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Self-Directed Learning versus Traditional Learning in Clinical Setting: A Study at Armed Forces Institute of Ophthalmology

Omar Zafar

Department of Ophthalmology, Armed Forces Institute of Ophthalmology/National University of Medical Sciences (NUMS) Rawalpindi Pakistan

ABSTRACT

Objective: To compare the outcome of self-directed learning to the traditional learning in terms of academic performance in clinical setting by using diabetic ocular fundus findings among fourth year MBBS students.
Study Design: Quasi-experimental study.
Place and Duration of Study: Armed Forces institute of Ophthalmology, Rawalpindi Pakistan, from May to Nov 2019.
Methodology: After taking consent, data was collected from 50 students through multiple choice questions-based pre-test and post-test by non probability convenient sampling. The data was analyzed using SPSS version 22.0.
Results: Out of total students, 28 (56%) students were male and 22(44%) were females. Mean age was 22.15±3.26 years. Both the groups showed improvement in their academic performance as *p*-value <0.001, but SDL group showed more improvement as compared to the traditional learning group.
Conclusion: Self directed learning is better as compared to the traditional teaching as it promotes conceptual learning so it is important to work on this issue.

Keywords: Diabetic Ocular fundus, Self-directed learning (SDL), Traditional learning.

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INTRODUCTION

Self-directed learning is a process in which learners take the initiative, with or without the help of others, in finding their learning needs, generating goals, identifying the MITs, and deciding how and when to learn.[1] Self-directed learning, or 'guide on the side' approach, predominantly depends on the learner.[2] It is independent of the subject matters or the instructional strategies. It depends primarily on the person in charge of the learning process. The learner decides the subject matter to be learnt, the instructional strategies to be adopted, and the methods and resources to be used. The extent to which the learner makes these decisions is, in fact, the extent of self-directed learning.[3] Traditional learning is the method that our medical colleges have followed for generations. It is a teacher-centred approach in which the learners have no choice in the learning process.[4] The 'Sage on the stage' approach promotes rote learning and hampered concept formation. According to Malcolm Knowles's theory of adult learning, adult learners are self-regulated and autonomous.[5,6] They use metacognition and understand their strengths and weaknesses. Thus, they know what, when, where, how and what not to study. There is convincing evidence that students who take the initiative in learning learn better than passively being taught.[7] Self-initiated learners have a greater and more purposeful motivation and tend to apply, to a greater extent, the knowledge they have learned in their daily lives.[8,9]

This study is about the academic performance after SDL and traditional teaching in clinical settings. In Pakistan, our problems differ from those of the developed world regarding the number of students, faculty and resources.[10] Thus, this study can give us an insight into what is more beneficial in our Pakistani setup. The study includes 4th year students because it is feasible. Academic performance being the output, the results of the study will generate much interest in students all over the country. Diabetes, an extremely common cause of blindness, has much clinical impact. The rationale for using Multiple Choice Questions as a pre-test and post-test is that it is convenient for students because they already use this assessment format; therefore, they will know the true nature of the study better.

METHODOLOGY

The quasi-experimental study was conducted at the Armed Forces Institute of Ophthalmology Rawalpindi from May to November 2019, after approval from the Institutional Ethical Research

Correspondence: Dr Omar Zafar, Department of Ophthalmology, Armed Forces Institute of Ophthalmology, Rawalpindi, Pakistan
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Committee (No. 192/ERC/AFIO). Non-probability Convenient sampling was utilized.

Inclusion Criteria: Students of 4th year MBBS from Army Medical College visiting the Armed Forces Institute of Ophthalmology on their one-month rotational training were included in the study.

Exclusion Criteria: Non-consenting students were excluded.

Fifty students of 4th year MBBS on their one-month rotational training were included in the study. Students were divided into two groups (Self-Directed Learning-Group and Traditional Learning-Group). One group of 25 students underwent traditional teaching of ocular fundus findings in diabetic patients, whereas the other group of 25 students had self-directed learning over one week. It was a feasible study because students already visiting the eye ward were included. All additional resources were only needed in the department. Diabetes mellitus is a very common disease causing blindness. Students commonly get questions regarding diabetic fundus findings in their final exams. Thus, they were motivated to learn this clinical entity. The research problem pertains to the students' education, which they already were doing. On arrival at the institute, both groups had a pre-test of 25 Multiple Choice Questions, which consisted of a stem and five options. It was one of the best option types. The traditional teaching of ocular fundus findings included a lecture in the institute's auditorium followed by a teacher's demonstration of fundus findings in real patients. Fundus findings were demonstrated via a direct ophthalmoscope and slit-lamp fundus camera. The self-directed learning group had an hour-long work-shop in which they were guided on how to go about self-directed learning for ocular fundus examination and findings. They studied independently, found the resources, and applied them to the patients. However, teachers were available to help them if they desired to. At the end of the week, a post-test of 25 Multiple Choice Questions was given to both groups. The same test at the same time was administered to both groups. Multiple Choice Questions were used because of objectivity, available Multiple Choice Questions bank in the institute, ease of administration and analysis. We chose to measure the outcome objectively via an MCQ-based paper.

Data was analyzed using the Statistical Package for the Social Sciences (IBM SPSS Statistics for Windows version 26, IBM Corp; Armonk, USA). Mean and standard deviation were calculated for quantitative variables and frequency and percentages were calculated for qualitative variables. Quantitative variables were compared across groups using the independent samples t-test. In contrast, the Chi-square test/Fischer exact test was used for qualitative variables, and the *p*-value of ≤0.05 was considered significant.

RESULTS

A total of fifty (n=50) students were included in this study, (25 students in each group). The mean age was 22.15±3.26 years. Of the total students, 28(56.0%) were male and 22(44.0%) were females. There was no statistically significant difference in performance between Self-Directed Learning and Traditional Learning in the pre-test (24.88±4.52 vs 25.76±6.02; *p*-value=0.562) shown in Table-I.

Table-I: Comparison of Self-Directed Learning and Traditional Learning of pretest (n=50).

Pretest Session	Study Groups		*p*-value
	Self-Directed Learning	Traditional Learning	
Mean±SD	24.88±4.52	25.76±6.02	0.562

The statistically significant difference in performance was observed between Self-Directed Learning and Traditional Learning during the post-test (35.60±5.66 vs 25.76±6.02; *p*-value=0.009) (Table-II). Both the groups showed significant results after intervention (*p*-values <0.001). Furthermore, the Self Directed Learning Group of students showed higher scores than the Traditional Learning Group (Table-III).

Table-II: Comparison of Self-Directed Learning and Traditional Learning of Posttest (n=50).

Pretest Session	Study Groups		*p*-value
	Self-Directed Learning	Traditional Learning	
Mean±SD	35.60±5.66	31.02±6.32	0.009

Table-III: Comparison of Pre and Post Test regarding Self-Directed Learning and Traditional Learning Sessions (n=50).

Study Groups	Pre Test	Post test	*p*-value
Self-Directed Learning	24.80±4.52	35.60±5.66	<0.001
Traditional Learning	25.76±6.02	31.02±6.32	<0.001

DISCUSSION

Our study included only the Ophthalmology curriculum. In addition, we are only interested in ascertaining whether self-directed learning can play a part in our undergraduate ophthalmology curriculum. Self-directed learning is broadly identified as a better

learning method than traditional learning. Several studies in this regard have been published. Self-directed learning is the single most widespread mode of learning among older adults, growing out of the learner's unique interests and needs and carried on at levels comfortable for the individual.[11]

A study by Chaudhuri *et al*.[12] showed that students performed significantly better in post-test sessions (61.51±13.57 vs. 44.74±17.1; $p<0.001$**) compared to pre-test sessions in SDL sessions. Peine *et al*.[13] did a study in the third academic year of the medical students. Students were divided into four groups: lectures, seminars, e-learning and curriculum-based self-study. Peine *et al*. concluded that students in modern study curricula learn better through modern self-instructed methods than conventional ones. A systematic review done by Murad *et al*.[14] to determine the effectiveness of Self-directed learning in health professionals. The conclusion was that SDL in health professions education is associated with moderate improvement in the knowledge domain compared with traditional teaching methods and may be as effective in the skills and attitudes domains.

Another study evaluated whether the adult learning model improves student learning regarding cognitive performance and perception of proficiency in military medic training. The course was conducted for ten weeks. They concluded that the adult learning model had only a modest improvement over the learning scores compared to the traditional teaching.[15]

Mehlar *et al*.[16] conducted a study on fourth-year medical students in the USA regarding the interpretation of ECG. There were three groups having workshops, lectures and a Self-directed teaching method. They concluded that workshops and lecture groups scored better than SDL groups. Mehmud *et al*.[17] conducted a study in Pakistan. Final-year MBBS students were included in the study. The study concluded that self-directed learners show a positive attitude towards research compared to the non-participants.

In clinical settings in our country, more needs to be published on this since Pakistan's situation of clinical learning (namely, the number of students, teaching faculty number and commitments, and infrastructure) differs from the Western world. Studying the academic outcome of Self-directed learning and traditional teaching in our clinical setup will be helpful. However, in our country, we are following the traditional teaching method in the clinical setup. Since Self-directed learning promotes conceptual learning compared to rote learning in the traditional method, it is important to work on this issue.[18]

LIMITATIONS OF STUDY

There were a few limitations of our study. It included participants from our institution only. We chose not to include participants from other institutions as it would not have been possible to standardize control variables if those participants were included. Moreover, we are most interested in the outcomes involved with introducing self-directed learning at *our* institution. Another limitation was the varying experience levels of instructors, and we cannot account for pre-reading done by students beforehand. Only cognitive ability was being tested.

CONCLUSION

Self-directed learning is better than traditional teaching as it promotes conceptual learning, so it is important to work on this issue.

Conflict of Interest: None.

Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

OZ: Study design, data acquisition, drafting the manuscript, data interpretation, critical review, approval of the final version to be published

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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