

Implementation and evaluation of self directed learning (SDL) in MBBS students

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ABSTRACT

Introduction- Learning is a complex process that involves various cognitive, motivational, and environmental factors. Self directed learning has become popular in medical curriculum and has been advocated as an important and effective strategy for medical students to develop competence in knowledge acquisition and its long term retention.

Aims- The primary aim was to find out if there was any benefit of supplementing Self directed learning SDL activity with a traditional lecture

To compare effectiveness of Self study, problem based study and peer assisted learning for clinical oriented subject.

Methods- The participants were 60 undergraduate students from a university in India, who were randomly assigned to one of the three groups. The topic selected was neonatal jaundice. Each group had 20 students, with an equal number of males and females. Each group were given either self study, or problem based study and peer assisted learning. The materials consisted of a pre-test, a post-test, a readiness questionnaire, and a lesson on a topic related to their major. The pre-test and the post-test were multiple-choice questions that assessed the students' knowledge of the topic. The readiness questionnaire was a Likert-scale survey that measured the students' interest, enjoyment, confidence, and motivation toward the topic and the study method.

Results- The results indicated that there was a significant difference among the groups in terms of post-test scores [$F(2,57) = 4.32, p < 0.05$], but not in terms of pre-test scores [$F(2,57) = 0.21, p > 0.05$]. A post-hoc test (Tukey's HSD) revealed that the peer assisted group had significantly higher post-test scores than both the reading group ($p < 0.05$) and the problem based group ($p <$

0.05), but there was no significant difference between the reading group and the problem based group ($p > 0.05$).

Conclusion- Self directed learning is an effective method of learning in MBBs students. Peer assisted learning is the most effective amongst the above learning methods.

Keywords- Self directed learning (SDL), Peer assisted learning, Traditional didactic lectures, Medical Council of India(MCI), Learning methods

Introduction

Learning is a complex process that involves various cognitive, motivational, and environmental factors. Different students may have different styles of learning, and different teachers may use different methods to facilitate learning. Active learning strategies enhance students participation and active learning than traditional didactic lectures (1,2). Designing of student-centered teaching learning methods, has been emphasized in the directives of undergraduate medical education by the Medical Council of India (3). Student motivation and performance improves when the instructions are adapted to student learning preferences (4). Therefore, it is important to investigate which study method is more effective for enhancing students' learning outcomes and satisfaction. The method of learning in the present study is SDL Self directed learning. Under the new Competency Based Medical Education curriculum, the Medical Council of India has made SDL mandatory in all subjects for teaching undergraduate medical students. Self-directed learning SDL is a process where students take the initiative for their own learning, construct the goals, search for the resources, self-assess their learning gaps and finally evaluate the learning outcome. 1 SDL has been advocated for effective and efficient training of medical students. 2 SDL is one of the key components of adult learning as proposed by Malcolm Knowles. Mezirow, have correctly pointed out that "No concept is more central to what adult education is all about than SDL". 3 Murad MH, had suggested that studies are needed to standardise the SDL module in medical undergraduate curriculum. Authors recommend that all departments of undergraduate MBBS begin implementing SDL sessions immediately and contribute to achieving the vision of the Medical Council of India.

Methodology

The study used a quasi-experimental design with three groups: Reading, problem based and peer assisted. The independent variable was the study method, and the dependent variables were the test scores and the attitudes of the students. The participants were 60 undergraduate students from a university in India, who were randomly assigned to one of the three groups. Each group had 20 students, with an equal number of males and females. The materials consisted of a pre-test, a post-test, a readiness questionnaire, and a lesson on a topic related to their major. The pre-test and the post-test were multiple-choice questions that assessed the students' knowledge of the topic. The readiness questionnaire was a Likert-scale survey that measured the students' interest, enjoyment, confidence, and motivation toward the topic and the study method. The lesson was a 30-minute presentation that covered the main concepts and facts of the topic. The procedures were as follows: We conducted the session on 13th march 2023 at 5 pm. Students were already told about the topic. Neonatal jaundice topic was selected. First, all the students took the pre-test and filled out the readiness questionnaire. Then, they were divided into three groups according to their study method. One group was given reading material from standard textbook (Nelson's paediatrics). The other group was given case scenario and was told to find relevant information about the topic. And the final groups were divided into small groups among themselves and they presented subtopic to each other. After the lesson, all the students took the post-test and filled out the attitude questionnaire again.

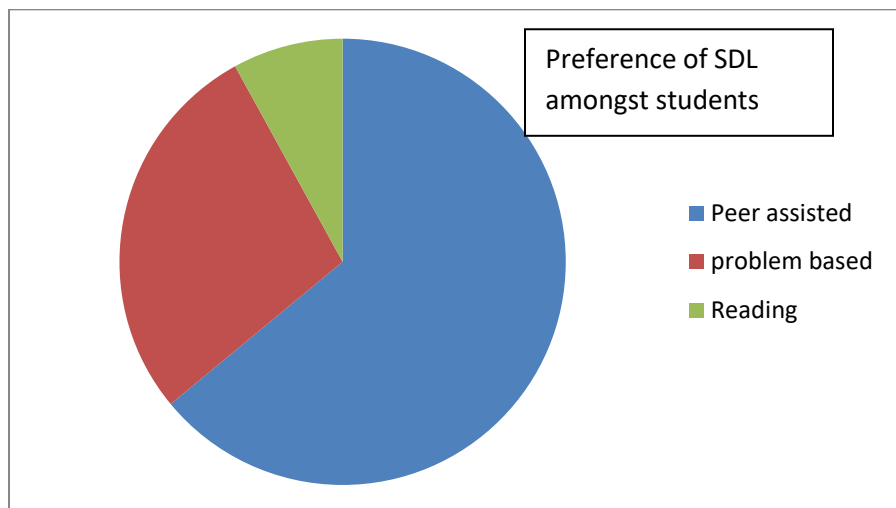
Statistical analysis

The frequency (% distribution) of responses under each category of the Likert scale feedback questionnaire was analyzed and tabulated using SPSS version 20. The data analysis involved calculating the mean and standard deviation of the test scores and the attitude scores for each group, and performing an analysis of variance (ANOVA) to test for significant differences among the groups.

Observation Pre test scores

	Reading	Problem based	Peer assisted
Mean (Pre)	8.4	8.2	8.3
SD (Pre)	0.88	0.83	0.81

Mean(Post)	8.6	8.5	9.1
SD(Post)	0.79	0.82	0.76



Result

The ANOVA results indicated that there was a significant difference among the groups in terms of post-test scores [$F(2,57) = 4.32, p < 0.05$], but not in terms of pre-test scores [$F(2,57) = 0.21, p > 0.05$]. A post-hoc test (Tukey’s HSD) revealed that the peer assisted group had significantly higher post-test scores than both the reading group ($p < 0.05$) and the problem based group ($p < 0.05$), but there was no significant difference between the reading group and the problem based group ($p > 0.05$). These results suggest that the peer assisted method was more effective than the reading and the problem based methods in improving students’ test scores, but not in influencing their attitudes.

Discussion

The main finding of this study was that the peer assisted method was superior to the reading and the problem based methods in enhancing students’ test scores on a topic related to their major. This finding supports the hypothesis that group discussion fosters deeper learning and better retention of information than passive or individual methods. SDL is one of the key components of adult learning as proposed by Malcolm Knowles. Mezirow , have correctly pointed out that

“No concept is more central to what adult education is all about than SDL”(7). Murad MH, had suggested that studies are needed to standardise the SDL module in medical undergraduate curriculum.(8).our study also consistent with Evensen, D. H et al (9).This finding is also consistent with the social constructivist theory of learning, which posits that learning is an active and collaborative process that involves interaction, dialogue, and negotiation among learners The peer assisted method may have stimulated students ’ cognitive and metacognitive skills, such as critical thinking, problem-solving, self-regulation, and feedback. However, the study did not find any significant difference among the groups in terms of their attitudes toward the topic and the study method. We advocate voluntary peer tutoring and the need for good organization, possibly a coordinator of peer-tutoring, recognizing the acknowledged need for training and support for tutors. (10,11). However, the study did not find any significant difference among the groups in terms of their attitudes toward the topic and the study method. This may be due to several factors, such as the short duration of the intervention, the novelty of the topic, or the personal preferences of the students. Further research is needed to explore how different study methods affect students’ affective and motivational aspects of learning. The study also had some limitations that should be acknowledged. First, the sample size was relatively small and homogeneous, which limits the generalizability of the results. Second, the study used only one topic and one type of assessment, which may not capture the complexity and diversity of learning outcomes. Third, the study did not control for potential confounding variables, such as students’ prior knowledge, ability, personality, or learning style. Therefore, caution should be exercised when interpreting and applying the results of this study. Based on the results and limitations of this study, some recommendations can be made for future research and practice. Future research should use larger and more representative samples, multiple topics and assessments, and more rigorous experimental designs to examine the effects of different study methods on various aspects of learning. Future practice should also consider using a variety of study methods to cater to different learning needs and preferences of students, and to enhance their academic performance and satisfaction.

Conclusion This study investigated which study method is better for learning among undergraduate students in India. The research question was: To analyse the effectiveness of self

directed learning by conducting SDL on different groups of students. The hypothesis was: Students who participate in peer assisted method will have higher test scores than students who receive lecture or self-study. The study compared three study methods: reading, problem based and peer assisted and measured their effects on students' test scores. The results showed that the peer assisted method was more effective than the reading and problem based methods in improving students' test scores. The results were discussed in relation to the social constructivist theory of learning, and the implications, limitations, and recommendations of the study were presented. This study has practical implications for teachers and students who want to optimize their learning outcomes and satisfaction.

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