

Original Article

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Evaluating the flipped Vs traditional teaching method on student nurse's performance

Neha Singla¹ Prabhjot Saini² Jasbir Kaur³

¹Nursing Tutor, ²Professor, ³ Principal, DMCH College of Nursing., Ludhiana, Punjab, India

Abstract

Background: Recent advances in technology have unlocked entirely new directions for education research. Educators have been working to break the lecture centered instruction model by shifting the focus from the curriculum pacing guide to student learning needs such as flipped learning i.e. shifting direct learning instructional outside the group learning space to the individual learning space. **Material and Methods:** A quasi experimental (non-randomized Pretest-Posttest control group) design was used to assess the efficacy of flipped classroom method with traditional teaching method on student nurses' performance. Total 73 nursing students of a nursing college were divided into two groups- Group A (traditional teaching method) and Group B (flipped classroom method). Both the groups were taught the same topic. The knowledge of students was assessed for immediate (posttest) and retention memory i.e. 7 days after teaching. The data was collected by self-report method. **Results:** Findings revealed that the mean score of Group A (Traditional teaching method) was lower than the mean score of Group B (Flipped classroom method) in the Post test (immediate) i.e. 16.65 ± 3.36 vs. 18.58 ± 3.38 ($t_{71} = 2.93$, $p < 0.05$). The mean score of the Group A (traditional teaching method) was lower than Group B (Flipped classroom method) in Posttest retention i.e. (14.69 ± 3.47 vs. 17.68 ± 3.12 $p = 0.00$). **Conclusion:** The study concluded that flipped classroom method has better results on student nurses' performance as compared to traditional teaching method.

Keywords: Flipped vs Traditional teaching method; Student nurses' performance.

Corresponding author: Prabhjot Saini, Professor, Deptt. Of Medical surgical Nursing, DMCH College of Nursing, DMC & Hospital, Ludhiana. Email: psainidmc@gmail.com

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INTRODUCTION

Education is a light that shows the mankind the right direction to surge.¹ It has shaped so many generations for thousands of years and remains so in our present. The nursing education is designed to prepare individuals for the nurse educator role in academic or staff development settings.² Traditional education also known as basic, conventional education refers to long established customs that society traditionally

used in schools.³ It is concerned with the teacher being the controller of the learning environment. Power and responsibilities are held by the teacher and they play the role of instructor (in the form of lectures) and discussion maker (in regard to curriculum content and specific outcome).⁴ Recent advances in technology have unlocked entirely new directions for education research.⁵ Many institutions are moving towards innovative methods of teaching as a solution to

produce graduated who are creative and can think critically, analytically and solve problems.¹ The “Flipped Classroom” is one of the most recently emerged and popular innovative teaching method now-a days. Flipped classroom refers to pedagogical practices that allow students to learn course contents traditionally delivered in classroom lectures prior to class, with the help of technology.⁴ The main idea is to shift the attainment of content before class in the form of instructional videos, recorded lectures, and other remotely assessed instructional items. Then, instructors spend in-class time applying the material through complex problem solving, deeper conceptual coverage, and peer interaction.⁶⁻¹⁰ It is possible to flip a class using individual activities such as quizzes, worksheets and problem solving assignments. Quite remarkably, regular poor academic performance by the majority of students is fundamentally linked to application of ineffective teaching methods by teachers to impact knowledge to learners.¹¹ Researchers also found that student centered methods of teaching like flipped classroom is more effective method for implicate and retention. The flipped teaching method could be better than traditional teaching method in the coming up scenario of our nation with improved technologies and internet accessibility. Moreover, limited nursing research has been conducted on the flipped classroom method and little data exists about student or faculty perceptions of the strategy at graduate level. This study will enhance known information about effective teaching pedagogy for baccalaureate nursing students.¹² Hence this study was undertaken to assess the efficacy of flipped teaching method over traditional teaching method in relation to the student nurses’ performance.

MATERIAL AND METHODS

Quasi experimental (non-randomized Pretest-Posttest control group) research design was adopted in this study. In total, 73 students of DMCH, College of Nursing, Ludhiana, Punjab were selected into two groups- Group A (Traditional teaching method) and Group B (Flipped classroom method). Group A consisted of 35 students and Group B had 38 students. Both the groups were selected from the same

class and were taught the same topic (Multiple Pregnancy). Same educator was considered for both the teaching methods to maintain the homogeneity in teaching acquisition and skill. The tool comprised of 4 parts: Part A – Socio Demographic Profile consisted of age, gender, habitat, board of education, education of father and mother, occupation of father and mother. Part B- Multiple Choice Questionnaire (MCQ.s) to assess the knowledge of nursing students. 30 item multiple choice questions on the topic selected (Multiple pregnancy) with subscales that address the topic in 5 sections: a) Introduction (6 questions), b) etiology and risk factors (3 questions), c) diagnosis and investigations (10 questions), d) complications (8 questions), e) management (3 questions). Each question had one correct answer among four choices and each correct answer hold one mark i.e. Maximum marks-40 and minimum marks-0. The students were categorized on the basis of 4 categories as per their test scores: a) Excellent (>75%) b) Good (60-74%) c) Average (40-59%) d) Below average (<40%). The subjects were assessed for immediate (posttest) and retention memory 7 days after teaching (posttest). Part C- Structured Teaching Program in the form of lesson plan for the Group A (traditional teaching method). Part D - Material and activities for flipped classroom like quiz and brain storming activities. Content validity of tool was established by the experts from the field of Medical surgical nursing, Gynecological and obstetrical nursing department. The reliability of knowledge questionnaire was calculated to be highly reliable $r=0.86$. Data was collected by self-report (pen and paper) method. A verbal consent was taken from study subjects and assured that their information would be kept confidential.

Study design

A Quasi experimental (non-randomized Pretest-Posttest control group) research design was adopted in this study. Both groups were taught on the scheduled time and day i.e. one hour in the afternoon at 2 - 3pm. Pretest was conducted one day prior to the conduction of teaching in both flipped and non flipped groups. The non-flipped (traditional) condition took place during

one-hour class period. In this condition, lesson plan was prepared and followed. The students were first introduced to the material during class instruction. A typical class period began with the exploration of the topic with the help of lecture cum discussion method using black board as an A V Aid and at last home assignments were given on the related topic. In the Flipped Classroom Setup, the students were provided with study material, links, videos and images related to the selected topic 24 hours prior to the class. During the actual class flipped method was adopted and an interactive session of 20 minutes with the use of discussion method related to the topic was conducted followed by classroom activities like quiz, brain storming questions in the end. Post test 1 (immediate) was conducted immediately after the class teaching

and Post test 2 (Retention) was conducted after 7 days of the class teaching in both the groups.

RESULTS

Percentage, mean, standard deviation, t-test and ANOVA were used for describing the findings of the study. Table 1 depicts that in both the groups, most of the subjects were female belonging to age group 21-25 years with mean age 21.2 ± 3.12 in Traditional teaching method and 20.3 ± 3.09 in Flipped classroom method. Most of the subjects 18 (51.5) and 22 (57.8) passed with CBSE board of examination in both Group A and B. The qualification of mother 22 (57.9) and 15 (42.9) was matric to secondary education and fathers 13 (37.2) and 18 (47.2) were graduate and above in both groups

Figure 1: Mean percentage scores of both Group A (Traditional teaching method) and Group B (Flipped classroom method) among student nurses.

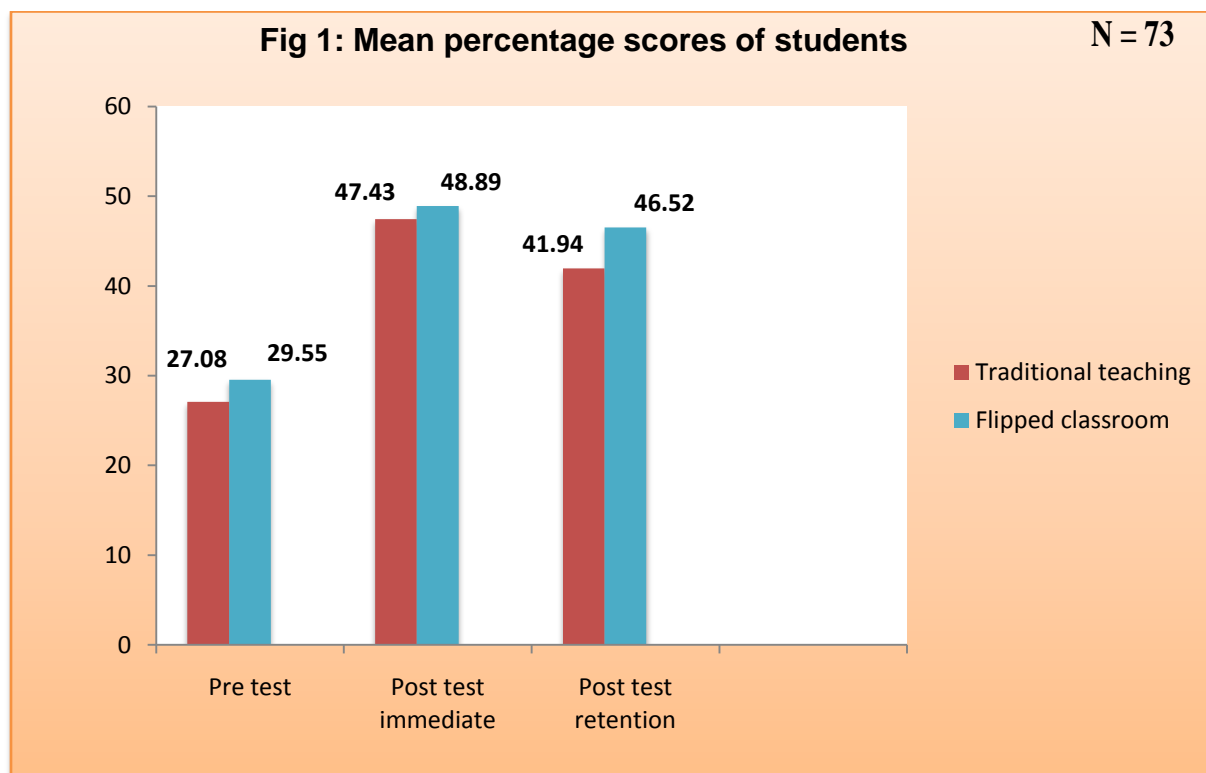


Table 1: Distribution of student nurses in Group A (traditional teaching method) and Group B (flipped classroom method) as per their socio demographic variables.**N=73**

Socio -demographic variables	Group A (Traditional teaching method) (n ₁ =35) f(%)	Group B (Flipped classroom method) (n ₂ =38) f(%)	Chi square (χ^2) p value df
Age (in years)			
<20	03 (08.6)	02 (05.26)	$\chi^2 = 1.24$ p= 0.26 ^{NS} df = 1
21-25	32 (91.4)	36 (94.74)	
Gender			
Male	02 (05.71)	04 (10.5)	$\chi^2=0.55$ p=0.45 ^{NS} df=1
Female	33 (94.29)	34 (89.5)	
Board			
PSEB	15 (42.9)	13 (34.2)	$\chi^2=0.49$ p=0.78 ^{NS} df=3
CBSE	18 (51.5)	22 (57.8)	
ICSE	02 (5.6)	03 (8.0)	
Educational status (Mother)			
Illiterate	00(0)	01 (2.6)	$\chi^2=8.4$ p=0.06 ^{NS} df=3
Matric	11 (31.4)	22 (57.9)	
Secondary	15 (42.9)	06 (15.8)	
Graduate & above	09 (25.7)	09 (23.7)	
Educational status (Father)			
Illiterate	01(02.8)	00 (0)	$\chi^2=1.73$ p=0.62 ^{NS} df=3
Matric	11 (31.4)	10 (26.4)	
Secondary	10 (28.6)	10 (26.4)	
Graduate& above	13 (37.2)	18 (47.2)	
Occupation(Mother)			
Working	10 (28.6)	10 (26.4)	$\chi^2=0.04$ p=0.82 ^{NS} df=1
Non working	25 (71.4)	28 (73.6)	
Occupation(Father)			
Working	34 (97.2)	33 (86.8)	$\chi^2=2.56$ p=0.10 ^{NS} df=1
Non working	01 (2.8)	05 (13.2)	
Habitat			
Urban	17 (48.6)	20 (52.6)	$\chi^2=0.12$ p=0.72 ^{NS} df=1
Rural	18 (51.4)	18 (47.4)	

**Mean age (traditional teaching method) =21.2± 3.12

**Mean age (flipped classroom method) =20.3 ± 3.09

* Significant at p< 0.05

NS: Non significant (p>0.05)

Table 2: Distribution of student nurses in both Group A (Traditional teaching method) and Group B (Flipped classroom method) according to their level of knowledge**N=73**

Level of Knowledge	Group A			Group B		
	Traditional teaching method (n ₁ =35)			Flipped classroom method (n ₂ =38)		
	Pre test f(%)	Post test (Immediate) f(%)	Post test (retention) f(%)	Pre test f(%)	Post test (immediate) f(%)	Post test (retention) f(%)
Excellent (>75%)	-	-	-	-	-	02 (2.7)
Good (60-74%)	-	15 (20.3)	5 (6.8)	01 (1.4)	21 (28.4)	11 (14.9)
Average (40-59%)	8(10.8)	19 (25.7)	24 (32.4)	18(24.3)	16 (21.6)	19 (25.7)
Below average (<40%)	27(36.5)	01 (1.4)	04 (8.1)	19(25.7)	01 (1.4)	06 (8.1)

Table 2 reveals the distribution of student nurses' in both Group A (Traditional teaching method) and Group B (Flipped classroom method) according to their level of knowledge. Pre test knowledge scores in both group A (Traditional method) and group B (Flipped method) was found to be below average (36.5% and 25.7%) respectively. While 25.7% of the subjects had post test immediate knowledge score in Group A (Traditional teaching method) as average and 28.4% in Group B (Flipped classroom method) as good. Most of the subjects showed post test retention knowledge score in both Group A and B as average i.e. 32.4% and 25.7% respectively. Only 2.7% of the subjects were having excellent Knowledge in Post test retention in flipped classroom method as compared to none in traditional teaching method (Group A). Therefore, the results showed that students in flipped classroom method showed better results than traditional teaching method. **Fig 1** describes

the mean percentage distribution of knowledge scores among student nurses in both groups i.e. Group A (traditional teaching method) and Group B (Flipped classroom method). It shows that flipped teaching method showed better percentage scores among students than traditional teaching method in both post test immediate (48.89% vs. 47.43%) and post test retention (46.52% vs. 41.94%) respectively. **Table 3** reveals the comparison of pre test mean scores of both the groups were almost same i.e. 9.48 ± 2.52 vs. 11.23 ± 2.70 in Group A (Traditional teaching method) and Group B (Flipped classroom method) respectively ($p > 0.05$). The mean score in the Post test (immediate) after both the lectures of Group A (Traditional teaching method) was significantly lower than the mean score of Group B (Flipped classroom method) i.e. 16.65 ± 3.36 vs. 18.58 ± 3.38 ($t = 2.93$, $p < 0.05$) after instruction. This significant

Table 3: Comparison of mean knowledge scores of student nurses in both the groups.**N = 73**

	Groups	n	Mean \pm SD	Mean%	t value	p value
Pre test	Traditional	35	9.48 \pm 2.52	27.08	2.8	0.06 ^{NS}
	Flipped	38	11.23\pm 2.70	29.55		
Post test (immediate)	Traditional	35	16.65 \pm 3.36	47.43	2.93	0.04*
	Flipped	38	18.58\pm 3.38	48.89		
Post test (retention)	Traditional	35	14.69 \pm 3.47	41.94	3.87	0.00*
	Flipped	38	17.68\pm 3.12	46.52		

* = significant at $p < 0.05$ level

Minimum score = 0

NS = Non significant at $p > 0.05$ level

Maximum score = 30

difference indicated that the use of flipped classroom method for teaching had a positive impact on the students' success in nursing. Moreover the mean score in Post test retention of the Group A (traditional teaching method) was also significantly lower than Group B

(Flipped classroom method) i.e. (14.69 \pm 3.47 vs 17.68 \pm 3.12, $p=0.00$). Hence, it can be concluded that flipped classroom method is significantly better teaching method than traditional teaching method.

Table 4. Comparison of Mean Difference in pretest-posttest immediate scores and pretest-posttest scores of Traditional teaching method (Group A) and Flipped classroom method (Group B) among student nurses.**N=73**

	Groups	MeanD	SD	df	t test	p value	Significance level
Pre-Post immediate	Traditional	7.17	2.12	34	2.6	0.17 ^{NS}	$p > 0.05$
	Flipped	7.35	2.72				
Pre-Post retention	Traditional	5.21	2.29	37	1.24	0.21 ^{NS}	$p > 0.05$
	Flipped	6.45	3.16				

NS- Non-Significant

Table 4 reveals the comparison of Mean Difference in pretest-posttest immediate scores and pretest-posttest scores of Traditional teaching method (Group A) and Flipped classroom method (Group B) among student nurses. When the mean difference were compared of the pre-posttest immediate scores and pre-posttest retention scores of Traditional teaching method (Group A) and Flipped classroom method (Group B) among student nurses, the achievement of Mean difference of Group A (Traditional teaching method) was found to be lower than Group B (Flipped classroom method) in both pre-posttest immediate (7.17 ± 2.12 vs. 7.35 ± 2.72 , $p > 0.05$) and pre-posttest retention (5.21 ± 2.29 vs. 6.45 ± 3.16 , $p > 0.05$). These results indicated that the student nurses' performance in flipped classroom method was better than traditional teaching method in both post test 1 (immediate) and post test 2 (retention) memory however the results were non-significant at $p > 0.05$.

DISCUSSION

Heightened appreciation of independent learning and early patient content in the undergraduate nursing curriculum has stimulated the academic authorities to emphasize self directed and problem based learning approaches.¹³ The purpose of this study is to assess the efficacy of traditional teaching method with flipped classroom method on student nurses' performance. The present findings support the use of flipped classroom method significantly improved the students' performance than traditional teaching method. The examination score in flipped method (Group B) showed 2.7% subjects having excellent knowledge in Post test retention as compared to none in traditional teaching method. Furthermore, 28.4% students scored good in Post test immediate and 14.9% in Post test retention score in flipped classroom method as compared to 15 (20.3%) and 5 (6.8%) in Traditional teaching method. This finding was supported by a study conducted by Tve JD et al revealing that the students performance in flipped courses were significantly higher than traditional courses.¹⁵ Similar study concluded by Kathey Missiline et al (2013) on flipping the classroom to improve students' performance and satisfaction. Results shows that examination score were higher for the flipped classroom than either of the other method.¹⁶ The present findings revealed that the comparison of the mean difference of the scores of Group A (Traditional teaching method) was found to be lower than Group B (Flipped classroom

method) in both pre-posttest immediate (7.17 ± 2.12 vs. 7.35 ± 2.72 , $p > 0.05$) and pre-posttest retention (5.21 ± 2.29 vs. 6.45 ± 3.16 , $p > 0.05$). Similar results were shown in the study conducted by Rahul Ramesh Bogam (2015) to assess effect of flipped classroom model on knowledge of medical students at Bharti Vidhyapeeth University, Medical College, Pune. There was statistically significant improvement in knowledge of participants from pre test – post test interventions as a result of “Flipped teaching method” ($t=20.99$, $p < 0.001$).⁵ The findings of the study emphasized that the “Flipped Classroom Method” is a better teaching method that can replace traditional teaching method as the former can capture the attention of students and help them involve into active learners. It is a powerful teaching tool that can result in superior learning outcomes in the students' retention of knowledge, enhance their critical thinking.¹⁷ Therefore, teacher educators should incorporate flipped classroom method that will help to improve their learning and performance.

LIMITATIONS

While the study revealed many important aspects of the flipped classroom on student performance, but still there were some limitations. Student's actual time engaged with the online learning material was not evaluated. There was no evaluation on whether students who spent more time on online learning material performed better in the flipped environment or students who put their own efforts for learning spent more time on online learning material. It was assumed that all the students had an access to internet services and all were using smart phones. The study was limited to a particular topic which may be of less interest to the undergraduate nurses.

CONCLUSION

Flipped classroom method can be more informative and fruitful in engaging student self learning. Furthermore, it may improve in an active and interactive sessions in classroom thus engaging both teacher and student. Flipped classroom method may lead to a long term learning gains than in a traditional classroom method where students are exposed to the topic for the first time.

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