

## Nursing Education Research Conference 2018 (NERC18)

### A Comparison of Instructional Methods for an Undergraduate Nursing Health Assessment Course

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With the emphasis on the ability of nursing students to apply knowledge learned, new classroom designs are being implemented to ensure student success. Traditional teaching modalities consisted of lecture and regurgitation of knowledge. Today, faculty are implementing a flipped classroom design as a pedagogical tool to enhance learning through increased faculty and student engagement (Paterson, 2017; Smith, 2017; Rotellar and Cain, 2016). Flipped designs have also been shown to promote higher-order thought processes and reasoning skills in English as a second language students (Kim, Park, Jang, and Nam, 2017). Some studies have shown no difference in student grades or level of student satisfaction with flipped classroom design vs traditional lecture based design but suggest that intensity of the course has a factor (Whillier and Lystad, 2015). Students are often resistant to change from traditional methods of instruction and sometimes find individual learning of content difficult without the face to face instructor contact (Telford and Senior, 2017). An additional method to integrate technology use in a health assessment course is the use of virtual patient technology which provides a comprehensive learning experience in a safe environment and engages students to develop their assessment and documentation skills. The combination of flipped classroom design with virtual patient experience has been shown to allow for a personalized learning experience that promoted higher-level learning in pharmacy students in a required therapeutics class (Lichvar, Hedges, Benedict, and Donihi, 2016).

This study compared outcomes of three different teaching modalities in an undergraduate health assessment course. The modalities were as follows: traditional lecture in a traditional classroom setting (traditional section); flipped class in a traditional classroom setting (flipped section); and flipped class in a fully technology integrated classroom (flipped and integrated section). Course content was identical across the three sections. In the traditional section, students completed preparatory readings followed by lectures in class and then completed a virtual patient module assignments at home. In the flipped section, students completed preparatory reading and viewed content-based podcasts prior to class. In the classroom, faculty reviewed key lecture elements and students completed the virtual patient module assignments individually during class time. The flipped and integrated section used the flipped delivery method as described. In a technology integrated classroom, students worked collaboratively in groups to complete the virtual patient module assignments together with the support of course faculty. At the completion of the semester, comparisons were made between mean grades on each assignment and examination. Grading of the virtual patient module assignments was completed by lab instructors associated with the course. Interrater reliability was ensured with training during orientation to this course prior to the start of the semester. Examinations were graded via Pars Score® technology and completed by the course instructor of record. Standard student course evaluations, which are de-identified in their report to course faculty, were compared to determine if there is difference between the three sections.

This study used a convenience sample as the students were already enrolled in the respective sections of this required foundational course. Teaching modality and room assignments were determined after the student enrollment period was completed. Following institutional review board approval, informed consent was obtained from students wishing to participate by having their grades included in data analysis. Students who did not consent to participate were excluded from the study. Consent was obtained by a co-investigator who did not have any teaching or grading responsibilities in the course. Further, data was collected by this co-investigator to maintain participant anonymity to course faculty. Participation or nonparticipation in this study in no way impacted their course grades or content delivery. Because end of semester standard course evaluations are reported as aggregate data, there was no way to include or exclude student data and therefore all aggregate data was examined.

A total of 95 students participated in this study. Data from both the de-identified student database and course evaluations were analyzed statistically using ANOVA and Kruskal-Wallis comparison testing. Data analysis revealed significantly better outcomes on 10 of the 12 virtual patient modules in the flipped and integrated classroom section compared to the two other teaching modalities ( $p < .05$ ). Student performance across groups on course examinations did not differ except for one unit examination favoring the flipped and integrated model. Of the summative evaluations, no significant differences were found between groups for the final head to toe demonstration, final examination, and overall student grades; those in the flipped and integrated model scored significantly higher on the comprehensive virtual patient module ( $p < .05$ ). Qualitative comments from student evaluations were analyzed for common themes.

In conclusion, the use of a flipped classroom design with an integrated model using a virtual patient supported student learning. It improved the scores on virtual patient modules, which provided the students with a safe platform to practice their assessment, documentation, and critical thinking skills. While most of the summative evaluations showed no significant difference, the comprehensive module did show significant difference, which demonstrates the students' ability to organize, perform, and document their complete history and physical exam. Limitations of this study included the small sample size and the fact that the students were not allowed to self-select in which section they would participate. Further study is recommended.

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**Title:**

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**Keywords:**

Instructional Design, Nursing Education and Virtual Patient

**References:**

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### **Abstract Summary:**

Technology is an important tool in nursing education. A comparison was done of three models of instruction using technology to enhance learning in an undergraduate nursing health assessment course. Each section was taught using a different modality: traditional lecture vs podcast, with individual technology assignments vs group technology assignments.

### **Content Outline:**

#### Introduction

Flipped classroom vs Traditional classroom

Use of technology with virtual patient interaction

Integrated classroom vs traditional classroom

Lab setting

#### Methodology

Quasi-experimental Comparison Design

Three instructional modalities compared:

1. Traditional lecture in a traditional classroom with individual technology-based virtual patient assignments at home.
2. Flipped class in a traditional classroom with content podcasts prior to class and individual technology-based virtual patient assignments in class with faculty support.
3. Flipped class in a fully technology-integrated classroom with podcast prior to class and group technology-based virtual patient assignments in class with faculty support.

#### Sample

Convenience sample, students enrolled in course

Consent obtained from those who wished to have their grades considered in data analysis.

#### Data Analysis

De-identified student database of assignment and examination grades

End of semester, anonymous student evaluations

Kruskal-Wallis and ANOVA statistical tests were used to compare mean scores between class sections of assignment grades, examination grades, and quantitative scores on course evaluations

Qualitative data analysis of anecdotal comments on course evaluations

Discussion

Limitations

Implications

Conclusion

First Primary Presenting Author

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**Professional Experience:** Adjunct faculty for undergraduate bachelors nursing program for 7 years, Assistant Professor of Nursing for 6 years at the undergraduate, graduate, and doctoral levels. Laura has taught the undergraduate health assessment course for 6 years, using a variety of pedagogical methods.

**Author Summary:** Dr. Markwick received her BSN from the University of Vermont in 1985 and MSN and DNP from St John Fisher College in 2006 and 2010 respectively. Her background in nursing includes a wide variety of specialties and settings. Laura is an Assistant Professor of Nursing at St John Fisher College and has been teaching for 13 years. She is the owner of a private primary care nurse practitioner practice and active in multiple professional organizations.

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