SSRG International Journal of Nursing and Health Science
ISSN: 2454 – 7484 / https://doi.org/10.14445/24547484/IJNHS-V8I2P105

Volume 8 Issue 2, 21-25, May-Aug 2022

Original Article

The Journey from Lecture Only to a Flipped Classroom

Susan Braud

School of Nursing, University of Lynchburg, VA, USA.

Received: 25 April 2022 Revised: 06 June 2022 Accepted: 22 June 2022 Published: 30 June 2022

Abstract - *Transitioning from a lecture to a flipped classroom involves flexibility, preparation, and continual learning for faculty. The flipped method involves pre-recording lectures and creating case studies, games, and discussions that encourage critical thinking and ownership of learning. A project was completed to determine the impact of implementing a flipped classroom method on first-semester undergraduate junior nursing students in a pharmacology course. A non-probability convenience sample was used that consisted of 94 students.*

The study's outcome revealed no significant statistical difference (p=.63) in the flipped class's exam grades students in the flipped class. This finding demonstrates that students can understand content regardless of the method of instruction. However, course evaluations illustrated a need to improve the method of delivery and learning activities. The flipped method has been continued in pharmacology and incorporated in the sophomore-level health assessment course. Evaluations with the adjustments and revisions illustrate student learning and satisfaction in the courses. Faculty need to assess and evaluate their courses to ensure learning continually.

Keywords - *Flipped class, Active learning, Pharmacology, Nursing education, NCLEX.*

1. Introduction

Healthcare is constantly evolving, which changes the roles and expectations of the bedside nurse. There is an urgent need for nursing faculty to respond to changes in healthcare to prepare students for their future profession. According to Von Colln-Appling and Giuliano, faculty must encourage and guide student nurses to think critically and anticipate potential patient outcomes [1]. Novice nurses must be prepared to think on their feet and react to situations that could change their patients' outcomes.

Nursing education should include classroom strategies that engage students and challenge them to think critically about the content being taught. Strategies that include active learning should be designed to increase critical thinking and the application of course material. The traditional lecture can lead to an overwhelming amount of content instead of allowing students to apply content through active learning with appropriate feedback from faculty. According to Khanova, Roth, Rodgers, and McLaughlin, active learning results in "improved performance, increased learning and achievement, greater engagement and improved critical thinking skills" (p. 1039) [2]. This can lead to students taking ownership of the content, while the faculty become the guide to help support their learning. The flipped model will allow students to utilize skills to solve problems and develop important and necessary critical thinking skills [2].

Changing the format of a course requires flexibility, preparation, and continual learning for the faculty. It requires them to listen to students and revise the course regularly to meet student learning needs and to ensure that they think critically. The journey began with a Doctorate in Nursing Practice (DNP) final project. Since then, improvements and revisions have been made to the course based on student feedback and experience. This journey has been challenging but rewarding and is now being implemented in the sophomore level health assessment course and continued in the junior level pharmacology course.

2. Background

Changes in healthcare and advances in medical research require healthcare education to change. According to the American Association of Colleges of Nursing (AACN), nursing students take ownership of their learning and respond to active classroom learning [3]. The AACN states active learning as "making an action out of knowledge" [3]. To successfully prepare student nurses for their profession, faculty must guide the students in their learning and ability to think and apply knowledge to patient scenarios and situations critically.

The National Council of the State Boards of Nursing (NCSBN) has revised the National Council Licensure Examination (NCLEX) and will release the Next Generation NCLEX in the Spring of 2023. The Next Generation NCLEX aims to assess and measure the graduate's ability to apply knowledge, think critically, and use clinical judgment [4].

Although the revised NCLEX was a few years away, changes needed to be implemented to improve the likelihood of successful critical thinking for all students. How will critical thinking be assessed, and will the students be able to apply knowledge? The solution was to incorporate active learning such as case studies, discussion questions, and games that encouraged students to discuss and share their thoughts on patient scenarios. Pharmacology was scheduled for 50 minutes of class time twice a week. Therefore there was very little time for active learning after a lecture. The result was to change the course format to a flipped classroom.

The pharmacology course was introduced to a flipped method of instruction, which included having pre-recorded lectures and using in-person time for active learning. According to Thomas and Schuessler, students that receive their course content from lectures will only retain five percent of that content [5]. This is alarming information, especially when related to a pharmacology course. According to the NCSBN test plan, pharmacological and parenteral therapies make up 15% of the NCLEX.

For students to be successful in their learning, faculty need to foster critical thinking and engagement in course content so they can apply knowledge at the patient's bedside. One way to foster critical thinking and increased engagement is by incorporating active learning strategies into the in-class sessions. To successfully integrate active learning, the lectures need to be pre-recorded and made available to students before the scheduled class time so that there is time for working through case studies, discussions, and questioning. During the scheduled class, the faculty acts as the main facilitator to guide the student and assist them in recognizing their weakness in the material. Active learning results in faculty moving from the sage on the stage to the guide on the side [6].

The flipped classroom was initially introduced in 2007 by two high school teachers, Jon Bergmann and Aaron Sams [7]. This concept was created when the teachers recorded their lectures for students to view at home on their own time when they were absent from school. This allowed students to stay current with the course content even when absent. The lecture content is strengthened in the classroom by incorporating strategies that involve team/group work and critical thinking skills [8]. During the scheduled class time, the faculty can act as the main facilitator to guide the student and assist them in recognizing their strengths and areas of weakness in applying the course content.

The flipped classroom fosters this type of learning because it offers pre-class material via pre-recorded presentations, textbook readings, and/or online videos. Video lectures can increase the student's autonomy and control with studying and learning and their attention and engagement with the course content [9]. The millennial and forward generations of students may prefer this type of learning due to living in the era of technology and YouTube® [10]. Students need to get involved in the content that is being presented and should be able to demonstrate an understanding and comprehension of it instead of just reproducing it for test purposes. Kim and Jang found that when active learning includes solving problems in a group, the students will eventually improve their "communication, teamwork and leadership skills" [11].

The nursing curriculum should not be siloed; content should be carried through each course and expanded upon as appropriate. Students will be encouraged to use their knowledge from previous courses and patient experiences as they incorporate content from the current course to work through case studies and patient scenarios. These skills will prepare the student nurse for their future profession, giving them the necessary tools to adapt to the many changes in healthcare.

3. Approach

A quantitative method using experimental design was used for this project. It was based on testing an intervention on a group and then comparing the results with a non-interventional group. In this study, the intervention was the flipped classroom method, and the non-interventional group was the traditional lecture. The non-interventional group received content via in-person lectures and pre-assigned textbook readings. The total sample included 94 junior-level pharmacology nursing students. Of the 94 participants, 47 were from the non-interventional class, and 47 were from the interventional flipped method. IRB approval was obtained from the study site before the initiation of this project.

The textbook and course material remained the same for the interventional and non-interventional students in the Pharmacology course. This provided the consistency of the content being taught. Exam questions were prepared or obtained from exam banks designed by the required textbook, Assessment Technologies Institute (ATI) Pharmacology book, and/or pre-class lecture content.

The faculty proctoring the exam was the faculty member that facilitated the content covered in the exam to prevent potential bias with the material. The pharmacology class was held in a large classroom on campus two days a week for 50 minutes, which was consistent for both groups. The room was equipped with smart board technology, allowing students to airplay from their iPads and dry erase boards evenly distributed throughout the room to foster creativity with discussions and learning. Lectures were pre-recorded and made available to students before the face-to-face scheduled time. Class time was spent working on case studies, discussion questions, or game questions that covered content in the pre-recorded lectures with a small group of their peers.

The questions on the exam resembled questions on the NCLEX and included multiple choice and multiple response questions. An identical test was given to the non-interventional and interventional groups of students. The test was administered to both groups via the students' school-issued iPads using the ExamSoft application. ExamSoft is a testing software loaded on the iPad to improve test security and reduce the incidence of dishonesty and cheating on an exam. Each question weighted 2.94, and students needed to achieve an 80% or higher to pass the exam.

4. Outcomes

This study found that there was no significant difference in the scores for the non-interventional group (M=83.61, SD=7.82) and interventional group (M=82.86, SD=7.08; t (92) = .49, p=.63, two-tailed). The magnitude of the differences in the means (mean difference =.75, 95% *CI*: -2.31 to 3.81) was very small (eta squared = .003). Statistical significance was set at p< .05. The exam grades of the interventional cohort were similar to those of the non-interventional cohort that received the traditional lecture method. Although this was only one exam, it demonstrated that the students could learn the content and that the teaching method did not have an unfavorable effect on the exam grades.

The mean exam grade (M=82.86) demonstrates that students mastered the content in the flipped class. The flipped method allowed the students to view recorded lectures as often as needed to understand the concepts better. This is not feasible in a traditional lecture where content is taught in the classroom and not recorded, along with little to no time for learning activities.

Students in the interventional pharmacology course were the first to participate in a flipped classroom. Students completed University course evaluations anonymously at the end of the semester. Comments included:

- I liked having the videos available online to watch and take notes on my own time. It was much easier than sitting in a classroom to take notes on what the PowerPoint said and the additional facts professors added to the material. The videos allowed me to press, pause, and re-watch as many times as I needed for my learning experiences. I feel like case studies helped with a better understanding of the material.
- I enjoyed applying the medications to the case studies in class. This allowed me to learn logically to remember better the content I learned in class.
- While they took a long time to listen to while making notes, they were extremely helpful, and I loved that I could pause and repeat things I missed.
- I hated the videos initially, but in the end, I loved them! I would keep doing them in future classes.
- I did not enjoy watching lecture videos before class and not going over any of the content in class. The video lectures are helpful when studying for tests but are not an efficient way to learn material for the first time.
- This class would have been better if we were able to sit in class and be taught the material and have the chance to take notes.

5. Discussion

Although this study did not prove a statistical significance (p=.63) between the two methods of instruction, it demonstrated that students could learn the content. According to Dehghanzadeh and Jafaraghaee, the most effective way to improve critical thinking is by incorporating small group activities, role-playing, case studies, and patient scenarios [12]. During a flipped class, there is time for the learning activities because the lecture is made available to students ahead of time.

In a similar study conducted by Murray et al., there was no significant difference in exam grades. However, they discovered that knowledge retention was higher among students in the flipped class [13]. The flipped method increases students' time in the classroom to solve problems, discuss, and apply the content concepts. Analyzing and applying content to patient situations requires the students to pull content from previous courses and experiences. Nursing students should build upon past knowledge and experiences within each course and should be required to pull from this knowledge bank to answer questions, solve patient scenarios and provide valuable insight for patient care. Learning content for exam purposes only will not create a lifelong learner. The mean exam grade (M=82.86) demonstrates that students mastered the content in the flipped class.

Faculty should continually revise and improve their courses to increase students' critical thinking skills. According to Lawson, Davis, and Son, the scholarship of teaching and learning need to shift a focus from the "should" to the "how should" the classroom be flipped (p. 79) [14]. Integrating active learning into the classroom can increase the student's ability to think critically through patient scenarios and increase their ability to communicate and collaborate with peers. Active learning should be complex and involve deliberate thinking that builds upon concepts taught in the recorded lectures [14]. One class should build upon the next, like building blocks, making connections to the concepts. Using case studies in the classroom can increase the students' ability to use knowledge, incorporate course concepts, and collaborate with classmates to solve clinical problems. [15]. This should lead to increased clinical judgment when the students enter the hospital setting and increase their confidence when caring for their clients.

The feedback was positive and negative from the students, resulting in changes. There appeared to be no consistency in the length of the pre-recorded lectures, ranging from 20 to 60 minutes. All recorded lectures are 25 minutes or less depending on the chapter and only contain content to supplement the textbook reading. Lectures are available to students three days before the scheduled class time. An improvement was also made to the case studies that included several medications (both previous medications learned and current), lab work, anatomy and physiology, and disease process written within a patient scenario. The case studies are designed for students to use knowledge from previous courses such as health assessment and pathophysiology. Students work in groups and place answers on a whiteboard which helps to improve communication and teamwork. The faculty facilitated the case study while students shared their answers and gave their rationale. Another important strategy is introducing this method in the sophomore year of nursing, the first year of nursing courses for students in the program.

Evaluation Comments after changes were implemented:

- online was difficult, but I liked how I could replay it as many times as I want
- Connecting this course to the lab and collaborating on case studies gave me great practice with my skills. Further, I appreciated having access to all recorded lectures.
- The thing I liked best about this course was the collaborative group work and how we talked through each case study at the end of class
- Working in the classroom with other students on case studies helped me to learn and apply the material
- A great deal because our case studies help us with real-life scenarios.
- The case studies in this class were a beneficial tool to help us prepare for the tests and help us get in the habit of thinking critically

6. Conclusion

Research has shown that students can learn from a flipped classroom method. With this method, the recorded lectures allow the students to have access to content anywhere and anytime they choose. Although the grades did not show statistical significance, the first course evaluations from students illustrated a need for improvement and delivery of content and the next set of evaluations demonstrated that the adjustments made to the course were positive for student learning. Preparing students for the NCLEX is important but preparing them to critically think by applying knowledge will prepare them to deliver safe and effective care to their patients.

References

[1] Von Colln-Appling C & Giuliano D. A, "Concept Analysis of Critical Thinking: A Guide for Nurse Educators," *Nurse Education Today*, vol. 49, pp. 106-109, 2017. Doi: 10.1016/j.nedt.2016.11.007.

[2] Khanova J, Roth M.T, Rodgers J.E, and McLaughlin J.E, "Student Experiences Across Multiple Flipped Courses in a Single Curriculum," *Medical Education*, vol. 49, pp. 1038-1048, 2015. Doi: 10.1111/medu.12807.

[3] "The Essentials of Baccalaureate Education for Professional Nursing Practice," *American Association of Colleges of Nursing*, 2021. [Online]. Available: https://www.aacnnursing.org/Portals/42/AcademicNursing/pdf/Essentials-2021.pdf

[4] *NCLEX-RN Examination: Test Plan for National Council Licensure Examination for Registered Nurses*, NCSBN, 2018. [Online]. Available: https://www.ncsbn.org/2019_RN_TestPlan-English.pdf

[5] Thomas V & Schuessler JB, "Using Innovative Teaching Strategies to Improve Outcomes in a Pharmacology Course," *Nursing Education Perspectives*, vol. 37, no. 3, pp. 174-176, 2016.

[6] McElhany J, "Awakening Student Ownership: Transitioning to a Student-Centered Environment," *Art Education*, vol. 70, no. 1, pp. 29-35, 2017.

[7] Lane-Kelso M, "The Pedagogy of Flipped Instruction in Oman," *The Turkish Online Journal of Educational Technology*, vol. 14, no. 1, pp. 143-150, 2015.

[8] Geist M, Larimore D, Rawiszer H & Al Sager AW, "Flipped Versus Traditional Instruction and Achievement in a Baccalaureate Nursing Pharmacology Course," *Nursing Education Perspectives*, vol. 36, no. 2, pp. 114-115, 2015. Doi: 10.5480/13-1292

[9] Jones J.P, McConnell D.A, Wiggen J.L & Bedward J, "Effects of Classroom "flipping" on Content Mastery and Student Confidence in an Introductory Physical Geology Course," *Journal of Geoscience Education*, vol. 67, no. 3, pp. 195-210, 2019. Doi: 10.1080/10899995.2019.1568854.

[10] Jong M.S, "To Flip or Not to Flip: Social Science Faculty Members' Concerns about Flipping the Classroom," *Journal of Computing in Higher Education*, vol. 31, pp. 391-407, 2019. DOI: 10.1007/s12528-019-09217-y.

[11] Kim H. & Jang Y, "Flipped Learning with Simulation in Undergraduate Nursing Education," *Journal of Nursing Education*, vol. 56, no. 6, pp. 329-336, 2017. DOI: 10.3928/01484834-20170518-03

[12] Dehghanzadeh S & Jafaraghaee F, "Comparing the Effects of Traditional Lecture and Flipped Classroom on Nursing Students' Critical Thinking Disposition: A Quasi-Experimental Study," *Nurse Education Today*, vol. 71, pp. 151-156, 2018. DOI: 10.1016/j.nedt.2018.09.027

[13] Murray L, McCallum C & Petrosino C, "Flipping the Classroom Experience: A Comparison of Online Learning to Traditional Lecture," *Journal of Physical Therapy Education*, vol. 28, no. 3, pp. 35-41, 2014. Doi:10.1097/00001416-201407000-00006

[14] Lawson A, Davis C, Son J, "Not All Flipped Classes are the same: Using Learning Science to Design Flipped Classrooms," *The Journal of Scholarship of Teaching and Learning*, vol.19, no. 5, pp. 77-104, 2019.
[15] Jimenez-Gomez M.A, Cardenas-Becerril L, Velasquez-Oyola M.B, Carrillo-Pineda M & Baron-Diaz L.Y, "Reflective and Critical Thinking in Nursing Curriculum," *Rev.Latino-Am.Enfermagem*, vol. 27, pp. e3173, 2019. Doi: 10.1590/1518-8345.2861.3173.