Supporting Healthcare Professionals in Clinical Practice: A novel design approach to clinical simulation.

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Abstract

The goals of education within a healthcare setting are to prepare students for practice, integrate critical thinking, effective communication, and therapeutic skill within a safe environment. While didactic classroom-based education focuses on the theories and concepts needed for practice, the subsequent clinical practice setting requires authentic experiences that help students apply knowledge and increase technical skills. The role of clinical practice cannot be underestimated and is widely acknowledged as a core component of clinical education. The clinical practice learning encounter occurs in two ways: (1) real-world patient interaction and (2) manikin-based simulated learning contexts. However, time, money, opportunity, and resources are often an obstacle when providing real-world clinical education (Aiello et al., 2023). While didactic classroom-based education focuses on theories and concepts, manikin-based simulation education provides students with an experience that allows application of knowledge, theory, and clinical skills within a controlled and safe environment. However, manikin-based simulation has historically focused on compartmentalised clinical skill teaching, that can limit pedagogical authenticity. Therefore, a gap between theoretical knowledge and experience can exist, which can lead to debilitating anxiety, and reduced confidence. Student anxiety within manikin-based simulation has a direct relationship to the Yerkes Dodson's bell curve (Fig 1: Mornell, 2013; Nakayama, 2018), whereby students are overwhelmed by cognitive load which results in poor performance (right-shift) or hindered/uninterested due to the awkwardness of the manikin simulation experience. To address this, our research reviewed two areas of interest.

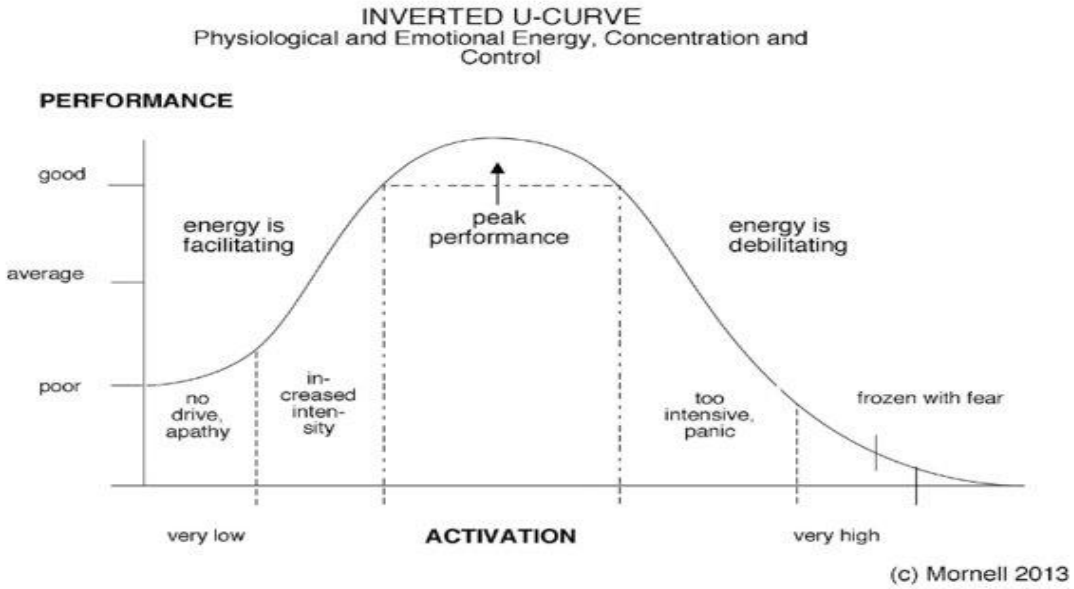

Figure 1. *An adaptation of Yerkes Dobson Bell Curve.*

1) Can virtual reality (VR) environments as an adjunct to clinical simulation help stimulate student engagement and remove some of the awkwardness associated with treating a manikin? In a simulated VR environment, learners can immerse themselves in a multisensory environment that simulates reality, allowing learners to interact and apply cognitive and psychomotor skills. This helps with buy-in, engagement and removes some of the uncertainty of what the patient/environment looks like.

2) Can anxiety be controlled and focus enhanced within the simulation? To address our objective we utilised a technique known as 'centering'. Centering is a meditative and visualization technique that can support focus, promote relaxation, and relieve anxiety (VandenBos, 2007).

We utilised a design-based research approach to problem solve the negative aspects of clinical simulation and try and provide the students with the tools to optimise engagement and down-regulate anxiety, enhance their learning experience, and optimise performance. This presentation explores the design and development of a manikin-based simulation program within the University of Melbourne Nursing Department involving 40 first-year post-graduate nursing students using high-fidelity mannikins, an interactive VR environment plus the centering technique. This study provides encouraging insight into the capacity for immersive technologies to help students effectively manage the stresses of live performance in both virtual and real worlds.

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