

# A Study to Assess Effectiveness of Teaching Methods on Retention of Knowledge among Nursing Students in Colleges of Pune City

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**Abstract :** *Teaching methods has long since are used as an effective way to present information. Numerous teaching methods are used by teachers from traditional times to this Modern era. Therefore, exploring the efficacy of a variety of teaching methods for leadership educators is important due to the potential to determine best practices for classroom delivery. Purpose: To study the effectiveness of teaching Methods on retention of knowledge among nursing students. Objectives: To assess the effect of teaching methods on retention of knowledge among nursing students. Material and methods: This was a quantitative pre-experimental three group pre-test and post-test research design. The sample size was 300, divided into 100 for each method adopted for students of second Year B.Sc Nursing students for the subject of Medical Surgical Nursing. Probability cluster sampling technique was used for the selection of sample. Each group was having 100 samples and received Lecture Method in form of planned Lesson plan, Computer Aided Learning in the form of Power Point Presentation and Problem Based Learning in the form of situation formulated on Topic of Hypertension. Study was conducted in Bharati Vidyapeeth, Tilak mahavidyalaya, Sadhu vaswani, D.Y.Patil, Sinhgad and Themi grant Colleges of Nursing. Data collection was done by using demographic data of the samples, questionnaire was used to assess knowledge retention and Likert scale was used to assess students preferences, similarly open ended questionnaire was used to assess students opinion of teaching method that they consider valuable and least valuable and reasons for the same. Results: Computer Aided Learning has remarkably good knowledge retention and Lecture method has good effect on knowledge retention but Problem based learning has poor effect on knowledge retention but students valued and preferred Lecture method as the best method and consider Problem Based learning as least preferred and valuable method according to their opinion. Lecture method being most traditional method yet been most preferred method as compared to Computer aided Learning method and Problem based Learning method by the students. Conclusion: Computer aided learning is remarkably good effect on knowledge retention but students prefer Lecture method as best and consider it valuable.*

**Keywords:** Teaching Methods, Lecture Method, Computer Aided Learning, Problem Based Learning, knowledge retention

## 1. Introduction

With the revolution in technology, education over the years has changed tremendously from paper, pen to computer. The traditional teaching methods are replaced by new advanced teaching methods, even laptops and computers are now passed with the entry of ipads. Blackboards are replaced by digital boards. Students are now technologically advanced which provide them answer for everything at instant speed. Interactive teaching and classroom imparts lot of practical knowledge<sup>1</sup>

## 2. Review of literature

Academic excellence can create revolution in field of Nursing and its effect on quality patient care. One of the aims of health services in 21st century is improvement in quality of life.<sup>2</sup>

Researches on teaching methods highlights that different categories of teaching methods exist and nearly 150 methods are incorporated in field of education from traditional times to modern times.<sup>3</sup>

Extensive search revealed that in the field of education in all the sciences researches are very sparse and similarly in

Nursing Education (Pulen, 2011) Thus this study was carried out to assess Effectiveness of Teaching Methods on Retention of Knowledge among Nursing students in Colleges of Pune city.<sup>4</sup>

## 3. Research Methodology

This study uses the quantitative research approach. A pre-experimental study with three group pre-test post-test research design was considered best suited to the study. This design was used since the study evaluated the effect of teaching methods (independent variable) on knowledge retention of the students (dependent variables).

The investigator adapted Probability cluster sampling for Data Collection.

**3.1. Setting:** Bharati Vidyapeeth, Tilak mahavidyalaya, Themi Grant Institute of Nursing Education, Sadhu vaswani, D.Y.Patil, and Sinhgad Colleges of Nursing

**3.2. Population:** Second Year B.Sc Nursing students.

**3.3. Sample Size:** 300

**3.4. Inclusive Criteria**

- Second year B.Sc. Nursing students admitted to Selected Colleges of Pune city in the year 2013-14.

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- Students those who had successfully completed First Year. B.Sc Nursing examination.
- Students those who were willing to participate in the study.

### 3.5. Exclusive Criteria

- Students who were allowed to attend classes of Second.Year.B.Sc Nursing but had not passed their FirstYear B.Sc Nursing Examination.
- Students who were awaited with the results of reevaluation of FirstYear.B.Sc Nursing Examination

## 4. Description of the Tool

### Section I: Demographic profile

Section one was prepared to collect general information about the Second Year B.Sc Nursing students about variables such as:

- Age.
- Gender.
- Percentage of Marks HSC
- Percentage of Marks F.Y.B.Sc Nursing

### Section II: Tool to assess knowledge Retention.

Knowledge questionnaire was formulated based on specific topic which was selected for Lecture Method, Computer Aided Learning and Problem Based Learning Method from Subject of Medical Surgical Nursing in specific Topic of Hypertension.

Questionnaire was formulated following aspects: Meaning and Definition, Incidence, Risk Factors and Etiology, Pathophysiology, Investigations, Prevention, Complications, Medical Management and Nursing Management on Topic of Hypertension.

Knowledge tool consisted of thirty items, the scoring done was as follows: Correct answer-1, Wrong answer-0. Total score-30

Grading was done as below

0-8	Poor
9-16	Average
17-24	Good
25-30	Excellent

### Section III: Tool to assess student's preferences for teaching Methods

Likert scale was used to assess students preferences, Scoring for Likert scale was done as follows, Total scoring was 28

0-7	Poor teaching Method
8-14	Average Teaching Method
15-28	Excellent teaching Method.

### Section IV: Tool to assess students Opinion about teaching methods

- Method to be Valuable and least valuable
- What are the reasons for considering particular method so?

## 5. Results and Analysis

This part deals with the overall analysis of samples related to knowledge retention of students in selected colleges of pune city in terms of frequencies, percentage, average, and t values.

**Table 1:** Demographic description of variables by frequency (%)

Demographic Parameters	Frequency	%
<b>Age</b>		
19	9	3%
20	267	89%
21	24	8%
<b>Gender</b>		
Female	186	62%
Male	114	38%
<b>% of marks in HSC</b>		
Distinction	78	26%
First Class	120	40%
Second Class	69	23%
Third Class	33	11%
<b>% of marks in F.Y.B.Sc Nursing.</b>		
Distinction	84	28%
First Class	105	35%
Second Class	45	15%
Third Class	21	7%
Failure	18	6%
A.T.K.T	27	9%

The sample distribution in table 1 shows that 89% sample are of 20 years of age, 62% are female by gender, 40% scored First class in HSC, 35% scored First class in First Year B.Sc Nursing.

**Table 2:** Analysis of demographic data of samples according to teaching methods

Demographic	Lecture method	Computer Aided Learning method	Problem based learning method
<b>Age</b>			
19	3	3	3
20	92	79	96
21	11	8	5
<b>Gender</b>			
Female	40	95	51
Male	38	26	50
<b>% of marks in HSC</b>			
Distinction	15	45	18
First Class	38	31	51
Second Class	30	21	18
Third Class	7	15	11
<b>% of marks in F.Y.B.Sc Nsg.</b>			
Distinction	18	38	28
First Class	17	29	59
Second Class	21	15	9
Third Class	7	5	9
Failure	5	6	7
A.T.K.T	11	7	9

Table 2 shows sample distribution according to the teaching method adopted

Lecture Method: 92% are of 20 years of age, 40% are females, 38% has scored first class in HSC and 21% has scored second class in F.Y.B.Sc Nursing.

Computer Aided Learning method: 79% are of 20 years of age, 95% are females, 45% scored distinction in HSC and 38% scored distinction in F.Y.B.Sc Nursing.

Problem Based Learning: 96% are of 20 years of age, 51% has scored first class in HSC and 59% has scored first class in F.Y.B.Sc Nursing.

### Section II A:

**Table 3:** Mean score of overall knowledge retention of students in Lecture method

Skills	Mean	SD	T	df	p-value
Pre-test	9.6	3.3	15.5	99	0.000
Post-test	14.3	3.5			

The above table 3 indicates that there was a significant increase in the knowledge score from the pre-test to the post-test with a standard deviation of (3.3) and (3.5) respectively. The difference is significant at (99%) confidence interval. t-value for this test was (15.5) and p-value for this comparison was 0.000, which is small (less than 0.05) thus lecture method was found to have significant effect on knowledge retention of students.

### Section II B

**Table 4:** Mean of overall knowledge retention of students in Computer Aided Learning method.

Skills	Mean	SD	T	df	p-value
Pre-test	10	2	15.5	99	0.000
Post-test	33.2	11.3			

The above table 4 indicates that there was a significant increase in the knowledge score of pre-test to the post-test knowledge score with a standard deviation of (10.0) and (33.2) respectively. The difference is significant at (99%) confidence interval. t-value for this test was (15.5) and p-value for this comparison was 0.000, which is small (less than 0.05) thus Computer Aided Learning method was found to have highly significant effect on knowledge retention.

### Section II C

**Table 5:** Mean of overall knowledge retention of students in Problem based learning method

Skills	Mean	SD	T	df	p-value
Pre-test	6	2.1	15.5	99	0.000
Post-test	12.5	1.8			

The above table 5 indicates that there was a significant increase in the knowledge score from pre-test to the post-test with a standard deviation of (6.0) and (12.5) respectively. The difference is significant at (99%) confidence interval. t-value for this test was (15.5) and p-value for this comparison was 0.000, which is small (less than 0.05) thus administration of problem based learning method was found to have poor

effect on knowledge retention of students. Thus hypothesis H3 is rejected.

Comparing Lecture method and computer aided learning, the problem based learning has poor impact on knowledge retention.

### Section III A

This section presents the Analysis of data related to the association of selected demographic variables with knowledge retention in lecture method.

**Table 6:** Association of Lecture Method with demographic variables

Demographic Parameters	Pre-test knowledge scores				
	Poor	Average	Good	Excellent	P-value
<b>Age</b>					
19	2	3	3	1	0.911
20	106	43	75	43	
21	4	8	7	5	
<b>Gender</b>					
Female	60	29	64	33	1.11
Male	23	21	32	38	
<b>% marks in HSC</b>					
Distinction	22	28	10	18	0.027
First Class	28	11	47	34	
Second Class	9	17	24	21	
Third Class	7	9	11	6	
<b>% marks in F.Y.B.Sc Nsg.</b>					
Distinction	12	35	16	21	0.012
First Class	48	25	17	15	
Second Class	7	11	20	7	
Third Class	5	8	3	5	
Failure	7	4	4	3	
A.T.K.T	5	9	11	2	

Since P-value corresponding to age and gender of the students was found to have no significant association while as percentage of marks in HSC and percentage of marks of F.Y.B.Sc Nursing the P-value is smaller than 0.05, thus has significant association with knowledge retention. Thus

### Section III B:

This section presents the Analysis of data related to the association of selected demographic variables with knowledge retention and teaching methods in computer aided learning.

**Table 7:** Association of Computer aided Learning Method with demographic variables

Demographic Parameters	Pre-test knowledge scores				
	Poor	Average	Good	Excellent	P-value
<b>Age</b>					
19	2	3	3	1	0.751
20	69	75	75	48	
21	8	3	5	8	
<b>Gender</b>					
Female	40	49	33	64	0.921
Male	21	38	23	32	
<b>%of marks in HSC</b>					
Distinction	20	26	11	21	0.011
First Class	47	11	28	34	

Second Class	8	24	20	17	
Third Class	11	6	7	9	
<b>% of marks in F.Y.B.Sc Nsg.</b>					
Distinction	21	16	35	12	0.031
First Class	17	15	48	25	
Second Class	17	7	10	11	
Third Class	3	5	5	8	
Failure	4	3	7	4	
A.T.K.T	11	2	5	9	

Since P-value corresponding to age and gender of the students was found to have no significant association while as percentage of marks in HSC and percentage of marks of F.Y.B.Sc Nursing. P-value is smaller than 0.05 hence has significant association with knowledge retention.

**Section III C:**

This section presents the Analysis of data related to the association of selected demographic variables with knowledge retention in problem based learning. In order to find the association the data is analyzed using Fisher's exact test.

**Table 8:** Association of Problem based Learning Method with demographic variables

Demographic Parameters	Pre-test knowledge scores				P-value	
	Poor	Average	Good	Excellent		
<b>Age</b>					0.821	
19	81	58	50	78		
20	8	7	3	6		
	21	2	1	2	4	1.21
<b>Gender</b>						
Female	22	66	26	72		
Male	20	52	19	23		
<b>% marks in HSC</b>						
Distinction	11	31	13	23	0.013	
First Class	40	18	29	33		
Second Class	24	17	8	20		
Third Class	7	7	10	9		
<b>% marks in F.Y.B.Sc Nursing.</b>						
Distinction	35	12	16	21	0.028	
First Class	48	17	25	15		
Second Class	7	11	10	17		
Third Class	8	5	5	3		
Failure	4	7	3	4		
A.T.K.T	5	9	11	2		

Since P-value corresponding to age and gender of the students was found to have no significant association while as percentage of marks in HSC P-value is smaller than 0.05, the HSC and percentage of marks of F.Y.B.Sc Nursing has significant association with knowledge retention.

**Section IV A:**

This section presents the students preference regarding the teaching methods to be most effective method of teaching.

**Table 9:** Mean score of student's preferences of teaching methods.

Teaching method	Mean score	SD	t	d	r	r2
Lecture method	3.04	1.285	2.57	0.24	0.12	0.014
Computer Aided learning	1.93	1.02	1.90	0.18	0.09	0.008
Problem based method	1.2	1.33	0.69	0.06	0.03	0.001

When Lecture method was compared with computer aided learning and Problem based Learning methods, it was the only method to show statistical significance in the average mean difference in every comparison.

Computer aided learning and problem based learning is not as significant as compared to lecture method.

Students reported that they believed lecture method is the most preferred method of teaching.

The difference in average scores of effectiveness for lecture method when compared with other method of teaching was statistically significant (t = 2.57, 1.90, 0.69).

**Section IV B:**

**Table 10:** Mean score of student's opinion of teaching methods.

Teaching method	Mean score	SD	t	d	r	r2
Lecture method	4.6	2.3	5.09	3.22	0.85	0.72
Computer Aided learning	2.6	1.42	0.88	0.56	0.27	0.08
Problem based method	0.9	1.3	0.26	0.16	0.1	0.01

Student's opinion regarding Teaching method using lecture method, Computer Aided Learning and Problem based Learning highlights the mean score of 4.6, 2.6, 0.9 in which lecture method highlights significant mean score of 4.6 shows that in student opinion, lecture method is useful and valuable for them as compared to other two methods.

**Section IV C: Reasons for why students consider specific method to be Valuable and least valuable.**

Lecture method was considered valuable by 62% of students for the following reasons,

- Teachers making the lesson easier
- Teachers are well prepared
- References used by teacher is based on their knowledge and are best
- Blackboard method made it easier
- There is no diversion in Lecture method
- Notes given by teachers are more valuable and easily understood as well as it becomes easy during examination
- We mostly depend on the notes of teacher which we get in detail from the teachers.
- Utilization of teacher's notes is helpful during examination
- Most of the time lesson plan is well prepared
- Good control over class room makes environment feasible for good understanding that can be only done by teachers.

Reasons highlighted by students, Why Lecture Method of teaching is not considered as valuable

- Same old notes are referred for years together by the teachers
- Sometimes it becomes monotonous and hence difficult to understand.

Computer Aided learning method was considered valuable by 28% of students for the following reasons,

- It can highlight about new concept of the particular content by referring different websites.
- New trends can be highlighted in the image form as it becomes easy
- Nursing should also follow same trend and technology as other profession hence nursing teachers should also use computers in their practice.

Why Computer Aided Learning is not considered as valuable

- Teachers download the PowerPoint presentation and are ready to deliver the lecture.
- Less efforts are taken by teachers so it becomes difficult for concept to be understood
- Teacher does not refer the books for the content of the subject.

Problem Based Learning method was considered valuable by 20% of students for the following reasons

Problem Based learning to be more valuable for the following reasons

- Students are actively involved hence it becomes easy to understand.
- Leadership qualities are developed.
- Decision making ability is improved.
- Confidence level enhances.
- More references are understood by students.

Why Problem Based learning is not considered as valuable

- It wastes lot of time
- It is difficult for Nursing students to utilize resources make topic understand and come ready for discussion due to heavy clinical assignments, clinical hours and lack of time
- It can be useful for higher classes and for Masters programme as compared to UG programmes.

It concludes that Computer Aided Learning has remarkably good knowledge retention, and Lecture method has good effect on knowledge retention but Problem based learning has poor effect on knowledge retention but students value and prefer Lecture method as the best method and consider Problem Based learning as least preferred and valuable method. Lecture method being most traditional method yet been most preferred method as compared to Computer aided method and Problem based method by the students.

Though statistically it has been proved that Computer aided learning is remarkably good effect on knowledge retention but students prefer Lecture method as best and consider it valuable, Similarly students has highlighted reasons why they consider specific Method to be valuable.

## 6. Discussion

The study concluded that Computer Aided Learning has remarkably good knowledge retention and Lecture method has good effect on knowledge retention but Problem based learning has poor effect on knowledge retention. Students value and prefer Lecture method as the best method and consider Problem Based learning as least preferred and valuable method. Lecture method being most traditional method yet been most preferred method as compared to Computer aided method and Problem based method by the students.

Though statistically it has been proved that Computer aided learning is remarkably good effect on knowledge retention but students prefer Lecture method as best and consider it valuable.

The result marked that there was significant knowledge retention in Nursing students using Problem based learning method[Cooper,2011]<sup>5</sup> similarly study conducted on Lecture method in terms of knowledge retention highlights that significant increase in knowledge score using Lecture method (Les PS, Dupin , 2012)<sup>6</sup>

The results of this study highlights significant effect of Computer Aided Learning in terms of knowledge Retention and less effective is Problem Based Learning but many studies has proved significant effect of Lecture Method, Computer Aided Learning and Problem Based Learning independently and has proved that each method is significant and can prove effective in terms of knowledge retention.

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