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Self-directed learning: assessment of students’ abilities and their perspective

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Bhandari B, Chopra D, Singh K. Self-directed learning: assessment of students’ abilities and their perspective. Adv Physiol Educ 44: 383–386, 2020; doi:10.1152/advan.00010.2020.—The introduction of Competency-Based Medical Education Curriculum in India has endorsed many new concepts, like foundation course, self-directed learning (SDL), early clinical exposure, etc. Emphasis is being given to active teaching-learning approaches. One such approach is SDL. SDL is an active learning approach in which the students are responsible for their own learning outcome, with teacher acting as a facilitator of learning. A medical graduate, being a lifelong learner, should inculcate the habit of SDL. In the present study, the SDL abilities of first year Bachelor of Medicine, Bachelor of Surgery students were assessed using a questionnaire. Based on their experience, students were also asked about the prerequisites of SDL, how it can be promoted, and their expectations from the teachers. Students scored high in most of the SDL skills. However, they felt they need improvement in time management. Furthermore, the students are required to develop their interpersonal communication skills, and they also find it difficult to express messages effectively in oral presentations. Most of the students felt they need help in finding the correct learning resources. According to them, the students should be focused, motivated and stress-free, have time management skills, and be able to search learning resources for successful implementation of SDL. They felt that events that encourage active participation by students, if organized at regular intervals, could promote SDL. Some felt that evaluation of SDL would motivate them to take it seriously. According to the students, teacher should act as a facilitator, a mentor, as well as an evaluator.

INTRODUCTION

Medical Education in India is fast progressing, and the primary focus is on acquiring competencies by medical students through self-directed learning (SDL) and is promoted by the active learning approaches. SDL is defined by adult education expert Malcolm Knowles as the process by which the students themselves take the initiative to diagnose their learning needs, formulate their learning goals, identify resources for learning, and evaluate their learning outcomes (6). SDL is primarily a higher order active learning technique that promotes higher order cognitive skills and increases self-efficacy of the students. Onus of learning lies with the students (10). Medical students need to be lifelong learners. SDL plays a crucial role in inculcating the habit of reading and learning in medical graduates. It also develops all of the domains of learning: cognitive, psychomotor, and affective. Despite the promises active learning holds and despite the progress in the field of medical education, the system of medical education in India is skeptical in adapting this change in pedagogy. SDL is an educational concept that has been receiving increasing attention since the implementation of competency based medical education (CBME) by the Medical Council of India (MCI) (3). Dedicated time has been allotted to SDL in CBME curriculum in each specialty. Despite all reservations, the implementation of SDL has become mandatory. Literature search could not retrieve any study in an Indian context that assesses SDL abilities and perspectives of undergraduate medical students; hence the present study was planned.

METHODS

The study was conducted at our institute after obtaining permission from the Institutional Ethics Committee. Participants were first-year medical students, and the participation was entirely voluntary in nature. After explaining study details to each participant, written, informed consent was obtained. Confidentiality and anonymity of the participants were maintained, as no personal information was recorded. Out of a total 90 students, 10 were absent and 6 did not fill out the questionnaire and were excluded from the study.

Students were asked to fill out a questionnaire. The questionnaire had two types of questions: 1) questions with a 5-point Likert scale, and 2) open-ended question.

SDL instrument (SDLI), a prevalidated questionnaire by Shen et al. (16), was used in the study. The questionnaire consisted of 20 items, of which the first 6 items explored their learning motivation, 7–16 explored their planning and implementation abilities, and the remaining dealt with interpersonal communication skills. The participants were asked to select from a Likert scale 5-point rating: “strongly disagree,” “disagree,” “neutral,” “agree,” and “strongly agree.” The questionnaire has been validated and used among Chinese nursing students. As per a psychometric systematic review by Cadorin et al. (7), SDLI, owing to its excellent methodology quality adopted in estimating the psychometric properties, is recommended for assessment of SDL abilities among nursing students. However, given that other healthcare students and professionals, e.g., medical students, are expected to possess SDL skills to pursue lifelong learning, it can be used across different cultural, educational, and work settings with careful study designing (7). We had conducted a pilot survey with 10 students to find out their understanding of the items given in the questionnaire and if any additional point was required to be added. Cronbach’s alpha for each item was found to be $>0.70$. Concurrently, it was also validated by experts from different specialities, including members of the medical education unit of the institute. All of the items of the questionnaire were found suitable to be used among undergraduate medical students.
In the open-ended questions, the students were asked to share their views on the prerequisites of SDL, ways to promote it, and the role of the teacher in self-directed learning. Responses to the questions were recorded. The quantitative and qualitative analysis of the data was carried out. Quantitative analysis was done using Microsoft excel software. Data were expressed in percentages. For the qualitative analysis, the responses to the open-ended questions were reviewed and thematically analyzed by two of the authors. Final agreement was reached after thorough discussions among the authors. The findings were clustered according to three themes: prerequisites of SDL, ways to promote SDL, and role of a teacher in SDL. A few expressive comments are presented.

RESULTS

A total of 74 students completed the questionnaire. The mean age of the students was 19 ± 0.8 yr. Because of its location, the institute caters to urban students with a similar educational background. All of the students have completed their higher studies from the Central Board of Secondary Education, where a similar curriculum is followed. Since the questionnaire was anonymous and gender was not mentioned in the format, the responses on the basis of gender could not be segregated.

The students’ responses to SDLI are given in Table 1.

The maximum score was 4.70 for item 3 that states, “I strongly hope to constantly improve and excel in my learning.” The minimum score of 3.74 was given to item 19 that states, “I am able to communicate messages effectively in writing.” The students get motivated for learning by success and failures (mean 4.49), but lag behind in their interpersonal communication skills (mean 4.54). They are aware of their strengths and weaknesses, they are capable of assessing or searching learning resources are more imperative virtues that favor SDL. The students who are motivated, and managing time effectively are some of the capable of carrying out SDL. The following quotations show their views on prerequisites of SDL: “. . . focusing [on] the task in hand and concentrating on the topics being taught, self-motivation and free environment may help in conducting SDL sessions in a meaning way”; “. . . studying the subject without

Table 1. Students’ responses to self-directed learning instrument

| No. | Items                                                                 | Strongly Disagree, % | Disagree, % | Neutral, % | Agree, % | Strongly Agree, % | Mean Score |
|-----|----------------------------------------------------------------------|----------------------|-------------|------------|-----------|-------------------|------------|
| 1   | I know what I need to learn.                                          | 5                    | 10          | 18         | 45        | 22                | 3.95       |
| 2   | Regardless of the result or effectiveness of my learning, I still like learning. | 0                    | 12          | 20         | 43        | 25                | 3.98       |
| 3   | I strongly hope to constantly improve and excel in my learning.       | 0                    | 0           | 5          | 28        | 67                | 4.70       |
| 4   | My successes and failures inspire me to continue learning.            | 0                    | 2           | 13         | 37        | 48                | 4.54       |
| 5   | I enjoy finding answers to questions.                                  | 0                    | 7           | 8          | 38        | 47                | 4.44       |
| 6   | I will not give up learning because I face some difficulties.         | 3                    | 8           | 17         | 40        | 32                | 4.18       |
| 7   | I can proactively establish my learning goals.                        | 10                   | 5           | 25         | 47        | 13                | 3.93       |
| 8   | I know what learning strategies are appropriate for me in reaching my learning goals. | 3                    | 7           | 25         | 38        | 27                | 4.02       |
| 9   | I set the priorities of my learning.                                  | 8                    | 5           | 13         | 35        | 38                | 4.32       |
| 10  | In the classroom or on my own, I am able to follow my own plan of learning. | 7                    | 13          | 17         | 47        | 17                | 3.89       |
| 11  | I am good at arranging and controlling my learning time.              | 2                    | 18          | 22         | 32        | 27                | 3.79       |
| 12  | I know how to find resources for my learning.                         | 8                    | 5           | 33         | 40        | 13                | 3.86       |
| 13  | I can connect new knowledge with my own personal experiences.         | 3                    | 3           | 18         | 42        | 33                | 4.39       |
| 14  | I understand the strengths and weakness of my learning.              | 0                    | 2           | 10         | 55        | 33                | 4.49       |
| 15  | I can monitor my learning progress.                                   | 0                    | 2           | 18         | 60        | 20                | 4.21       |
| 16  | I can evaluate on my own learning outcomes.                           | 0                    | 5           | 27         | 48        | 20                | 4.11       |
| 17  | My interaction with others helps me plan for further learning.        | 0                    | 5           | 20         | 42        | 33                | 4.39       |
| 18  | I would like to learn the language and culture of those whom I frequently interact with. | 10                   | 7           | 15         | 28        | 40                | 4.35       |
| 19  | I am able to express messages effectively in oral presentations.      | 8                    | 10          | 30         | 23        | 28                | 3.74       |
| 20  | I am able to communicate messages effectively in writing.            | 10                   | 2           | 10         | 45        | 33                | 4.60       |

Statements were rated on a 5-point Likert scale, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Mean score of each item is also given.
stress, generating ideas, reviewing the ideas, evaluating peers and oneself may help”; and “. . . we should be allowed to stay in [the] library for long hours with proper access [sic] to books and internet facilities.”

Ways to promote SDL. Students figured out that conducting regular events in which students can actively participate and assessing the outcome may help in promoting SDL among them. Some comments are as follows: “. . . regular seminars, group discussions, class presentations, debates, quizzes can motivate me to read on my own”; “. . . peer teaching is a way when we can sit and read to teach our colleagues”; and “. . . if we are evaluated for the topics which we are given to read, we will read more effectively.”

Role of a teacher in SDL. All of the students felt that teachers should act as a facilitator, motivator, mentor, and evaluator during SDL sessions. Some expressions by the students are as follows: “. . . teacher can suggest [to] us learning resources as well as assess our outcome”; “. . . teacher should show [the] interesting side of the topic to motivate me to read further” and “. . . I feel a teacher while conducting SDL should share newer learning ideas, focus on concepts . . . rather he should be there whenever required!”

DISCUSSION

There has been a recent paradigm shift in the Indian Medical Education from teacher centered to student centered with the inception of CBME-based curriculum. Self-directed learning is an imperative student-centered approach; early introduction of this approach will help the medical students to become lifelong learner. Being a lifelong learner is one of the goals of an Indian Medical Graduate (3). This is the first study assessing SDL abilities of undergraduate medical students in India; literature search has revealed some studies in which the medical students were assessed for SDL readiness (1, 15).

Comparison between SDL and teacher-centered learning has shown varying results (2, 5, 10). According to Levett-Jones (13), SDL implementation in undergraduate nursing education has not been successful. While implementing SDL, past experience and educational setting should be taken into consideration (8). In the present study, all of the students had a similar educational background, and all were exposed to SDL to a similar extent. It has been consistently observed that high achievers do well in SDL, whereas low achievers find it difficult to cope with SDL. The possible explanation for the discrepancy could be lack of abilities like information gathering and information processing, analytic skills, communication skills, etc., among low achievers (4). Iwasiw (9) has elaborately described the role of a teacher in SDL. The teacher acts like a facilitator of learning by directing students about objective writing, ensuring access to learning resources, providing information, teaching about evaluation, maintaining learning standards, and making oneself available during the SDL process (9, 12). Our students also expect their teachers to fulfill most of these responsibilities. In a recently published article by Henry Khat (11), among the indicators of the SDL, the students perceived themselves to be least competent in stress management, examination preparation, and online class readiness.

The concept of SDL has been newly incorporated in the Indian medical education system. Its implementation has become mandatory as per the latest CBME curriculum. However, challenges associated with the execution of this teaching-learning technique cannot be ignored. The teachers and students are accustomed to passive teaching-learning methods and are hesitant in coming out of their comfort zone. Hence, the major challenge in the current scenario is to motivate them to come out of their shell and explore the benefits of this method. To bring like-minded motivated faculty together who could implement SDL and to make the learning resources available to the students is another challenge. One of the prerequisites of SDL implementation as a learning technique is adequate preparedness of the faculty, as well as students. The MCI recommends a skill session on SDL during the foundation course, but a more elaborate training program of the students about the process of SDL is required. A self-directed learner should learn to be in touch with curiosities, formulate questions based on one’s curiosities, identify and select efficient methods to collect data required to answer these questions, and finally analyze the data so as to get valid answers to questions (14). In order to generate these qualities and achieve their goals, faculty need to support, motivate, and help the students. One of the potential problems the faculty may encounter is ensuring uniformity, as students are from diverse backgrounds with varying capabilities of self-directed learning. For overcoming these issues, the facilitators and students have to work together to enhance students’ SDL skills, especially time management and interpersonal skills. Furthermore, the habit of writing reflections also helps students develop SDL. Feedback from students and facilitators may help in improvising the process further.

Limitation. Like any self-administered questionnaire-based study, this study is also limited by self-report bias. The present study was based on a self-report questionnaire that explored student abilities of SDL and, therefore, is not a direct measure of their SDL abilities. Additionally, the small sample size hinders the generalizability of the study. Although the questionnaire was validated by experts and through a pilot study in 10 medical students, lack of detailed psychometric analysis of the items is a possible limitation.

Conclusion. It is suggested that, before implementing SDL, the facilitators should be aware of those abilities in which students require special guidance. Concurrently, students should monitor their own learning progress, identify the areas where they are lacking, and make efforts towards self-improvement. The joint efforts by the facilitators and students themselves may be helpful to make students independent and lifelong learners.

DISCLOSURES

No conflicts of interest, financial or otherwise, are declared by the authors.

AUTHOR CONTRIBUTIONS

B.B. and D.C. conceived and designed research; B.B. and K.S. performed experiments; B.B. and D.C. analyzed data; B.B. and D.C. interpreted results of experiments; B.B. and D.C. drafted manuscript; B.B., D.C., and K.S. edited and revised manuscript; B.B., D.C., and K.S. approved final version of manuscript.

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