

A COMPARITIVE STUDY ON THE EFFICACY OF PBL (PROBLEM BASED LEARNING) AND ABL (ACTIVITY BASED LEARNING) IN PERCEIVING ANATOMY AMONG PHYSIOTHERAPY STUDENTS

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ABSTRACT

Introduction: Problem based learning and Activity based learning are the resultants of change in the teaching-learning strategy in modern education. Many higher learning institutes all over the world have implemented PBL and ABL in their teaching sessions. This study was conducted to compare the efficacy of PBL and ABL in perceiving Anatomy among the Physiotherapy students.

Materials and Methods: The study was conducted on the first year B.PT students(bachelor of Physiotherapy) of the Paramedical Vigyan Mahavidhyalaya, saifai, Etawah, Uttarpradesh. The study was conducted for a period of 4 weeks. A total of 40 students were selected after taking consent for their participation in the study by simple randomization and was randomly assigned into two groups experimental Group A with 20 students (n=20) and Group B (control group (n=20) in each group by lottery method after satisfying the inclusion criteria. The outcomes of the study were analyzed by a feedback questionnaire consisting of 10 items with a three point likert scale and an objective assessment for score of 10 by MCQ questionnaire based on higher domains of bloom's taxonomy of learning objectives

Results: The outcomes of the study were analyzed by a feedback questionnaire consisting of 10 items with a three point likert scale and an objective assessment for score of 10 by MCQ questionnaire based on bloom's taxonomy of learning objectives. All values were tabulated and statistically analyzed by means of independent 't' test. The mean of Likert scale scores of Group A is 26.2(S.D =2.24) and Group B is the 23.05 (SD=1.77) with t value 4.792, p value is 0.00013 hence $p < 0.05$. The mean of Objective assessment in Group A is 6.35 (SD=1.01) and Group B is 5.2 (SD=1.66) with t value is 2.572, p value is 0.007, hence $p < 0.05$

Thus from the above statistical data of Likert scale and Objective assessment, Group A is significantly different than Group B with $p < 0.05$, i.e 95% of significance.

Conclusion: Problem Based learning is found efficient over Activity based learning in Perceiving Anatomy by the Physiotherapy students.

KEY WORDS: PBL, ABL, Likert Scale, Bloom's Taxonomy, Anatomy, Physiotherapy.

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INTRODUCTION

In the modern trends of changing Teaching-Learning strategies, the classroom teaching has been constantly changing from a traditional teacher centered learning to a modern student centered learning. The teacher's role in the classroom has changed from a demonstrator to a facilitator of learning. Many methods of modern student centered learning techniques have been implemented in the modern pedagogy of learning and assessment.

Problem Based Learning more popularly known as PBL has been implemented in higher educational institutions especially medical schools all over the world.

Problem-based learning (PBL) is a student-centered pedagogy in which students learn about a subject through the experience of problem solving. Students learn both thinking strategies and domain knowledge. The PBL format originated from the medical school of thought, and is now used in other schools of thought too. It was developed at McMaster University School of Medicine in Canada in the 1960s and has since spread around the world [1-4]. The goals of PBL are to help the students develop flexible knowledge, effective problem solving skills, self-directed learning, effective collaboration skills and intrinsic motivation.

Activity-based learning or ABL describes a range of pedagogical approaches to teaching. Its core premises include the requirement that learning should be based on doing some hands-on experiments and activities. The idea of activity-based learning is rooted in the common notion that children are active learners rather than passive recipients of information. If children are provided the opportunity to explore by their own and provided an optimum learning environment then the learning becomes joyful and long-lasting.

Aims To compare the efficacy of perceiving Anatomy by Problem based approach and Activity based learning approach among the first year Undergraduate students of Physiotherapy (B.PT).

Objectives:

1. To assess the efficacy of Problem based

learning approach in perceiving anatomy among the Physiotherapy students

2. To assess the efficacy of Activity based learning approach in perceiving anatomy among the Physiotherapy students

3. To compare the PBL and ABL in perceiving anatomy among the Physiotherapy students.

MATERIALS AND METHODS

The study was conducted on 1st year Bachelor of Physiotherapy students of Paramedical Vigyan Mahavidhyalaya, UPRIMSNR, Saifai, Etawah, Uttar Pradesh, India. The study was conducted for a period of 4 weeks. A total of 40 students were selected after taking consent for their participation in the study by simple randomization and was randomly assigned into two groups with 20 students in each group by lottery method. The inclusion criteria includes the students of 1st year Bachelor of Physiotherapy course who are willing to participate, who are studying the Anatomy for the first time and who are regular in their attendance. The uncooperative students, students who have already studies Anatomy in a different course or who are studying Anatomy for second time as a supplementary or back log paper and who are irregular to attendance were excluded. The PBL sheets, ABL sheets, Consent forms, MCQ questionnaire to assess the students based on Higher domains of Bloom's Taxonomy, Feedback questionniere by Likert scale and teaching aids which are needed for performing these sessions were used to conduct these sessions.

Procedure: A total of 40 students were selected after taking consent who satisfy the inclusion criteria and were randomly divided in to two groups of 20 (n=20) each by simple randomization using lottery method.

Group A (n=20) were explained the principles and techniques of PBL learning. A PBL session was designed on Supraspinatus and painful arc syndrome. The group is redivided into two subgroups of 10 each and two tutors as facilitators were assigned to lead the PBL. Each group had a chairperson, scribe and members long with a tutor as facilitator. Each member of the team were explained their role in the PBL.

A total of four sessions were given for both sub groups. In the first session, the Problem was stated and Objectives were discussed with duration of 2 hours. Then a period of 3 days was given for individual learning. In the second session, Problem solving session was taken for duration of 2 hours. In the third session the resources and nutshell information was gathered and discussed for a duration of 2 hours. In the final session, the feedback was taken.

Group B (n=20) were explained the principles and techniques of ABL learning. An ABL session was designed on the Supraspinatus and painful arc syndrome. The group is subdivided into two subgroups of 10 each and two tutors were assigned as facilitators. 4 different activities on the topic were designed and were given to the groups at 4 individual sessions. Each group had a team leader who leads the activities. After the final session, feedback was taken.

Both groups after completing the sessions, A test was conducted which comprised of 10 MCQ's. The questions were formulated based on bloom's taxonomy of learning objectives.

Outcome Measures: The outcomes of the study were analyzed by a feedback questionnaire consisting of 10 items with a three point likert scale and a objective assessment for score of 10 by MCQ questionnaire based on bloom's taxonomy of learning objectives.

RESULTS AND DATA ANALYSIS

In this study to compare the efficacy of perceiving Anatomy by Problem based approach and Activity based learning approach among the first year Undergraduate students of Physiotherapy (B.PT) in Group A and Group B, all data was expressed as mean+/-, standard deviation and was statistically analyzed using independent 't' test to determine the statistical difference among the parameters at 0.5% level of significance.

Independent 't' test was used to calculate the significance difference in Likert scale between Group A and Group B. The mean of Likert scale scores of Group A is 26.2(S.D =2.24) and Group B is the 23.05 (SD=1.77) with t value 4.792, p value is 0.00013 hence $p < 0.05$. Independent 't' test is used to calculate the significant difference

in the objective assessment between Group A and Group B. The mean of Objective assessment in Group A is 6.35 (SD=1.01) and Group B is 5.2 (SD=1.66) with t value is 2.572, p value is 0.007, hence $p < 0.05$

Thus from the above statistical data of Likert scale and Objective assessment, Group A is significantly different than Group B with $p < 0.05$, i.e 95% of significance, hence we reject the null hypothesis.

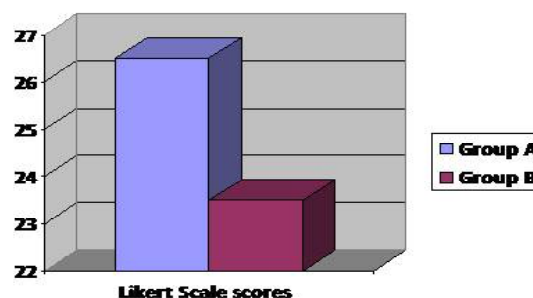
Table 1: Comparison of Likert scale scores in Group A and Group B.

Group	Mean	SD	T value	P value
Group A	26.5	2.24	4.792	<0.05
Group B	23.5	1.77		

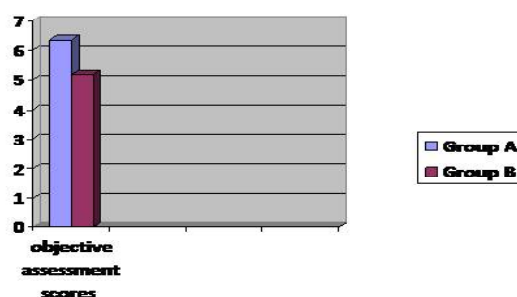
Table 2: Comparison of Objective assessment scores in Group A and Group B.

Group	Mean	SD	T value	P value
Group A	6.35	1.01	2.57	<0.05
Group B	5.2	2.57		

Graph 1: Comparison of Likert scale scores in Group A and Group B.



Graph 2: Comparison of Objective assessment scales in Group A and Group B.



DISCUSSION

In this study efficacy of Problem based learning in perceiving Anatomy among the Physiotherapy students over the Activity based learning is found more beneficial and hence we reject the null hypothesis.

The randomized single blind controlled trial

evaluated the efficacy of Problem based learning over the Activity based learning in perceiving anatomy among the Physiotherapy students was found significant difference favoring the experimental group in the form of better student satisfaction and significant high scores in the objective assessment.

Problem based learning is an advanced learning strategy which uses a clinical problem as a frame work for students to acquire new knowledge and learn problem solving skills

Anatomy is a preclinical science which is very important for Physiotherapists and is considered as a Gateway for Health care education. It is considered as one of the important basic science subjects in medical curriculum.

The PBL is a technique proved for producing knowledgeable and caring Physiotherapists and enhances their self directed learning skills. The PBL learning motivated the students to improve critical thinking, enhancing team work and acquire better knowledge on anatomy.

A study by Saalu LC et.al has found that Physiotherapy student's perception of problem based learning sessions in Musculoskeletal Physiotherapy is positive [6].

Students found the PBL is enhancing learning strategies and fulfilling the learning objectives, reflects the critical thinking and was fun learning. The results are also compatible with other authors [7-9].

On the contrary, in a study by Eimear fallon et.al "An activity based approach to the learning and teaching of research methods: measuring student engagement and learning supports the idea that the students that are not actively involved in a learning environment do not engage with the material or experience a deeper learning experience ,thus favoring the activity based learning [9].

Tough the Activity based learning is also interesting; it is not possible to learn the clinical aspects of Anatomy by activities all the times. It may not stimulate the students for critical thinking and problem solving attitude. Students also don't understand the importance of team work and team building.

CONCLUSION

The Problem based learning is found more effective technique of learning and found interesting among the students and helps to acquire and perceive Knowledge of Anatomy among the Physiotherapy students over the Activity based learning.

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Conflicts of interest: None

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Appendix - Likert scale

FEED BACK RATING based on LIKERT SCALE

GROUP : _____

LEARNING STRATEGY : _____

NOTE: Kindly read the statement and give your feedback accordingly.

Statement	Disagree 1	Agree 2	Strongly Agree 3
This learning strategy helped me for independent learning abilities			
This learning strategy is enjoyable and interesting			
This learning strategy allows me to have critical thinking and judgment			
This learning strategy reduces my stress from learning			
This learning strategy helps me to learn about team buiding and team work			
This learning strategy has made me learn all the learning objectives effectively			
This learning strategy enhances the ability of using theory and strengthen the links between the courses			
This learning strategy enhances the self learning abilities			
This learning strategy enhances the communication between the students and between the teacher and students			
This learning strategy increased my self confidence			

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