

# Effects of Flipped Classroom Approach on Health Assessment Knowledge and Skills Among Undergraduate Nursing Students

Flipped  
Classroom  
Approach on  
Health  
Assessment  
Knowledge and  
Skills

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## ABSTRACT

**Objective:** To evaluate the effects of flipped classroom approach on Health Assessment knowledge and skills among undergraduate nursing students.

**Study Design:** Non Randomize Control Trail (NRCT) study

**Place and Duration of Study:** This study was conducted at the Department of Nursing, University of Lahore from 21<sup>st</sup> July 2022 to 21<sup>st</sup> December 2022.

**Materials and Methods:** Data was collected from nursing students of Allama Iqbal nursing College Lahore. The participants were divided into two groups of experimental and control group. Data was collected using adopted questionnaire before initial approval of university and concern nursing college.

**Results:** A significant ( $P=0.003$ ), ( $P=0.000$ ) differences among the pre and post mean knowledge and health assessment practices scores were assessed in the experimental group and control groups.

**Conclusion:** This study found that flipped learning improved nursing students' knowledge and health assessment skills.

**Key Words:** Flipped learning, flipped classroom approach, Health Assessment knowledge and skills, undergraduate nursing students

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## INTRODUCTION

The concept of nursing education is fairly broad. Students learn how to apply what they have studied about nursing theory to a clinical context during their nursing program<sup>1</sup>. In order to properly apply theoretically acquired knowledge in a practical situation, learners must exercise skills like critical thinking and clinical reasoning<sup>2</sup>. Also, it is advised that educators consider the possibilities of implementing creative teaching strategies that emphasize engaging pupils in the learning process<sup>3</sup>.

Modern teaching methods like flipped learning have also been introduced to nursing students through nursing education. Flipped learning fosters a learner-centered learning environment that helps nursing students build high-order thinking skills<sup>4</sup>. Redesigning their courses to line with student-centered learning is a step that nursing institutions are taking.

Integrated learning has been incorporated into this program<sup>5</sup>.

Flipped learning, a relatively recent educational innovation, to increase the effectiveness of instruction, the flipped classroom concept has been used in higher education settings<sup>6</sup>. Because it allowed teachers to adapt their lessons to the unique needs of each individual student, researchers came to the conclusion that this way of teaching was effective<sup>7</sup>.

Also, the flipped learning participant read the material aloud as homework at home. They arrive at class with a thorough comprehension of the subject, and under the teacher's guidance, they engage in extensive discussion of the subject<sup>8</sup>. Nonetheless, a number of cutting-edge teaching techniques have been tried to solve these challenges, such as problem-based learning with flipped learning and action learning with simulation education<sup>9</sup>. The flipped classroom method encourages students to participate in more active learning by having them pre-read the teacher-provided video content and visualize what they will see in the video<sup>10</sup>. Compared to other forms of traditional learning, the experimental group of BSN nursing students reported high levels of course satisfaction with flipped learning<sup>11</sup>. The primary objective of the flipped classroom is to use class time to help students grasp the material. By flipping the typical lecture-based method, this approach improves student learning and achievement<sup>12</sup>.

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## MATERIALS AND METHODS

This was a Non Randomize Control Trail (NRCT) study design. Students from the second professional of the general BSc.N. program at Allama Iqbal Medical College in Lahore participated in this study. Following initial university approval, the study was finished in nine months. The study's sample size was 100 second-year nursing students in total. The study's subjects were chosen through the use of purposeful sampling. Students from Section A received instruction using a flipped classroom model, whereas Section B students received instruction using a traditional model.

Data was collected using an adopted and validated checklist (CVI=0.89) and questionnaire (CVI=0.76). A pilot study was carried out on 10% of the sample size. The Cronbach's Alpha of the practice tool was 0.702 and knowledge was 0.787. The students were divided into two groups i.e. experimental (n=50) and control (n=50). The intervention group received flipped classroom teaching, while the comparison group experienced traditional teaching. The study was approved from University of Lahore. Data were analyzed by using SPSS v. 26.

## RESULTS

**Socio-demographic profile:** The majority (72%) of the participants were from the age group of 20 to 25 years, followed by more than 25 years (17%) and less than 20 years (11%). Overall, all the participant were reported that they used internet and the usage of internet is more than one hour per week. Similarly, all the participants were reported that they haven't used web based education (Table 1).

### Effect of interventions (Knowledge):

**Pre and post-interventional knowledge among experimental group:** Pre-interventional knowledge among the nursing students regarding health assessment content was accessed before interventions and flipped interventions using Wilcoxon signed-rank test. Post-

interventional knowledge was again assessed. There was significant (P=0.004) difference among the pre and post mean knowledge score. The mean knowledge score from 11.90 was enhanced to 14.42 (Table 2).

**Pre and post knowledge among control group:** For comparison of the means Wilcoxon signed-rank test was applied. There was no significant (P=0.858) difference among the pre and post mean knowledge score (Table 3).

**Table No.1: Socio-demographic profile of the participants, n=100**

	Frequency	Percent
Age of the participants		
Less than 20 Years	11	11.0
20 to 25 Years	72	72.0
More than 25 Years	17	17.0
Total	100	100.0
Use of Internet by the participants		
No	0	0
Yes	100	100.0
Weekly internet usage by the participants		
Less than one hour	0	0
More than one hour	100	100.0
Web based education of the participants		
Yes	0	0
No	100	100.0

### Effect of interventions (Health Assessment Practices):

**Pre-post-interventional health assessment practices among experimental group:** There was significant (P=0.000) difference among the pre and post mean health assessment practices score. Pre-interventional mean score of health assessment practices was 193 which enhanced to 231 after interventions (Table 4).

**Pre-post health assessment practices among control group:** There was no significant (P=0.842) mean difference among the pre and post mean health assessment practices score among the control group (Table 5).

**Table No.2: Mean knowledge score difference among pre and post interventional experimental group, n=50.**

Descriptive Statistics					
	N	Mean	Std. Deviation	Minimum	Maximum
Pre-Interventional Knowledge	50	11.90	4.501	5	18
Post-Interventional Knowledge	50	14.42	4.161	7	20
Ranks					
	N	Mean Rank	Sum of Ranks		
Pre-Interventional Knowledge - Post-Interventional Knowledge	Negative Ranks	15 <sup>a</sup>	20.50	307.50	
	Positive Ranks	33 <sup>b</sup>	26.32	868.50	
	Ties	2 <sup>c</sup>			
	Total	50			
Test Statistics					
Z					-2.881 <sup>b</sup>
Asymp. Sig. (2-tailed)					.004
a. Wilcoxon Signed Ranks Test					
b. Based on negative ranks.					

**Table No.3: Mean knowledge score difference among pre and post control group, n=50.**

Descriptive Statistics					
	N	Mean	Std. Deviation	Minimum	Maximum
Pre-Interventional Knowledge	50	11.92	4.521	5	18
Post-Interventional Knowledge	50	12.10	4.325	5	18
Ranks					
	N	Mean Rank	Sum of Ranks		
Pre-Interventional Knowledge - Post-Interventional Knowledge	Negative Ranks	25 <sup>a</sup>	23.78	594.50	
	Positive Ranks	24 <sup>b</sup>	26.27	630.50	
	Ties	1 <sup>c</sup>			
	Total	50			
Test Statistics					
Z					-.179 <sup>b</sup>
Asymp. Sig. (2-tailed)					.858
a. Wilcoxon Signed Ranks Test					
b. Based on negative ranks.					

**Table No.4: Mean health assessment practices score difference among pre and post interventional experimental group, n=50.**

Descriptive Statistics					
	N	Mean	Std. D	Minimum	Maximum
Pre-Experimental health assessment practices	50	181.24	8.587	160	193
Post-Experimental health assessment practices	50	225.94	2.896	220	231
Ranks					
	N	Mean Rank	Sum of Ranks		
Pre-Experimental health assessment practices - Post-Experimental health assessment practices	Negative Ranks	0 <sup>a</sup>	.00	.00	
	Positive Ranks	50 <sup>b</sup>	25.50	1275.00	
	Ties	0 <sup>c</sup>			
	Total	50			
Test Statistics					
Z					-6.162 <sup>b</sup>
Asymp. Sig. (2-tailed)					.000
a. Wilcoxon Signed Ranks Test					
b. Based on negative ranks.					

**Table No.5: Mean health assessment practices score difference among pre and post control group, n=50.**

Descriptive Statistics					
	N	Mean	Std. Deviation	Minimum	Maximum
Pre-Experimental health assessment practices	50	181.24	8.587	160	193
Post-Experimental health assessment practices	50	182.98	15.938	160	229
Ranks					
	N	Mean Rank	Sum of Ranks		
Pre-Experimental health assessment practices - Post-Experimental health assessment practices	Negative Ranks	23 <sup>a</sup>	21.28	489.50	
	Positive Ranks	20 <sup>b</sup>	22.83	456.50	
	Ties	7 <sup>c</sup>			
	Total	50			
Test Statistics					
Z					-.199 <sup>b</sup>
Asymp. Sig. (2-tailed)					.842
a. Wilcoxon Signed Ranks Test					
b. Based on positive ranks.					

## DISCUSSION

In this study, those individuals who took part in the study and were assigned to the intervention group will demonstrate higher levels of skill. The difference between the intervention group and the control group was statistically significant, despite the fact that the intervention group had higher scores.

This result is consistent with the findings of Mekler et al. and Sailer and Sailer, who found that the flipped interventions have a significant effect on the students' knowledge and practices of health assessment. Sailer and Sailer reported that the students' knowledge and practices of health assessment improved as a result of the flipped interventions<sup>13</sup>. Both of the studies revealed that the flipped interventions had a substantial influence on the nursing students' practices about the health assessment.

However, these findings were corroborated by another similar study that was conducted out by Lai et al., who revealed a significant improvement in practical skill ratings in students of the study group, and this may be because group teaching occurred face to face. The study was carried out by Lai et al (lectures and hands on training). In addition, flipped activities were carried out in the classroom, and the researcher made use of flipped components in conjunction with three different game-based learning methodologies while the class was in session<sup>14</sup>.

In addition, flipped activities were carried out in the classroom, and the researcher made use of flipped features in conjunction with traditional teaching methods while the class was in session. Another study by Kim and Kim found that flipped learning improved students' skills<sup>15</sup>. This may be due to the fact that flipped learning was used both inside and outside of the classroom, and the researcher combined flipped learning with other teaching methods, including situation-based learning.

According to the findings of this research, flipped classroom interventions have a significant beneficial impact on the students' overall knowledge and skills. These findings were supported by a study carried out by Zainuddin's which emphasis on the flipped interventions for improvement of the understanding of the students regarding many nursing skills. Furthermore, the study also indicated that the students had positive perceptions of their own levels of competence, autonomy, and relatedness; greater performance; and the ability to attain good achievement during the examinations. According to the findings of the study, the environment of the flip-class encouraged higher levels of motivation and involvement. In particular, students were encouraged to compete and win against other students while participating in the flipped activities by collecting as many points and badges as they could<sup>16</sup>.

Also, our findings are consistent with those of<sup>17,18</sup> who showed a significant improvement in the knowledge level of the flipped group related practical skills. They found that the flipped group had been exposed the students in a manner where they work on the students intellectual and practical skill and help in the smooth transfer of information. In contrast, different studies provided different findings in contrast with this study and found that students in the interactive lecture group had better knowledge than those in the game group. This finding was interpreted flipped interventions of teaching and skills, the students are exposed to a variety of distractions, whereas students in the lecture group were required to concentrate on the facts<sup>20</sup>.

Following the flipped interventions, individuals in the experimental group showed a substantial increase in their knowledge and practices regarding the health assessment in comparison to those in the control group. This finding is consistent with the findings of Inangil et al<sup>20</sup>, who found that the nursing students in the experimental group had considerably higher scores on the knowledge and practices test than those in the control group.

## CONCLUSION

According to the findings of this study, nursing students who were taught using a flipped instructional model had improved knowledge, practices, and skills in the area of health assessment. In addition, flipped interventions boost students' confidence and drive, and they allow them to be better prepared for clinical classes than those who learn through traditional methods. The flipped elements in this study helped promote the students' understanding of health assessment techniques and fostered a good competitive environment. This was accomplished by flipping some of the study's elements. It is possible to see flipped learning as an effective teaching strategy for the purpose of presenting learning materials to nursing students in order to improve the students' knowledge and skills competence.

### Author's Contribution:

Concept & Design of Study:	Amna Rafique
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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