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Module to facilitate self-directed learning among medical undergraduates: Development and implementation

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Abstract:

CONTEXT: Currently, self-directed learning (SDL) is emphasized in medical institutions all over the world. The skills of SDL enable one to be a lifelong learner, a necessity to cope up with fast-expanding medical knowledge.

AIMS: This study aims to develop and implement an “SDL” module for medical undergraduates and find out their perception about the same.

SETTINGS AND DESIGN: A cross-sectional study using a mixed-method design (having both qualitative and quantitative components) was conducted in the Department of Community Medicine, UCMS, Delhi, India.

METHODS: A module was developed following an extensive literature review and focus group discussions with the teaching staff of the institute. First-semester undergraduate students were invited to participate in the study and asked for feedback using a semi-structured questionnaire.

STATISTICAL ANALYSIS: Quantitative data were expressed in mean, range, and frequency. For qualitative data, thematic analysis was performed.

RESULTS: The module was implemented with 160 students, in November for 10 hour distributed over 5 weeks. Feedback could be obtained from 130 students. Sixty-seven percent of students were satisfied and 66% reported as motivated to study the allotted topic further. Qualitative analysis showed that though the students liked the learning process based on this module, they also felt facilitators could have been more active in imparting knowledge and skills.

CONCLUSIONS: To make learners equipped with the ability to learn throughout a professional learning course, SDL as a learning tool should be introduced in the medical undergraduate curriculum.

Keywords:

Competency, medical students, self-directed learning

Introduction

The goal of medical education is not only enhancement of knowledge and skills but also the creation of a medical professional who is a clinician, leader, and lifelong learner, as described in the recently launched medical undergraduate curriculum of India.^[1] An

individual who is equipped with self-directed learning (SDL) is a lifelong learner. Lifelong learning is a necessity to cope up with fast-expanding medical knowledge and enables a health professional to continue learning throughout the professional life course.^[2,3] According to published literature, SDL also helps to reduce the numbers of demotivated medical graduates.^[4]

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Globally, medical institutes are now emphasizing on SDL.^[5,6] SDL is the process in which the individuals take the initiative with or without the help of others in determining their needs, formulating learning goals, identifying resources of learning, choosing, and implementing learning strategies and evaluating learning outcomes.^[7,8]

In SDL, the learner is responsible for his or her own learning process and it gradually shifts the learning control from teacher to learner.^[9] Studies also suggest that SDL learners perform better than traditional lecture group learners.^[10-12]

The medical Council of India (MCI), in its newly released curriculum, has dedicated time for SDL for each subject. The present study was conducted with the following objectives: (a) to develop and implement an "SDL" module for medical undergraduates, (b) to find out the perceived level of motivation for further study and levels of satisfaction with this module.

Methods

A cross-sectional study using mixed method design (having both qualitative and quantitative components) was conducted by the Department of Community Medicine in a Medical College of Delhi, India. All teaching staff (faculties and residents) of the department were invited to participate in the development of the module. Two focus group discussions (FGD) were held before the development of the module. Literature review and FGDs helped to form a framework and identify essential components of the module. The framework comprised: (a) creating a functional definition of SDL (b) deciding the principles for choosing teaching-learning activities (c) identifying the desired competencies associated with SDL (d) aligning teaching-learning activities and assessment with principles and competencies of SDL (e) Selecting the criteria for assessing a learner and (f) the evaluation of the module through students' feedback. The activities undertaken for the development of the module were part of the regular teaching-learning program of the department.

During the implementation of the module first-semester undergraduate students posted in the Department of Community Medicine for SDL activity in November 2019 were invited to participate in the study and asked for feedback using a semi-structured questionnaire. Feedback included information regarding an undergraduate student's level of satisfaction with this method of learning, perceived level of motivation and interest to further study the topic using the learning strategy selected by them. The information

obtained from the students' was kept anonymous and confidential. Quantitative data were expressed in mean, range, and frequency. For qualitative data, thematic analysis was done. Clearance from the institutional ethics committee was obtained before the start of the study.

Results

Development of the module

- a. Creating a functional definition of SDL: SDL was defined as a learning process where students in partnership with facilitators decide the learning objectives of a preselected topic, identify resources for consultation, decide activities for learning, and evaluating themselves
- b. Principles for choosing learning activities: It was decided that activities that encouraged teamwork, promoted feedback, and helped to reflect continuously on individual progress would be chosen. Some identified activities were student-led seminars, role plays, panel discussions, preparation of health education materials, and case studies, etc
- c. Identification of the competencies for SDL: the competencies to be acquired through SDL for a first-semester undergraduate medical students were discussed. Four competencies were identified based on discussion and an article by Patterson *et al.*^[13] The level of each competency was decided considering the students' academic experience. The competencies were (i) teamwork: students discuss, decide, and work together to solve a given task (ii) Reflection: Students narrate incidents they come across, the positive and negative aspects of the incidents, what caused the occurrence and what could be done differently in future. (iii) critical thinking: student can answer critical questions raised by facilitators and starts formulating her own query (iv) self and peer evaluation: student can determine the level of achievement using evidence
- d. Planning and Programme Organization: the sequencing of the program was done considering the available workforce, time, and other resources. All facilitators involved in the exercise were sensitized and trained. Students were divided into five groups. For each group, the topic of SDL was predecided based on discussions among the faculty. Five different topics were chosen, which were thought appropriate for 1st-year medical undergraduates. The topics were obesity, adolescence, air pollution, balanced diet, and hygiene. Each group was supported by a faculty and three residents. The venue for each of the groups was arranged. As only two buses were available for transportation, it was decided only two groups can have a community exposure if decided and chosen by groups. Facilitators planned teaching-learning

activities considering the competencies to be acquired and the principles of SDL.

Programme implementation

A total of 160 first-semester students were posted in the Department of Community Medicine in November for 10 hour distributed over 5 weeks. Hence, each session was of 2 h duration/week. Students worked in groups allocated to them. Each group had four facilitators with one faculty member and three postgraduate residents. Each group decided on their specific area of learning (based on selected topics), learning objectives, and activities for learning. The learning resources available for consultation were discussed. The facilitators helped groups and sub-groups discussions, monitored progress over the course, and managed differences of opinions. The teaching-learning activities chosen by different groups were discussions on case-based scenarios, flipped classrooms, student-led seminars, movie screening, panel discussion, role plays, pair and share, etc.

Assessment of learners

A learner was assessed with the help of a checklist developed for the purpose. The checklist included components such as (1) initiation, (2) communication, (3) critical thinking, (4) resources: finding and sharing, (5) team-work: responsibilities and respect for others, (6) overall involvement, and (7) self and peer evaluation. There was a mini examination at the end of the posting to assess the knowledge and skill gained during the posting.

Self and peer evaluation

A learner was asked to evaluate herself and a facilitator identified peer, regarding (1) responsibility and respect for others (2) information processing (3) communication (4) critical thinking, and (5) awareness on a scale of 1–5, where a score of 1 implied “totally disagree” and five implied “totally agree.” For self and peer assessment, we used the criteria developed by Papinczak *et al.*^[14] The instrument was suitably modified to fit our context and consisted of a ten item checklist. The facilitators’ ranking was matched with students self-evaluation and peer evaluation of a learner with self-evaluation for final assessment.

Students’ feedback about the program

Although the program was implemented on 160 students, feedback could be obtained from 130 students only. Sixty-seven percent of students mentioned that they were satisfied with the current learning process, while 70% reported the program to be interesting. Sixty percent of the students reported that they were motivated to study the allotted topic further. The overall rating of the module on a scale of 0–10 got a mean score of 7.5 from the learners with the minimum and maximum score being 2 and 10.

Qualitative analysis of students’ perception

Qualitative analysis of students’ perception elicited both positive and negative responses. They are listed in Tables 1 and 2.

Discussion

SDL follows the principle of adult learning. This learning is the new age learning, where importance has been given to collaborative learning.^[15] While preparing the module, the principles of competency-based medical education were followed by identifying and defining the competencies a self-directed learner should possess. Although SDL in an ideal situation is for motivated learners, care was taken to develop a learner who learns how to learn.

In the present study, the students felt that SDL sessions were effective, enjoyable, and innovative ways to learn. However, students also felt that facilitators could have been more active in imparting knowledge and skills. As in SDL students were supposed to be responsible for finding the answers for the learning objectives decided by them,^[16] they were forced to think, do a search, do group discussion, and come up with the answer. The activities planned, made learners to consult available resources, read, discuss, and present, which they might

Table 1: Supporting verbatim responses positively oriented toward the module following the question: “Things that you liked about this posting”

Theme	Verbatim example
Interaction	“Working in small groups and getting a chance to discuss with peers in such serious topics,” “All the students were very involved and I felt free to question anything,” “Out of the box interactive sessions,” “Every student was given an opportunity to put his/her view,” “teacher-student interaction,” “Learning from your peers”
Freedom	“Freedom to cover the topic at own convenience” “no compulsory activity” “no strict schedule” “students were given a choice what they wanted to learn” “objectives were made by ourselves” “Use of mobile phones were allowed”
New learning activity	“New style,” “the whole activity was very new to me,” “innovative learning method,” “nice technique,” “it was fun,” “different ways of learning amazing things”
Evaluation	“Method of scoring was interesting and it seemed fair,” “Getting an opportunity to assess ourselves and our peers”
Teamwork	“Learned to work in a team and coordinate,” “We had meeting outside the class too,” “Group discussions were fun to attend and provided a laid back learning experience,” “Made new friends”
Reflection	“Made me think about the previous class/activities”
Confidence building	“Developed confidence to talk in front of the teachers,” “Communication skills improved after attending this posting” “Provided me a platform to share my views,” “I was able to present my thoughts and viewpoints”

Table 2: Supporting verbatim responses negatively oriented toward the module following the question: “Things that you did not like about this posting”

Theme	Verbatim example
Physical environment	“Congested classroom,” “Video and audio quality of the equipment were low,” “The acoustic was not good”
Group activity	“Groups formed had a very few active members, many students were not doing anything,” “Some members of the group failed to contribute properly,” “Groups were not made according to our convenience and it affected our work” “Not all students were serious”
Evaluation	“Giving marks to oneself” “The concept of entire evaluation plan was low”
Time	“Less time available” “Longtime duration” “There was a theory class scheduled just after SDL session” “SDL class was just after lunch break”
Feedback and supervision	“Too much feedback was asked from us” “Strict supervision”
Learning experience	“Could have been more informative through lectures,” “Consumed a lot of time and time was simply wasted” “Teachers should have taught us more,” “We could have used this time to study other subjects at home,” “Right now I feel the topic was given more time than it simply needed,” “The learning was not textbook based,” “No written notes, can’t revise” “I probably grasped less compared to textbook learning,” “It was more of a casual learning process” “Teacher should have taught something”

SDL=Self directed learning

not have done otherwise following a didactic lecture. Keeping the philosophy of SDL in mind, self, and peer assessment component was also included in the module, which is not usual criteria for assessment in the didactic teaching-learning process. We tried to follow Grow’s staged SDL model,^[17] which describes SDL in a phased manner. It is also known that a class of students always has a heterogeneous mixture of learners^[18] who differ from others in terms of skills to be acquired by an SDL learner. It has been seen that students belonging to higher-scoring groups usually also performed better on SDL topics.^[17] However, keeping in mind the proven long-term benefits of SDL, the activities to promote a self-directed learner need to be continued in a systematic way.

Limitations of the study

This study has several limitations. First, this was the first exposure to SDL for the students. A longitudinal program to follow these students as a self-directed learner in subsequent years might help to evaluate this module more effectively. Second, for the facilitators too, it was a maiden exposure on the implementation of SDL sessions. Each group with allotted facilitators identified their objectives, resources, teaching-learning activities, which might have created experiences which were not uniform for all the students. However, each student was a unique learner with their own learning preferences^[19] and collectively, facilitators tried that each group follows a consistent process to enable SDL. Third, the module was of a short duration, 10 hour only and with 1st year medical undergraduates, which may limit its generalizability to all medical undergraduates. Fourth, the data about the evaluation of the module was based only on the perception of students.

Conclusions

The results of this study suggest that SDL can be used as a teaching-learning method for medical

undergraduates. Students enjoyed and were satisfied with the teaching-learning activities and assessment methods suggesting scope for change from the traditional methods of learning. Easy access to various resources for learning further facilitates the inclusion of SDL in the medical curriculum. Although the demand for the traditional lecture was also mentioned by the students, SDL sessions from the start of their medical career would go a long way in transforming them into lifelong learners. Individuals who have learned how to learn can organize their own learning and transfer new information to larger contexts, an ability which would be a prerequisite for the medical profession, which mandates constant updating of oneself. Students can become Self Directed Learners only when they are aware of the process of SDL rather than just the acquisition of knowledge and skills of the subject content. Following the recommendation of MCI for the new undergraduate medical curriculum, exposure to SDL is compulsory in India. However, more studies in different settings are required to implement SDL in the medical curriculum.

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Conflicts of interest

There are no conflicts of interest.

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