Original Article

Online interactive discussion boards: exploring student engagement when critically discussing the concept of confidentiality and telehealth

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Contributions: (I) Conception and design: L Collins; (II) Administrative support: All authors; (III) Provision of study materials or patients: All authors; (IV) Collection and assembly of data: L Collins; (V) Data analysis and interpretation: L Collins; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

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Background: The traditional methods of acquiring new knowledge have seen a dramatic shift globally as technology has advanced our means of delivering content, and social media use has become a primary means of communication in this generation of healthcare students. Academic engagement through online discussion boards has provided students with the critical reasoning skills to challenge concepts, articulate objective perspectives and develop the notion of interactive peer learning. The aim of this project was to evaluate student engagement and the effectiveness of an interactive discussion board when discussing the topic of confidentiality and telehealth among population health management graduate students. This was to determine intelligent interactions, the appropriateness of the learning environment, and active online learning.

Methods: We conducted a retrospective process evaluation on the effectiveness of an online discussion board. The analysis was carried out through rigorous, systematic reading of the discussion board, evaluating the frequency and depth of student interactions and manual coding.

Results: Intelligent critical discussions and immersive active online learning were the two main themes identified. Spontaneous independent learning promoted student leadership with asynchronous online learning.

Conclusions: Online interactive discussion boards created an environment that emphasized content and supported social engagement and peer learning when discussing the topic of confidentiality and telehealth. Online learning engagement is dependent on student participation, and the presentation of debatable questions on an interactive discussion board to heighten the student learning experience.

Keywords: Confidentiality; discussion boards; online; telehealth

Received: 07 June 2023; Accepted: 15 November 2023; Published online: 05 December 2023.
doi: 10.21037/ht-23-9
View this article at: https://dx.doi.org/10.21037/ht-23-9

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Introduction

The traditional methods of acquiring new knowledge have seen a dramatic shift globally as technology has advanced our means of delivering content, and social media use has become a primary means of communication in this generation of healthcare students (1). With over 6.4 million students opting for online higher education in the last 6 years (2), and the immediate transition to online education due to the COVID-19 pandemic (3), there has been a greater need for interactive and engaging teaching and learning strategies. The continuity of effective online learning not only relies on the teaching content, but also must be tailored to the diverse learning needs of the student population (4). Academic engagement through online discussion boards has provided students with the critical reasoning skills to challenge concepts, articulate objective perspectives and develop the notion of interactive peer learning (5,6). Students obtaining graduate degrees in the field of healthcare, health sciences, and related allied health professions, require the knowledge and skills to address complex challenging scenarios in varied healthcare settings (7). The use of interactive teaching and learning tools such as online discussion boards are fundamental for the development of critical reasoning and exchange of disease-related information for managing long-term illnesses (8).

In 2021, Wang *et al.* developed a framework that promotes active online learning in a smart learning environment (9). The smart learning environment consists of three fundamental attributes. The first attribute is intelligent interactions and students being able to obtain real-time feedback from academics and peers. The second attribute is the learning environment and immersing students into a digital learning space that is not complex or challenging to utilize. The last attribute is active online learning and the learning expectations that define the theories and concepts being taught and new knowledge being acquired.

The aim of this project was to evaluate student engagement and the effectiveness of an interactive discussion board when discussing the concept of confidentiality and telehealth among population health management graduate students. This was to determine intelligent interactions, the appropriateness of the learning environment, and active online learning. It has been reported that online discussion boards offer opportunities for individualized and interactive student learning in higher education, and are frequently used in health professions education as an effective way of integrating peer learning (10). We present this study in accordance with the guidelines for reporting evaluations based on observational methodology (GREOM) (11), as this study was conducted as a retrospective process evaluation on the effectiveness using online discussion boards for teaching and learning and student engagement.

Methods

Theoretical framework

The process evaluation framework developed by Saunders *et al.* (12) was adopted as a theoretical framework for constructing a comprehensive evaluation plan for teaching and learning methods in healthcare programs. According to Saunders *et al.* process evaluations are used to monitor and document program implementations and aid in understanding the relationship between specific program elements and program outcomes. The aim of this process evaluation was to monitor student engagement and interaction with a discussion board when answering and discussing critical questions relating to aspects of population health management. Saunders *et al.* provide a systematic approach for developing a process evaluation plan which facilitated the structure of this process evaluation (12).

Evaluation design

This was a retrospective process evaluation on the effectiveness of an online discussion board. Process evaluation allows for direct qualitative observation which includes unobtrusively and systematically recorded encounters within a program (13), and facilitates an assessment of a process, a structure or its outcomes based upon information on the properties, activities or characteristics of the investigation (14). The data were presented as interactive discussions using the online discursive forum guided by Socratic questioning, questions that are presented to investigate perspectives, assumptions, viewpoints and evidence (15). Socratic questioning facilitates the process of moral reasoning and critical thinking (16), of which was required to effectively evaluate the discussion board as to whether or not it was an appropriate platform for critical discussions. The process evaluation was implemented as a formative process to monitor and adjust teaching and learning delivery as required to ensure theoretical integrity and academic quality assurance.

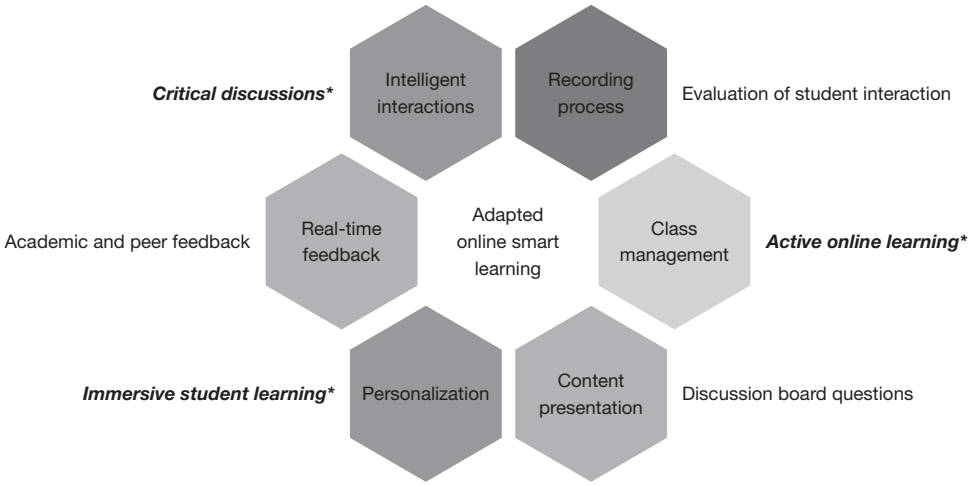

Figure 1 Adapted online smart learning environment. Adapted from Wang *et al.* Determinants of Active Online Learning in the Smart Learning Environment: An Empirical Study with PLS-SEM. Sustainability 2021:9923 (9). *, three fundamental attributes of active online learning.

Setting and context

The discussion board context was focused on the topic of confidentiality and telehealth. Moodle, the online learning management system (LMS) was the hosting software for the asynchronous interactive discussion board. Teaching, learning and discussion board content were embedded within the graduate Health Informatics course. This course was password protected and only accessible to academics and students who were enrolled and had permission to access the content. The graduate students who had access to the interactive discussion board were undertaking a master's degree in Population Health Management and discussions relating to confidentiality and telehealth were the focal topics of discussion.

Data collection

A retrospective process evaluation on the effectiveness of the online discussion board as a teaching and learning tool, was examined for its appropriateness, when exploring the concept of confidentiality and telehealth. An inductive approach was used to analyze the data (17) which was guided by the evaluation objective and Socratic questioning. The evaluation objective was to explore the effectiveness of an interactive discussion board among graduate students critically discussing the concept of confidentiality and telehealth. The evaluation objective and Socratic questioning guided the process evaluation.

The discussion board performance was determined by how many times and the frequency a student contributed or posted to the discussion board.

Data analysis

The analysis was carried out through rigorous, systematic reading of the discussion board, evaluating the frequency and depth of student interactions, and manual coding (18) of the discussion board performance. Coyle *et al.* (13) describes this 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. The students' textualized discussions were not included within the data analysis, as we wanted to focus on the process evaluation and the effectiveness of an interactive discussion board as a teaching and learning tool, as opposed to worded responses from the students.

The adapted online smart learning environment (*Figure 1*) originally developed by Wang *et al.* (9) guided the process of understanding the findings, by considering three fundamental attributes of active online learning which were class management, personalization and intelligent interactions. We sought to identify whether the topic of confidentiality and telehealth promoted intelligent interactions between the graduate students with varied perspectives. This was done by reviewing student contributions in response to the Socratic questions (*Table 1*). We also evaluated the frequency of responses from each

Table 1 Discussion board questions

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

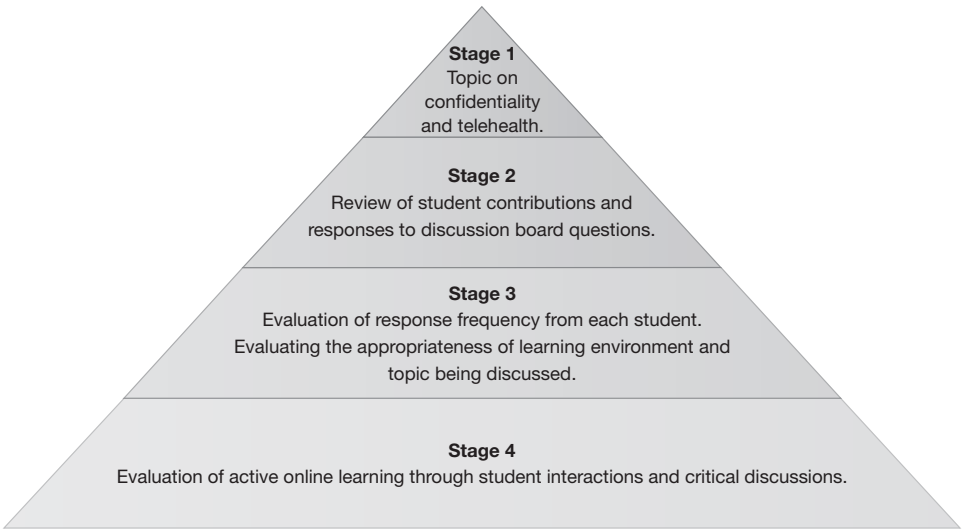

Figure 2 Four stage evaluation process.

of the students and whether the learning environment was appropriate for the topic being discussed. The active online learning concept was evaluated by reviewing student interactions with the discussion board and whether critical discussions were evident. *Figure 2* illustrates the process evaluation at four different stages.

Ethical considerations

Students were provided with information about the process evaluation. They were also informed that the discussion boards would be moderated and evaluated throughout the interactive process and thereafter. Students were made aware that the discussion board textualized responses would not be analyzed, but an evaluation on the effectiveness of the interactive discussion board as part of teaching and learning would be conducted. Implied consent was obtained through each students' active interaction and willingness to participate in critical discussions as described by University of California San Francisco (UCSF) human research protection program (19). The process evaluation study was conducted in accordance with the Declaration of Helsinki (as revised in 2013) (20). 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). Informed consent was taken from all individual participants.

Results

The findings from this process evaluation highlighted two main themes. Theme one: intelligent critical discussions and theme two: immersive and active online learning. There were various factors that contributed to intelligent interactions, the appropriateness of the learning environment for discussing the topic of confidentiality and telehealth and actively engaging in an asynchronous online learning environment.

Intelligent critical discussions

Intelligent interactions were evaluated for evidence of

critical discussions and academic debate received by student responses. The academic debate was accompanied by students uploading links to current peer reviewed literature defending the concepts relating to confidentiality and telehealth. Students also elaborated on individual experiences of data breaches and confidentiality, which provided realistic context to the topics being discussed. Critical scrutiny to further delve into the responses was evident and created an authentic interactive online learning experience. Intelligent critical discussions observed from the discussion board is what Clark & Egan describe as the result of the Socratic method that encourages critical reflection, surfacing knowledge that was previously outside of an awareness, and the technique that produces insightful perspectives and helps identify positive actions (21).

The graduate students individually responded to each question with more than three responses. The responses coherently addressed the discussion points raised by all the students. Forty-four asynchronous responses were available on the interactive discussion board within 24 hours of questions going live on the Moodle platform. The responses had been posted at varied times of the day, but there were no signs of delayed answers.

Immersive and active online learning

Immersive online learning was evident as students utilized the digital learning space to interact with their peers. The ability to receive real-time feedback comments from peers and the academic promoted an online smart learning environment as described by Wang *et al.* (9). Links to current peer reviewed literature uploaded in defense of the concepts relating to confidentiality and telehealth promoted active and wider reading, as students were not solely relying on instructional content but the contribution of independent literature searching.

Discussion

Evaluating the effectiveness of an interactive discussion board exploring the concept of confidentiality and telehealth among graduate students, highlighted the versatility of online teaching and learning. Versatility was evident through intelligent interactions and students being able to incorporate external literature sources to enhance the intensity of online critical discussions. Various scholars recommend the use of asynchronous discussion boards, articulating that their use promotes a deeper understanding of course material and subject matter proficiency (22,23). A fact, which in this case served to heighten the critical exploration of confidentiality and telehealth within the scope of Health Informatics. Other studies have reinforced the importance of asynchronous discussion boards as an interactive teaching and learning tool, sharing the idea that it encourages collaborative learning experiences (24-28). In turn, these collaborative learning experiences positively impact the development of students' higher order cognitive skills (29). This notion is particularly salient, when students take an assumed active leadership role, such as facilitating the critical discussions (30,31).

Inherently, the online interactive discussion board created an environment that emphasized content and supported social engagement. This was noted specifically for student-led discussions which drew personal experiences and critical reflection. Chen *et al.* found out that asking initiating questions on an asynchronous interactive discussion board promotes active participation and positively affects the level of cognitive presence (32). The cognitive presence of the students was evident, as there was a constant flow of interactive and discursive dialogue which took the concept of confidentiality and telehealth into critical scrutiny from personal perspectives. This in-depth interaction is what Komives *et al.* describes as a cognitive and emotional process (33).

Wider reading and delving into other sources of literature supported the process of active online learning. The spontaneous act of independently searching for current peer reviewed literature for the purpose of defending academic discussions and debate demonstrated increased interaction. Although online learning has been criticized for being inferior to face-to-face interaction (34,35), the evaluation of this interactive discussion board has set a different narrative. It could be argued that experienced academics have the knowledge and skills to stir up and promote active online learning through contentious questions (36), but the ultimate online engagement is dependent on student participation, which was evident through this process evaluation.

Conclusions

Evaluating the effectiveness of an interactive discussion board exploring confidentiality and telehealth among graduate students, highlighted the various factors that contribute to its success. Intelligent interactions, the appropriateness of the learning environment, and active

online learning are all fundamental components of student learning and engagement with discussion boards. The topic of confidentiality and telehealth promoted expansive critical debate and reasoning. However, ultimate online engagement is dependent on student participation, and presenting debatable Socratic questioning methods on an interactive discussion board heightens the student learning experience.

Acknowledgments

Funding: None.

Footnote

Data Sharing Statement: Available at https://ht.amegroups.com/article/view/10.21037/ht-23-9/dss

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://ht.amegroups.com/article/view/10.21037/ht-23-9/coif). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). 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). Informed consent was taken from all individual participants.

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doi: 10.21037/ht-23-9
Cite this article as: Collins L, Johnson M, Tyson C. Online interactive discussion boards: exploring student engagement when critically discussing the concept of confidentiality and telehealth. Health Technol 2023;7:4.