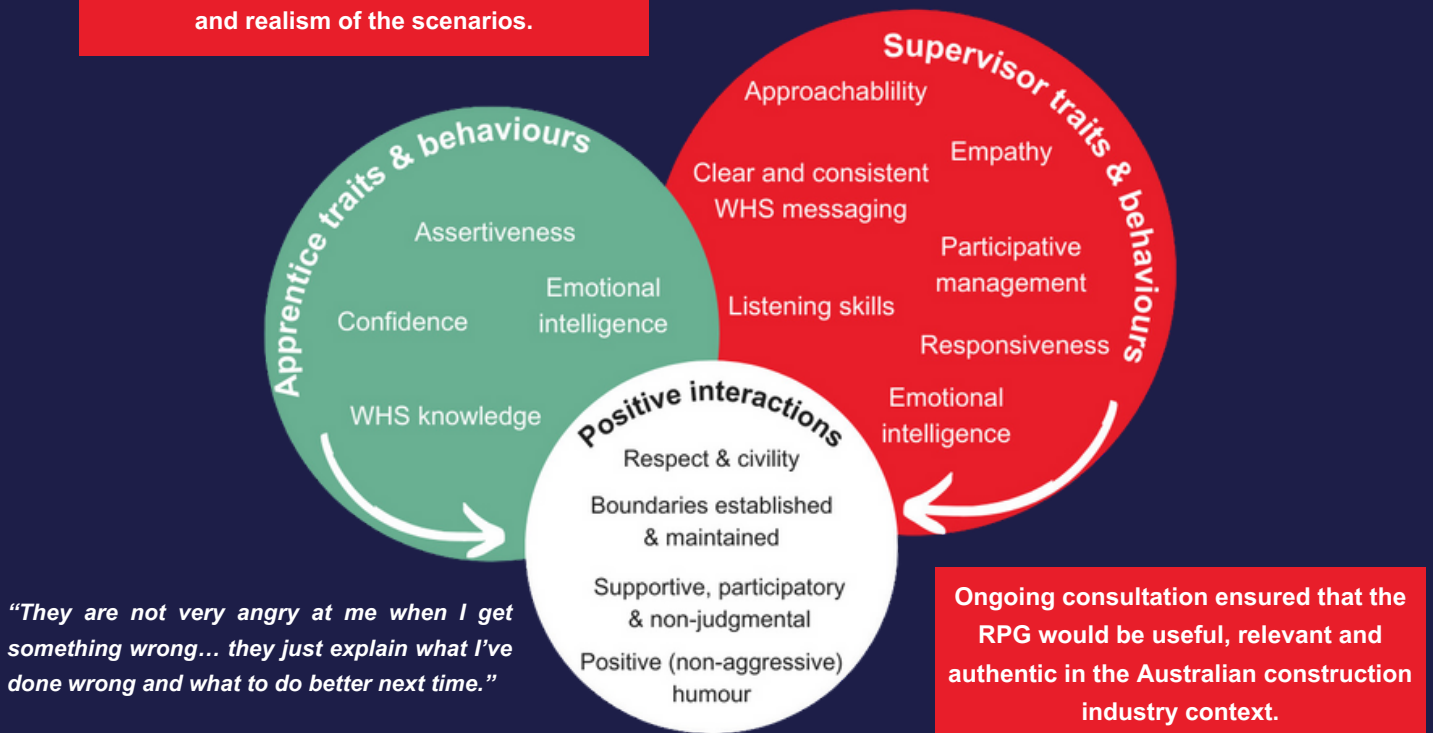


Figure 5: Characteristics of effective communication and social support model

Supervisors' response to the training tool

Upon its completion, the RPG was trialled by a focus group with 14 participants who worked in supervisory, safety and/or managerial roles in the construction industry. The training was well-received, with several participants noting its value to both apprentices and supervisors.

"I think it's good on that level to be like 'oh that is what it's still like to be a young person' ... because you forget sometimes... I like it in that respect. I would use it."

"I think it will be useful on both ends: it's a refresher for the supervisor and through TAFE it teaches them about what sort of situations you're going to go into."

"We always do an induction for new employees, apprentices and construction managers, and I think that'd be the place for us to do it... I'd take it on straight away."

Apprentices' response to the training tool

An experiment with a before-after design was undertaken to test the RPG. 294 apprentices (in NSW and Victoria) completed a baseline survey and played the RPG. At the end of each scenario, apprentices were asked whether they had learned something new and whether they found the content useful. Responses (Figure 6) show that an average of 71% of apprentices said they had learned something new and 81% said they would use the training content in their workplace.

Participants were asked to complete a follow-up survey four weeks after they played the RPG. A total of 152 apprentices completed both baseline and follow-up surveys.

Analysis of the survey data showed that apprentices were confident in their communication ability before playing the RPG. However, playing the RPG significantly increased the extent to which apprentices' comfort in communicating with their supervisor is translated into self-reported safety communication behaviour, including:

- speaking up about health and safety concerns in the workplace; and
- actively intervening if they see a co-worker doing something unsafe (shown in Figure 7).

Playing the RPG also significantly strengthened the association between feeling comfortable talking with supervisors about health and safety-related issues and the apprentices' mental health.

These results indicate that the game has a significant positive effect in helping apprentices to translate their communication skills into positive behaviours and improved health and safety outcomes.

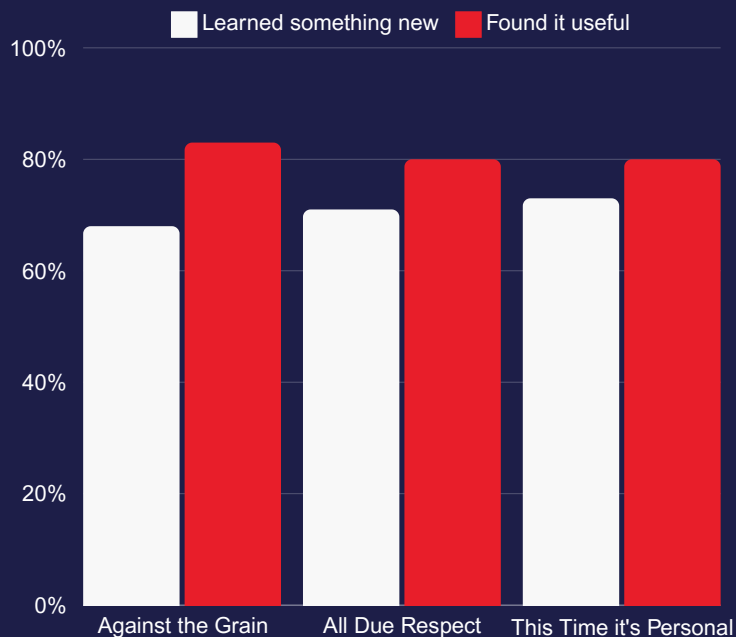


Figure 6: Apprentices' assessment of the three RPG scenarios



Figure 7: The relationship between communication comfort and safety behaviour before and after playing the RPG

What's next?

The results of this experiment suggest the RPG is an effective training tool for enabling apprentices and supervisors to improve their health and safety-related communication and behaviours. This is likely to translate to safer, healthier and more supportive workplaces for young workers in the Australian construction industry, and potentially also contribute to increased rates of apprenticeship completion.

References

[1] NCVER (2022), Completion and attrition rates for apprentices and trainees 2021, NCVER, Adelaide.

[2] Gow, K., Hinschen, C., Anthony, D., & Warren, C. (2008). Work expectations and other factors influencing male apprentices' intentions to quit their trade. *Asia Pacific Journal of Human Resources*, 46(1), 99-121.

[3] Ross, V., Mathieu, S. L., Wardhani, R., Gullestrup, J., & Kölves, K. (2021). Factors associated with workplace bullying and the mental health of construction industry apprentices: A mixed methods study. *Frontiers in psychiatry*, 12, 629262.

[4] Greacen, P., & Ross, V. (2023). Exploring the impact of social identity on the bullying of construction industry apprentices. *International journal of environmental research and public health*, 20(21), 6980.

[5] Australian Institute for Suicide Research and Prevention (2006), Suicide in Queensland's Commercial Building and Construction Industry, Griffith University Brisbane.

[6] Safe Work Australia (2023), Snapshot: WHS outcomes for apprentices and trainees, Safe Work Australia Canberra.

[7] Chan, S. (2016). Belonging to a workplace: first-year apprentices' perspectives on factors determining engagement and continuation through apprenticeship. *International Journal for Educational and Vocational Guidance*, 16, 9-27.

[8] Lingard, H., Zhang, R. P., LaBond, C., Clarke, J., & Doan, T. (2022). Situated Learning: How Interactions with Supervisors Shape Construction Apprentices' Safety Learning and Practice. *Journal of Construction Engineering and Management*, 148(10), 04022107.

[9] Lane, C., & Rollnick, S. (2007). The use of simulated patients and role-play in communications skills training: a review of the literature to August 2005. *Patient Education and Counseling*, 67(1-2), 13-20.

[10] Oblinger, D. (2004). The next generation of educational engagement. *Journal of interactivemedia in education*, 2004(8), 1-18.

[11] Bouvier, P., Lavoué, E., & Sehaba, K. (2014). Defining engagement and characterizing engaged-behaviors in digital gaming. *Simulation & Gaming*, 45(4-5), 491-507.

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For more information, contact us:

Helen Lingard
Distinguished Professor
helen.lingard@rmit.edu.au

Rita Peihua Zhang
Associate Professor
rita.zhang@rmit.edu.au

[linkedin.com/company/construction-work-health-and-safety-research-rmit](https://www.linkedin.com/company/construction-work-health-and-safety-research-rmit)

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