

ORIGINAL ARTICLE

PERCEPTION OF FIRST-YEAR MEDICAL STUDENTS REGARDING SELF-DIRECTED LEARNING AND CONVENTIONAL LECTURING IN PHYSIOLOGY THROUGH ACTIVITY FEEDBACK**Raisa Naz, Shazia Tauqeer, Kinza Sammar*, Shabana Naz**, Jaweria Ajmal***, Sahar Farhat, Muhammad Ayub[†]**Department of Physiology, Ayub Medical College, *Abbottabad International Medical College, **Department of Pathology, Ayub Medical College, Abbottabad, ***Final Year Student, AJK Medical College, [†]Department of Physiology, Azad Jammu & Kashmir Medical College, Muzaffarabad, Pakistan

Background: In order to transform the healthcare professionals into lifelong learners, it is important to develop self-directed learning (SDL) skills in their early study years. Students engaged in SDL can complete their learning assignments and can be transformed into lifelong learners. The objective of this study was to evaluate the improvements in perception of students by integrating principles of SDL activity in conventional curricular system in a 4-week first-year MBBS respiratory module. **Methods:** It was a descriptive cross-sectional survey conducted in Ayub Medical College Abbottabad on First Year MBBS (2020–2021) batch, where the module coordinator assigned respiratory insufficiency case-based studies to 1st Year medical students. Students were asked to give response to 20 questions on standard questionnaire proforma. Students were asked to reflect on how this assignment affected their perception of SDL skills and improvement in learning. Students strongly agreed, agreed, neither agree nor disagree, disagree, and strongly disagree about the 20 responses on Likert scale. For simplification, descriptive parameters were modified to numerical values which were then used to analyze responses on MS Excel. **Results:** Feedback response rate was 80% (177, 99 males and 78 females). Frequency of responses was recorded both for conventional teaching (CT) and SDL. There was marked variation in responses, both for SDL and conventional method of teaching. **Conclusions:** The students positively perceived the activity as a valuable learning experience. SDL assignments can be successfully implemented in pre-clinical courses and show improvements in their perception and learning skills.

Keywords: Self-directed learning, Conventional teaching, Medical education, Physiology teaching

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INTRODUCTION

The emerging trends in field of medical education require a shift from traditional lecture generally involving a single teacher delivering lecture to a large group of students with the older methods of delivery like audio-visual aids, blackboard or Power-Point presentation etc. In concordance with this while the students primarily taking the initiative in their self-learning, new learning strategies like directed-self learning (DSL), problem-based learning (PBL), collaborative learning (CL) and self-directed learning (SDL) have been integrated in medical curricula over the past two- decades.¹ Furthermore, the blend of newer techniques like lecture, CL and self-directed methods are also in practice where the role of conventional lecture has been reduced.² SDL has been signified as a process in which the students take initiative and bear responsibility for their own learning. SDL also permits health professionals to continuously learn and update their knowledge throughout their professional careers.¹⁻³ SDL is defined as a process in which a learner takes the initiative, bears responsibility, identifies their learning needs, creates learning goals, organizes time and resources for learning, applies appropriate learning strategies and then evaluates their learning outcomes.³

The introduction of Integrated Modular System (IMS) now requires medical institutes to provide adequate opportunities for medical students to participate in self-learning activities and time for independent study to inculcate the skills of lifelong learning in medical students like the ability to recognize the gaps in one's knowledge, to know how to fill these gaps and find reliable sources needed, to gather the relevant information, and finally to apply this information to one's lifelong clinical practice.⁴ Thus SDL is considered a key competency to be achieved in Integrated Modular System of medical school's curriculum which is actually a higher order active learning technique to promotes self-efficacy and higher level of cognitive skills of the students which has been strongly commended for effective medical training.^{3,4} This helps the trainees in the diagnosis of their learning needs and goals, identification of available human and other resources for learning, in choosing and implementation of appropriate strategies and at the end evaluation of their overall learning outcomes. With the developmental evolution in the field of science and technology and medicine of course, the learning tools, educational technologies, and teaching methods have been gradually variegated.⁵

In this challenging era of medical education, medical students can complete learning assignments and remain informed by effectively engaging with self-directed teaching tools and be prepared for the future as a consistent lifelong learner.⁶ It also covers all domains of learning: cognitive (knowledge), psychomotor (skills), and affective (attitude). In the field of medicine medical professionals need to acquire the newest medical expertise and means to sustain their specialized skilled competencies and comparatively serve their patients and community in a better way.⁷ It is recommended that doctors need to learn throughout their careers.^{6,7} It is increasingly documented that there should be early implementation of medical education strategies that should transform students into lifelong learners. SDL is assumed as an encouraging approach that can support this continuous learning in medical education.^{8,9} It is a purposeful mental process, usually escorted with many behavioural accomplishments, affected by many social, cultural and educational setups, past experiences, study skills, self-awareness and motivation involved in search of information.⁹

Despite the importance of active learning and current progress in the field of integrated modular system, the medical education in Pakistan is still dubious and needs a lot of adaptations like probing and consideration of impelling factors.¹⁰ Students orientation, teachers training, resource management, and time allocation may be helpful in augmenting students' SDL capacity.¹¹ The present study aimed to determine students' responses about SDL activity, and discover which factors can improve or affect students' active learning by implementing SDL in their study courses.

PARTICIPANTS AND METHODS

It was an analytical quasi experimental research conducted in the Department of Physiology, Ayub Medical College Abbottabad from June to August 2021 during Respiratory Module teaching to evaluate the performance of 1st Year MBBS students (2020–2021 batch) by self-directed learning, and responses were compared with conventional method of teaching. Ethical approval of Institutional Review Committee was obtained. Non-probability convenience sampling was used and written informed consent was obtained.

The potential study participants were 221 students of 1st Year MBBS. They were first taught the topic of respiratory insufficiency in a lecture hall as a large group discussion using PowerPoint presentation. At the end of module, they were assigned case-based studies whose topics were selected randomly, learning objectives of topic were made clear to the students and a list of reference books was provided beforehand.

After giving proper instructions about SDL and then given two-week time to gather clinical data regarding a specific topic and prepare for discussions.

They were grouped into 10–15 students each and were advised to visit clinical wards to take history and examination of patients with respiratory diseases and relate them to the basic physiological concepts learnt in conventional classroom teaching. At the completion of task, the team leaders had to compile the summary of activity and present before class with PowerPoint presentation and teachers as facilitators.

The students individually assessed their perception, knowledge gaps of the cases, identified scholarly sources to fill their knowledge gaps, shared the information with their teammates, and reflected on their ability to guide their own learning. The facilitator encouraged their free self-expression and interaction among group during discussion but keeping the discussion limited to the learning objectives.

The Likert scale questionnaire was developed and modified using extensive literature review for the utilization of homogenous Likert scale. Students' responses were distributed on 5-point Likert scale as 5=strongly agree, 4=agree, 3=neither agree nor disagree, 2=disagree and 1=strongly disagree. Two such questionnaires were distributed among students one for evaluation of responses after SDL activity and one for conventional teaching/learning technique. Students were asked to record their responses on given questionnaire. The questionnaire was returned in one week. All those who returned filled proformas were included in study and the rest were excluded from study. Data were analysed on MS Excel.

RESULTS

The potential study participants were 221 students consisted of 124 males (56.1%) and 97 females (43.89%), of 1st Year MBBS aged 18–21 (19±0.5) years. The 98% (217) students participated in the SDL activity. Feedback response rate was 80% (177) 99 males and 78 females (Table-1).

In the proforma the frequency of responses was recorded both for Conventional Teaching (CT) and SDL. There was difference in the responses of students both for SDL and CT. Majority of the students favoured SDL. Some responses were intermediate between agree, neutral neither agree nor disagree, disagree and strongly disagree in the performance evaluation of SDL and CT method by feedback method. (Table-2).

Table-1: Distribution and response rates of male and female students of class (n=221)

Variables	N (%)
Males	124 (56.1%)
Females	97 (43.89%)
Age (Years, Mean±SD)	19±0.8
Activity response rate (Total)	217 (98%)
Males	119 (54.83%)
Females	98 (45.16%)
Feedback response rate (Total)	177 (80%)
Males	99 (55.93%)
Females	78 (44.06%)

Table-2: Students’ response on Likert scale for SDL and CT

Questions	Number of participants Responses (n)									
	Self-directed learning (SDL)					Conventional teaching (CT)				
	SA	A	Neither A/nor DA	DA	SD	SA	A	Neither A/nor DA	DA	SD
1. The activity hold my interest	57	48	9	3	--	50	43	15	8	1
2. The trainer used relevant and convenient tool	45	40	15	10	7	63	52	1	1	--
3. The activity increased the students-teachers interaction	75	35	6	1	--	20	25	35	30	7
4. The activity was easy to conduct and relevant to students learning	27	23	44	13	10	65	22	16	10	7
5. The activity was time bound	75	24	6	12	1	80	23	10	4	--
6. Helped to integrate my basic knowledge in physiology	61	35	17	4	--	65	32	20	--	--
7. Gave me a chance to self-study	72	31	10	2	2	23	33	25	17	10
8. Broke the uniformity of class room lecture	53	36	11	13	4	25	27	24	20	21
9. Increased my communication skills	58	36	12	5	6	4	9	18	53	33
10. Increased my problem solving skill	45	31	32	5	4	3	2	25	43	44
11. Made me more responsible in studies	69	23	16	6	3	32	29	40	7	9
12. Increased my leadership skills planning and implementing.	42	31	20	13	11	--	--	--	51	66
13. Increased my confidence	45	37	21	13	1	4	11	60	23	19
14. Instilled learning motivation in students	55	46	8	3	5	35	49	28	5	--
15. Permitted Self-monitoring/evaluation	36	35	21	12	13	15	19	44	23	16
16. The trainer had a desired professional skill	24	42	38	7	6	46	40	29	2	--
17. Helped in creating learning goals	53	32	28	3	1	23	37	46	6	5
18. Endorsed self-efficacy and higher level of cognitive skills	59	44	10	1	3	19	24	45	20	9
19. Assisted in identifying available resources and adopt relevant strategy	61	28	11	10	7	17	19	22	37	22
20. Enabled me to apply this information to lifelong clinical practice	70	39	6	--	2	23	25	30	28	11

DISCUSSION

The literature on SDL in medical education reports multiple scopes of SDL and the purpose of present study was to determine the perception of students after introducing the SDL activity in a preclinical medical institute course. Results of this study show that including SDL activity in a preclinical course successfully improves students’ skills and learning and can be practiced successfully and integrated into the curriculum. Several studies report the use of clinical cases in lecture-based courses to enhance self-directed learning similar to our study.⁵⁻⁷ Taking and giving feedback to and from the students is an essential part of SDL activity that can be applied in lecture-based courses with involvement of minimal teaching faculty^{9,10} and is an effective way of performance evaluation of students in such SDL skills as evidenced by activity response rate and feedback response rate in this study.

The SDL assignment was basically planned to encourage the quality of search skills needed to spot present and future gaps in students’ knowledge. There are other studies which show a comparison of knowledge acquisition⁸, learning evaluation and self-motivation by students using an SDL approach against conventional methods of course delivery.^{9,10} Hill M *et al*¹⁰ showed similar results as our study. They noted that SDL activities result in more gains in knowledge in contrast to traditional teaching methods as assessed by greater variation in the responses of students regarding two types of teaching strategies as Conventional Teaching (CT) and SDL.

Metacognition, the ability to think about one’s thinking and self-awareness is a vital skill for SDL and is another issue which we identified by students response which showed remarkable improvement as evidenced by our students’ answers. In fact, continual self-assessment or reflection is one of the frequently registered policies for teaching metacognitive skills in the health professions.¹¹ Reflection and feedback develop clinical reasoning skills and provide evidence-based care and is critical in the training of future physicians as we assessed by responses 10–14 in our study. The inability to reflect on one’s own clinical practice often results in diagnostic and treatment errors.¹² There are three components of metacognition: planning, monitoring, and evaluating which we noticed in students’ feedback. The valuable component of this study was a reflection of their perception because the students were able to identify their own strengths and weaknesses. The reflection upon this study shows that there is need to include more opportunities for SDL in our preclinical coursework in order to polish their professional skills as stated by Galvin *et al*¹⁴.

The SDL in medical education supports multiple aspects of students’ learning like leadership and management skills, personality traits like self-confidence of the learner, the learning environment as it assists in identifying the available resources and adopt relevant strategy, and the metacognitive process and self-efficacy¹⁵, as we observed by improved responses of students in their feedback. Overall, the students’ reflective comments provide insight into how this activity affected their SDL abilities beyond what we could observe by simply grading their assignments.^{16,17} We should not assume that all enrolled medical students

established, well-developed self-directed learning skills, the students revealed reflections like the ability to recognize one's knowledge gaps, to know where and how to find acceptable sources with the relevant information, and then to synthesize this information and apply it to one's clinical practice are lifelong learning skill that is an observation in our study which is consistent with the literature¹⁸ on SDL.

The primary aim of medical educators is to adopt SDL to produce learners who can manage their own learning in their careers and have a continuous search for knowledge through critical thinking that will improve recall and retention of information to promote better learning and decision making.¹⁹ SDL is the requirement of health professionals to increase motivation, independence, self-confidence in practice, self-discipline and goal orientation due to knowledge explosion, initiative, creativity, love of learning and independence in learning, learning opportunities, acceptance of responsibility to one's own learning and the constantly developing medical information during their careers as shown by responses of the students on Likert scale, and strongly depicted by many studies.²⁰⁻²²

Our study indicated that SDL can be enhanced by providing students with updated recent information about the assignment, specific performance goals, grading at the end of task completion, flexible time frame that allows sufficient time for task completion, support for student learning such as personal educators or supervisor, feedback and assessment consistent with other worldwide studies. Mentoring of students by faculty and peers, might improve the learning environment for students.^{13,19} The inability of students to hold with the academic workload discourage SDL is indicating that the curriculum needs re-evaluation. Studies^{13,16} have shown that curriculum plays a major role in SDL performance.

Our study indicates that students require support for SDL. Students need assistance to improve their self-management skills so as to take control over their own learning, especially in respect to time, resources and learning strategies due to the packed curriculum. Various strategies for SDL can be strengthened so that students can improve on their SDL skills.²¹ As similarly stated by a studies^{19,20} that students require more case or problem-based studies, clinical orientations, innovative teaching program group discussions and tutorials in regular teaching so as to improve their performance in exams and to make them more self-directed.

In the current situation of continuously emerging advances in teaching environment of medical institutes and field of medicine, SDL and especially self-motivation is crucial to enable medical students to become more independent and develop self-directed learning skills, show increased sense of responsibility,

self-confidence and aggressiveness and answerability to one's own actions which are hallmark to a career of medical professionals.²¹ It is a primary responsibility of the medical educators to implement SDL with the sole aim of producing medical professionals and lifelong learners who can significantly manage their own personal development and learning in this era of competition.^{22,23} Throughout their careers they should have a continuous quest for learning knowledge through imagination and critical thinking that will enhance their decision making in terms of retention and recall of their remote knowledge to promote better application and life time learning.^{19,24} Health professionals all the time, need to be self-directed, independent, self-confident in their practice, whether teaching or clinical skills. They should be motivated, self-disciplined and goal oriented due to changing environment, explosion of information and the continuously developing skills in medical fields during their professional lives.²⁵

CONCLUSION

SDL assignments can be successfully implemented in pre-clinical courses and are perceived by the students as contributing to their skills for transforming them into effective seven star doctors of future. The limitation of this study is that it was single-point based, conducted at one institution and in 1st Year medical students only. Further activities and studies that enhance their SDL skills throughout their undergraduate teaching program should be evaluated.

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