LIVE SAFETY DEMOS
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Introduction

• Construction remains very dangerous and fatality rates have plateaued over past 5 years.
• Safety training is often lecture-based and lacks engagement.
• Our research is focused on building a multimedia safety training program to improve retention by engaging both visual and verbal channels of learning.
• The training module was developed using proven methods to promote adult learning models to generate emotional engagement and spark situational interest in safety among construction workers.
• We seek to transition safety training from passive to active and exciting.

Method

• 2 demos were shown to workers: falling objects and pinch points.
• Workers participated in accordance with Self-directed Learning Model. This involved facilitator guided sessions where workers learn through self-management (contextual control), self-monitoring (cognitive responsibility), and motivational factors
• Hyper-realistic demonstration to help them experience an injury without injuring themselves.
• Artificial hands were built using life-casting techniques also including flesh, blood, bladder, and bones.

Background

Research Goals

Can Live Demos build an emotional engagement with workers?

Is there relationship between change in situational interest and change in emotional states?

Can Live Demos instigate situational interest among workers?

Demographics

• 1200+ participants for the training program over a course of week.
• 489 construction workers participate in the study. (Strong external validity)
• Pre- and post-demo surveys available to workers in both Spanish and English
• Measure emotional states, situational interest changes using research validated questionnaires.
• Analyzed results over the varied demographical dimensions in our sample.

Results

• There was statistically significant increase in negative emotions (such as disgust, fear, guilt, sadness, unhappiness for all demographic groups.
• There was statistically significant decrease in positive emotions (such as happiness, joy, love, pride) overall and for each demographic group.
• There was a statistically significant (~50%) increase in fear and surprise
• 10 out of 12 situational interest questions showed statistically significant increase post-demos indicating an involved workforce with regards to safety.
• Hispanic workers showed much higher situational interest than Caucasian workers.
• Principal component analysis and multivariate logistic regression was used to check for relationship between change in situational interest and change in emotional states. The results show a strong relationship between negative emotional states and situational interest and no significant link to positive emotions.

Conclusions

• The Live Demos caused a surge in negative emotions overall which tends to increase risk averse behavior among people. Induced emotions such as fear and disgust increases future risk avoidance and knowledge retention.
• Live Demos caused an increase in situational interest which is psychologically characterized by heightened attention and cognition along with increase in effort. There was a increase in SI after the demos across all the demographical dimensions. Induced situational interest can lead to motivation to continue learning and develop strong engagement with the material.
• Negative emotions (e.g. fear, anxiety) causes a motivation to learn to avoid failure. They lead to a more detail-oriented and cautious approach towards solving problems, which is preferable with respect to construction and safety. The results also show there was link between SI and negative emotions challenging the popular belief that only positive emotions aid in learning.
• The findings suggest that Live Demos is a promising advancement in safety training that could transform safety training from passive and lecture based to more effective, interactive and emotionally engaging.

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