



## “Learning to Learn” – A workshop-based approach for enhancing learning skills of the first-year medical undergraduates

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> Abstract

**Introduction:** “Competency Based Medical Education” in the Indian undergraduate medical curriculum has demanded the medical students to be “Competent learners” in addition to other explicit roles expressed by the regulatory body. Fostering the learning skills plays a major role in helping to attain clinical competence. Hence, this study aimed to implement and evaluate the effectiveness of an interactive “Workshop on Learning Skills” organized for the first-year medical undergraduates.

**Methods:** A mixed-method study was carried out by the Medical Education Unit. Based on purposive sampling, 100 first-year undergraduates were included as the study participants. An interactive, activity-oriented workshop on the “Learning skills module” was conducted for the participants in small groups on textbook reading, note-taking, presentation skills, interpretation of illustrations, and enhancing memory. The reaction of the learners and the retro-pre-evaluation of the learning skills were assessed using a self-administered questionnaire. Dennis-Congo’s study skills inventory was administered before and readministered 10 months after the workshop. Quantitative data were analysed with Mean±SD, and a cluster analysis with frequency count was done for qualitative data.

**Results:** Around 57% of the participants rated the workshop as “excellent”. There was a statistically significant difference ( $p < 0.001$ ) in the mean scores of the “Retro-Pre evaluation” on textbook reading, note-taking, presentation skills, interpretation of illustrations, and enhancing memory. However, there was no significant difference in Dennis Congo Study Skills Inventory scores. Students expressed practical difficulties in applying the learning strategies and demanded reinforcement and follow-up sessions to induce a strong behavioural change.

**Conclusion:** The workshop-based approach in instilling learning skills is well received by the students. However, behavioural changes strongly demand reinforcement and follow-up sessions.

**Keywords:** Learning; Memory; Medical education

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## Introduction

Students entering the first professional year of medical education face multiple challenges in terms of transition from adolescence to adulthood, from “teacher centered delivery of instructions” (Pedagogical learning) to “self-directed learning” (Andragogical learning).

At one end, the introduction of the “Competency Based Medical Education” (CBME) for the undergraduate medical curriculum, has demanded “Faculty development programs” to be organized for the educators, preferably as a continuous process with effective reinforcement sessions (1). Teachers are in the process of upskilling themselves in adopting interactive and innovative active learning strategies (2). CBME is being implemented in many developed and developing countries wide across the world, which includes life-long learning as a major component. On the other end, for a medical student, to become globally relevant and competent, life-long learning and self-learning skills play a crucial role. Exposure to an exponential increase in information and accessibility to a wide array of resources in the medical field demand an effective learning strategy to be adopted by the medical students. The regulatory body emphasizes the acquisition of mastery in the fundamental skills of learning by the undergraduate medical students (3). In addition, approach to learning and study skills among the medical students are found to be major factors influencing the quality of student learning (4, 5).

A variety of research has addressed the learning styles and learning approaches of the medical students (6, 7). The literature search reveals a significant proportion of medical students remaining as “Surface learners” (8). Cebeci and his colleagues emphasized the alarming impact of the waning interest of students in deep approach of learning (5). This puts a high demand on teachers in tailoring their teaching strategies to the diverse needs on the learners. However, all the strategies may turn successful only with the appropriate behavioural change in the learning approaches adopted by medical students.

Medical students are not lacking in learning skills but are less oriented to the strategies for effective learning. Siddiq and his colleagues in their study identified a positive attitude of the students towards a learning skills course (9). Lack of a proper learning strategy is one among the several factors influencing the academic achievement of the medical students (10, 11).

Skills related to textbook reading, note taking, memory, test preparation, concentration and time

management were some of the factors influencing the academic performance of the students (12). Medical students spend less amount of time in reading “Textbook” and need training in effective preparation and presentation in exams (13).

However, there is scarcity of sufficient data on the impact of a workshop on the enhancement of learning skills of medical undergraduates. Hence, the present study aimed to introduce a “Workshop on Learning Skills” for the students and evaluate its impact by assessing the immediate reaction of the learners after the workshop and their behavioural changes in terms of enhancement of learning skills over a period of time.

## Methods

This mixed-method study was carried out at Sri Manakula Vinayagar Medical College and Hospital for first year medical undergraduates. It is predominantly an interventional quantitative study complemented with descriptive and qualitative analysis. Institutional Ethics Committee (IEC) approval was obtained (EC/116/2022). The study was initiated based on a pilot observation. Immediately after the admission into the first professional year, a pre-academic survey through 51-item self-administered “Dennis Congo Study Skills Questionnaire” was conducted for the first-year medical undergraduates. Dennis Congo Study Skills questionnaire is a pre-designed, pre-validated questionnaire used widely in medical education to assess the study skills of the students (12). It consists of six domains on Textbook reading, Note-taking, Memory, etc., with each domain having 5-13 components. The students were expected to rate themselves for each component in a Likert scale of 1-5. One of the components of the inventory enquired the students regarding their exposure to learning skills courses or workshops. The survey findings revealed that 67% of the students have not attended any kind of learning skill courses or workshops. Based on this pilot observation, it was decided to conduct an interactive “Workshop Learning Skills” for the first-year medical undergraduates. The “Workshop on Learning Skills” included the following components in the framework namely textbook reading, note taking, presentation skills, interpretation of illustrations, and enhancing memory. A total of 100 students participated in the study.

The inclusion criteria were first-year medical undergraduates of the institution, willingness to participate, and attendance and involvement in the entire workshop activities for a duration of 5 hours. The participants were excluded if they were absent from the workshop and those who did

not participate in all the activities for a duration of 5 hours.

The objectives of the workshop were to enable the students to use the Survey, question, read, recite, and review (SQ3R) strategy for effectively read the textbooks, effectively utilize the tips for taking notes in a lecture class, follow appropriate measures for an effective note making/synthesis of answers, present the prepared content with all adequate requirements, practice the essential steps in the process of interpretation of illustrations, and adopt suitable strategies to enhance their memory/recall.

Students were divided into groups of 25, and the workshop was conducted for 100 students. The workshop was carried out for a period of 5 hours for students in small groups together with intensive hands-on training on enhancement of textbook reading skills, note making, note taking, presentation skills, interpretation of illustrations, and tips for memory enhancement. All the sessions were made interactive with inclusion of activities.

The SQ3R strategy was emphasized for all the students. Students were given tips on “Note-taking” during lectures and “Note-making” – synthesis of answers during textbook reading. Group activity was conducted for improving the presentation skills of the students. Students were encouraged to make different presentations as paragraph, flow charts, and diagrams. Students were given hands-on training on interpreting non-academic charts and interpreting academic

illustrations as a group. Students were exposed to small games and activities on recall. Later, they were given simple tips to enhance their memory. For all the group activities, feedback was given by their peers as well as the facilitators.

#### Data Collection

Kirkpatrick’s Evaluation Model was used to evaluate the learners (14). The reaction of the learners after the workshop (Level I Kirkpatrick’s Evaluation Model) was assessed using a self-administered feedback questionnaire. The learning by the participants was assessed with retro- pre-evaluation of their attitude and skills towards the acquisition of the “Learning Skills” (Level II Kirkpatrick’s Evaluation Model). The behavioural change of the participants (Level III Kirkpatrick’s Evaluation Model) was done by re-administering the “Dennis Congo Study Skills Questionnaire”, ten months after the conduct of the workshop, along with a feedback questionnaire.

#### Statistical Analysis

Descriptive statistics (percentage distribution) and Mean±SD were used for quantitative data. Paired student t-test was used for the comparison of the retro-pre-evaluation scores and Dennis Congo scores. Manual content analysis was done for the responses of the open-ended questions of the feedback questionnaire. Cluster sampling was done to consolidate the statements conveying the same meaning with frequency counts. IBM SPSS version 22 was used for statistical analysis.

**Table 1:** The lesson plan of the “Workshop on Learning Skills Module”

No	Breakup of the session	Topic
1	20 minutes	Ice-Breaking session
2	10 minutes	Overview of the program, Division of groups
3	60 minutes	Activity on Textbook reading, note –making/ note –taking Students were divided into two groups - A group – Projection of video clipping for 10 minutes (Instructed to prepare a written content on the summary of the video clip) - B group – Reading exercise on novel pages (correlating with the video clip) shared with the students for 10 minutes (Instructed to prepare a written content on the summary of the video clip) - Brainstorming on the challenges faced with the activity - Reflection by the students - Power point presentation on SQ3R strategy
4	15 minutes	Break
5	45 minutes	Power point presentation on Note taking, Note making and Presentation skills
6	40 minutes	Group activity by students with Text book reading, Note making and presentation skills on academic content
7	35 minutes	Interpretation of Illustrations - Projection of a crime scene, followed by reflection of the students - Projection of academic graphs and charts and their interpretation (Fish bowl technique)
8	45 minutes	Enhancing Recall & Memory - Interactive recall games with pictures and cards - Tips for recall/Memory shared with power point presentation
9	20 minutes	Feedback & Closure

**Table 2:** The consolidated feedback responses received from the participants immediately after the workshop

Positive factors about the workshop	Suggestions for improvement
<ul style="list-style-type: none"> <li>• Entertaining [25]*</li> <li>• Harry potter video clipping activity was interesting [30]</li> <li>• Interesting group activities [15]</li> <li>• Useful tips suggested [20]</li> <li>• Our existing skills were made effective</li> </ul>	<ul style="list-style-type: none"> <li>• Display of best presentations of students can be done [2]</li> <li>• Feedback on presentation in the upcoming formative assessment exams will be helpful [5]</li> <li>• More time may be allotted for "Interpretation of Illustrations"</li> </ul>

\*Numbers in parentheses indicate the number of responses obtained from the participants

**Table 3:** The comparison of the "Retro-pre-evaluation" of the attitude and skills towards acquisition of the learning skills

Domains addressed	Text Book Reading	Note Taking & Note Making	Presentation Skills	Interpretation of Illustrations	Enhancing Memory
Before Workshop	3.17±0.81	2.90±1.04	2.64±0.78	2.79±0.91	3.07±0.80
After Workshop	3.95±0.69	4.02±0.96	3.79±0.67	3.83±0.84	3.98±0.60
p	<0.001	<0.001	<0.001	<0.001	<0.001

**Table 4:** The comparison of the "Dennis Congo Study Skills Inventory" before and 10 months after the workshop

Domains addressed	Text Book Reading	Note Taking	Memory
Before Workshop	30±4.00	17.78±3.4	31.76±6.3
After Workshop	30.17±4.00	18.52±2.7	33.01±5.4
p	0.691 Not significant	0.050 Not significant	0.159 Not significant

**Table 5:** The consolidated feedback analysis of the participants on "Hindering factors in the application of learning strategies and possible solutions to overcome the same"

Hindering Factors in the application of the learning strategies	Possible solutions to overcome the challenges
<ul style="list-style-type: none"> <li>• Large volume of portions</li> <li>• Waning of interest</li> <li>• Difficulty in applying the same strategy in real life situation</li> <li>• Cramming habit</li> <li>• Difficulty in time management</li> </ul>	<ul style="list-style-type: none"> <li>• Training in Time Management</li> <li>• Daily reading</li> <li>• Time Table preparation</li> <li>• Reinforcement sessions</li> <li>• Follow up by the teachers (every 3 months)</li> </ul>

*Ethical Consideration*

Institutional Ethics committee permission was obtained (EC/116/2022). Informed consent was obtained from the study participants. Confidentiality and privacy of the data was maintained throughout the conduct of the study.

**Results**

Table 1 represents the lesson plan followed for the "Workshop on learning skills module" implemented for the medical undergraduates. The learners were required to immediately rate the sessions after attending the workshop on the learning skills module. 57% of the students rated the workshop "Excellent", 26% as "Very Good", and 17% as "Good". Table 2 represents the consolidated feedback responses received from the participants immediately after the workshop. Table 3 represents the comparison of the "Retro-pre-evaluation" of the attitude and skills towards acquisition of the learning skills. Table 4 represents the comparison of the "Dennis Congo Study Skills Inventory" before and 10 months after the workshop. The percentage of students with the improvement of memory scores was 41%, textbook reading 25%, and note taking

34%. Table 5 represents the consolidated feedback analysis of the participants on "hindering factors in the application of learning strategies and possible solutions to overcome the same".

**Discussion**

The study intended to implement and evaluate the effectiveness of "workshop on learning skills" for the medical undergraduates. The workshop-based approach in imparting "Learning Skills" was well received and appreciated by the students (Level I Kirkpatrick's Evaluation Model), thereby reflecting their positive attitude towards the same. This was evident in the overall rating given by the students regarding the workshop. In addition, there was a significant increase in the retro-pre-evaluation scores obtained from the participants. Similar observation was made by Siddiqui I and his colleagues (9).

Lack of significant improvement in the Dennis Congo scores suggests that there is a tendency towards decline of the "Learning skills" with the advancement of the professional years. These results were compatible with the observation made by Cebeci S, where third professional years had higher scores over "Surface Approach" towards



learning, compared to first professional year student (5). The waning trend in the “Textbook reading habits” and “Note-taking habits” of the medical students have been reported by other studies (15-17). However, compared to textbook reading and note-taking habits, the percentage of improvement in memory scores was high (41%). The reinforcement of information across the professional years and the ability to add new information with old information and integrating them might have made the students feel confident related to their enhancement in memory skills. The lack of reasonable study time and poor time management are some of the factors that can be considered for the decrease in the study skills (15).

In contrast, a study conducted by Nyland RL has revealed a positive behavioural change in the students. However, they offered frequent reinforcement sessions. The study skills workshop conducted for the first-year students in the study by Nyland RL underwent revisions and was made longitudinal. The authors of the study claim the longitudinal nature of the workshop as one of the reasons for the success of the same (18).

Research on study habits of “highly effective medical students” have front lined “effective time management” as a major reason for the academic achievement of the students. (14, 18). Well-planned reinforcement sessions with effective time management strategies may help to bring behavioural changes among the learners (18, 19). Similar comments were given by our students, when they were asked to suggest possible solutions to overcome the practical constraints in applying the learning strategies.

Reinforcement has been found to be associated with positive impact on student learning in a scoping review (20). A tailored interventional program on learning skills that runs throughout the semester involving five sessions with compulsory attendance may improve the learning strategies of the students as suggested by Sisa and colleagues in their study on interventional program to enhance the learning skills of the students (21).

#### *Strengths and Limitations of our Study*

We consider the entertaining framework of the module, mixed methodology comprising of quantitative and qualitative components, and attempt to measure the behavioural changes of the study participants (up to Level III Kirkpatrick’s Evaluation Model) as strengths of our study. As many studies have been limited to identifying the learning styles and approaches of the students, we went a step ahead in implementing the “Learning Skills Module” in a workshop format.

However, our study is not without limitations. We did not incorporate time management session as a part of the module, which played a major influence on the students in adopting the strategies. Lack of the longitudinal framework and lack of reinforcement sessions were some of the other limitations of the study. These limitations could be overcome by training the students with appropriate time management, planning of reinforcement sessions of the learning skill workshops with good spacing, and performing periodical follow-ups by the instructors.

#### **Conclusion**

The workshop-based approach in instilling learning skills is well received by the students. However, behavioural changes strongly demand reinforcement and follow-up sessions, with incorporation of “Time Management” and “Stress Management” as essential components. We recommend replacement of didactic sessions on learning skills with a workshop-based approach in a longitudinal fashion to assist students with effective adoption of the strategies for an improved academic outcome. Also, the correlation of these learning skills with the academic performance may provide a better understanding of the learning behaviours of the students.

#### **Authors’ Contribution**

All authors contributed to the discussion, read and approved the manuscript, and agreed 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.

#### **Conflict of Interest**

The authors declare no conflicts of interest.

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