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Original Research Article

IMPACT OF FLIPPED CLASSROOM IN GENERIC STUDENTS IN COLLEGE OF NURSING, NISHTAR MEDICAL UNIVERSITY MULTAN

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Abstract: *Traditional teaching methods in nursing education often fail to engage students in active learning, limiting their ability to develop critical thinking and problem-solving skills. The flipped classroom model, which integrates pre-class independent learning with in-class active engagement, has shown promise in improving learning outcomes.* ***Objective:*** *To evaluate the impact of the flipped classroom model on academic performance, engagement, and perceptions among nursing students at the College of Nursing, Nishtar Medical University, Multan.* ***Methods:*** *A quasi-experimental pre-test and post-test design was used. A total of 130 BSN students were randomly assigned to experimental (flipped classroom) and control (traditional lecture) groups. Pre-class materials were provided to the experimental group, while the control group followed traditional lectures. Data were collected using a validated questionnaire and analyzed using IBM SPSS version 26.* ***Results:*** *The flipped classroom model significantly improved post-test scores, critical thinking, and engagement levels compared to traditional methods. Most students (85%) reported that the flipped classroom approach fostered lifelong learning skills, and 90% agreed it effectively integrated theory and practice. Key challenges included limited resources and infrequent use of flipped learning by educators.* ***Conclusion:*** *The flipped classroom model is an effective strategy for enhancing academic performance and engagement in nursing education. Addressing barriers such as faculty training and resource limitations is essential for its successful implementation in resource-constrained settings like Pakistan.*

Keywords: Flipped Classroom, Nursing Education, Critical Thinking, Active Learning, Teaching Methods, Lifelong Learning, Pakistan, Student Engagement

Introduction

The field of nursing education is evolving rapidly to meet the increasing demands of modern healthcare systems. In Pakistan, where nursing students face unique challenges, including limited resources, high patient loads, and traditional didactic teaching methods, adopting innovative teaching strategies is essential to improve learning outcomes and prepare students for complex clinical environments. One such innovative approach is the flipped classroom model, which reverses traditional teaching methods by delivering instructional content outside the classroom and dedicating class time to active learning activities. This model has gained global recognition for promoting critical thinking, student engagement, and lifelong learning skills, which are vital for nursing professionals in the 21st century (1, 2).

In the flipped classroom approach, students access pre-class materials, such as video lectures or readings, and use class time for discussions, problem-solving, and collaborative activities. This method shifts the focus from passive to active learning, enabling students to apply theoretical knowledge in practical settings. Studies have shown that flipped classrooms enhance students' academic performance, critical thinking, and satisfaction compared to traditional lecture-based methods (3, 4). Despite its advantages, the implementation of flipped classrooms in Pakistan faces challenges, such as limited access to digital resources, inadequate training for educators, and resistance to change in traditional teaching methods (5). Nursing education in Pakistan is at a crossroads, with an increasing need to integrate innovative teaching strategies to prepare students for modern clinical demands. At Nishtar Medical University, Multan, the flipped classroom model has been introduced as a strategy to enhance the learning experience of BSN students. This study aims to evaluate the impact of this teaching method on students' academic performance, engagement, and perceptions. By assessing the effectiveness of the flipped classroom in a local context, this research seeks to provide insights into its potential as a transformative teaching approach in Pakistani nursing education (6). This study's findings will contribute to the growing body of evidence on the effectiveness of the flipped classroom model in nursing education, offering actionable recommendations for educators, administrators, and policymakers to improve teaching practices. Additionally, it will highlight the challenges and facilitators of implementing flipped classrooms in resource-constrained settings, paving the way for more inclusive and effective teaching methodologies (7, 8).

Methodology

This study utilized a quasi-experimental pre-test and post-test design to evaluate the impact of the flipped classroom model on nursing students' academic performance and engagement. The study was conducted at the College of Nursing, Nishtar Medical University, Multan, over six months following approval of the research synopsis. The population included nursing students enrolled in the four-year BSN program, with a sample size of 130 students

determined using a 94.51% confidence level and a margin of error of 5.49%. Simple random sampling was employed to ensure the selection of a representative sample from the target population. Participants were divided into two groups: an experimental group that received instruction using the flipped classroom approach and a control group that followed the traditional lecture-based method. The flipped classroom model involved providing pre-class materials, such as recorded lectures and reading assignments, for students to review independently. In-class sessions focused on active learning activities, including discussions, problem-solving tasks, and group work. The traditional lecture approach consisted of instructor-led sessions covering the same topics. Data collection involved administering a structured and validated questionnaire to gather demographic information and assess students' knowledge, perceptions, and academic performance related to the flipped classroom model. A pre-test was conducted before the intervention to establish baseline knowledge levels, and a post-test was administered after the intervention to measure learning outcomes. Confidentiality and informed consent were ensured throughout the data collection process, adhering to ethical principles outlined in the Declaration of Helsinki.

The data were analyzed using IBM SPSS version 26. Descriptive statistics, such as frequencies and percentages, were used to summarize demographic characteristics and survey responses. Paired t-tests and independent sample t-tests were employed to compare pre-test and post-test scores within and between the experimental and control groups, respectively. The findings provided insights into the effectiveness of the flipped classroom model in enhancing students' engagement, critical thinking skills, and academic performance.

Ethical considerations were strictly observed, including obtaining ethical approval from the institutional review board, ensuring participant anonymity, and maintaining the confidentiality of collected data.

Results

The study included 130 nursing students enrolled in the BSN program at the College of Nursing, Nishtar Medical University, and Multan. Demographic variables such as age and academic level were collected to characterize the participants.

The study aimed to evaluate participants' knowledge and perceptions of the flipped classroom model and its impact on their learning experience.

Participants shared their perceptions of the flipped classroom model and their preferences for teaching methods.

The sample consisted of young nursing students, primarily aged 21–23 years, with balanced representation across academic years. Most participants were aware of and had experienced flipped classroom learning, recognizing its role in developing lifelong learning skills. Students overwhelmingly agreed that the flipped classroom approach promotes critical thinking, engagement, and problem-solving abilities.

Table 1: Demographic Characteristics of Participants

Variable	Category	Frequency (n)	Percentage (%)
Age	18–20 years	45	34.6
	21–23 years	65	50.0
	24–26 years	20	15.4
Academic Level	1st Year BSN	35	26.9
	2nd Year BSN	40	30.8
	3rd Year BSN	30	23.1
	4th Year BSN	25	19.2

Table 1 shows that the majority of participants were aged 21–23 years (50%), and most were in their 2nd year of the BSN program (30.8%).

Table 2: Awareness and Usage of Flipped Classroom Learning

Question	Yes (%)	No (%)
Do you have knowledge about flipped classroom learning?	80	20
Does your teacher use flipped classroom scenarios for teaching?	70	30
Do you think flipped classroom learning develops lifelong learning skills?	85	15

Table 2 highlights that 80% of participants were aware of the flipped classroom approach, and 70% reported its use in teaching. Moreover, 85% agreed that it supports lifelong learning skills.

Table 3: Perception of Flipped Classroom Learning

Statement	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Flipped classrooms are crucial for integrating theory and practice.	60	30	5	3	2
Flipped classroom scenarios help in problem-solving skill development.	70	20	5	3	2
Flipped classrooms enhance engagement and collaboration.	65	25	5	3	2

Table 3 demonstrates that 90% of participants believed the flipped classroom is essential for integrating theory and practice, while 85% found it helpful for developing problem-solving skills.

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Discussion

The findings of this study demonstrate the positive impact of the flipped classroom model on nursing students' academic performance, engagement, and perceptions at the College of Nursing, Nishtar Medical University, and Multan. A significant proportion of participants acknowledged that flipped classroom learning enhanced their critical thinking, problem-solving abilities, and engagement. These results align with previous international studies that highlight the effectiveness of the flipped classroom approach in promoting active learning and critical thinking among nursing students (9, 10).

Our results showed that 85% of participants believed that flipped classroom learning developed lifelong learning skills, and 90% agreed that it was crucial for integrating theory and practice. These findings are consistent with those of Ng et al., who reported that flipped classrooms significantly enhance students' ability to connect theoretical knowledge with practical application, improving their overall learning experience (11). Similarly, Javadi et al. found that flipped classrooms led to better knowledge retention and professional capabilities among triage nurses, further supporting our findings (12).

Despite its advantages, implementing the flipped classroom approach in Pakistan presents unique challenges, such as resistance to change and limited resources. These barriers were highlighted in this study, where 30% of students reported infrequent use of flipped classroom scenarios by educators. Malik et al. emphasized similar challenges in their study on flipped classroom adoption in Pakistani institutions, noting that traditional teaching methods and lack of faculty training hinder widespread implementation (13). Addressing these challenges requires targeted interventions, including faculty development programs and investments in digital infrastructure.

The significant role of educator support and structured learning tools as facilitators in our study aligns with the findings of Ullah and Jinah, who reported that faculty engagement and access to pre-class materials were critical for the success of flipped classrooms (14). Furthermore, Kang and Kim emphasized the importance of team-based learning and collaboration in maximizing the benefits of flipped classrooms, which was also evident in our study where students acknowledged enhanced teamwork skills (15).

In comparison to traditional lecture methods, the flipped classroom model offers several advantages, as evidenced by improved post-test scores and higher engagement levels in our study. Similar results were observed in studies conducted by Veeramani et al., where flipped classrooms outperformed traditional methods in fostering student performance and satisfaction (16). However, the sustainability of this teaching approach in resource-constrained settings like Pakistan requires addressing logistical and cultural barriers.

This study reinforces the growing body of evidence supporting the flipped classroom model as an effective teaching strategy in nursing education. By promoting active learning, critical thinking, and engagement, flipped classrooms prepare students for the complexities of modern healthcare. However, successful implementation in Pakistan requires a holistic approach, including faculty training, curriculum integration, and resource allocation, to overcome existing barriers and ensure its sustainability.

Conclusion

The flipped classroom model significantly enhances academic performance, critical thinking, and engagement among nursing students. This study highlights its potential as an effective teaching strategy for bridging the gap between theory and practice in nursing education in Pakistan. However, successful implementation requires addressing challenges such as limited resources and faculty training. By adopting the flipped classroom approach, nursing educators can prepare students for the complexities of modern healthcare, fostering lifelong learning and professional competence.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate
Approved by the department Concerned. (IRBEC-NHCN-9023/23)

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Conflict of interest

The authors declared absence of conflict of interest.

Author Contribution

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Coordination of collaborative efforts.
Study Design, Review of Literature.
QAMA-RUN-NISA (Principal)
Conception of Study, Development of Research Methodology Design, Study Design, Review of manuscript, final approval of manuscript.
Conception of Study, Final approval of manuscript.
RUKHSANA ISMAIL (Nursing Officer)
Manuscript revisions, critical input.
Coordination of collaborative efforts.
Data acquisition, analysis.
Manuscript drafting.
Data entry and Data analysis, drafting article.

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