Comparison of Self-Directed Learning Readiness Among Students Experiencing Hybrid and Traditional Curriculum

VASUDHA DEVI, DHARSHINIE DEVAN, PAW CHEN SOON, WEE PANG HAN

ABSTRACT

Background: Self-Directed Learning (SDL) skills are required for medical graduates for them to engage in continuous learning during their medical practice. The curriculum which is followed in an institution influences the development of readiness for SDL in a student. Hence, improving the medical student's SDL skills has been accepted as an important goal of the higher education.

Aim: To compare the Self-Directed Learning Readiness (SDLR) among medical students who experienced the traditional curriculum with clinical exposure from the 2nd year of the course and among medical students who experienced a partially problem based curriculum.

Setting and Design: The Manipal University, India, has 2 medical programmes which run in the Manipal Campus, India. One of these medical programmes follows the traditional curriculum with an early exposure to the clinical from the 2nd year of the course, whereas the other one follows a partially problem based curriculum (hybrid) with clinical exposure from the 3rd year of the course. In this cross sectional study, the SDLR of the students who experienced the above curriculums was compared at the beginning of the 3rd year of the course.

Materials and Methods: To obtain the SDLR of the students of the traditional (n=120) and the hybrid (n=120) curriculums, the SDLR scale which was designed by Fischer et al., was suitably modified. The student's response was collected in a five point Likert scale in September 2010.

Statistical analysis: The categorical variables were described as median and interquartile range. A total SDLR score of >129 was considered as an indication for the readiness. Appropriate non-parametric tests were used to compare the groups. A p value of <0.017 was considered as statistically significant.

Results: There was a statistically significant difference (p = 0.004) in the total median SDLR score between the students of the hybrid 132 (117, 137) and the traditional 137 (128, 144) curriculums. Students from both the groups scored the lowest in self-management, whereas the traditional group scored more in the desire-for-learning (p=0.001) and the self-control (p=0.004) factors as compared to the hybrid group.

Conclusions: In the development of SDLR in students, the traditional curriculum with an early clinical exposure seemed to influence them more than the hybrid curriculum which used paper based cases for PBL in the initial years. However, additional support is required for students of the both curriculums in self-management.

INTRODUCTION

Due to rapid changes, the knowledge that medical students acquire at school may become obsolete when they join for medical practice. Medical students are likely to work in different contexts during their professional career. Doctors thus need to keep learning and engaging in continuing education, to ensure that they maintain professional competence. A key element which is believed to be important for university graduates to be engaged in continuous learning is their ability to be self-directed in learning [1]. 'Self-directed Learning Readiness' is defined as the degree that the individual possesses i.e., the attitude, abilities and personality characteristics which are necessary for Self-directed Learning [2]. Improving a student's ability to be self-directed in learning has been accepted by many as an important goal of higher education [3].

In 1998, a position paper from the World Federation of Medical Education (WFME) clearly recommended that "medical education must be the greatest possible extent integrate basic and clinical disciplines with a focus on the key principles and that students should meet patients early on" [4]. The recent medical education reforms have incorporated these principles by adopting problem based learning (PBL) and Self-directed learning (SDL) as the

teaching-learning strategies. Studies which were done on pure PBL curricula have supported the assumption that PBL encourages SDL [5-7]. A review concluded that PBL students were active library users, that they employed deep-level learning strategies and that they believed that they were continuing to improve their SDL abilities [8]. A recent study which compared PBL and the traditional curricula reported that the PBL students showed significantly more self-regulated learning, that they perceived themselves as more active contributors to the group learning process and that they used a broader range of resources than the students in the traditional programme [9]. In a study which was done in Nepal, the total SDLR scores of the medical students had been found to be improved at the end of the first year of the partially problem based curriculum [10].

In a traditional medical programme, often the students do not encounter patients until the third or fourth year of the study. In a study which was done by MacLean M, 1st year students who had field visits with an opportunity for hands on practice felt that an early clinical exposure was a rewarding experience [11]. However, whether the traditional curriculum with early clinical exposures in the form of hospital visits fosters SDLR in students as comparable

to the hybrid curriculum that uses paper based cases for PBL, has not yet been investigated. Hence, the present study was designed to investigate the SDLR in students who experienced the traditional curriculum with clinical exposures in the 2nd year of the course and that in the students who experienced the partially problem based curriculum.

MATERIALS AND METHODS

Educational Context

Melaka Manipal Medical College (MMMC) which is under the Manipal University, India, offers the Bachelor of Medicine and Bachelor of Surgery (MBBS) program in two campuses; one in Manipal, India and the other in Melaka, Malaysia. After completing two and a half years of training at Manipal, the students proceed to Melaka for the clinical training. The first year students study anatomy, physiology and biochemistry, whereas pathology, micro-biology, pharmacology and forensic medicine are taught in the second year. MMMC, Manipal campus, embodies a hybrid system which comprises PBL, SDL, practical's and the more familiar, traditional didactic lectures.

Kasturba Medical College (KMC) is one of the sister institutions of Manipal University which offers the MBBS program, where the students complete their course in Manipal itself. In this traditional system, the curriculum delivery is done through didactic lectures, tutorials and practical's throughout the course and from the 2nd year onwards, the students are also exposed to clinical training where they get an opportunity to see patient cases, interact with patients and present and discuss cases with the clinicians.

For both of the above MBBS programmes, students who have completed the +2 of India or equivalent examinations are admitted.

Questionnaire and Subjects

The Self-Directed Learning Readiness Scale (SDLRS) which was designed by Fisher et al., with 42 items was used to determine the extent to which individuals perceived themselves as possessing the skills and the attitudes which were associated with SDL [12]. This SDLRS had 42 items which belonged to 3 factors: self-management, a desire for learning and self-control. Recently, Hendry and Ginns validated SDLRS for use in medical students of the academic year 1-2 of a 4-year, graduate entry in the hybrid University of Sydney Medical Program (USydMP) [13]. This led to the development of a revised 38 item SDLRS. As the context of our MBBS program was similar to that of USydMP, the original 42 item SDLRS was suitably revised to a 38 item SDLRS as was suggested by Hendry and Ginns in 2009. But we maintained the subscales as was suggested by Fischer et al., [12]. In this study, the traditional study group was exposed to clinics from the beginning of the 2nd academic year itself. Whereas the hybrid study group would be exposed to the clinics only from the beginning of the 3rd academic year. Hence, before administering the questionnaire, an item, 'I often review the way nursing practices are conducted' was deleted from the SDLRS, as we felt that this item may alter the total SDLR score in the hybrid and the traditional groups. Another item, 'I need to be in control of what I learn' was also removed from the SDLRS as most of the students informed us that they did not understand its meaning. Hence, the SDLRS which was used in this study had 36 items which belonged to 3 factors: self-management with 12 items, desire for learning with 10 items and self-control with 14 items.

The questionnaire was administered to students who were studying the hybrid curriculum (n=120) and to students who were studying the traditional curriculum (n=120) at the commencement of the 3rd year MBBS course in September 2010.

This cross sectional study was done as a part of the Mentored Student Project (MSP) and it was approved by the institutional research committee of MMMC. A written informed consent was obtained from students before they responded to the questionnaire in the 5 point Likert scale. The responses obtained were completely anonymous.

STATISTICAL ANALYSIS

Statistical analysis was performed by using the Statistical Package for the Social Sciences (SPSS), version 16. The categorical variables were described as median and inter-quartile range. The comparison of the total SDLR score between the groups was done by using the Mann-Whitney test. A p value of <0.017 was considered as significant. As the revised SDLRS had 36 items instead of the 42 items of Fischer's SDLR, a total SDLR score of >129 was considered as an indication for the readiness for SDL instead of a score of >150 [12].

The comparison of the subscales within the groups was done by using the Friedman test followed by the Wilcoxon Signed Ranks test for a pair-wise comparison. The comparison of the subscales between the groups was done by using the Mann-Whiney test.

RESULTS

The response rate was 50% in both the groups (hybrid and traditional).

The median total SDLR score in the hybrid curriculum was 132 (117, 137) whereas, in traditional curriculum, it was 137(128, 144). The difference in the SDLR scores between the hybrid and the traditional curricula was statistically significant [Table/Fig-1]. We found that the score of 55.7% of the students in the hybrid curriculum and that the score of 68.1% of the students in the traditional curriculum was >129.

The cumulative average of the self-management factor had the lowest median score as compared to the other two factors in both the hybrid and the traditional groups, whereas the self-control factor had the highest score in both the groups [Table/Fig-2].

The comparison of the subscales between the groups revealed that the traditional group had scored more in the desire-for-learning and the self-control factors as compared to those in the hybrid group [Table/Fig-2].

An item wise analysis showed significant differences in the median scores of the items 4, 8, 9, 13, 18, 19, 20, 24, 25, 28, 29, 30 and 36 [Table/Fig-1] between the hybrid and the traditional groups.

DISCUSSION

This study measured the SDLR in students of the hybrid and the traditional curricula. This was the first study that reported the statistically significant low level of the SDLR score in students of the hybrid curriculum as compared that of the traditional curriculum. However, the factors that were responsible for the observed differences in the SDLR score were not investigated in this study.

The SDLR scores in the hybrid and the traditional groups were >129, which showed the student's readiness to undergo SDL at the beginning of the 3rd year of MBBS course. The readiness for SDL depends on the student's personal attributes as well as on the curriculum which is followed in the institution [14]. A recent study showed that several components of the hybrid curriculum, especially the tutorial discussions and the case/unit objectives
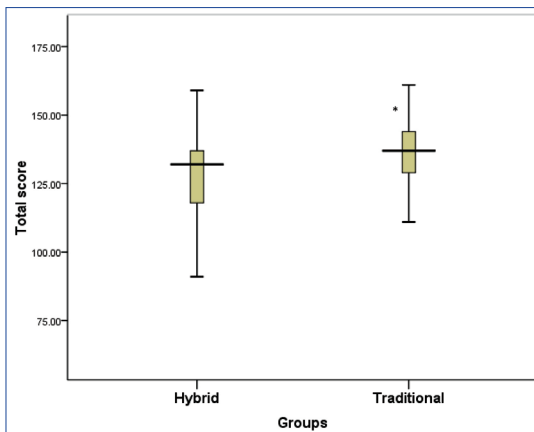
[Table/Fig-1]: Comparison of total cumulative average score (median and interquartile range) on self-directed learning readiness between hybrid and traditional curriculum.
*p = 0.004, Hybrid vs. Traditional.
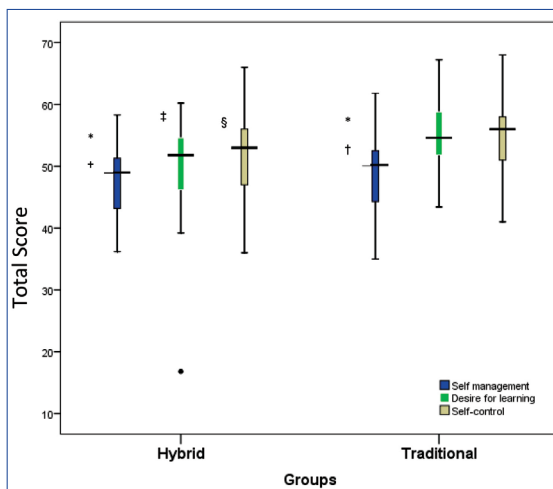
[Table/Fig-2]: Comparison of cumulative average score on each factor related to self directed learning readiness within hybrid and traditional Curriculum

Comparison of subscales in Hybrid group:
*p<0.001, Self-management vs Desire for learning
†p<0.001, Self-management vs Self control
Comparison of subscales in Traditional group:
*p<0.001, Self-management vs Desire for learning
†p<0.001, Self-management vs Self control
Comparison of subscales in between hybrid and traditional groups:
‡ p= 0.001, Hybrid vs Traditional, § p=0.004, Hybrid vsTraditional

Item No.	Items	Hybrid	Traditional	p-value
1	I manage my time well.	3(2,4)	4(2,4)	0.082
2	I have good management skills.	4(3,4)	4(3,4)	0.539
3	I set strict time frames.	3(2,3.5)	3(2,4)	0.429
4	I prefer to plan my own learning.	4(3,4)	4(4,5)	0.001*
5	I am systematic in my learning.	4(3,4)	3(3,4)	0.204
6	I am able to focus on a problem.	4(3,4)	4(3,4)	0.474
7	I critically evaluate new ideas.	3(3,4)	4(3,4)	0.027
8	I prefer to set my own learning goals.	4(3,4)	4(4,5)	0.003*
9	I am open to new ideas.	4(3,4)	4(4,5)	0.001*
10	When presented with a problem I cannot resolve, I will ask for assistance.	4(3,4)	4(3,4)	0.489
11	I am responsible.	4(3,4)	4(3,4)	0.151
12	I have high personal expectations.	4(3,4)	4(3,5)	0.078
13	I have high personal standards.	4(3,4)	4(3.75,5)	0.008*
14	I have high beliefs in my abilities.	4(3,4)	4(3,4)	0.028
15	I am aware of my own limitations.	4(3,4)	4(4,4)	0.035
16	I am confident in my ability to search out information.	4(3,4)	4(3,4)	0.114
17	I enjoy studying.	3(3,4)	4(3,4)	0.173
18	I have a need to learn.	4(3,4)	4(3.75,4)	0.015*
19	I enjoy a challenge.	4(3,4)	4(4,5)	0.001*
20	I enjoy learning new information.	4(3,4)	4(4,5)	0.001*
21	I set specific times for my study.	3(3,4)	3(3,4)	0.871
22	I like to gather the facts before I make a decision.	4(3,4)	4(3,4)	0.024
23	I am organized.	4(3,4)	3(3,4)	0.361
24	I am logical.	4(3,4)	4(4,5)	0.003*
25	I am methodical.	3(3,4)	4(3,4)	0.008*
26	I evaluate my own performance.	4(3,4)	4(3,4)	0.242
27	I prefer to set my own criteria on which to evaluate my performance.	4(3,4)	4(3,4.25)	0.169
28	I am responsible for my own decisions/actions.	4(3,4)	4(4,5)	0.004*
29	I can be trusted to pursue my own learning.	4(3,4)	4(4,4)	0.011*
30	I can find out information for myself.	4(3,4)	4(4,5)	0.008*
31	I like to make decisions for myself.	4(3,4)	4(3.75,5)	0.048
32	I am in control of my life.	4(3,4)	4(3,4)	0.567
33	I solve problems using a plan.	3(3,4)	3.5(3,4)	0.804
34	I prioritize my work.	4(3,4)	4(3,4)	0.322
35	I learn from my mistakes	4(3.5,4)	4(3,5)	0.430
36	I need to know why	4(3,4)	4(4,5)	0.013*

[Table/Fig-3]: Comparison of SDL Readiness (Median and Interquartile Range) in Students of Hybrid and Traditional Curriculum.
*p-value is < 0.05.

cooperatively and positively influenced the student's self-directed learning [15]. Our hybrid curriculum, with teaching-learning activities like PBL, SDL and mentored-student projects, seems to be fostering SDL skills in the medical students.

The students who experienced the traditional curriculum also had optimum levels of the SDLR score at the beginning of the 3rd year of the course. It is important to note that these students were exposed to clinical from the 2nd year of the course itself. Hence, in addition to the tutorial discussions, the early exposure to the bedside teaching in the form of ward rounds, patient case presentations and mere observation of how the clinicians perform their tasks, which seem to create an interest in students and thus foster their SDL skills.

In this study, a statistically significant high SDLR score in the traditional curriculum compared to the hybrid curriculum, was observed. This difference could be attributed to 3 factors:

1. The readiness for SDL exists along a continuum and it is present in all individuals to some extent [12]. Hence, the observed difference in the SDLR scores in the hybrid and the traditional groups could be due to the difference in the level of the inherent SDLR itself.

2. Studies have shown that students score low in SDLR when they are subjected to an SDL project when they have a high preference for a high level of structured teaching sessions [2]. The observed difference in our study could also be attributed to this point.

3. Teaching- learning activities like an early exposure to clinicals with bedside teaching expose the students to real life situations which are relevant for their future practice. This may create more interest in the students for SDL than tutor designed, paper based PBL cases. The observed statistically significant high score in the desire for learning and the self-control subscales could also be attributed to an early exposure to bed side teaching and tutorial discussions.

In a study, Miflin et al., found that instead of developing self-direction, the students had become overly dependent on the faculty direction in their new PBL curriculum [16]. Another study reported that in an integrated PBL curriculum, the student learning was not self-directed but rather were the ideas which were socially

agreed upon amongst the peer group and which were directed by the resources which were provided by faculty [17]. However, the reason for the above observation has not yet been investigated. It could be due to the low level of inherent SDL skills which directs the students to depend on faculty given resources and peers to complete their assignments. Moreover, it has been shown that students who had a low readiness for SDL and were exposed to an SDL project could exhibit a high level of anxiety, and similarly those learners with a high readiness for SDL who are exposed to increasing levels of teacher direction could also exhibit high anxiety levels [2,18]. This brings us to the importance of measuring the SDLR score of the students at the beginning of the course itself, to adopt appropriate teaching-learning strategies, depending on the level of their readiness to undergo SDL.

When SDLR is measured during the course as in our study, it can be used to evaluate the curriculum for the quality of support which is provided to the students to enhance their SDLR [13]. Unlike an earlier study which was done in the same institution (MMMC) on first year medical students of the hybrid curriculum [19], our study showed a high score for self-control instead of a high score for the desire for learning. Though the study population was different in these two studies, the influence of the curricula of the 1st and the 2nd year of MBBS courses of MMMC on these changes cannot be ruled out. As was reported in the study which was done by Reem et al., this study also revealed a low score in self-management. Hence, this study gave another supporting evidence for the suggestion which was proposed by Reem et al that the students of MMMC need to be supported in their self-management skills [19].

Limitations of the Study

The student's response rate was only 50% in both the groups, which might have affected the study results. Moreover, this study was based on a questionnaire and hence it may not have been a true measure of the student's SDLR.

Future Directions

The change in the SDLR score over the whole course in the traditional and the hydrid groups may be studied. The extent to which each of the components in the hybrid and the traditional curricula contributed to the development of SDLR, can be explored. It seems worthwhile to compare the extent to which PBL from the beginning of the MBBS course and early clinical exposures with case discussions at the patient's bed side in fostering SDLR in medical students.

In conclusion, in the development of SDLR in students, the traditional curriculum with early clinical exposures seems to influence the students more than the hybrid curriculum which uses paper based cases for PBL in the initial years. However, additional support is required for students of both the curricula in self –management.

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AUTHOR(S):
1. Dr. Vasudha Devi
2. Dr. Dharshinie Devan
3. Dr. Paw Chen Soon
4. Dr. Wee Pang Han

PARTICULARS OF CONTRIBUTORS:
1. Associate Professor and Head of Pharmacology.
2-4. Student.

NAME OF DEPARTMENT(S)/INSTITUTION(S) TO WHICH THE WORK IS ATTRIBUTED:
Melaka Manipal Medical College, Manipal Campus, Manipal University, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Vasudha Devi
Associate Professor and Head, Department of Pharmacology, Melaka Manipal Medical College (Manipal Campus), Manipal University, Manipal, India - 576104.
E-mail: v21devi@gmail.com