Original Article

Comparison of different teaching styles in student of Optometry related to Ocular Anatomy on the basis of grading

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Objective: To differentiate the two learning strategies on the basis of grading in optometry students related to anatomy.
Methodology: This cross-sectional study was conducted at Isra School of Optometry, Isra University Karachi Campus from July to December 2018. Convenient sampling technique was used 60 students were enrolled in the study. They were divided on the basis learning styles; Group A were applied Student centered approach including TBL, small group discussion and tutorials and Group B were applied teacher centered approach including lectures and demonstration. Grades were evaluated on the bases of scoring method. Each assessment carries 50 marks. Marks under 9 scored 1, marks 10-19 scored 2, marks 20-29 scored 3, marks 30-39 scored 4 and marks 40-50 scored 5. Data were analyzed through SPSS version 20.0.
Results: Higher frequency of grades in group A in all assessments were seen as compared to B. Mean score were higher in group A ($p<0.01$).
Conclusion: Grading was significantly higher in student centered learning strategy as compared to teacher centered and self-directed learning approach makes the learner autonomous and independent. (Rawal Med J 202;45:206-210).
Key words: Optometry, student centered, self-directed learning, anatomy.

INTRODUCTION

A foremost challenge for anatomy educators is the capability to deliver satisfactory core anatomical knowledge and understanding to medical students with limited time and resources.[1] In Medical curricula, different types of new learning systems were introduced, such as Case-based learning, Problem-based learning (PBL), Team-based learning (TBL) and Self-directed learning (SDL) as effective methods of teaching in the last 10-20 years.[2] Among them the SDL has become widespread and has been encouraged as an efficient learning approach for the students to develop aptitude in knowledge acquirement. It has constructive and beneficial effect on students in terms of knowledge attainment for learning basic medical subjects.[3]

The reinforced SDL is a learning method in which students independently take ingenuity and accountability for their individual learning. It also empowers the students in future as health professionals to continue learning and apprising their knowledge during their professional life.[4] In this method the student is able to diagnose and applying appropriate learning tactics and assessing their own learning results.[5] Efficacious application of SDL techniques need boosts to the learning atmosphere that educators and curriculum designers should assimilate into the current curricula. Of which include new learning methods like e-learning, assessment tool like presentations and assignments, and tools for the maintenance of both student-centered learning and teacher supervision.[6]

Institutes that integrate SDL approaches have considerably better achievements in student performance as compared with the classes depending on traditional lectures and have considerably minor failure rates.[7] This study was conducted to evaluate the impact of student-centered and teacher-centered learning approach on the grading of formative and summative

assessment and facilitates the students by applying best way of teaching for their educational development.

METHODOLOGY

This cross sectional study was conducted on 60 B.S Vision Sciences students of Isra School of Optometry Al-Ibrahim Eye Hospital from July to December 2018. Both genders of second year students of anatomy were selected by convenient sampling and written consent was taken individually. The study was approved by institutional ethical review committee. Students were divided into two groups on the basis of different learning styles. Total 30 numbers of students were randomly enrolled in student centered teaching including TBL, small group discussion and tutorials in Group A and others were included in teacher centered learning based on lectures and demonstrations in Group B.

The students in Group A obtained SDL throughout the session while Group B were taught by facilitator throughout the session. All students were evaluated by four different equal categories including individual based written assignments, individual projects including models and drawing charts, presentations and at the end summative assessment through MCQs. Each assessment carried 50 marks based on checklist. The marks were calculated by scoring method. >9 marks=Score 1, marks 10-19=Score 2, marks 20-29=Score 3, marks 30-39= score 4 and marks 40-50= Score 5. The evaluation was taken during the session and scoring was done using checklist. The checklist was filled by facilitator.

Statistical analysis: The scoring was put on Excel sheet according to their grading and then data were analyzed in order to compare the results between the groups using independent "*t*" test. All date were processed using SPSS version 20.0

RESULTS

Out of 60 students, 22 were male and 38 were female. The mean age was 19.32±1.34 years.

Table 1. Frequency and percentage of grading in different assessment tools.

Assessment Tool		(Group A) n (%)	(Group B) n (%)
Scoring Assignments	<9	-	-
	10-19	1(3.3%)	6(20.0%)
	20-29	1(3.3%)	13(43%)
	30-39	10(33.3%)	7(23.3%)
	40-50	18(60.0%)	4(13.3%)
	Total	30(100%)	30(100%)
Scoring Projects	<9	-	4(13.3%)
	10-19	1(3.3%)	10(33.3%)
	20-29	3(10.0%)	10(33.3%)
	30-39	11(36.7%)	3(10%)
	40-50	15(50%)	3(10%)
	Total	30(100%)	30(100%)
Scoring Presentation	<9	-	4(13.3%)
	10-19	-	8 (26.7%)
	20-29	2 (6.7%)	13(43.3%)
	30-39	13(43.3%)	4 (13.3%)
	40-50	15(50%)	1 (3.3%)
	Total	30(100%)	30(100%)
Scoring Summative Assessment	<9	-	2 (6.7%)
	10-19	-	11 (36.7%)
	20-29	2 (6.7%)	11(36.7%)
	30-39	8 (26.7%)	4 (13.3%)
	40-50	20(66.7%)	2 (6.7%)
	Total	30(100%)	30(100%)

Figure. Mean ± SD of scores of different assessment methods among the groups.

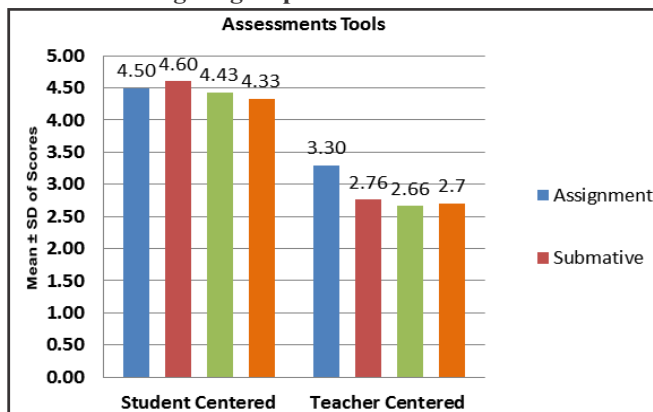**Table 2. Level of significance in different assessment tools among the groups**

Assessment tools	Group A vs Group B Level of significance
Assignments	<0.01
Projects	<0.01
Presentations	<0.01
Summative Assessment	<0.01

p value <0.05 *independent "t"* test

Scoring of all four different assessments is shown in Table 1 and Figure. Among two different groups, Table 2 shows the level of significance in different assessment tools among the groups.

DISCUSSION
We observed that the students of group A were better in organization and composition of prior knowledge along with their new knowledge into a sophisticated framework. We found these students took considerably higher scores while assessment compared with those who were taught by teacher cantered learning.

Self-directed learning technique is reflected to develop certain aspects of skills and attitudes in students, like self-engaged learning, independent decision making, teamwork, collaboration, communication skills, presentation skills and research skills.[8] The students are passively involved in teacher centered learning, their focused only on books and lectures. These students acquire knowledge with lack of enthusiasm and research hence these students are less interactive and their spectrum of thinking is limited. While students are active learner and participate in presentations and projects observed in student centered learning.[9]

In this process, the students also develop different ways of critical thinking, eminence of understanding, ability to remember and retain the knowledge, success gratification, enthusiasm, aptitude and self-assurance, which are very important qualities that must have instil in medical professional students to become a successful professionals.[10] In the present study, it was noticed that in student centered learning, students scored higher grading compared with teacher centered learning.

One of the studies by Abraham et al reported that SDL groomed the students, encouraged them to go at different levels of searching, and increase their desire to study by using PBL and SDLRS scale.[11] Our findings are similar. The optometry students acquired higher scoring in anatomy when they were involved in the student centered learning compared with teacher centered learning.

With PBL and tutorials, there was increased SDL, collaboration in work and students power of decision making.[12] In our study, students preferred to be part of the active learning when compared with passive learning, because student's desires not to follow only teacher's views and ideas but to adopt new research and ideas.[13] Physiology students accomplished the use of numerous new innovative questions to intensify the curiosity towards their subject.[14]

Self-directed learning is also a basic and challenging learning style in our surroundings.[15] One of the studies related with the readiness for SDL, suggests most of the students agreed for SDL and score was about 72%.[16] Active student centered learning improves the quality of knowledge, engage the students in searching and gaining information.[17] In the present study, students scored higher in different types of learning methods when compared with teacher centered. Students had been provided different types of resources and materials were engaged in activities to increase their cognitive process as reported in another study.[18]

In a study by Acosta et al among all students of ocular anatomy and physiology determined to find out whether teacher-centered online web learning or student-based online web quizzes and self-assessment activities were more helpful for students, the majority of students opted for student-based learning to be more useful in helping them to gain maximum knowledge of the subject.[19] Huang et al reported that student-centered team based interactive learning was more effective and enjoyed by students as compared to the traditional teacher-based learning.[20]

The outcomes from the current study suggest that the student centered learning involvement in curriculum offers the student an effective learning environment with professional mentoring

experience. It creates effectually determining mentoring relationships between facilitator and student that provides satisfactorily supports in academic context.

CONCLUSION

We found positive impact of student-centered learning in comparison with teacher-centered learning strategies. Student-centered learning style significantly helped in improving the competencies and supports the students in their assessment. Teacher-centered approach makes the learner teacher dependent while Self-directed learning makes the learner autonomous and well reflect their deficiencies when their learning in their own control.

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