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Original Research Article

Introduction of SDL in Department of Anatomy: Evaluation of Learning and SDL Readiness

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ABSTRACT

Background: Self-directed learning (SDL) is a process in which individuals assume the responsibility of identifying their learning needs, setting goals, locating sources, developing and implementing proper strategies, and evaluating the outcomes of learning both individually and collectively. The advantages of SDL include, but not limited to, gaining more autonomy in learning, having higher motivation for it, acquiring lifelong learning skills, and developing greater self-control, self-confidence, and self-management. SDL has become popular in medical curricula and has been advocated as an effective learning strategy for medical students to develop competence in knowledge acquisition.

Aim and Objectives: To introduce self directed learning in the Department of Anatomy, to encourage faculty members to accept SDL as a Teaching Learning method and encouraging students to develop an attitude of self directed learning & to become lifelong learners.

Methodology: After proper sensitization of the faculty & students regarding SDL, two sessions were conducted during the Anatomy Dissection Hall timings of the First Year students. The performance of the students, in the SDL topics was assessed using the MCQ & SAQ tests. Feedback regarding the SDL methodology was taken both from the students as well as the faculty. Also the Questionnaires were given to students applying Fischer's Self Directed Learning Readiness Scale (SDLRS) & Jefferson Scale of Life Long learning –Health Profession Version (JeffSLL-HSP) & the results were statistically analyzed.

Results: A total of 126 MBBS students of the first semester participated in SDL session and most students scored more than mean score in the tests after SDL sessions, there was a fourfold increase in the number of students scoring more than 80% in the two SDL tests. Also participating students showed high readiness towards SDL and were oriented to become Life Long Learners.

Conclusions: SDL can be effectively implemented in the Department of Anatomy and it motivates students to become life long learners.

KEY WORDS: Self-directed learning (SDL), Teaching Learning method. Life long learners, MCQ, SEQ, Fischer's Self Directed Learning Readiness Scale (SDLRS).

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INTRODUCTION

Self-directed learning (SDL) is defined as a process, in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes [1]. The concept of self-directedness in learning was first discussed in educational literature as early as 1926 [2].

It is no longer practical to define the purpose of education as transmitting what is known. In a world in which the half-life of many facts and skills may be ten years or less, half of what a person has acquired at the age of twenty may be obsolete by the time the person is thirty. Thus it is important to attain new knowledge easily and skillfully the rest of his or her life. Lifelong, self-directed learning (SDL) has been identified as an important ability for medical graduates [3]. The main purpose of education must now be to develop the skills of inquiry, and more importantly to go on acquiring new knowledge easily and skillfully the rest of his or her life [4].

Key Components of SDL are:

The educator as a facilitator: Teachers in SDL programmes are seen as a source for skills rather than a source of content, and they assume the role of facilitators or consultants to the learner [5]. The role of the educator is to move from the role of a wise person in the learning process to the creator of a self-directing learning environment [6].

Identification of learning needs: Educational needs are the discrepancy between the present level of competency and the required level of competency (or the difference between aspiration and reality)[7].

Development of learning objectives: Learning objectives are the desired outcomes of learning and are derived from the pool of needs generated by learners. Learners translate needs into objectives and ideally, would choose the ones that are higher on their priority list and are measurable to facilitate learning evaluation [7].

Commitment to a learning contract: A learning contract is a formal document prepared by learners in consultation with a subject expert to demonstrate "what is to be learned, how it is to be learned, and how learning will be verified" [8]. Thus, learning contracts acknowledge learners' self-directedness and specify learning objectives, resources, strategies and evidence of accomplishment [1].

Resource identification. Learners in consultation with a subject expert, choose the appropriate resources based on their preferred method of learning and the type of learning objectives[1].

Implementation process: To build rapport and set the climate for SDL, facilitators should conduct introductory meetings with learners. These meetings emphasise the partnership between learners and educators, rather than dependency of students on teachers. Subsequent meetings can be utilised to identify learning needs, goals, learning plan and evaluation means [1].

Learning evaluation: Learning portfolios that demonstrate the acquisition of knowledge, skills, attitudes and achievements have been recommended for health professionals undertaking SDL. Learning portfolios enable learners to control the educational process, maintain autonomy, promote reflective thinking, increase SDL skills and evaluate learning outcomes [9].

Everybody can turn into self-directed learner; however, the level of their SDL ability depends on factors such as motivation for learning, self-confidence, conscience, experience, and intelligence [10], which are collectively called readiness for SDL. According to Wiley (1983) [11], SDL readiness is defined as "the degree the individual possesses the attitudes, abilities and personality characteristics necessary for self-directed learning".

The undergraduate medical education programme in India is designed to create a graduate who possesses the requisite knowledge, skills, attitudes, values and responsiveness to patients, so that he or she provides appropriate and effective first contact care for a community. The Medical Council of India, which sets uniform standards for higher qualifications in medicine, stipulates that Indian medical graduates should be lifelong learners committed to continuously improving their skills and knowledge [12].

Lifelong learning is a complex and multidimensional concept, as reflected in the definition suggested by the European Lifelong Learning Initiative: ''Lifelong learning is the development of human potential through a continuously supportive process which stimulates and empowers individuals to acquire all the

knowledge, values, skills, and understanding they will require throughout their lifetimes and to apply them with confidence, creativity and enjoyment in all roles, circumstances and environments'' [13].

Self-directed learning has many advantages regarding knowledge acquisition, retention, and the development of metacognitive skills. They are an essential component of medical education. Many types of self-directed learning are available for a teacher and a learner. Each method has its pros and cons. The teacher has to carefully choose and design a learning resource to train a student [14].

The present study was conducted to introduce this novice method in the Department of Anatomy and encourage the students to become life long learners.

METHODOLOGY

The present study was carried out with the MBBS First Professional students (II Semester) in Department of Anatomy at Sri Guru Ram Das Institute of Medical Sciences & Research, Sri Amritsar.

Ethical Consideration: The project proposal was sent for ethical approval from the ethical committee of the institute. Written permission was obtained. Study participants were informed about the aim of the study and were ensured that participation in the study was voluntary. Study data were collected, analysed, and reported anonymously. Questionnaires were anonymous.

The stakeholders & the faculty involved were sensitized prior to carrying out the project procedure as SDL was being introduced in this department for the first time.

Faculty Sensitization: The participating faculty members were explained the meaning of Self Directed Learning, the need to conduct SDL i.e. motivating students to become Life Long Learners. They were made aware of their role as a facilitator in conducting SDL and were trained regarding formulation of Learning objectives. They were also counseled regarding the apprehension of losing authority over students if SDL is encouraged.

Student Sensitization: The meaning of SDL was explained to the participating students. They were taken into confidence that their honest feedbacks regarding the methodology & utility of SDL will in no way affect their internal assessment, but at the same time they must not take the SDL sessions in a very casual way.

Conduction of SDL Sessions:

The session was conducted in the two batches-Batch A & B each having 75 students. Each batch was subdivided into five small groups of 15 students; according to their class roll numbers; thus there were 10 groups in total (5 groups in each batch). Two SDL sessions (i.e. for two topics - portal vein & mesenteric arteries) were conducted in each group & were supervised by 5 faculty members (One faculty member facilitated two groups, i.e. one group in each batch, also one batch at a time). However, the students who attended both the sessions were126 (rest were absent either during the first session or the second & few were absent during tests, hence were excluded from the study, while those who were present in both were selected). The sessions were planned during the D-Hall timings, keeping in consideration the schedule of classes so that normal teaching was not disturbed.

The students were given the learning objects for the topic 10 days before the session. In brief they were told about the areas of importance, and all available sources (books, online assess sites, journals). On the scheduled day of session, students discussed the topics in allotted groups, during D-Hall timings for around an hour, amongst themselves, tried solving their queries/ muddiest points, highlighting anything new they came across during literature survey. The teachers acted as facilitators while supervising these discussion sessions.

During the second SDL session, the students were made to give small presentations on various subtopics of portal vein in groups.

Data Gathering: 2 days after the SDL discussion, a small class test comprising both 4 MCQs (Multiple choice questions) & 2 SAQs (Short Answer Questions) {4+6 marks} was conducted for both the sessions. The question

paper of the tests was decided with the consent of participating faculty & was also validated (one faculty member in the department is a CMCL FAIMER fellow). MCQs were evaluated manually without negative marking. SAQs were also marked by the concerned faculty. The marks of the tests were tabulated.

After the two SDL sessions, the participating faculty & students were also given feedback questionnaires. These questionnaires for feedback evaluation were designed & validated, & piloted after discussions with MEU faculty (which also included 3 CMCL FAIMER fellows). Satisfaction with the effects of teaching with SDL methods were examined through open ended questions at the end of last session & were qualitatively analyzed.

The data collection tool in this research was Fisher, King, and Tague's [9] self-directed learning readiness scale. The tool most used in educational researches to evaluate self-directed learning readiness is Guglielmino[15]] (1978) self-directed learning scale; however, due to several reasons, including its validity being questioned, not being easily accessible, problems about its cost, validity, and reliability, this scale was modified and improved by Fischer et al (2001) [6]. Guglielmino's scale is a self-report questionnaire with 58 Likert statements, which was reduced to 41 and then 40 statements by Fischer (2001); it is categorized into three areas of self-directed learning: Self-management, Willingness to learn & Self-regulatory abilities [16].

The 40-item Fisher's SDLRS consists of three domains including self-control (fifteen items), desire for learning (twelve items), and self-management (thirteen items) [17]. The items of the Fisher's SDLRS are scored on a five-point Likert scale from 5 (Completely agree) to 1 (Completely disagree). The self-control domain reflects that self-directed learners are completely independent individuals who can analyze, plan, implement, and evaluate their learning. The minimum and the maximum possible scores of this domain are 15 and 75, respectively. Self-management domain denotes that self-directed learners are able to identify their own educational needs, set learning goals, manage their time and energy for learning, and provide constructive feedbacks. The minimum and the maximum possible scores of the self-management domain are 13 and 65, respectively. Finally, the desire for learning implies that learners are strongly motivated for knowledge acquisition. The minimum and the maximum possible scores of this domain are 12 to 60 [18]. Consequently, the total score of the Fisher's SDLRS would range from 40 to 200. According to Fisher et al (2001), scores higher than 150 show great SDL readiness while scores less than 150 reflect low SDL readiness [19].

The JeffSLL-HPS is a 14- item self-report questionnaire to assess orientation toward lifelong learning among students from a variety of health professions. The sum of the 14 items yields a total score with a range of 14 – 56. Higher JeffSLL-HPS scores indicate a greater orientation toward lifelong learning. Scores on the JeffSLL-HPS assess three factors: Learning Beliefs and Motivation, Attention to Learning Opportunities and Technical Skills in Seeking Information [20]

Questionnaires applying Fischer's Self Directed Learning Readiness Scale (SDLRS) & Jefferson Scale of Life Long learning –Health Profession Version (JeffSLL-HSP) were administered to the students a week after conduction of SDL sessions.

Data Analysis: The SPSS v.17.0 software was used for managing and analyzing the data. The results of the tests for the two SDL sessions were evaluated to find out the minimum, maximum marks, the mean & standard deviation for the same, in order to assess the performance of the students. Mean values were also calculated to assess the readiness for Self Directed Learning & the attitude of students towards life long learning.

OBSERVATIONS AND RESULTS

The results of the study are as under:

Results of the MCQ & SAQ tests: At the end of each SDL session an evaluation test was done to assess the knowledge gained by this method of teaching. The results showed that in the first test 27 students out of 126 were not able to clear (78.6% students passed), while in the second session results showed improvement

& just 14 scored less than 50% marks (88.9% passed). The graph 1 shows the results of two SDL sessions. As can be seen from the graph [Fig 2(a) & 2(b)], students scoring more than 80% marks also increased incredibly (by almost four times) in the second session. Thus showing that the performance is likely to improve with the repetition of SDL sessions. Mean values for the score of SDL 1 were 5.8095 ± 1.323 while that for SDL 2 were 6.638 ± 2.0313 however the difference between the two, as calculated by paired t-test; was statistically significant, as can be seen from tables 1 & 2

Table 1: Showing Correlation between marks of two SDL tests

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	SDL1 & SDL2	126	0.272	0.002

Table 2: Showing paired differences between the scores

Paired Differences								
	Mean	Std. Dev	Std. Error Mean	95% Confidence Interval of the Difference		t	df	P value
				Lower	Upper			
Pair 1	-0.82937	2.10158	0.18722	-1.1999	-0.45883	-4.43	125	<0.001

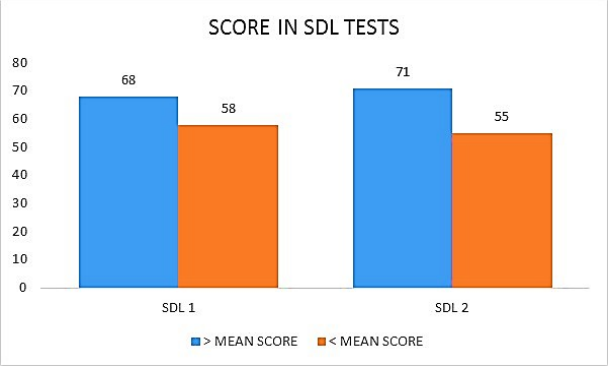

Fig. 1: Graph showing Number of students scoring more than & less than mean score in the two SDL Tests.

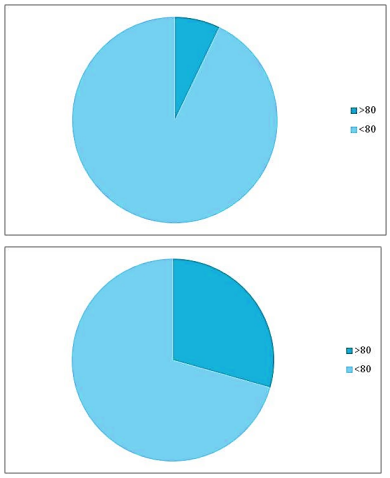

Fig. 2a and 2b: Showing percentage of students having more than 80% in SDL1 & SDL2 tests (Left & Right Figures respectively)

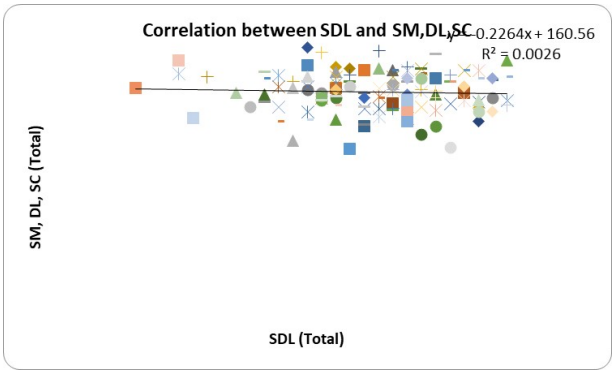

Fig. 3: Correlation between SDL (Total) & SM, DL, SC (Total) [i.e. Total SDLRS]

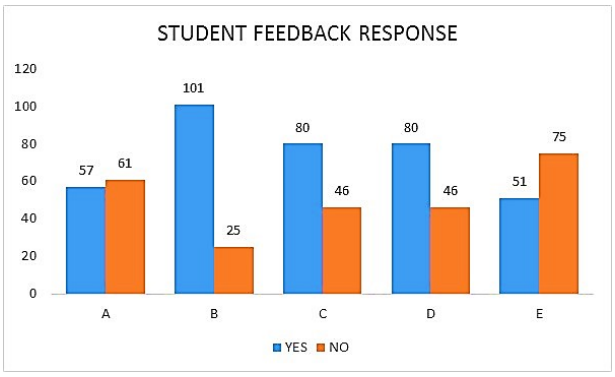

Fig. 4: Number of students giving positive & negative responses to the questions in the feedback forms [A- Were you able to consult the library & internet topics for preparation of SDL session? B- Were your queries/ muddiest points resolved? C-Did you feel that this was taking more time than routine time needed to revise the lessons already taught? D-Was looking for different sources for the topics of discussion an interesting job? E- You would prefer being taught by SDL]

Assessment of Self Directedness using Fischer's Self Directed Learning Readiness scale: The data obtained from the questionnaires administered were tabulated and statistically analyzed. The results thus obtained after statistical analysis have been tabulated in Table 3. If the three domains are compared amongst themselves, the mean values for Self control were maximum, i.e. 4.135 ± 0.431, those for self management were minimum i.e 3.629 ± 0.433 & those for desire for learning were intermediate, i.e. 4.044 ± 0.415.

Self Management (SM): The subfactor for self management which was most readily agreed by the students was that they preferred to plan their own learning (SM12), however most of them disagreed to setting strict time frames (SM4).

Self Control (SC): Most participants agreed to that they are themselves responsible for their own decisions and actions (SC3). However they

Table 3: Showing Results of Fischer's Self directed Learning Readiness Scale (SDLRS)

Item Code	*Factor* *Sub Factor*	Mean	Std. Dev
SM	***Self-management***	3.629	0.433
SM1	I manage my time well	3.3175	0.94362
SM2	I am self-disciplined	3.5635	0.95913
SM3	I am organized	3.6429	0.84346
SM4	I set strict timeframes	2.873	1.0118
SM5	I have good management skills	3.5476	0.86355
SM6	I am methodical	3.6984	0.75121
SM7	I am systematic in my learning	3.7143	0.79857
SM8	I set specific times for my study	3.3571	1.02344
SM9	I solve problems using a plan	3.6429	0.84346
SM10	I prioritise my work	3.8333	0.77717
SM11	I can be trusted to pursue my own learning	3.9286	0.79174
SM12	I prefer to plan my own learning	4.1032	0.76764
SM13	I am confident in my ability to search out information	3.9603	0.70881
DL	***Desire for learning***	4.044	0.415
DL1	I want to learn new information	4.3413	0.62177
DL2	I enjoy learning new information	4.2937	0.70504
DL3	I have a need to learn	4.1429	0.76644
DL4	I enjoy a challenge	4.0159	0.74816
DL5	I enjoy studying	3.8095	0.77681
DL6	I critically evaluate new ideas	3.7698	0.76066
DL7	I like to gather facts before I make a decision	4.0079	0.70988
DL8	I like to evaluate what I do	3.9683	0.72594
DL9	I am open to new ideas	4.0635	0.68988
DL10	I learn from my mistakes	4.1746	0.83022
DL11	I need to know why	4.254	0.82885
DL12	When presented with a problem I cannot resolve I will ask for assistance	3.6905	1.02344
SC	***Self-control***	4.135	0.415
SC1	I prefer to set my own goals	4.3095	0.69816
SC2	I like to make decisions for myself	4.254	0.71483
SC3	I am responsible for my own decisions/actions	4.3571	0.69816
SC4	I am in control of my life	4.0159	0.8293
SC5	I have high personal standards	3.9444	0.80305
SC6	I prefer to set my own learning goals	4.127	0.64478
SC7	I evaluate my own performance	4.0079	0.79494
SC8	I am logical	4.0714	0.7063
SC9	I am responsible	4.2063	0.70787
SC10	I have high personal expectations	4.2857	0.73601
SC11	I am able to focus on a problem	4.0635	0.65417
SC12	I am aware of my limitations	4.0952	0.79427
SC13	I can find out information for myself	4.0952	0.67443
SC14	I have high beliefs in my abilities	4.127	0.76925
SC15	I prefer to set my own criteria on which to evaluate my performance	4.0635	0.84613

disagreed that they had personal high standards (SC5).

Desire for Learning (DL): The most strongly agreed subfactor for Desire for Learning was that the students want to learn new information (DL1) while students strongly disagreed to that when given a problem, if they cannot resolve, they will ask for assistance (DL12).

As stated earlier in Material & Method section, the total SDLRS scores higher than 150 show great SDL readiness while scores less than 150 reflect low SDL readiness. In the present study, 92 students (73% students) showed

great SDL readiness.

Assessment of orientation towards Life Long Learning by The Jefferson Scale of Lifelong Learning – Health Professions Students (JeffSLL-HPS): As stated earlier in Material & Methods, the values for this scale can range between 12 & 56, however in the present study the values varied between 28 & 51. The mean values obtained for the various values have been tabulated under Table 4.

As can be seen the highest mean value was for point No. 2, i.e Lifelong learning is a professional responsibility of all healthcare providers (3.5635 $\pm$ 0.544) while minimum was for point No. 12 i.e. I routinely attend optional sessions, such as professional meetings, guest lectures, or clinics where I can volunteer to improve my knowledge and clinical skills.

Correlation between Total scores of JeffLLL (JL), Fischer's Total SDLRS, Total Management (SM), Total Desire for Learning (DL), Total Self Control (SC) & Total score/marks of SDL tests Total scores of SDLRS & the total Marks of SDL tests: An attempt was made to find out correlations between all these variables using Pearson correlation coefficient (r). The statistical results are tabulated in Table 5 & they have been summarized in Table 6.

As can be seen from tables 5 & 6 above Life long Learning will increase if the students have higher Desire for Learning & good self control & show greater readiness for self directed learning. However the readiness for self directed learning is positively correlated with all the three attributes of SM, DL & SC.

Students who have greater scores of self management & have greater self control will have a higher desire for learning & will show greater readiness for becoming self directed learners & develop Life Long learning skills. On the other hand, another interesting fact revealed by the correlation study is that the total readiness for SDL & total marks/scores of SDL tests are negatively correlated [negative but not significant relation between two (rather very weak relation almost no relation) as -1 is perfect negative and +1 is perfect positive relation { r = -0.051; p = 0.569; not significant}] Fig 3

Summary of Student Feedback: Fig 4 below has summarized the responses of students to the Yes/No questions given in the feedback forms. 45.23% students were able to consult library & internet sources [A], however students expressed that it was easier to consult internet sources. 80% students admitted that their queries were solved [B], 63.49% advocated that this type of teaching learning method was more time consuming [C], 63.49% believed that looking for different sources was an interesting job [D]. However 40.47% preferred being taught by SDL [E].

When asked to comment upon the difficulties faced by the students in the SDL sessions, the common views which emerged were as follows:

1. They could not manage the time for preparation well
2. They could not find time to go to the library.
3. There was ambiguity in the understanding of topic.
4. It was considered to be wastage of time by some, as the same time could be utilized for revision of the topic
5. There was unequal participation by the students of the group, those who were not prepared added nothing & some could not express properly what new information they had got, so enthusiasm in the activity exhausted early
6. Overview of the topic was not enough to prepare the topic on one's own
7. SDL is good for learning based topics but not for conceptual topics, as Wikipedia cannot replace real teachers

The students were also asked to give suggestions to improve SDL & the common responses were as follows:

1. More detailed instructions to be given regarding how to approach the topic
2. Make it compulsory for every student to come prepared on the day of SDL, more motivation by the faculty
3. SDL should be combined with being small summary lecture by teacher,
4. However, some suggested that there should be an initial class to be followed by SDL

Summary of Faculty Feedback: The participat-

ing five faculty members were given feedback forms discussing their experiences with the SDL sessions. The questionnaire was based on likert's scale. The points in the questionnaire were then also discussed amongst the faculty members. Common views that emerged were as follows:

1. Aims & objectives of the method were partly understood.

2. The Academic Contents of the method were felt as stimulating.

3. The academic learning by SDL did not appear much refreshing (enjoyed by) for students.

4. Response & interest shown by students was partially enthusiastic.

5. Participation by the students was very unequal, as few showed over zealous participation, some were participating moderately, while a few did not participate at all.

6. SDL methodology encouraged active student participation and discussions.

7. SDL Methodology motivated students to search internet, for the topics but they didn't seem looking for Library sources.

8. SDL Methodology partly motivated students to ask questions and clarify doubts from students.

9. Using SDL Methodology seemed helpful in improving student learning skills, but these would be more helpful during post graduation.

10. SDL Methodology was overall an interesting exercise, but required more effort.

11. This methodology can be used more often once we as faculty become more skilled in acting as facilitators and the students are motivated more to increase their participation.

In response to the **short comings regarding SDL sessions**, the salient points given by the faculty were;

· Conducting SDL seemed to be an extra burden.

· There was a feeling that students might miss upon some of the important areas of the topic.

· Students seemed to hesitate in participating in the presence of teacher.

· Faculty needs more training as to how to behave as a facilitator

The **faculty members suggested** a need for more of faculty development as to how to conduct SDL sessions in a more organised manner & a higher level motivation at the level of students to bring about effective SDL Sessions.

Table 4: Showing mean values of all variables of Jefferson's scale of Life Long Learning obtained from students after SDL Sessions.

Sr.	Feature	Mean	SD
1	Searching for the answer to a question is, in and by itself, rewarding	3.3968	0.58075
2	Lifelong learning is a professional responsibility of all healthcare providers	3.5635	0.544
3	I enjoy reading articles in which issues of healthcare/medicine are discussed	3.2619	0.53931
4	I routinely attend student study groups	2.7857	0.65247
5	I read healthcare/medical literature in journals, websites or textbooks at least once every week	2.7302	0.65008
6	I routinely search electronic resources to find out about new developments in healthcare/medicine	2.6587	0.647
7	I believe that I would fall behind if I stopped learning about new developments in healthcare/medicine	3.1508	0.74905
8	One of the important goals of health professions education is to develop students lifelong learning skills	3.5	0.54772
9	Rapid changes in health science/medicine require constant updating of knowledge and development of new professional skills	3.5317	0.53196
10	I always make time for learning on my own, even when I have a busy class schedule and other obligations	2.9683	0.60579
11	I recognize my need to constantly acquire new professional knowledge	3.1984	0.61993
12	I routinely attend optional sessions, such as professional meetings, guest lectures, or clinics where I can volunteer to improve my knowledge and clinical skills	2.5635	0.67523
13	I take every opportunity to gain new knowledge/skills that are important to my discipline	3.1587	0.58532
14	My preferred approach in finding an answer to a question is to consult a credible resource such as a textbook or electronic resource	3.4444	0.52999

Table 5: Correlation between Total scores of JeffLLL (JL), Fischer's Total SDLRS, Total Management (SM), Total Desire for Learning (DL), Total Self Control (SC) & Total score/marks of SDL tests

		Total_JL	Total_SM	Total_DL	Total_SC	Total_ SDLRS	Total_SDL
Total_JL	Pearson Correlation	1	-0.059	.206*	.344**	.244**	0.061
	Sig. (2-tailed)		0.508	0.021	0	0.006	0.495
	N	126	126	126	126	126	126
Total_SM	Pearson Correlation	-0.059	1	.231**	-0.044	.542**	-0.09
	Sig. (2-tailed)	0.508		0.009	0.624	0	0.314
	N	126	126	126	126	126	126
Total_DL	Pearson Correlation	.206*	.231**	1	.550**	.821**	-0.004
	Sig. (2-tailed)	0.021	0.009		0	0	0.963
	N	126	126	126	126	126	126
Total_SC	Pearson Correlation	.344**	-0.044	.550**	1	.748**	-0.013
	Sig. (2-tailed)	0	0.624	0		0	0.886
	N	126	126	126	126	126	126
Total_SDLRS	Pearson Correlation	.244**	.542**	.821**	.748**	1	-0.051
	Sig. (2-tailed)	0.006	0	0	0		0.569
	N	126	126	126	126	126	126
Total_SDL	Pearson Correlation	0.061	-0.09	-0.004	-0.013	-0.051	1
	Sig. (2-tailed)	0.495	0.314	0.963	0.886	0.569	
	N	126	126	126	126	126	126

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed)

Table 6: Summarized Correlations

Variable (Total Scores)	Significant (positive) Correlations
Jefferson's Life Long Learning Scale	Total Desire for Learning Total Self Control Total Self Directed Learning Readiness
Self Management (SM)	Total Desire for Learning Total Self Directed Learning Readiness
Desire for Learning (DL)	Total Self Management Total Self Control Total Self Directed Learning Readiness
Self Control (SC)	Total Jefferson's Life Long Learning Scale Total Desire for Learning Total Self Directed Learning Readiness
Self Directed Learning Readiness	Total Jefferson's Life Long Learning Scale Total Self Management Total Desire for Learning Total Self Control Total Self Directed Learning Readiness

DISCUSSION

Self directed learning comprises: organising teaching and learning so that learning is within the learners' control & a goal towards which learners strive so that they become able to accept responsibility for their own learning [21].

To meet the challenges in today's healthcare environment, self-directed learning is most essential [4]. Learners who enter educational programs without having self-directed learning skills usually face stress or failure [22]. Therefore, developing self-directed learning skills has become one of the goals of adult education during the last few decades [20].

In the present study, SDL has proved to be efficient for MBBS first Year students in the subject of anatomy as can be seen from the number of students getting more than 50% scores in the tests held after the first & second sessions, and also the average marks of the students increased in the second test.

Much of what is important today may be irrelevant tomorrow. Given this, teaching today's facts seems less important than ensuring that students have the skills to learn and relearn as knowledge develops. This has led to an emphasis on "lifelong learning skills." These include the ability to analyze problems,

define what needs to be learnt, know how and where to access information, evaluate information, and be aware of the one's own limitations. The rationale is that students who develop such skills will be equipped for whatever the future holds and will keep up to date when they are no longer on formal training programs. Self-directed learning (SDL) skills are thought to be associated with lifelong learning and students in an integrated medical curriculum had scores on the self-directed learning readiness scale SDLRS that correlated with clinical performance and probably represented a readiness for SDL [23]. Present study findings also suggest that students had necessary attitude, ability & personality characteristics for SDL, as around 73% students showed high SDL readiness (>150).

Further the total SDL readiness was positively & significantly correlated with its three attributes of self management, desire for learning & self control.

Literature review gives reference of similar studies being conducted in the past. A study on self directed learning readiness was conducted amongst fifth semester MBBS students of JIPMER institute, which gave the mean total SDLRS score as 140.4 ± 24.4 [24], which was low as compared to 157.738 ± 11.970 in the present study. Another study on Readiness for self-directed learning among First Year Saudi Medical students showed the maximum readiness for desire for learning [25] as compared to maximum score for self control in the present study. However in both studies scores were minimum for self management perhaps because the students need support in self-management skills especially in planning, time management and in utilizing systematic methodology for learning.

The finding also indicate that the students were oriented well towards Life Long Learning Skills as seen from the results of Jefferson LLL scores. Further the values of SDLRS were significantly positively correlated with the scores of LLL. Hence it can be stated without doubt that the habit of SDL will motivate the students to become Life Long Learners.

As has been wisely said by Albert Einstein, that Wisdom is not the product of schooling but the lifelong attempt to acquire it; thus, efforts need to be made to train the faculty & motivate students to overcome the various shortcomings of this methodology.

CONCLUSION

Self-directed learning can be considered as an alternate form of learning in knowledge acquisition as can be interpreted from the scores of SDL tests & the feedbacks given by faculty & the students. However, in this study, SDL sessions could cover only a few topics area from the total content areas in the curriculum of the first-year MBBS programme. A study of longer duration with wide-ranging content area needs to be done to ascertain the impact of SDL on traditional curriculum. To meet the challenges in today's healthcare environment, self-directed learning is most essential.

Study findings also suggest that the students had a high readiness for self directed learning. So the institution policy makers should develop strategies for promoting SDL. Moreover, continuing education programs need to be modified and revised for actively involving self-directedness in their learning and also for empowering them for lifelong learning.

Authors Contributions & ORCID

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Anupama Mahajan - Designing the study, Editing the manuscript

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