



Surgery

COMPARATIVE STUDY BETWEEN SELF DIRECTED LEARNING AND TRADITIONAL DIDACTIC LECTURES IN 3RD-SEMESTER MBBS STUDENTS IN THE DEPARTMENT OF GENERAL SURGERY IN MAYO INSTITUTE OF MEDICAL SCIENCES

A. K Srivastava*

Associate Professor of Surgery, Mayo Institute of Medical Sciences, Barabanki, U.P
*Corresponding Author

N. K Gupta

Professor of Surgery, Mayo Institute of Medical Sciences, Barabanki, U.P

Prakshi Solanki

Intern, Mayo Institute of Medical Sciences, Barabanki, U.P

ABSTRACT

Self-Directed Learning (SDL) is an emerging concept in M.B.B.S. that is being proposed by Medical Council of India to improve student learning. This study aims at finding out whether supplementing Self-Directed Learning in addition to traditional didactic lectures further benefits students' learning. In this study, the students were tested by case based and MCQ-based test for assessment. The performance of the students was evaluated using a Chi Squared Test which showed that while the students who underwent both SDL and didactic lectures combined scored better than those who underwent sessions of SDL or didactic lecture alone. Either lecture alone or SDL alone is nearly equally effective method for learning but when lecture is combined with SDL, the result is better.

KEYWORDS : Self-Directed Learning, Didactic lecture, General Surgery, Chi-Squared Test

INTRODUCTION

Traditional didactic lectures have been the standard mode of teaching in medical education. These lectures usually comprise of a single teacher teaching the whole class of usually a 100 students. While the traditional didactic lectures have been improved upon by evolving from chalk and board to aided PowerPoint, video and audio support using projectors, it is an emerging concept that it is not an effective method of learning for medical education.

Problem-based, self-directed learning is a teaching-learning method specifically designed to emphasize these skills and to increase the retention of facts and their recall in the clinical situation.

This study was undertaken to evaluate the relevance and importance of self-directed learning in the field of medical education.

AIM

The aim of this study is to find out whether supplementing Self-Directed Learning benefits to student learning by traditional didactic lectures on two different topics in General Surgery for third semester students.

METHOD

Two batches of MBBS 3rd semester (A and B) comprising of 30 students each were taught the topic of Hydrocele in a traditional didactic lecture of 1 hour following which Batch A students went through a Self-Directed Learning session. The students were then given a test based on clinical scenario for assessment.

The two batches were given Self-Directed Learning session on the topic of Hernia followed by a didactic lecture of 1 hour on the topic to batch A. There was no lecture for batch B. The students were then tested by clinical scenario-based test and MCQ for assessment.

60 students of MBBS 3rd semester at Mayo Institute of Medical Sciences, Barabanki were randomly divided into two batches of 30 students each (Batch A and Batch B) for the didactic lecture sessions.

INCLUSION CRITERIA

- Students had to be enrolled full-time in the MBBS program. A total of 60 students participated in the study. Participation was voluntary.
- To know whether the two batches (A and B) were comparable, their previous year examination scores were compared. The examination scores showed similar average scores between the two batches.
- The topics for the study involved two most common groin swellings encountered in surgery.

METHODOLOGY: Session I

Topic: Hydrocele

1. Lecture and Self-Directed Learning

The two batches (A and B) were taught Hydrocele in a single one-hour

traditional didactic lecture. The Self-Directed Learning session was conducted to Batch A only on the same topic. The material for Self-Directed Learning contained the definition, symptoms, clinical signs elicited to diagnose Hydrocele and basic management of a Hydrocele.

2. Evaluation

The students were evaluated by a case-based test. The test was conducted after the Self-Directed Learning session for Batch A. The Batch B students received the test without the Self-Directed Learning session. The test involved clinical cases with one-line answer questions for each case and ten multiple-choice questions. Each question carried 1 mark with no negative marking for wrong answer. The answer sheets were collected and evaluated, and the results were tabulated.

METHODOLOGY: Session II

Topic: Hernia

1. Preparation of Self-Directed Learning material

The material for Self-Directed Learning contained the definition, symptoms, clinical signs elicited to diagnose Inguinal Hernia and basic management of a case of Hernia.

2. Self-Directed Learning session

The students were divided into batches of 10, and a tutor guided each group during the session. Fifty per cent of students (all students belonging to Batch A) had received a didactic lecture on inguinal hernia prior to the Self-Directed Learning session. The session lasted for 45 minutes, after which a test was conducted for all the students.

3. Assessment of Self-Directed Learning

The students were given a case-based test immediately after the Self-Directed Learning session. The test involved clinical cases with one-line answer questions for each case and ten multiple-choice questions. Each question carried 1 mark with no negative marking for wrong answer. The answer sheets were collected and evaluated, and the results were tabulated.

In the first session, the lecture was common to both batches, while the Self-Directed Learning session was exclusive to Batch A. The test conducted on Batch A students would evaluate the impact of an added Self-Directed Learning session to the lecture, whereas on Batch B students it would assess how much the students retained and applied the knowledge gained from the lecture alone.

In the second session, the Self-Directed Learning was common to both batches, while the lecture was exclusive to Batch A only. The test conducted at the end of session assessed the benefit of supplementing Self-Directed Learning with lecture for Batch A.

STUDY DESIGN

TOPIC – HYDROCELE		
	LECTURE	SDL
BATCH A	Yes	Yes

BATCH B	Yes	No
TOPIC – HERNIA		
	LECTURE	SDL
BATCH A	Yes	Yes
BATCH B	No	Yes

ANALYSIS

The scores were divided into subcategories of low marks (0-4), medium marks (5-7) and high marks (8-10) with maximum marks being 10. The results for the batches were compared using a Chi squared test where a p value of 0.05 was considered as statistically significant.

Table showing ----

Obtained Marks				
Marks bracket	SDL	Lecture	SDL+Lecture	Total
0 to 4	3	3	5	11
5 to 7	12	24	26	62
8 to 10	15	5	30	50
Total	30	32	61	123

Expected Values				
Marks bracket	SDL	Lecture	SDL+Lecture	Total
0 to 4	2.682927	2.861789	5.455284553	11
5 to 7	15.12195	16.13008	30.74796748	62
8 to 10	12.19512	13.00813	24.79674797	50
Total	30	32	61	123

Analysis of data for Chi Squared Test				
Observed (O)	Expected (E)	O-E	(O-E) ²	((O-E) ²)/E
3	2.68	0.32	0.100535396	0.037472284
12	15.12	-3.12	9.746579417	0.644531865
15	12.20	2.80	7.867340869	0.645121951
3	2.86	0.14	0.019102386	0.006674982
24	16.13	7.87	61.93562033	3.83975872
5	13.00813	-8.00813	64.1301474	4.930005081
5	5.455285	-0.45528	0.207284024	0.037996922
26	30.74797	-4.74797	22.54319519	0.733160499
30	24.79675	5.203252	27.07383171	1.091829935
			Chi Square Value	11.96655224

Null Hypothesis: H_0 : Students learning through SDL only or lecture only are more likely to fair better than the combination of SDL and Lecture

Alternate Hypothesis: H_a : Students learning through SDL only or lecture only are not likely to fair better than the combination of SDL and Lecture

Degrees of Freedom = (#Rows-1) x (#Columns-1) = 4
Critical value as looked up on **Chi Square Table:** 9.488

RESULT
11.96655224 > 9.488

Hence, we Reject the Null Hypothesis and conclude that *students learning through SDL only or lecture only are not likely to fair better than the combination of Lecture and SDL. Thus, the combination of the two methods is better*

RESULTS

For the first topic, average marks for Batch A students were 6.1 with 23.33% students scoring more than 8 marks while the average marks of students of Batch B were 5.8 with 15.62% students scoring more than 8 marks.

For the second topic, average marks for Batch A students were 8.3 with 74.19% students scoring more than 8 marks while the average marks of students of Batch B were 7.1 with 50% students scoring more than 8 marks.

The p value for the first topic was 0.443171 and that for the second topic was 0.06492.

TABULAR REPRESENTATION OF STUDY DESIGN

Topic of Hydrocele	
Batch A	Batch B
Lecture	Lecture
Self-Directed Learning	-
Average marks – 6.1	Average marks – 5.8

Scores of 8-10: 23.33% students	Scores of 8-10: 15.62% students
p-value 0.443171	
Topic of Hernia	
Self-Directed Learning	Self-Directed Learning
Lecture	-
Average marks – 8.3	Average marks – 7.1
Scores of 8-10: 74.19% students	Scores of 8-10: 50% students
p-value 0.06492	

DISCUSSION

There is an increasing concern that the curricula of many medical schools put too heavy an emphasis on memorization of facts and little emphasis is given on problem solving or self-directed study - skills necessary for the practice of medicine. Self-Directed Learning is an emerging concept in the study of MBBS that is being proposed by the medical council to improve student learning in MBBS course.

Self-Directed Learning is a process of learning in which the learner assumes primary responsibility for planning, implementing and evaluating a learning project.

Self-Directed Learning is a four-step process-

1. Assess readiness to learn, students need various skills and attitudes towards learning for successful independent study.
2. Set learning goals
3. Engage in learning process
4. Self-evaluation

SDL encompasses the following facts- (a) individual learners can become empowered to take increasingly more responsibility for various decisions associated with the learning endeavour; (b) self-direction is best viewed as a continuum or characteristic that exists to some degree in every person and in every learning situation; (c) self-direction does not necessarily mean all learning will take place in isolation from others; (d) self-directed learners appear to be able to transfer learning, in terms of both knowledge and study skill, from one situation to another; (e) self-directed study can involve various activities and resources, such as self-guided reading, participation in study groups, internships, electronic dialogues, and reflective writing activities; (f) effective roles for teachers in self-directed learning are possible, such as dialogue with learners, securing resources, evaluating outcomes, and promoting critical thinking.

In this study, Batch A students who were exposed to both the methods of learning – SDL and Lecture faired slightly better than the students of Batch B who were exposed to only one form of learning in each of the topics i.e. Hydrocele and Hernia. This suggests that a combination of the two methods – SDL and Lecture together is slightly more beneficial than just one method alone. Hence the effectiveness of SDL as a supplement to students' learning cannot be undermined.

CONCLUSION

While the students who underwent both SDL and didactic lectures scored better than those who underwent SDL or didactic lecture alone, however the difference is not statistically significant. Therefore, we conclude that students must be motivated for SDL and lifelong learning.

Financial Support: None

Conflict of Interest: The authors declare that there is no conflict of interest.

Ethical Clearance: The ethical clearance was taken from the Ethical Committee of Mayo Institute of Medical Sciences, Barabanki, U.P.

ACKNOWLEDGEMENTS:

- We are thankful to the students of 3rd semester of MBBS students who participated in this study.
- We are thankful to Dr. K. M Shukla, Dean, Mayo Institute of Medical Sciences for his kind cooperation in conducting this study.
- We are thankful to Mr. Saksham Kumar (B-TECH, MBA) for helping in analysis of data for Chi-squared test.

REFERENCES

1. Problem-Based, Self-directed Learning; Howard S. Barrows, MD JAMA. 1983;250(22):3077-3080. doi:10.1001/jama.1983.03340220045031
2. Hiemstra, R. (1994). Self-directed learning. In T. Husen & T. N. Postlethwaite (eds.), The International Encyclopaedia of Education (second edition), Oxford: Pergamon Press.

3. Self-directed learning readiness of Indian medical students: a mixed method study
Kalyani Premkumar, Elizabeth Vinod, Solomon Sathishkumar, Anna B. Pulimood,
Valerie Umaefulam, P. Prasanna Samuel and Tara A. John
4. Student directed learning in medical neuroscience curricula Douglas J. Gould, Misa Mi,
and Gustavo A. Patino
5. Effect of Workshop Training on Self-Directed Learning Skills of Students at Shiraz
University of Medical Sciences Rita Rezaee, Parisa Nabeiei
6. Study Guides: Effective Tools to Improve Self-Directed Learning Skills of Medical
Students Mahboobeh Khabaz Mafinejad, Rokhsareh Aghili, Zahra Emami, Mojtaba
Malek, Hamidreza Baradaran, Mansoureh Taghavinia and Mohammad E. Khamseh
7. Perspectives on Self-Directed Learning — the Importance of Attitudes and Skills
Parineetha P Bhat, B Rajashekhar, Ullas Kamath
8. Psychology Students' Understanding of the Chi Squared Test Gustavo R. CAÑADAS,
Carmen BATANERO, Carmen DIAZ and Rafael ROA