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Widening the Lens: The Wicked Problem in Healthcare

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Abstract

The American Association of Colleges of Nursing (AACN: 2021) demands proficiency in new competencies identified as essential to meet the needs of today's culturally diverse patients—including empathy, cultural sensitivity, and compassionate care. Nurses have traditionally been trained and assessed on technical skills through conventional instruction and, most recently, through immersive simulations to address complex patient needs. However, a gap exists in the effective instruction and assessment of the emotional skills needed to appreciate patients' unique cultural and linguistic diversities in order to deliver effective patient-centered care. This literature review contributes to a larger conversation about the growing need for the support and encouragement of transdisciplinarity in academia and its implications for the continued exploration of immersive learning across disciplines as a critical societal contribution to addressing wicked problems.

Keywords: wicked problems, cultural competence, immersive learning, nursing, empathy, social determinants of health.

Introduction

Context

The U.S. Department of Health and Human Services has identified vital environmental factors—or social determinants of health (SDOH)—that are shown to have a direct impact on peoples' health risks, functioning, and quality of life. These SDOH include an individuals' economic stability, access to quality education, job opportunities, income, access to quality health care, and exposure to community contexts that may include racism, discrimination, and violence, among other factors (Cole et al., 2022). A wealth of documentation affirms that SDOH-driven healthcare disparities and inequities disproportionately affect patient outcomes based on zip code, race, socioeconomic status, and biased assumptions, and that culturally and linguistically diverse patients are less likely participate in healthcare decisions (Agrawal, Shantanu & Enekwechi, Adaeze,

2020; Hall et al., 2015). The National Healthcare Disparities Report (Hall et al., 2015) published healthcare quality trends, revealing that healthcare is significantly better for White patients than for patients of color (Black, Hispanic, American Indian, and Asian), with healthcare providers spending longer time per patient and showing greater willingness to collaborate with White patients as part of intake and treatment protocols (Hall et al., 2015).

A Wicked Problem

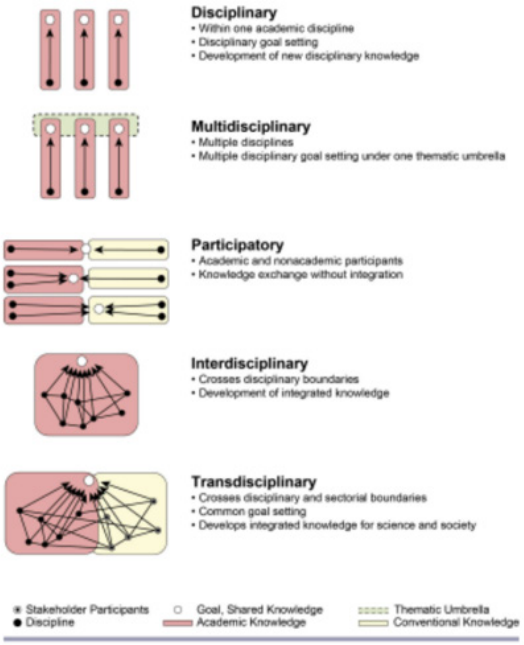
The term "wicked problem" is used to describe complex, multi-dimensional, and systemic problems like the healthcare disparities and inequities addressed in this research. Some of the most disturbing consequences of these disparities likely include medical errors, which kill approximately 251,000 people annually in the United States (Anderson & Abrahamson, 2017), a concern intensified by healthcare systems strained by the COVID-19 pandemic. A growing body of literature shows that addressing these wicked societal problems requires transdisciplinary research (TDR) that brings together insights and expertise from multiple disciplines from both academic and non-academic stakeholders (Elia & Margherita, 2018; Kumlien & Coughlan, n.d.; OECD, 2020), which are all necessary to wade through the inherent complexity and ambiguity of multi-dimensional wicked problems. However, academic barriers to TDR are highly complex as they can yield incomplete interventions (pp. 16-17), exemplified by immersive learning interventions designed to mitigate cultural and linguistic biases in the nursing profession. Culturally and linguistically diverse patients disproportionately "experience higher rates of adverse health events than English-speaking people" due to systematic miscommunications and misunderstandings, a challenge compounded by documented evidence that nurses tend to have less empathy for patients experiencing pain when they are of a different race, and that their empathetic concerns steadily decline throughout nursing education and career trajectory (Everson et al., 2015).

This literature review contributes to the larger conversation about the growing need for the support and encouragement of transdisciplinarity in academia and its implications for the continued exploration of immersive learning across disciplines and as a critical societal contribution to addressing wicked problems. This review is organized into three sections: 1) the transdisciplinarity dilemma, 2) immersive learning interventions in nursing education, and 3) frameworks and lenses for further exploration.

The Transdisciplinary Dilemma

Both universities and public research institutions wrestle with how best to support TDR and its inherent methodological and communication complexities without disrupting the boundaries of disciplinary silos, a systemic legacy that "cuts across the so-called 3rd mission activities (societal engagement and innovation) of universities and PRIs" (OECD, 2020.p.69). A global policy research paper (OECD, 2020) focused on addressing challenges with TDR reported that researchers who cross disciplinary boundaries to engage in transdisciplinary research are regularly misunderstood or penalized by promotion committees, viewing TDR agendas as lacking focus or evidence of commitment to the researcher's core discipline. Therefore, universities inadvertently frame the inherent complexity of TDR as a flaw rather than an essential strength (OECD, 2020) needed to address wicked problems.

Transdisciplinarity is not well understood and is often confused with other concepts, most commonly with multidisciplinarity and interdisciplinarity. Literature reviews, conceptual analyses, and policy papers that have examined transdiciplinarity (Bernstein, 2015; Choi & Pak, 2006; OECD, 2020; Van Bewer, 2017) agree that it should not be used interchangeably with the other two terms. Figure 1 (OECD, 2020) illustrates that transdisciplinarity incorporates academic researchers across disciplines with non-academic researchers and also encourages non-scientific stakeholders to co-create new knowledge, theories, and solutions to achieve a common goal. Van Bewer's (2017) definition of transdiciplinarity within healthcare also emphasizes community and academic stakeholder integration: "Transciciplinarity involves transcending disciplinary boundaries, a sharing of knowledge, skills, and decision making [with] a focus on real-world problems and the inclusion of multiple stakeholders including patients, their families, and their communities" (p.339), underscoring that "given the importance of patient-informed care, notions of transdisciplinarity in healthcare that fail to integrate the participation of patient, families, and communities within the transdisciplinary healthcare team are incongruent with best practice (p. 346).



Source: Architectures of adaptive integration in large collaborative projects (Wright Morton, Eigenbrode and Martin, 2015[2])

Figure 1

Immersive Learning Interventions in Nursing Education

A growing body of literature explores immersive learning interventions within nursing educational settings to help fill current nursing training gaps, namely delivering essential clinical skills for high-risk scenarios and emotional competencies to expedite understanding between nurses and patients (S. Hauze & Marshall, 2020; S. W. Hauze, 2018; Hoyt, 2018). A preliminary search yielded sources across four thematic areas: 1) transdisciplinarity in healthcare research as a methodology to confront the complex nature of the problem (briefly addressed previously); 2) the urgency to embed SDOH, empathy, cultural competence, and other social/emotional skills in nurse training (Hall et al., 2015; *AACN*, 2021; Thornton & Persaud, 2018); 3) interventions designed to improve quality of care through education focused on empathy, compassion, and emotional skills (Bertrand et al., 2018; Chernikova et al., 2020; Courtney-Pratt et al., 2015; Everson et al., 2015; Hales et al., 2021; Levett-Jones et al., 2017, 2019; Levett-Jones & Cant, 2020; Saab et al., 2021); and 4) evaluation of interventions

that aim to increase empathy in students including nursing student variables, perspectives, and learning considerations related to interventions (Hannans et al., 2021; Hofmann et al., 2021; Kim & Ahn, 2021; Mikkonen et al., 2016; Papadopoulos et al., 2016; Radianti et al., 2020).

In order to select articles addressing immersive technology interventions, I limited the search to articles published no earlier than 2015, given the rapid evolution of immersive technologies and our ever-changing understanding of their capabilities. All empirical studies, literature reviews, and conceptual analysis articles were peer-reviewed. An initial examination of these articles revealed gaps confirming the non-transdisciplinary nature of study design, which falls under three themes: 1) limiting assumptions, 2) disciplinary bias, and 3) limited measures.

Assumptions Gaps

Immersive simulation research in nursing education settings has shown that extended reality (XR) instruction can foster student success through increased learner confidence, emotional connection, and motivation to learn (S. Hauze & Marshall, 2020; S. W. Hauze, 2018; Hoyt, 2018). Industry research (Likens & Eckert, 2021) also suggests that simulation-based learning of soft skills allows for more rapid and deeper learning than traditional classroom or e-learning environments.

However, the widespread assumption that immersive learning is synonymous with technology-enhanced experiences and pedagogies is limiting and problematic. This assumption perpetuates the misconception that so-called immersive learning experiences always entail technology-supported interventions. These limiting assumptions appear across reference studies that use the word “immersive” or the “immersive learning” concept either as part of their abstract, title, body, or keywords (Bertrand et al., 2018; Chernikova et al., 2020; Courtney-Pratt et al., 2015; Everson et al., 2015; Hales et al., 2021; Levett-Jones et al., 2017, 2019; Levett-Jones & Cant, 2020; Saab et al., 2021). However, these articles lack clear definitions and boundaries of the terms that may differentiate their study’s understanding of immersion or immersive learning from others that may or may not involve technology instruments. Instead, the studies focus on measured variables (e.g., empathy, student satisfaction, cultural awareness,

etc.). Only one article reviewed (Hannans et al., 2021) included a briefly detailed distinction between what the authors identify as non-immersive virtual simulations versus immersive virtual simulations, establishing that "immersive virtual experiences [are] identified in the literature as meaningful and transformative to student learning" (p. 569), which is a weak definition in it of itself as it could easily fit non-immersive virtual simulations that also "offer students the ability to practice situational decision-making in a safe virtual environment" (p.568).

Developing a more precise understanding and definition of immersion, immersive learning, and immersive simulations versus non-immersive learning experiences remain to be further detailed. Additionally, all methodologies in the scope of this study failed to consider or reference the role of immersion as a potential measurable covariate that may affect results, nor was it referenced as a limitation within the study. Yet, research that spans the neuroscience, neuroeconomics, and psychology disciplines has examined the impact of immersion and immersive experiences through the use of compelling storytelling as a trigger for oxytocin and dopamine in the brain, which are two neurochemicals that are shown to have an important role in improvements of empathetic, trusting, and cooperative behaviors and information recall (Barraza & Zak, 2009; Zak, 2015).

Similar limiting assumptions involve the concept of empathy within immersive simulations. For example, Hales et al. (2021) examine empathy immersion interventions that demonstrate positive correlations with the overall well-being of patients and healthcare workers. However, this article is one example of several that discuss the concept of empathy in general terms without a clear distinction between a wide range of cognitive, emotional, and behavioral variables (e.g., empathetic concern, cognitive empathy, valuing the person, perspective taking, etc.) (Riess, 2017) that can be measured or have been measured across disciplines. The systematic review of Mikkonen et al. (2016) highlights yet another gap in empathy intervention studies within nursing and healthcare educational settings, which have failed to account for ***students'*** cultural and linguistic diversity and its impact on learning experiences and the measures of variables.

Measures of Variables Gaps

The review of immersive learning interventions literature with particular attention to how variables are measured reveals an outcome of disciplinary bias, which limits our understanding because the types of assessments used to gauge outcomes employ only self-report instruments (Bertrand et al., 2018; Chernikova et al., 2020; Courtney-Pratt et al., 2015; Everson et al., 2015; Hales et al., 2021; Levett-Jones & Cant, 2020; Saab et al., 2021) that include limited qualitative data. Namely, the systematic review by Levett-Jones et al (2019) regarding the effectiveness of empathy education for undergraduate nursing students identified two critical weaknesses across all reviewed studies: 1) all research designs used subjective measures and offered limited levels of objective evidence, calling studies "self-report surveys which can be influenced by social desirability bias" (p.12); and 2) researchers often overlook how results can be impacted by the various definitions of empathy and ongoing debates about which empathy domains and elements are being measured (as previously discussed), calling out the need for careful consideration of "the purpose, appropriateness, and relevance of specific empathy instruments prior to use, and [that] psychometric testing should be undertaken with sampled populations" (p.11).

Frameworks and Lenses for Further Exploration

Addressing transdisciplinary research barriers and the inherent disciplinary bias that impedes a complete understanding of critical concepts and discovering holistic solutions to wicked problems is a crucial area that must be expanded. Frameworks and lenses for further exploration—perhaps as part of recommendations and guidance to conduct transdisciplinary research—can include methodologies, frameworks, and approaches such as complexity theory (Allen et al., 2011; Kallemeyn et al., 2020), design thinking (Gallagher & Thordarson, 2018), liberatory design (Anaissie et al., 2020), and concept analysis processes (Elia & Margherita, 2018), among others.

Conclusion & Recommendations for Future Research

Often categorized as a healthcare ***empathy problem***, the healthcare wicked problem that disproportionally affects patients based on their racial, cultural, and linguistic differences calls for transdisciplinary research and educational solutions that supplement clinical skills education with emotional skills instruction—including empathy and cultural competence training—that can su-

pport equitable, patient-centered care (***AACN***, 2021). However, academic barriers to conducting effective and efficient transdisciplinary research have led to disciplinary bias and placed limits on cross-disciplinary exploration, ultimately yielding limited assumptions and understanding of critical concepts like immersion, immersive learning, and empathy, as well as effective measures.

This literature review exclusively examined interventions within the theme of immersive simulations and virtual reality interventions focusing on increasing empathy and cultural competence in nursing patients. Self-report instruments were broadly used to measure their effect on variables like knowledge acquisition, increases in empathy, or confidence in exercising social/emotional skills, providing an incomplete picture of interventions.

My research identifies the immediate need for a systematic concept analysis of ***immersion*** and ***immersive learning*** that includes definitions, antecedents, attributes, and ramifications to help inform the future design of theory and practice. With a better understanding of immersion and immersive learning as critical concepts for educational interventions, future research should bridge gaps between technology-based interventions and analog approaches, such as immersive cultural humility and self-awareness framework training (Caffrey et al., 2005; Nguyen et al., 2021; Tervalon & Murray-García, 1998) by examining their effectiveness across a continuum of immersive pedagogies.

The growing and passionate community of immersive technology experts and enthusiasts has evoked the idea that "the future is human, and the future of learning is immersive" (Lee et al., 2021, p.21). I contend that whether it is in the form of a story, a simulation, or any type of immersive experience, what we cannot allow to escape us as stakeholders in the future that we are co-creating as educators, designers, researchers, and innovators, is that "the future is human,"—***as it has always been***—"and the future of learning [***can be***] immersive," if we commit ourselves to define it and to design for it.

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