

Learning Strategies among Medical Students in a selected University in Sri Lanka

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Abstract

Introduction: The discipline of medicine is continually changing and evolving, and with it, medical education. It is difficult to develop the attitudes, knowledge, and abilities needed to become a competent physician within a short amount of time. The purpose of this study is to identify and compare the practice of surface, strategic, and deep learning strategies by third-year medical students and students who have passed the final MBBS examination.

Methods: The Approaches and Study Skills Inventory for Students (ASSIST) – a 52-item questionnaire was given to 138 medical undergraduates at the Faculty of Medical Sciences, University of Sri Jayewardenepura. The ethics review committee of the Faculty of Medical Sciences, University of Sri Jayewardenepura granted ethical clearance for this study (Ref. no. 45/17).

Results: The strategic approach was shown to be the most common strategy [78.3%(108/138)] practiced by medical students [Students who completed their final MBBS exams [80.6% (25/31)] and third-year medical students (77.6% (83/107)]. The deep approach was used by 21 (15.2%) individuals and the surface apathetic approach by 9 (6.5%) participants, respectively. Percentage 82.6 (76/92) of females and 69.6% (32/46) of males reported adhering to a strategic approach. A statistically significant difference was not observed in the learning strategies used between the two study populations.

Conclusions: The strategic approach was commonly practiced by the study population. The results indicate that deep learning strategies were not utilized among medical undergraduates in their curriculum. Future medical curriculum revisions need to take these findings seriously and develop an instructional design to promote a deep learning approach.

Keywords: Approaches in learning, Undergraduates, Medicine, Curriculum

Introduction

In the medical curriculum, understanding the correct study methods is just as important as understanding the subject matter. Since studying medicine is a rigorous endeavor that takes nearly five years, it is crucial that students in this field have an appropriate mindset.

University lecturers face huge challenges in teaching and delivering medical knowledge in a way that allows students to absorb it, retain it, and use it effectively. To address these difficulties, student-centered, problem-based and interactive sessions have replaced subject-oriented instruction-driven, teacher-centered, teaching. This is an important advancement in medical education.

The undergraduate curricula of the majority of medical colleges have been designed with contemporary learning methodologies in mind.

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New teaching and learning techniques have been included in these curricula during their development (Edirisinghe et al., 2022; Koh et al., 2008). When developing effective medical curricula for undergraduate and graduate education, differences in learning styles and techniques play a significant role (Samarakoon et al., 2013). It is easier for teachers to adapt their instruction to fit the prevalent learning styles of their students when they are aware of their learning strategies (Lubawy, 2003; Newble & Entwistle, 1986). Similarly, students who are conscious of their preferred learning strategies may seek to improve them in a way that leads to academic success and enjoyment.

The intended method by which a student arranges the knowledge they have acquired to comprehend and learn is known as a learning strategy (Cuthbert, 2005). They have been categorized as follows: the strategic approach (SA), the surface apathetic approach (SAA), and the deep approach (DA) (Tait et al., 1998).

The authors do not wish to promote or support deep learning strategy above strategic learning strategy or vice versa since learning is a very individualized process that is dependent on numerous factors. The objective of this research was to identify the preferred learning strategies used by medical students.

The goal of DA is to learn as much as possible about a subject in-depth while making connections between new and old concepts. Teachers favour this method as it promotes learning at a deeper level and understanding which ultimately results in better academic performance as well as performance in the future workplace. Conversely, students practicing SAA confine themselves to memorization of the syllabus where they may not focus on achievement of intended learning outcomes, lack motivation to achieve good grades and lack a thorough comprehension of the content. SA students are adaptable because they prioritize achievement above everything else and can engage in either deep or surface-level learning as necessary (Biggs, 1979). These students place a high value on performance evaluations, which makes them more inclined to study targeting exams rather

than learning the material comprehensively (Leite et al., 2010). Given the characteristics of these three methods, it makes sense that learning with DA and SA is linked to academic success, whereas learning with SAA is probably going to lead to failure (Kleijn et al., 1994).

In Sri Lanka, the major teaching strategy is teacher-centered and depends on instructors' abilities to transfer knowledge to students who approach their studies passively. Following 13 years of study, Sri Lankan secondary school students face the General Certificate of Education (G.C.E)- Advanced Level (A/L) examination, which determines performance-based admission to state universities, including to medical programmes.

Founded 30 years ago, the Faculty of Medical Sciences (FMS), University of Sri Jayewardenepura (USJ) has grown throughout time to become one of the top medical faculties in the nation. It offers a three-phase comprehensive medical curriculum. Anatomy, Physiology, and Biochemistry are taught over the first two years as phase one (Preclinical). The third and fourth years where lectures and clinical training go hand in hand are considered phase two (paraclinical). The final year / fifth year of the medical curriculum is entirely hospital-based (clinical) considered as phase three, with students facing the final MBBS examination at the end of the final year. The medical curriculum delivered at FMS, USJ is module-based and emphasizes the use of clinical scenario-based learning methods. Numerous approaches are used to deliver medical education, and frequent assessments are used to evaluate students at various points during the curriculum.

Notable disparities in learning methodologies maybe anticipated among students (pre-interns) who have completed the final MBBS examination compared to other medical undergraduates, given the distinctions between school and university education. For example, medical students would be anticipated to prefer strategic learning, but pre-interns are likely to prioritize deep learning more (Meyari et al., 2010). Nevertheless, there are few published

studies (Jayasuriya-Illesinghe *et al.*, 2016; Samarakoon *et al.*, 2013) on learning strategies among medical students in Sri Lanka. The objective of this research was to identify and compare the learning strategies employed by third-year medical students and students who completed final MBBS. Finding these methods of learning would allow medical educationists to change the curriculum to promote more suitable and student-centered strategies.

Methods

Participants

A descriptive cross-sectional study was conducted at the FMS, USJ. Third-year medical undergraduates and students who have completed the final MBBS examination were recruited for the study. One hundred and thirty-eight medical undergraduates responded. All volunteering participants documented informed consent before the commencement of the study. The ethics review committee of FMS, USJ granted ethical clearance for this study (Reference no 45/17).

Questionnaire

Data was collected in two sections. Section A consists of demographic details. The standard ASSIST questionnaire was in section B.

The standard ASSIST was developed a few decades ago and has been used in many studies to assess the learning strategies used by students at academic institutions with English being the medium of instruction as a native language as well as a non-native language (Entwistle, 1991; Ismaiel, 2017). The FMS and USJ conducts the entire medical curriculum in English, therefore the questionnaires were given in English language.

The "Approaches to Study Skills Inventory for Students" (ASSIST) questionnaire was developed in the Enhancing Teaching-learning Environments project in the United Kingdom (Samarakoon *et al.*, 2013). This questionnaire helps to identify the learning approaches and

strategies utilized by an individual and can identify the most common strategy used by the said individual (Tait *et al.*, 1998). In the present study, we have used the "Approaches to Study" section which is one section out of the four. This section consists of 52 questions. Likert scale of numbers 1 to 5 was given to each question (1 - is the lowest, 5 - is the highest). The final marks on the three main learning strategies (Deep, Strategic, and Surface) were calculated by adding all sub-scale scores.

Statistical Analysis

The raw data were entered into SPSS software, version 25. Descriptive statistics were used on demographic variables. The Brown-Forsythe test was applied to observe the relationship between the academic year of the undergraduate curriculum and the type of learning strategies used by the respondents.

Results

Demographic data is given in Table 1. From the total study population of 138 undergraduates, 46 (33.3%) were males and 92 (66.7%) females. Percentage 77.5 (107/138) were third-year medical undergraduates and 22.5% (31/138) had completed their final MBBS examination.

The majority of study participants (78.3%; 108/138) used SA as their primary learning approach. Percentage 15.2 (21/138) used DA, and 6.5% (09/138) of students used SAA as their learning strategy. The majority (80.6%) of students who passed the final MBBS exam and 77.6% of third-year medical students adhered to SA. Additionally, the Strategic approach was the most common learning strategy employed by both females (82.6%) and males (69.6%).

Table 2 shows the distribution of the learning approaches according to gender and academic year of the undergraduate curriculum. The two groups did not substantially differ in mean scores for any of the three learning strategies (Table 3).

Table 1: Demographics data of the study population

		No	%
Gender	Female	92	66.7
	Male	46	33.3
Academic year of the undergraduate curriculum	Third year	107	77.5
	Completed final MBBS examination	31	22.5

Table 2: Distribution of the learning strategies according to gender and academic year of the undergraduate curriculum

	Gender				The academic year of the undergraduate curriculum			
	Female		Male		Third year		Completed final MBBS examination	
	No	%	No	%	No	%	No	%
Surface Apathetic Approach	05	5.4	04	8.7	06	5.6	03	9.7
Strategic Approach	76	82.6	32	69.6	83	77.6	25	80.6
Deep Approach	11	12.0	10	21.7	18	16.8	03	9.7

Table 3: The learning strategies between the third-year undergraduates and students who have completed the final MBBS examination

	Learning level	No	Mean	SD	Range	P-value
Deep Approach	Third year	107	60.38	11.924	23-79	0.186
	Students completed the final MBBS examination	31	57.32	10.962	29-72	
Strategic Approach	Third year	107	71.52	14.610	23-95	0.220
	Students completed the final MBBS examination	31	67.90	14.197	29-88	
Surface Apathetic Approach	Third year	107	50.64	10.674	22-77	0.787
	Students completed the final MBBS examination	31	50.10	9.672	31-69	

Discussion

The great majority of students used SA as the preferred method of learning, according to our study. This was true for students in preclinical programs as well as those who had passed the final MBBS test, regardless of gender. This is

consistent with a study by Samarakoon *et al.* 2013 that examined the methods of learning used by 147 participants, including medical students from the Faculty of Medicine, University of Colombo, and the Postgraduate Institute of Medicine, University of Colombo (Samarakoon *et al.*, 2013). Similar findings

were reported in a Singaporean study involving 238 medical students, of whom 50.8% used SA (Chonkar *et al.*, 2018).

The majority of students using SA instead of DA to learn provides significant insights into both the existing medical curriculum and the learning preferences of the students. Biggs *et al* in 1979 revealed that strategic learners were driven by competition and performance (Biggs, 1979). In addition, they have been shown to have the lowest levels of anxiety and have outperformed those who utilized alternative strategies academically, earning higher grades (Cipra & Müller-Hilke, 2019). Even in secondary school, these students may have capitalized on SA as only the highest achievers at the GCE A/L entry examination are admitted to state medical faculties in Sri Lanka. This tendency is may continue throughout their medical education.

The deep approach was discovered to be the most common method among 610 first-, second-, and third-year medical students in a Saudi Arabian study (Shaik *et al.*, 2017). A research conducted among 287 medical students at the beginning of the first, second, and third years in Ankara, Turkey, by Cebeci *et al* in 2013, reported that the majority of the students favored DA (Cebeci *et al.*, 2013). This may be because students in preclinical years have more time to devote to deep learning than students in clinical years. Further, students may have formed their techniques of learning strategies before enrolling in university. Since academic achievement is highly valued in Sri Lanka, both private tutors and school teachers prepare their children for success in pre-university exams. It is reasonable to assume that students would choose the method that helps them to thrive in their studies if achieving better results and performing well were valued more highly than a thorough comprehension of the subject matter.

The preclinical, paraclinical, and clinical phases are the three main sections of many medical curricula. Teaching /Learning activities at each level aim to gradually expand student knowledge and skills so they may competently address clinical issues following graduation as doctors. Students are routinely assessed

throughout the course through structured clinical exams where, in addition to written and oral exams, they are required to show practical abilities. Students have embraced the strategic method as a coping mechanism for their demanding schedules and high workloads because it enables them to scrutinize the material and concentrate on the areas that are tested. This demonstrates how students are goal-oriented and that this trait does not alter when they get higher degrees.

We did not detect a statistically significant difference in the use of the three learning strategies between the third-year medical students and the students who have passed final MBBS groups, nor did the mean scores of the three learning strategies differ between them. The research conducted by Chonkar *et al* in 2013 has showed that the most common learning style was unaffected by demographic factors including age, gender, and greatest level of education (Cebeci *et al.*, 2013). This seems to suggest that learning strategies were somewhat unique and fixed and students would like to stick to their favorite strategy as they move up their academic careers.

A study conducted by Samarakoon *et al* in 2013 showed that the postgraduate (PG) trainees have a higher mean score for both DA and SA than in first years or final years ($p < 0.05$) (Samarakoon *et al.*, 2013). The groups' mean SAA scores did not significantly differ from one another (Samarakoon *et al.*, 2013). This study showed that postgraduates were shifting toward DA and SA. Compared to undergraduate medical students, PG students participate in more practical training and more student-centered learning. These type of learning strategies makes extensive use of patient management-centered learning, which encourages active learning which is a DA (Dolmans *et al.*, 2016). These studies explain the growing interest in DA to obtain an in-depth knowledge of the subject matter (Marton & Säljö, 1976).

The medical curriculum is quite extensive, and passing an examination necessitates extensive studying and in-depth knowledge of the subject matter. In conjunction with students' hectic

schedules balancing clinical rotations and lectures, SA has become their popular learning strategy (Bickerdike et al., 2016; Zilundu et al., 2022).

Although DA and SA are linked to enhancing academic performance, the significance of determining students' learning strategies extends beyond optimizing their academic performance (Feeley & Biggerstaff, 2015). To deliver the best knowledge in detail, it is helpful to know about the learning strategies used by the students when introducing and updating the curriculum. The preferred learning styles and the situation are combined to create the learning strategy (Newble & Entwistle, 1986). In comparison to problem-based learning, which fosters deep learning, an excess workload and examinations eventually direct the students to SAA rather than DA (Dolmans et al., 2016).

This result supports the concept that most undergraduate students are driven more by performance than by a desire to learn. Their ingrained value system and society's tendency to favor achievement over in-depth learning are partially responsible. Additionally, current teaching modalities that emphasize exams support this strategy. There's little reason to think that results would be very different outside of South Asia. However, further research is required on this matter.

Medical educationists can assist in developing an instructional design that supports deep learning by acknowledging its limits in the medical prospectus. Switching from a traditional lecture-based approach to an interactive student-centered problem-based approach is the hour of need. According to recent research, students' learning styles can alter and they can pick up more adaptable techniques that will enable them to create successful learning strategies of their own is superior to trying to change the way that students learn (Feeley & Biggerstaff, 2015).

The desire for SAA could be the result of a lack of understanding of the subject matter, a hard workload, and a busy schedule. University academics must find and apply strategies to get

students interested in their subjects and promote in-depth learning. For instance, rather than asking questions from students about information that needs simply rote learning, lecturers could pose questions requiring an examination of fundamental concepts. If the curricula sparked students' curiosity and fostered discovery instead of requiring a superficial understanding of information, then more students would choose deep learning strategies. More research needs to be conducted to observe a shift from the primary learning strategies of medical students gained during their stay in medical faculties.

Conclusion

The majority of the study participants favor a SA for their education. This highlights the fact that the SA method has been used consistently throughout the undergraduate period by students. Therefore, to encourage a more comprehensive deep learning approach, medical educationists must make changes in instructional design within the medical curricula.

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