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Identifying the Strategies That Promote an Immersive Online Learning Environment for Population Health Management Graduate Students

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ABSTRACT

Contemporary teaching and learning strategies are paramount. With an increased use of advanced digital technology, online learning is dependent on effective teaching and learning strategies. However, it is fundamentally dependent on knowledge transfer that is diverse, engaging, and meets the learning needs of the student learner. The project aimed to identify the strategies that promote an immersive online learning environment using the process evaluation method to evaluate student engagement and interaction through virtual critical discussions. This was a retrospective process evaluation to identify the strategies that promote an immersive online learning environment for Population Health Management graduate students. An adapted four-dimensional framework for evaluating immersive learning experiences guided this process evaluation. The findings from this process evaluation highlighted two main themes. Thought-provoking questions and evidence-based online learning were fundamental components for promoting an immersive online learning environment. Critical discussions promoted the expansion of peer learning. However, online discussion forum engagement is dependent on graduate students' active participation in the teaching and learning process and continuous student feedback can inform improvements to teaching and learning strategies in the future.

Keywords: discussion, forums, immersive, learning, online

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1. Introduction

Contemporary teaching and learning strategies are paramount, with increased use of advanced digital technology and social media paving the way for knowledge exchange among healthcare students (Giroux & Moreau, 2022). A vast number of students are opting for online higher education (Seaman et al., 2018), with the COVID-19 pandemic changing the dynamic of learning and students being receptive to diverse methods of acquiring new knowledge (Marsicano, 2020). Online learning relies on effective teaching and learning strategies but fundamentally is dependent on diverse knowledge transfer and student engagement, which meets the learning needs of the student learner (Lockee, 2021). Academic engagement and promoting immersive online learning are essential when preparing students with critical thinking skills that can challenge concepts, provide objective perspectives, and promote a learning environment that facilitates peer learning (Kanuka & Garrison, 2004; Shea & Bidjerano, 2009). Students obtaining health-related degrees require the knowledge and skills that critically address the complexities in healthcare practice (Sezgin & Bektas, 2023). The facilitation of immersive online learning creates a learning environment that is centered around

community learning (McClannon et al., 2018) and immersive online learning tools such as discussion forums are essential for the development of critical discussion and debate, with specific focus on disease-related information (Fox, 2011).

In 2010, De Freitas et al. developed a four-dimensional framework for designing and evaluating immersive learning experiences in a virtual world (De Freitas et al., 2010). The four-dimensional framework focused on (1) The learner, the diverse student population and the different ways in which knowledge is received and understood; (2) Pedagogy, the pedagogical approach that facilitates effective learning; (3) Representation, which focuses on the immersive learning content, and theoretical topic of discussion; and (4) The learning setting, which is the environment where learning takes place. Each of these dimensions contributes to the strategies that promote immersive online learning among a diverse student population.

This project aimed to identify the strategies that promote an immersive online learning environment for Population Health Management graduate students, whilst engaging in virtual critical discussions using a process evaluation method. We wanted to determine whether the application of an adapted four-dimensional framework for immersive learning (Figure 1) had an impact on asynchronous virtual critical discussions within graduate education. It has been reported that virtual discussion forums offer opportunities for immersive and interactive student learning in higher education, and are frequently utilized in health professions education as an effective strategy that promotes an immersive online peer learning experience (Donlan, 2019).

2. Method

2.1. Theoretical Framework

The Saunders et al. (2005) process evaluation framework was adopted as a theoretical framework to help identify the strategies that promote an immersive online learning environment for Population Health Management graduate students. Saunders et al. highlight that process evaluations are an effective method for understanding the relationship between program implementations and program outcomes. The project aimed to identify the strategies that promote an immersive online learning environment using the process evaluation method to evaluate student engagement and interaction through virtual critical discussions. A systematic approach for developing a process evaluation which was used to structure this project has been further explained by Saunders et al. (2005).

2.2. Evaluation Design

This was a retrospective process evaluation to identify the strategies that promote an immersive online learning environment for Population Health Management graduate students. Seminal research using process evaluations highlights that it is a research method that facilitates a qualitative observation of recorded encounters within programs that are unintrusive (Coyle et al., 1991), and supports the assessment process of activities or characteristics of a particular investigation (Haltaufderheide et al., 2022). The data within this project were student interactions using a virtual online discussion forum which was guided by Socratic questioning. These were thought-provoking questions that stirred up perspectives, assumptions, viewpoints, and evidence (Zare & Mukundan, 2015). Socratic questioning facilitates the process of moral intellectual judgment and critical thinking abilities (Torabizadeh et al., 2018), of which was required to effectively evaluate the strategies that promote an immersive online learning environment for Population Health Management graduate students whilst engaging in virtual

critical discussions. The process evaluation was implemented as a formative method that supports ongoing quality assurance processes within the academic department to ensure theoretical academic integrity and academic quality assurance.

2.3. Setting and Context

The Population Health Management program is delivered online via Moodle, the online learning management system (LMS) was the hosting software for all teaching and learning content. Teaching, learning, and discussion forum content were embedded within one of the required courses for the graduate program. This course was password-protected and only accessible to academics and students who were enrolled in the course and who had permission to access the content through the LMS. The graduate students who had access to the interactive discussion forum were in their second semester and undertaking a master's degree in Population Health Management. A critical academic discussion forum relating to confidentiality and telehealth was developed by the Socratic questioning method to stir up thought-provoking perspectives, assumptions, and viewpoints.

2.4. Data Collection

A retrospective process evaluation was conducted to identify the strategies that promote an immersive online learning environment for Population Health Management graduate students, whilst engaging in virtual critical discussions using a process evaluation method. We focused the data collection on the strategies that promoted an immersive online learning environment therefore, the students' textualized discussions were not included as part of the data collection. The data for the immersive online learning environment was determined by how many times a student contributed or posted to the virtual critical discussion forum. Data were obtained by systematically reviewing the discussion forum activity. Discussion forum activity was reviewed by monitoring the asynchronous student contributions at different time frames. This enabled a comprehensive review of the frequency, depth, and relevance of student critical discussions. Manual coding of discussion forum activity as described by Saldana (2016) helped to categorize student contributions in relation to topic areas being discussed.

Discussion forum activity included replies to comments, questions posted by students, constructive academic arguments, evidence-based literature and posted videos, all of which related to the Socratic questioning method on confidentiality and telehealth. When the discussion forum activity had minimal contributions, the evaluation of uploaded content, comments and discussions were analyzed.

2.5. Data Analysis

According to Schneider et al., (2009) a process evaluation analysis is carried out to gather information on strengths and challenges of an intervention to identify emergent themes. This data analysis process has been described by Coyle et al. (1991) in their seminal work as record keeping and a consistent administrative reporting system that monitors uniformity in the scope and depth of analyzing the data that has been collected. An inductive approach was used to analyze the data (Burkholder et al., 2019) which was guided by the process evaluation objective and Socratic questioning. We sought to identify whether a critical academic discussion forum related to confidentiality and telehealth promoted an immersive online learning environment for Population Health Management graduate students. This was done by reviewing student contributions in response to the Socratic questions (Table 1) and using De Freitas et al.'s. adapted four-dimensional framework (Figure 1) for evaluating immersive learning experiences

(De Freitas et al., 2010). The framework was adapted by associating each dimension of the model to the online course the graduate students were undertaking. The adapted four-dimensional framework guided the process evaluation by recognizing the diverse student population, the pedagogical approach for effective learning and student interactions, the immersive learning content that facilitates the level of critical discussions, and the environment of where learning takes place, which was the online environment. Figure 1 illustrates the adapted four-dimensional framework for evaluating immersive learning experiences.

The data were analyzed using the adapted four-dimensional framework for designing and evaluating immersive learning experiences in a virtual world (Figure 1). The review of discussion forum activity was evaluated using (1), the learner dimension of the adapted framework. The frequency and relevance of student critical discussions were evaluated using (2), the pedagogical dimension of the adapted framework. The manual coding of discussion forum activity was evaluated using (3), the representation dimension and the immersive learning experiences was evaluated by using (4), the learning setting dimension. Each of these dimensions helped with identifying the emergent themes pertaining to the strategies that promote an immersive online learning environment for Population Health Management graduate students, whilst engaging in virtual critical discussions.

Table 1.
Socratic Questions

Socratic Questions on Telehealth and Confidentiality
1. *How can confidentiality be maintained with the use of telehealth?*
2. *Do the failures of health informatics, such as data breaches or technological errors, pose a threat to the success of telehealth?*
3. Should hospital systems or health care practices be held liable if patient data is stolen during a breach in their electronic health system?

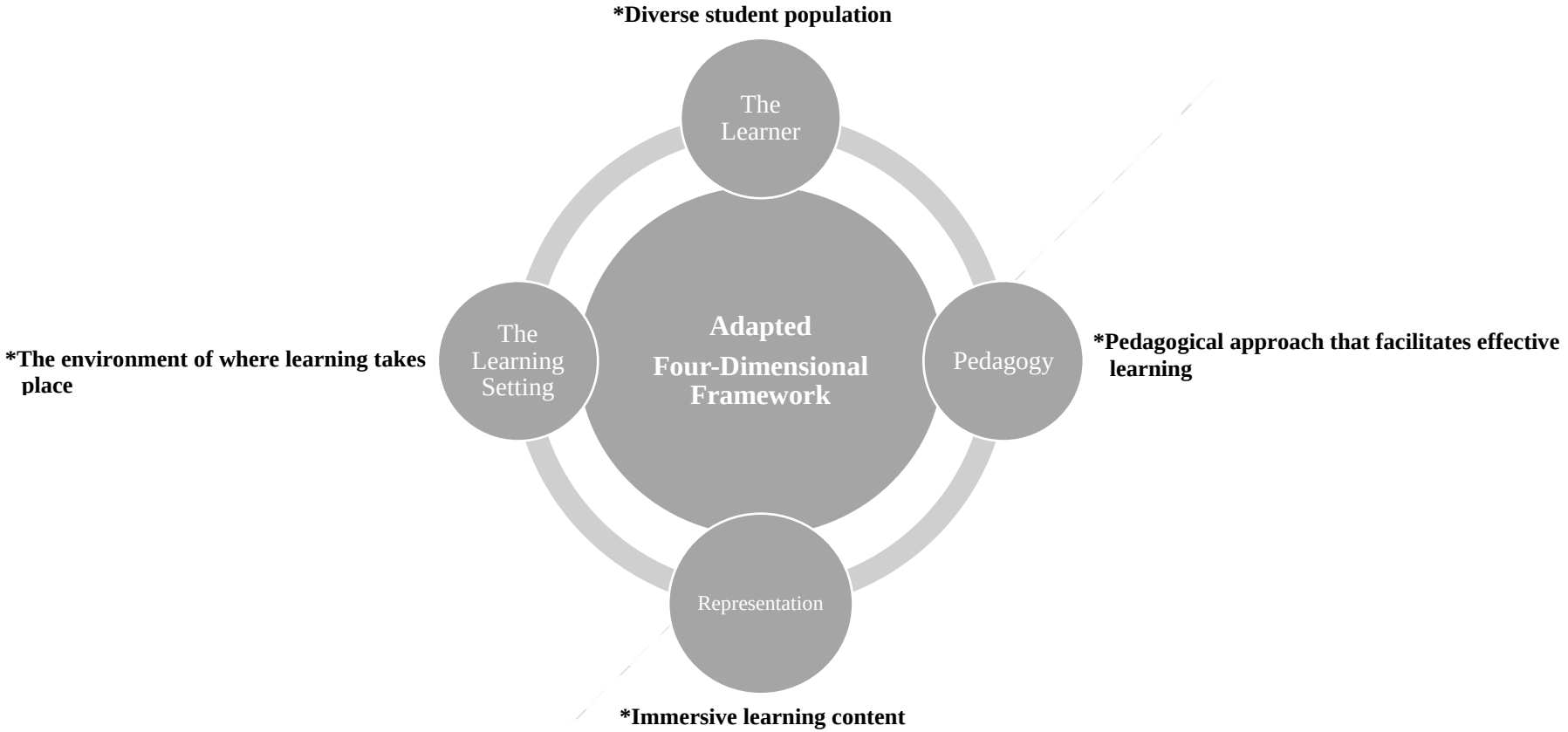

Figure 1. Adapted four-dimensional framework (Adapted from De Freitas, S., Rebolledo-Mendez, G., Liarokapis, F., et al. (2010). Learning as immersive experiences: Using the four-dimensional framework for designing and evaluating immersive learning experiences in a virtual world. British Journal of Educational Technology, 41(1), 69-85)

***** = The four-dimensional attributes of immersive online learning.

2.6. Ethical Considerations

Students were provided with information about the process evaluation by the course instructor during the first week of commencing the course. They were also informed that the discussion forum would be moderated and evaluated throughout the interactive process and after the course has been completed. Students were made aware that the discussion forum's textualized responses would not be analyzed, but an evaluation would be conducted on the effectiveness of the interactive discussion forum. Implied consent was obtained through each student's active interaction and willing participation in the critical discussions, which was part of the teaching and learning process. The process evaluation study was conducted in accordance with the Declaration of Helsinki (as revised in 2013) (The World Medical Association, 2016). The Institutional Review Board (IRB) at Southeastern Louisiana University, found this project worthy of being conducted and granted an IRB approval [IRB Number: 2022-146].

3. Results

The findings from this process evaluation highlighted two main themes. Theme one: the power of thought-provoking questions and theme two: evidence-based immersive online learning. Various factors contributed to thought-provoking questions and answers, and the immersive online learning environment was highly dependent on peer contributions which stimulated active engagement within an asynchronous critical discussion. This has been presented in accordance with De Freitas et al.'s. adapted four-dimensional framework for evaluating immersive learning experiences.

3.1. The Power of Thought-Provoking Questions

3.1.1. The Learner

This represents the diverse graduate student population and the different ways in which knowledge is received and understood. The graduate students were of different ages, ethnicities, and gender. They each had varying experiences in healthcare and contributed to the discussion forum with their own unique experiences. It was evident that Socratic questioning was the catalyst for thought-provoking intelligent interactions between graduate students. Critical discussions stirred up by questions that promoted critical thinking thought processes and academic discussion and debate created an advanced peer learning environment. Students demonstrated an advanced pedagogical approach to immersive online learning by uploading external literature and sources to the discussion forum to defend concepts relating to confidentiality and telehealth. Individual experiences that students had encountered relating to the discussion topic were incorporated into the debate. This method of peer interaction further enhanced the dynamic of the critical discussion.

3.1.2. Pedagogy

The pedagogical approach facilitated effective online learning for the graduate students. According to Clark & Egan, the Socratic questioning method encourages critical reflection and is a technique that produces insightful perspectives and helps identify positive actions (Clark & Egan, 2015). Each of the graduate students were fully engaged in the critical discussion and enthusiastically responded to each question with critical justifications and evidence-based insight. Student responses were relevant to the questions presented and all forty-four asynchronous interactive posts were available to other students within 24 hours of the discussion forum being active. Although each student's response was posted at different times, it did not hinder the productivity of the discussion forum. The pedagogical approach of an

asynchronous discussion forum supported the frequency, depth, and relevance of student critical discussions.

3.2. Evidence-Based Immersive Online Learning

3.2.1. Representation

Representation focuses on the immersive learning content and theoretical topic of discussion. Evidence-based immersive online learning was evident as students utilized the digital learning space to interact with their peers to highlight their knowledge, understanding, and contribution to the critical discussion. The ability to engage with the teaching and learning process by uploading evidence-based peer-reviewed literature as a defense strategy articulating the concepts relating to confidentiality and telehealth, demonstrated the advancement of their academic ability within an online learning space. The immersive online learning content supported the student's ability to make sense of the topic being debated and hone in on the various perspectives from their peers.

3.2.2. The Learning Setting

The online learning environment was where knowledge transfer took place. The learning environment was recognized as a safe space for students to contribute their knowledge and understanding of the topic being discussed as well as critically unravel concepts presented to the discussion that they were unfamiliar with, of which were presented to the forum by their peers. The online learning setting facilitated the process of peer knowledge transfer thus, enabled students to delve into a diverse method of teaching and learning. This supported the concept of students becoming their own facilitators in their learning process and granted them with the autonomy needed to understand concepts and principles being explored in the critical discussion process.

4. Discussion

Identifying the strategies that promote an immersive online learning environment for Population Health Management graduate students, highlighted the versatility of virtual online learning. Adaptability was evident through the application of Socratic questioning and intelligent interactions using evidence-based literature. The use of online asynchronous discussion forums has been highly recommended by scholars, articulating that discussion forums promote a deeper understanding of subject matter content as well as teaching and learning material (Aloni & Harrington, 2018; Perrotta, 2020). The idea that asynchronous discussion forums encourage collaborative learning experiences was evident (Alzahrani et al., 2023; Dewiyanti et al., 2007; Falcione et al., 2019; Gronseth & Bauder, 2022; Liu et al., 2018). Thus, these collaborative learning experiences have a positive impact on the development of students' higher order cognitive thinking skills (Tuma & Aljazeeri, 2021), a requirement much needed in the field of Population Health Management. Higher order cognitive thinking skills were particularly salient, as students occupied an active leadership role when facilitating critical discussions within the online learning environment (Hew & Cheung, 2011; Waters, 2012).

Inherently, the online learning environment was emphasized by immersive teaching and learning content and supported by interactive engagement. This was evident with student-led discussions influenced by thought-provoking questions. According to Chen et al. (2019) asking thought-provoking questions on an asynchronous interactive discussion forum promotes active participation and positively affects the level of cognitive student presence. Cognitive student

presence was an immersive online learning strategy that promoted a constant flow of interactive and discursive dialogue which took the concept of confidentiality and telehealth from individual experiences to critical scrutiny. Komives et al. (2013) describes this as the cognitive and emotional process. Students heightened evidence-based immersive online learning by independently searching for current peer-reviewed literature, an academic defense strategy that demonstrated higher order cognitive thinking skills. Despite the argument that to face-to-face classroom learning is superior to online learning (Allen & Seaman, 2016; Singh & Hurley, 2017), the strategies that promote an immersive online learning environment are evident within this evaluation. The power of thought-provoking questions promotes active online learning (Jaschik & Lederman, 2018), but online engagement is dependent on graduate students' active participation in the teaching and learning process.

Implementing thought-provoking questions in health-related programs provides students with advanced level academic skills. Levett-Jones (2013) explains that, the implementation of thought-provoking questions in academic programs is a process that facilitates the collection of specific cues, the processing of information, understanding the patient's problem or situation, planning and implementing care and evaluating the outcomes. Thought-provoking questions could be implemented in various ways to stimulate student thought processes and identify, challenge and debate concepts which require further exploration.

The implementation of evidence-based immersive online learning can change the dynamic of how students learn and interact with their peers. This learning strategy helps students to think critically leading to the discrimination of literature, which promotes a deeper understanding of material and the development of clinical reasoning (Merisier et al., 2018). With any teaching and learning strategy that is implemented, it is possible that it may not be suitable for all students with diverse learning abilities therefore, there is a need to continuously receive student feedback on teaching and learning strategies that are embedded within program curriculum. And despite the importance of student feedback on evidence-based learning, there is a need for more work exploring how students understand and value the different components of evidence-based learning, which can then inform improvements to teaching and learning strategies (Thomas et al., 2011).

5. Conclusion

Evaluating the use of online forums as a strategy to promote an immersive online learning environment for Population Health Management graduate students, whilst engaging in virtual critical discussions was essential. Thought-provoking questions and evidence-based online learning were fundamental components for promoting an immersive online learning environment. Critical discussions promoted the expansion of peer learning. However, online discussion forum engagement is dependent on graduate students' active participation in the teaching and learning process.

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