Finding self-directed learning readiness and fostering self-directed learning through weekly assessment of self-directed learning topics during undergraduate clinical training in ophthalmology

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Abstract

Background: To know the individual’s current level of readiness and to manage self-directed learning (SDL) not only help learners but also the instructors. The objectives of this study were to find SDL readiness among 4th year medical student and to analyze the effect of weekly assessment of SDL topics. Methodology: This was a cross-sectional study to analyze the effect of weekly assessment of SDL topics in fostering SDL. The 51 4th year students during a clinical posting in ophthalmology participated for this study. Each recruited student was tested for SDL readiness through the SDL readiness scale (SDLRS) developed by Lucy Guglielmino (1978), which was validated in our local setting and responses were collected from students on the 1st day of the clinical posting. The students chose SDL topics which were assessed on a weekly basis in the form of scenario-based multiple choice questionnaires. Written feedback was collected from each student regarding such activity during their clinical posting, especially to know the actual utilization of SDL hours provided in teaching schedule, satisfaction on the type of questions and motivation for SDL. Results: The mean SDLRS score in male students were 214.15 ± 19.73 and in female 207.95 ± 17.983, which falls under average score as defined in Guglielmino scale. The majority of study population expressed better utilization of SDL study hours because of weekly assessment than when they had no assessment for SDL. Conclusions: Majority of the study population were found to be ready for SDL. The weekly assessment of SDL topics was found to stimulate proper utilization of SDL slots in teaching schedule thereby fostering SDL habits.

Key words: Assessment, medical student, self-directed learning

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Introduction

Self-directed learning (SDL) is one of the educational innovations in higher education including medical education. Medical practice and knowledge are continuously changing so that it is essential to update the medical practitioners’ knowledge to provide the quality care. SDL ensures the learners to keep themselves up to date and enables them to apply in practice. Knowles defined SDL as “a process, in which an individual takes the initiatives, 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 ability to acquire skills in SDL may be the key link between undergraduate education, postgraduate training, and continuing professional development. More active student-centered educational methods that encourage these skills were introduced in medical education and found to be as effective as traditional teacher dominant teaching methods.\(^{(2)}\) Wiley defined SDL readiness as “the degree the individual possesses attitudes, abilities, and personality characteristics necessary for SDL.”\(^{(3)}\) Among several models through which the educators have tried to incorporate self-regulated learning into medical curriculum, the three-step approach model by Zimmerman stands out as a groundbreaking work; where he had stated that the self-regulatory learning could be attained after the learner passes through the sequential developments such as observation, emulation and self-control.\(^{(4)}\)

One of the attributes of self-direction in learning is to promote lifelong learning. It has been challenging for educators to assist in the development of SDL skills. There are few validated procedures for identifying the self-directed learners. Everyone possesses innate learning readiness, but it can be enhanced by certain learning situation and environment.\(^{(5,6)}\) Guglielmino’s SDL readiness scale (SDLRS) is one of the few instruments for the purpose of measuring self-direction in learning. Although this scale has been widely used, additional local validation is needed.\(^{(7)}\) One study conducted in West Asia region provides baseline data about the readiness of 1st year Saudi medical students for SDL.\(^{(8)}\) They noted that the students demonstrated a high desire for learning and self-control but suggested self-management skills needed further improvement. Otherwise, there has been scanty literature in exploring SDL readiness among students in Asia Pacific region. Hence, we tried to explore the SDL readiness as well as weekly assessment intervention to foster SDL. Our institution has already adopted SDL into the curriculum, and minimum of 6 h are allotted weekly for SDL while making the weekly teaching–learning schedule. The Ophthalmology Department also introduced SDL as one of the teaching-learning tools for the 4th year medical students during their 4 weeks clinical posting in ophthalmology. Ours is a hybrid system (traditional undergraduate MBBS curriculum with the incorporation of problem-based learning as part of instructional delivery) where students of 7th or 8th semester undertake clinical posting in ophthalmology for 4 weeks. The objectives of this study was to find SDL readiness among the recruited students and effect of weekly assessment of SDL topics on proper utilization of SDL slot in teaching schedule.

**Methodology**

This study was a cross-sectional study to find the SDL readiness among 4th year undergraduate medical students undertaking their ophthalmology clinical posting. The study population comprised 51 students in 10 small groups who were from 7th semester undertaking clinical posting in ophthalmology. Each group had 3 h of SDL slot each week in teaching for the scheduled 4 weeks clinical posting in ophthalmology. The SDLRS developed by Lucy Guglielmino 1978 was validated in our local setting after doing a pilot study and responses were collected from students on the 1st day of the clinical posting. The SDLRS is a self-report questionnaire with items in rating scale and is designed to measure the complex of attitudes, skills, and characteristics that comprise an individual’s current level of readiness to manage his or her own learning. The students chose three SDL topics from identified ten topics in ophthalmology that could be study through self-study. Three-hour slots for SDL were given to them every week. The SDL slots were placed in the afternoon session (2–5 pm). The learning objectives were drawn by the students and resource identification was made by the faculty member (Soumendra Sahoo). Each student was encouraged to study independently and utilize all the library and digital resources during the SDL hours allotted in their teaching schedule. Assessment in the form of scenario-based multiple choice questionnaires was conducted on every Friday of the first 3 weeks. A questionnaire was developed and responses were collected from each student regarding such activity during their clinical postings, especially to know the actual utilization of SDL hours provided in teaching schedule, satisfaction on type of questions and student liking on SDL assessment, as the same was introduced for the first time in our set-up. This study had been approved by Institutional Research and Ethics Committee.

Data were entered and analyzed using the SPSS software (SPSS Version 12, IBM Company Malaysia). McNemar test and paired t-test was used for categorical and continuous variables, respectively, to compare the differences within the groups. 95% confidence interval was calculated. Difference was considered statistically significant if \(P < 0.05\).

**Results**

The SDLRS score of the study population is shown in Figure 1.

Independent sample t-test was used to show the difference of SDLRS between male and female students. There was no significant difference of SDLRS between male and female students [Table 1].
The majority of the study population were satisfied with the SDL hours allotted in the weekly teaching schedule and also expressed better utilization of those SDL study hours [Table 2].

**Discussion**

One of the essential issues for educators is to develop a strengthening of the idea of self-direction within society.[9] The relationship between SDL and three facets of learning experiences namely learning activities, academic motivation, and academic performances.[10] One systematic review after examining 67 studies of self-direction in learning done between 1977 and 1987 determined that the SDLRS was by far the most frequently used instrument;[11] which support the idea of SDRLS done in this study [7,12] The students expressed that the SDL could be the driving force for lifelong learning in a recent study conducted in one of the medical schools in West Asia region[8] which support our findings as well.

This study found that most of the 4th year medical students recruited for this study were prepared for SDL readiness which matches with other studies conducted with medical students.[13] Similarly, no statistically significant SDLRS score between male and female students were found; which matches with a recent study.[8] It has been stated that the students who used to be ready for SDL can manage their own learning throughout their careers,[14] which is also indicated in our study by the expression of students supporting SDL as a driving force for lifelong learning. Most of the students felt that weekly assessment of SDL topics were not hectic but rather helped them to better utilize SDL hours allotted in teaching schedule. This was one of the significant effects in our institution because most of the SDL slots allotted in teaching schedule were not used properly by students as there was no assessment were in place. One study has highlighted that levels of SDL was not directly related to learning activities and academic performance particularly when associated with high levels of instructor control.[11] In this study, instructor’s involvement was minimal. The limitation of our study is mainly small sample size and not correlating overall academic performance during undergraduate training to individual SDL readiness score.

**Conclusions**

To conclude, most of the 4th year medical students in this study were found to be ready for SDL. Knowledge about the SDL readiness score and SDL assessment have the potential of working as a motivational tool for students to improve on their independent learning, utilizing SDL hours and preparing themselves for lifelong learning habits.

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**Table 1: Self-directed learning readiness scale between male and female students (n=51)**

| Variable | SDLRS (mean±SD) | t | P | 95% CI for difference |
|----------|-----------------|---|---|-----------------------|
| Male (n=15) | 214.15±19.73 | -1.618 | 0.109 | -13.799-13.398 |
| Female (n=36) | 207.95±17.983 | | |

SDLRS: Self-directed learning readiness scale; SD: Standard deviation; CI: Confidence interval

**Table 2: Learner’s responses on self-directed learning weekly assessment intervention (n=51)**

| Questionnaire item | Strongly disagree (%) | Disagree (%) | Neutral/no response (%) | Agree (%) | Strongly agree (%) |
|--------------------|-----------------------|--------------|-------------------------|-----------|--------------------|
| SDL assessment stimulated my independent learning | 0 | 1 (1.9) | 3 (5.8) | 20 (39.2) | 27 (52.9) |
| MCQs were ideal for SDL assessment | 0 | 1 (1.9) | 3 (5.8) | 21 (41.1) | 26 (50.9) |
| Resources were sufficient for my independent learning | 1 (1.9) | 1 (1.9) | 1 (1.9) | 30 (58.8) | 18 (35.2) |
| The drawing of learning objectives organized my independent learning process | 0 | 0 | 1 (1.9) | 12 (23.5) | 38 (74.5) |
| Hours allotted for SDL were insufficient | 21 (41.1) | 28 (54.9) | 1 (1.9) | 1 (1.9) | 0 |
| SDL improved my critical thinking | 0 | 2 (3.9) | 4 (7.8) | 39 (76.4) | 6 (11.7) |
| I feel SDL is a driving force for lifelong learning | 0 | 0 | 8 (15.6) | 37 (72.5) | 6 (11.7) |
| Weekly assessment of SDL was hectic for me | 19 (37.2) | 21 (41.1) | 2 (3.9) | 8 (15.6) | 1 (1.9) |
| I overall enjoyed and benefited from weekly SDL assessment | 0 | 0 | 4 (7.8) | 29 (56.8) | 18 (35.2) |

SDL: Self-directed learning; MCQs: Multiple choice questions
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Conflicts of interest
There are no conflicts of interest.

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