

INNOVATION IN THE COVID-19 PANDEMIC USING THE INQUIRY-BASED LEARNING APPROACH TO IMPROVE ACTIVE LEARNING, CONFIDENCE, AND CRITICAL THINKING OF NURSING STUDENTS

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Abstract

Background: Educators and learners at all levels including nursing students have been impacted by Covid-19 pandemic with rapid adaptations to online learnings. While struggling to face the challenges, a learning innovation is needed to improve students confidence and critical thinking. This study explored the impact of an inquiry-based learning approach using podcast in a first-year undergraduate nursing students on acquisition of knowledge, self-confidence, critical thinking.

Methods: The researchers in this study used a hybrid approach. We will evaluate the effectiveness of this course by a combination of a pre- and post-test in a quasi-experimental design and an in-depth interview to gauge students' knowledge gains, self-assurance, and critical thinking progress.

Results: The quantitative results revealed an enhancement in students' self confidence and knowledge acquisition. After the intervention, students who were highly self-confident increased from 52% in pre-simulation to 91%, while the the average of online midterm and final exam test score was $8.6/10 \pm 1$ (n 27) and $95\% \pm 5\%$ (n 27) for students in the intervention group compared to only $6.0/10 \pm 1$ (n 27) and $65\% \pm 5\%$ (n 27) for students in the control group. The students from the intervention group found the combination of podcast media in learning methods very helpful, beneficial and reported their satisfaction.

Conclusions: The inquiry learning method experience in combination with podcasts was an accepted form of learning innovation and provided new teaching strategies for students in times of pandemic to acquire knowledge more actively and develop their critical thinking.

Keywords: Students, Nursing, Pandemics, Personal Satisfaction, Self Concept, Thinking.

INTRODUCTION

The world is facing a previously unimaginable danger in the shape of a global pandemic. To far, the Coronavirus illness of 2019 (COVID-19) has claimed thousands of lives worldwide [1]. Nursing schools in healthcare are equipped for the unique challenges associated with helping in the development of the next generation of care workers [2]. The aim of this article is to explain how to study innovation through podcasts using an inquiry-based mindset. We remember some early lessons as we deal with this health problem. We handle issues brought up by students. We are concerned about how we will continue to educate nurses in a society marked by social alienation, isolation, and quarantine, while still needing nurses on the front lines [3].

Numerous problems and difficulties are addressed today as a result of the inefficiency of online meetings, conference calls, and urgent emails [4]. While the bulk of instruction takes place online, students in this program must demonstrate an understanding of the topic in order to meet the requirements for a Bachelor of Nursing degree [5]. Certain nursing colleges do not have the same difficulties as other academic institutions when transitioning quickly to distance education in a digital age. However, in

order to adopt successful online learning innovations, we, like other nursing schools in Indonesia, must make tough decisions [6] [7]. Finally, considerable emphasis is placed on improving the quality of education [8] [9].

However, despite the fact that there is a connection between the development of critical thinking and remote learning, there has been little research published that focuses on utilizing this method to improve student confidence and critical thinking in nursing students [10]. Nursing conclusion-making has been recognized as one of the most essential critical and questioning skills nurses may learn, and it has been described as "an fundamental talent that determines who we are and what we believe" [11]. With little or no previous experience, Encapsulation is a skill that is expected to be quickly picked up by first-year nursing students (Whitehead, 2002; O'Flaherty, 2019). Unfortunately, this prediction has not come true. Data from anecdotal sources shows that nursing students have difficulty meeting the high standards set for them in terms of their ability to synthesize information, grow their critical thinking (CT) skills, and evaluate their own performance. [12].

According to Scheffer and Rubenfeld, there are several facets of CT (2000). I seek out and obtain information, II inquire and investigate, III assess and draw conclusions, IV solve problems and put theory and knowledge to use. In nursing education, cognitive restructuring (CT) is a deliberate, higher-order thinking method for identifying client difficulties, assessing evidence-based practice in client care, and making appropriate decisions about the provision of care. Today's research in cognitive therapy is informed by an early description of CT cognitive processes: the formulation and assessment of arguments through interpretation, analysis, evaluation, inference, and explanation leading to problem solving and decision making. The purpose of this paper is to demonstrate how podcasts may be used to teach innovation to nursing students, therefore fostering greater levels of active learning, confidence, and critical thinking.

Method

Study design

This study employs both quantitative and qualitative methodologies. Before and after adopting the unique integrated inquiry technique with podcasts, students are examined on their comprehension of podcast material, In academic exams, knowledge acquisition, self-assurance, and the development and application of critical thinking are emphasized. In-depth interviews are utilized in qualitative research. In 2019, 54 first-year undergraduate nursing students were asked to join the experimental/post-test group (intervention). If they want not to participate, students can opt out without repercussions, yet none choose this choice. The objective of the course is to enhance students' knowledge of community nursing concerns and trends. Students are introduced to community nursing, government regulations related to community health, and community nursing care as well as hands-on practice in their surrounding communities due to the COVID-19 pandemic. This is the first time that students use the innovative combination inquiry approach using podcasts in their learning.

Students were randomized separately into 2 groups (intervention) (a total of 28), as well as a comparison (control group) (total of 26) to evaluate any changes in students' knowledge acquisition regarding the content of community-related subjects before and after intervention. Students in the experimental group, (1) conducted a weekly search of material literature for 7 weeks and a preliminary study in their environment, (2) they recorded and uploaded it on podcasts. (3) Traditional lectures use zoom. (4) lectures with an inquiry approach. (5) drawing conclusions and solving solutions. (6) Podcast recording of the conclusions they got from all processes. (7) repetition until application in the field accompanied by a supervisor for consultation. The control group was only given learning the traditional method using zoom.

Data collection

Scheffer and Rubenfeld (2000) identify ten mental habits (affective component) and seven cognitive skills as constituting critical thinking in nursing (cognitive component). The development of critical thinking abilities was measured in our research. By contrasting students' performance before and after being exposed to the podcast combination inquiry approach, this research highlights the three fundamental requirements of CT Scheffer and Rubenfeld. In this study, we measured students' level of confidence in their reasoning skills and their capacity to critically investigate a case study by comparing their responses before and after the intervention (see Table 2a and b). Scheffer and Rubenfeld's ii. apply standards by correctly assessing and critically analyzing material is put to the test by contrasting students' pre- and post-podcast combo inquiry-based case study answers for accuracy. Abilities of thought Synthesis is evaluated by a comparison of pre- and post-learning podcast summaries from a student podcast combination inquiry method to engaging with patients in a healthcare environment.

The data collection process consisted of three parts. In the first stage (A), students registered in the community course offering (a total of 54 students) were asked to complete a pre-test, informed on the inquiry technique and the usage of podcasts, and then instructed to seek for real-world instances in their immediate surroundings. On the basis of autonomous literature search information and mentor assistance, they are guided to particularly solve case studies in the surrounding area. Students submit their audio link weekly via a link on the course website, and the course supervisor assigns a formative score of 20 based on the precision with which they comprehend the case community's material.

The ability to critically analyze case studies and ask pertinent questions is assessed. In Phase 2 (B), students are encouraged to cooperate with instructors on introductory material, case studies, and overall education. Students receive timely comments from their tutors. If a student fails to meet the minimum passing score on the multiple-choice questions examined by the course coordinator, they are given another chance to reevaluate their understanding and resubmit their answers. Students are given the opportunity to reflect on their podcast combo inquiry learning experience, make suggestions on how the intervention may be enhanced, and discuss any other topic they choose in an unstructured virtual debriefing at the end of the class. Students are being asked to submit qualitative feedback on numerous aspects of their podcast combination inquiry learning experience using a five-point Likert scale form.

Phase three of the study requires students who have passed phase two to do a critical analysis of the same case study and respond to questions based on that analysis (C). Directors of courses typically give students a 20-point average for their participation. Correctly answering questions and demonstrating the ability to apply information in clinical settings are two ways in which students are evaluated (see data collection). Assessment and evaluation of nursing care and treatment methods is essential for a number of reasons, including learning about the patient's condition and explaining it to them in a clinical context. Students also showed improved self-assurance in answering case study questions and provided detailed comments on how they benefited from studying the podcast/combination inquiry technique. Instructed time allotted for students to complete and turn in final projects is two weeks.

Result

Demographics

Using a simple demographic survey and academic records, background data on students was collected. There were 24 females among the 54 students who had utilized simulation during two independent research sessions and whose data had been gathered. The average age of pupils at the start of the school year was 21. (range 16-25 years). Because they have not yet completed their first semester, they are all part-time, first-year students with a grade point average of 0.0. This study examines the demographics of first-year undergraduate nursing students in Indonesia.

Qualitative Study

Student satisfaction with the experience of approach learning methods with a combination of podcast media

Using a five-item Likert scale, student satisfaction with the simulation design and learning experience was evaluated qualitatively (Table 1). Overall, the students' responses to all components of the simulation were quite favorable.

Answering the question, "This method is at the right pace for my learning," students gave a 98% (strongly agree/agree) rating of satisfaction. Responding to the question, "This method allows me to test my own acquisition and understanding," students gave a 95% (strongly agree/agree) rating of satisfaction. Responding to the question, "This method is at the right level of difficulty for my learning," students gave a 95% (strongly agree/agree) rating of satisfaction.

What is the finest element of this method-learning approach? Student responses include: "enjoy real life like a nurse in real life"; "knowing the obstacles and challenges in the field as a nurse"; "I found the learning method in a clearer way so that it was easier for me to understand than other lectures"; "It stimulates my personal learning more than lectures"; "I like the way this is used to support my learning"; "this interactive approach worked best for me."; "I find this to be the most effective way to support my

Table 1 Using a five-item, five-point Likert scale questionnaire, we calculated the percentage of students who were satisfied with their simulation experience and the simulation's design.. (n = 54).

| | Likert | | | | |
|--|----------------|-------|---------|----------|-------------------|
| | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
| 1. independent, self-paced learning | 42% | 47% | 9% | 2% | 0% |
| 2. Inbuilt questions allowed checking of knowledge acquisition and understanding of content | 42% | 42% | 9% | 9% | 0% |
| 3. Was at appropriate level of difficulty | 42% | 42% | 0% | 0% | 0% |
| 4. Usefulness and timing of the immediate feedback assisted with active learning of the material | 42% | 42% | 0% | 0% | 0% |
| 5. This approach should be used in other topics within the course | 42% | 42% | 0% | 0% | 0% |

After completing the simulation, 100% of students stated that they do not have prominent questions about learning outcomes for the topic of community nursing

Quantitative

Students' presentations of case studies are met with assurance and appreciation.

The majority of the students who took part in the simulation showed at least some, if not considerable, improvement in their critical thinking and academic writing skills. According to Scheffer and Rubinfeld, this discrepancy reflects students' superior results on their post-simulation Part C case study submissions displaying a variety of critical thinking abilities (2000). Tables 2a and 2b. Grades are determined by a number of factors, including the accuracy of students' responses to questions central to the inquiry approach learning style and their ability to apply what they've learned by interacting with patients in a clinical setting.

Students in the second "not very confident" group (47 percent of the class) were more accurate in their assessment of the quality of their assessment, with 22% achieving a C or higher for Part A and the remaining 25% receiving P1 (55–64%) or P2 (50–54%), which tends to reflect their lower self-confidence more accurately (Table 2a). The most common type of mistake in this category is a fundamental misunderstanding of community evaluation. 54 students' trust in their critical judgment (Section C) increased after using the inquiry-based learning method (Table 2b). Specifically, post-intervention, 91% of students reported high self-confidence, compared to 47% of students pre-simulation (Tables 2a and b). Post-intervention, it appeared that students' use of critical thinking in their assessments improved, with all students revising their initial arguments somewhat and all receiving at least one higher rating.

Grade level for Part C delivery after intervention. The revised arguments of the students contain less content-related misunderstandings, improved clarity and explanation of the methods of community nursing evaluation, and increased confidence while dealing with clients in clinical settings.

Table 2a Both the students' reported level of self-confidence (in percent form) and their performance on the Part A pre-simulation assignment were significantly correlated with higher grades (case study critical appraisal and answering the case study MCQ) (n ¼ 60).

| Pre-intervention Part A grade/self confidence | D- HD | C | P1 | P2 | F1-F2 | |
|---|----------|----|----|----|-------|----------------|
| Very confident (%) | 14 | 19 | 14 | 5 | 0 | Total ¼ 52% |
| Not very confident (%) | 17 | 5 | 11 | 14 | 0 | Total ¼ 47% |

F2 (Fail 2)- HD is the key to the table's grades and nomenclature. (High Distinction)

Students' perceptions of simulation as a tool for active learning and knowledge transformation.

As part of their Part C report, students are required to provide reflection and comments on how they believe the podcast combo inquiry approach learning method may have impacted their learning. Several themes emerged concerning the efficacy of simulations in fostering active learning and students' critical reasoning in drawing conclusions in their podcasts, particularly with regard to knowledge transformation. Some students remarked that despite gaining new information about these therapies, this tool facilitates active learning by enhancing their comprehension, retention, consolidation, application, and transformation of knowledge, particularly in clinical settings.

This is apparent in student remarks such as: "drawing conclusions based on the search for resources, learning, and interactions with mentors makes information "stick"; and "engaging in real-world scenarios enhanced my grasp of the course material." The podcast supports student learning by identifying deficiencies and abilities in their knowledge and the courage to speak up and ask questions, as evidenced by student comments such as "the lesson was suitable to be applied to fill the knowledge gap (between the two submissions), and it helped me assess the case study better"; "It helps my understanding of community nursing in a simple way"; and "I now understand how to deal with the community in the field after assessment"

This method of instruction also promotes the development of students' critical thinking in their podcast summaries, particularly in relation to the clinical application of their knowledge, as evidenced by student comments such as "I feel that actively participating in role play (in society) allows me to apply my knowledge more clinically" and "nurse-patient interaction helps me apply my knowledge (in Part C)". This kind of instruction also instills in students the confidence to reconsider their arguments through critical reasoning, which might lead to improved patient outcomes. A student's statement highlighted this newfound confidence in critical evaluation as a result of inquiry-based learning methods: "I feel more confident after engaging in the learning technique (with Part C) since I now comprehend the mechanisms of assessment via evaluation in nursing care."

Acquiring Information

Evidence from two different types of final examinations suggests that students' knowledge acquisition of the assessment's content is enhanced by the simulation of a learning environment. Students in the intervention group scored an average of 8.6 out of 10 on the midterm online exam for blood issues (n=27), while students in the control group scored an average of 6.0 out of 10 (n=27) despite receiving lecture material on the topic of evaluation. Used a two-tailed t-test with a P value of 0.01 to determine significance. The average final exam score for the 10 multiple-choice nursing diagnostic questions for the intervention group is 95% 5% (n = 27), while it is 65% 5% (n = 27) for the control group who also received course material on nursing diagnostics. The learning goals and examination questions for the intervention and evaluation groups were identical. Results were analyzed using a two-tailed t-test at the 0.05 level of significance. Both sets of pupils share similar demographics.

Discussion

Learning how to think critically has emerged as a central goal of Health Sciences curricula [13], with profound implications for the delivery of high-quality treatment and the protection of patients. Future healthcare professionals might benefit from students who have acquired CT skills because they improve their critical thinking and their capacity to assess the importance of real-world challenges. However, anecdotal evidence suggests that many undergraduates are ignorant and absorb information without much critical scrutiny [14]. Students may now actively learn, grow in critical thinking, and use these abilities in community nursing thanks to novel teaching methodologies made possible by the combination of podcasts and the inquiry learning method experience during times of epidemic. Students in this research employ many methods (resume, inquiry, and case study analysis) to arrive at defensible findings about an issue (the HDN case study) (culminating in the submission of a final critical analysis of the case study). Through the use of podcasts and the inquiry-based learning approach, students are able to hone their problem-solving skills in a safe, "clinical," setting without fear of repercussions and at their own speed.

According to Scheffer and Rubenfeld (2000), critical thinking in nursing entails activities such as analysis, application of standards, discrimination, information searching, logical reasoning, prediction, and transformation of knowledge. The results may be used by nurses, teachers, and researchers to better comprehend the significance of critical thinking in the nursing profession [15][16]. Several critical thinking abilities, including as increased self-confidence, the application of standards of correctness, and the transformation of information, have benefited greatly from the coupling of summaries utilizing student podcasts with critical thinking, as recent studies have shown [17].

The "clarity of expression" in students' written Part C submissions after the inquiry approach learning method with a combination of podcasts was more pronounced than in their pre-simulated Part A submissions, as evidenced by students' higher scores for applying these skills in their Part C submissions than in their Part A submissions. Scheffer and Rubenfeld (2000) cite "tolerating uncertainty in clinical judgment" as a crucial critical thinking ability for nurses. Students using podcasts as part of an inquiry-based learning approach run the danger of establishing ineffective communication practices. For academic achievement, students need to be flexible and accept the possibility that they will make mistakes [7][18].

The students' new contributions show that their self-confidence has grown as a result of the positive influence that the inquiry learning approach paired with podcasts has on their capacity to reanalyze, reinterpret, and self-correct, all of which are essential critical thinking abilities [19]. (Table 2b). Students may submit an expanded or alternative argument in support of their position (Section C submission) compared to their initial position (Section B submission). This ability is necessary for evaluating patient circumstances and deciding on a course of action. Instructors in the field of nursing want their students to do more than just memorize information; they want them to think critically about it, make adjustments as necessary, and come up with responses that go beyond the obvious [20].

In addition, students who used the inquiry learning method in conjunction with podcasts experienced students appeared to have a greater understanding of community nursing care topic content, as evidenced by higher test scores for community nursing care topic questions on the two separate summative assessments [21]. Our results corroborate those of a previous study showing that students whose teachers employed inquiry techniques achieved significantly higher test scores (by roughly half the standard deviation) and were more positive about the methods they were taught to use in class than their counterparts who were taught in the more traditional fashion [22]. Some students may have been able to fill in gaps in their knowledge thanks to community nursing care. The statements of two students, "I don't feel the sim delivers more material than the lecture, which is quite detailed," and "The sim is effective at filling gaps in knowledge," reflect this.

Conclusion

Findings from this study lend credence to the idea that case-based simulation is an effective and novel active learning strategy for boosting students' self-assurance and critical thinking skills in areas like information gathering, analysis, synthesis, evaluation, and transformation, all of which can be applied to students' academic writing.

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