# Preference of teaching and learning methods in a new medical school of Malaysia

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## ABSTRACT

Teaching and learning are the two sides of a coin. Henceforth, there is a strong correlation between the methods used in delivering the information by the lecturers and the assimilation of that knowledge by the students. MBBS programme of FPSK, UniSZA, is divided into two phases, preclinical (Year I and II) and clinical (Year III, IV and V) phases. The main teaching and learning methods for preclinical phase include lecture, tutorial, practical, problem based learning (PBL) and early clinical exposure (ECE). This cross-sectional study was conducted in July 2013 in UniSZA, Malaysia. 50 respondents from preclinical phase were randomly selected from total 117 students to answers the questionnaire. The questionnaire was developed with extensive literature review and pretested and validated. The questionnaire has been divided into 5 sections. The data were analysed using the SPSS 17.0. This study showed that 36 (72%) out of 50 respondents chose lecture as the most preferred teaching and learning method. Five (10%) out of 50 respondents preferred tutorial and 3 (6%) out of 50 respondents preferred PBL, practical and ECE respectively. None of the respondents chose Computer Assisted Learning (CAL) as a preferred method. Probably learning guideline of CAL is not clear that make the session the most un-preferred. Majority of the students in preclinical phase preferred lecturer/teacher-centred learning session to acquire knowledge in a medical school.

## INTRODUCTION

"Learning can and often does take place without the benefit of teaching-and sometimes even in spite of it-but there is no such thing as effective teaching in the absence of learning. Teaching without learning is just talking. Classroom Assessment focuses the primary attention of teachers and students on observing and improving learning, rather than on observing and improving teaching" (Angelo and Cross, 1993). Teaching is considered as 'ever-evolving' processes especially in medical school. Consequently it needs to modernise continuously (Samarakoon *et al*., 2013). Major hurdle for any medical school is

teacher need deliver enormous amount of knowledge in very tight and narrow schedule and students need to 'retained, remembered and effectively interpreted'. This is the primary reason why most medical school need to reorganization their curriculum in 'varying degree' from 'didactic teacher-centered and subject-based teaching to the use of interactive, problem-based, student-centered learning' (Samarakoon *et al*., 2013; Koh *et al*., 2008).

It is reported by a number of medical educationist that familiarity with 'learning styles' have definite benefit for both teacher and students. Teacher can adapt new methods if they know the learning styles of the pupils (Newble and Entwistle, 1986; Lubawy, 2003). Furthermore, for students understanding 'knowledge of learning style', will ensuing in better scholastic contentment, as they can incorporate best method to learn (Samarakoon *et al*., 2013; Newble and Entwistle, 1986; Lubawy, 2003). It also reported that to progress high quality education for

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any country more devotion is required for 'learning style in teaching and educational technology'. Modern teaching technological advancement should be incorporate to achieve such high quality (Shakurnia *et al*., 2012). Pioneering works on students learning and their impact on the quality of learning started back in 1960s (Marton and Saljo, 1976a; Marton and Saljo, 1976b). The 'qualitative interview-based studies' techniques where initially used. These reports described that there is qualitative differences exist in way to students acquire and conceptualized knowledge (Marton and Saljo, 1976a; Marton and Saljo, 1976b). Learning styles denoting to 'cognitive, affective, and physiological behaviors' which accomplish as fairly steady instruments of 'how people perceive, interplay with, and respond to their environment' in learning circumstances by recollecting their stored data from brain (Keefe and Ferrell, 1990; James and Gardner, 1995). Thus learning style is defined as 'the manner in which and the conditions under which learners most efficiently and effectively perceive, process, store, and recall what they are attempting to learn' (James and Gardner, 1995). Thus 'learning style' means as 'an individual's preferred method of gathering, processing, interpreting, organizing and analyzing information' (Kharb *et al*., 2013). Eminent educational scientist categorizes the existing learning style in three layers-'instructional preferences through which they perceive information (outermost layer), information processing (middle layer) and personality (innermost layer)' (Curry, 1983). Learning style especially for medical students is quite 'complex' as there is enormous 'volume of content' and over 70 different learning styles has identified (James and Gardner, 1995; Lujan and DiCarlo, 2006; Coffield *et al*., 2004). It is reported that medical educators are currently encounters greatest challenge to achieve student contentment regarding 'curriculum and learning environment' (Murphy *et al*., 2004). There is global trend to reform medical curriculum from a teacher-centered to student-centered learning. Medical students are adult thus they have already developed their own learning style. Henceforth, it is essential for medical educators to 'tailor instructions' in such a way that the medical students appreciate and follow it to learn (Collins, 2004; Claxton and Murrell, 1987). Educational scholars develop VARK model based on the sensory modalities which are needed to compile any information (Fleming and Mills, 1992). VARK is an abbreviation for the Visual (V), Auditory (A), Read/Write (R) and the kinaesthetic (K) sensory modalities. The visual learners process the information best if they can see it. The auditory learners like to hear information. The read-write learners prefer to see the written words. The kinaesthetic learners like to acquire information through experience and practice (Fleming and Mills, 1992). Teaching and learning are the two sides of a coin (Omorogiuwa and Eweka, 2012). The best way to the quality of teaching is the 'amount of student learns'. There are consistently high correlations between students' ratings of the 'amount learned' in the course and their overall ratings of the teacher and the course. Those who learned more gave their teachers higher ratings (Cohen, 1981; Theall and Franklin, 2001). 'Research indicates that students are the most qualified sources to report on the extent to which the learning experience was productive, informative, satisfying, or worthwhile. While opinions on these matters are not direct measures of instructor or course effectiveness, they are legitimate indicators of student satisfaction, and there is substantial research linking student satisfaction to effective teaching' (Theall and Franklin, 2001).

Currently, the MBBS programme in Universiti Sultan Zainal Abidin (UniSZA) spans over a period of five years and is designed into two phases. Phase I consist of Year-I and II and Phase II consist of Year III, IV and V. Phase I is divided into four semesters and further subdivided into different modules. Phase II is divided into discipline-based clinical posting. However, our study only focus on Phase I students which basically using an integrated curriculum system as the core of teaching and learning method. The course of study is instead organized around organ systems such as Cardiovascular System or Gastrointestinal System. Other components of the integrated medical curriculum are PBL, tutorial, practical, ECE and CAL, which are being practised in UniSZA. Hence, this study is conducted purposely to identify the preference or perception of the students towards this system. Therefore, this study is aimed to collect the respondents' opinion through questionnaire to indicate either the already existing teaching or learning methods in UniSZA, are satisfactory to the students and sufficient or not in order to achieve MBBS programme's objectives. Objectives of the study to identify the students' problems in learning, to figure out the most preferred teaching and learning methods among medical students and to help the faculty to improve the efficiency of teaching and learning methods. The findings of this study will help to provide actionable directions for faculty to improve the students' credibility as the future doctors.

## MATERIALS AND METHODS

This study is a cross sectional study and was conducted in FPSK UniSZA, Kuala Terengganu, Terengganu, Malaysia. Total study population was 117. Out of 117 preclinical medical students 50 (25 from each Year), were selected randomly, from Year-I and Year-II of session 2012-2013, from MBBS programme. The period of study was from $12^{th}$ to $30^{th}$ July 2013. The data was collected by medical students of Year-II as part of elective programme. An instrument (questionnaire) was developed in English language through extensive review of literatures. Questionnaire was pretested and validated. The questionnaire was designed to obtain the information regarding the student's problems in learning and the most preferred teaching and learning methodologies among medical students. In order to achieve the objectives of the study, the questionnaire has been divided into 6 sections. The data was then compiled and analysed using SPSS version-17. The study was approved by the committee of the FPSK, UniSZA for medical-students in-course research.

## RESULTS

Out of 50 respondents, equal number of students participated in this study from Year-I and II; 25 (50%) from each

Year. Among them 30 (60%) are female and rest 20 (40%) are male. Majority 36 (72%) of the study population thinks that lecture class is the most preferred method of teaching. Beside lecture class 5 (10%) students opted for tutorial; and only 6% (3 students) voted for Problem Based Learning (PBL), Practical, and Early Clinical Exposure (ECE). None thinks CAL is useful (Figure 1).
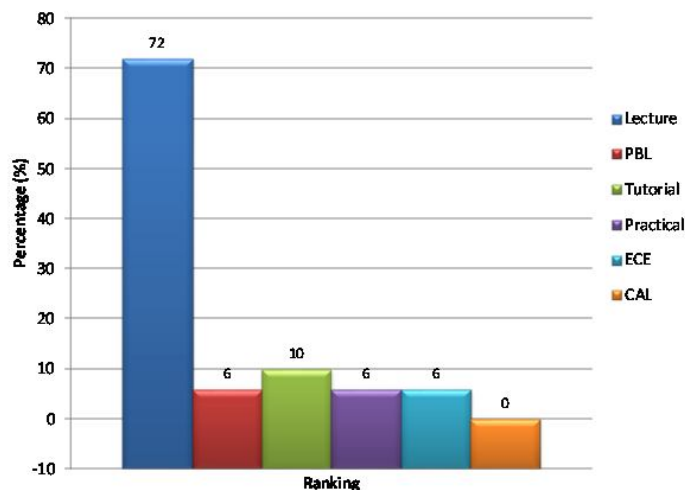


**Fig. 1:** Preference of Students of Teaching and Learning Methods.

Furthermore there were no significant difference in gender in preference of lecture class (p=0.740), PBL (p=0.495), practical (p=0.145) and ECE (p=0.460) (Table 1). Similarly no significance observed with year of study in preference of lecture class (p=0.515), PBL (p=0.119), practical (p=0.724) and ECE (p=0.596). Although significant differences were observed in tutorial (p=0.015) and CAL (p=0.042) in year of study. But, there were no significant differences in gender for tutorial (p=0.276) and CAL (p=0.195) (Table 1). Study population think that students are more interested (Table 2) with study topic when it is clinically important 60% (30) and creatively presented by lecturer 40% (20). Students identified problems encountered in lecture class, practical, and self-study (Table 3). Regarding lecture class respondents think lecturer's teaching method is non-interactive [19 (38%)], the topic itself is hard to understand [12 (24%)] and rest [19 (38%)] student's attitude (sleep during class, not focus). Too many students in a group [47 (94%)] and [3 (6%)] lack of technologies facilities are students view regarding practical class. Finally, dependent on the lecture note only [23 (46%)] and difficult to remember [27 (54%)] are commented as the main trouble of self-study. Only 7 (14%) students read topic ahead of lecture class and rest 43 (86%) do not go through the topic before lecture class. In contrary majority 46 (92%) of students agree that it is helpful to build understand about topic if they study before lecture class (Table 3). Although a large number students 33 [66%] opinion is it is hard to read and understand before lecture class. If it is mandatory to prepare a list of problems regarding the topic then majority students agreed 37 [74%] that they will read before lecture class. Eighty-eight percent students think mentioned technique will be helpful to build their academic achievement if it

is part of continuous assessment (Table 4). Sixty-four percent thinks at least 1-2 question lecturers should answer but 26% expect 3-5 and 10% more than 5 in last 5 minutes time (Table 6).

All students agreed that lecturer's personal creativity and ability to maintain a friendly environment is necessary for transferring information (Table 5). Further, 96% (48) students' thinks if lecturers draw pictures on the whiteboard it is more helpful to imagine and remember efficiently, rather than power point presentation only. Again, 86% of students think that there is fall of concentration of after 20 to 30 minutes of lecture that based on talk only. Majority 76% (38) of study population think they prefer 'two way communications' in lecture class. Among study respondent 92% (46) think a few of lecturers practice interactive learning methods (pneumonic, analogy, story-telling) during lecture session (Table 4). Ninety-four percent study respondents thinks discussion among friends improve their understanding for a certain topic (Table 6). Seventy-two percent (36) of them prefer 3-4 in one group. Again, 64% (32) respondents think a group discussion can help in improving language skills and confidence in speaking. Three different opinions have been deduced from study for the best time for discussion; just after or the same day of lecture (36%), after 2/3 days of lecture (14%), and during weekends (50%). Current study population (94%) believe problem-based learning (PBL) is the best way to access the critical thinking (Table 7). PBL are very helpful (50%) for development of understanding, is the thought of present study population but other two groups thinks just a little bit (48%), and not at all (2%). Finally, present study subject thinks lecturers should have 5 minutes to answer their query at the end of each class.

## DISCUSSION AND CONCLUSIONS

It is considered through research that student is the best resource about quality of teaching, was 'productive, informative, satisfying, or worthwhile' (Theall and Franklin, 1990; Ellett and Teddlie, 2003). Further, scholars and enlighten people believe sincere effort and wishes will teach better and teacher will be successful when they accept criticism of students (Guilbert, 1991). Again when students perform better and even more than expected, it is thought academic faculty is more effective and quality teaching is ensured (Goe *et al.*, 2008; Archibong and Nja, 2011). Successful and quality teaching not only the delivering a charismatic lecture but also involves use of various teaching aids like visual and auditory support, now available in many medical schools, and also effective student teacher interaction. Researcher report these joint efforts enhance and facilitate acquiring knowledge and skills which can be applied in practice. Thus both teaching and learning process become enjoyable and ensures benefit to the society (Soliven, 2003; Sovyanhadi and Cort, 2004). Moreover medical science is expanding every day. Todays updated information become outdated very quickly. Thus all health professionals especially medical doctor need to update their knowledge every day. Therefore medical education system has enormous demand to train future medical doctors in such a way

that they can adopt and cope with the quick changes of the facts (Jaffery, 2005). Throughout the world, in medical school, technique of giving instruction include traditional lecture method, problem based learning, team work, extra class, computer-based learning, visiting communities, workshop, seminar and symposium (Franzoni and Assar, 2009). The educational authorities in both developed and developing countries are highly concern especially for higher studies as there is strong correlation between academic performance and effective teaching. As a consequence, many leading educational institute has undertaken lot new initiatives to ensure effective teaching approaches (Frost and Fukami, 1997; Cadden *et al*., 2008). Lecture is considered as one the oldest method of teaching and learning in all type of education including medical science. Further medical council of India has considered it one of prime method of teaching (Sarkar and Majumdar, 2013). Majority of the present study population also considered that lecture is most beneficial for the medical students of UniSZA (Figure 1). Students get interest in lecture when they find it is clinically relevant and of course teacher own charisma attract them lot. This can interpret as the students are the future doctors thus when they feel it is important for their career, they get interested in it. Teacher's personality and way to talk and teach is the global human phenomena to attract learners (Table 2). Although lecture class is age-old method of teaching and conveying facts & data with evidence but it is one way of communication thus it is under attack of many scholars (Bligh, 1972; Kimmel, 1992; Kroenke, 1984). The foremost explanations given by the researchers are when learning to develop 'thinking skills or the modification of attitudes' like in medical schools lecture class is not operative as other method of teaching (Frederick, 1986; Svinicki and McKeachie, 1994; Newble and Cannon, 1994). At many occasions because of non-reactive passive talking in lecture class, students are passive, so they do not enjoy the class and there is failure of learning process (Steinert and Snell, 1999). Present study also has similar observation because in non-interactive lecture, (Table 3) students get indifferent with class which resulted in sleeping.

Gradually many medical schools in modern world and also developing countries are adopting Team-based learning (TBL) (Michaelsen, 2004; Haidet and Fecile, 2006; Vasan and DeFouw, 2007). Actually business school and other higher education started TBL as method of instruction (Michaelsen *et al.,* 1997; Michaelsen *et al*., 2002). The idea of TBL was developed by renowned educational researcher Larry K Michaelsen in 1970 (Michaelsen *et al.,* 2002). Medical school gradually started adopting TBL method of instruction for both in undergraduate and postgraduate studies TBL as because of its success in other academic institute (Haidet and Fecile, 2006; Tai and Koh, 2008; Thomas and Bowen, 2011; Vasan and DeFouw, 2005; Haidet *et al*., 2004; Kühne-Eversmann *et al*., 2008; Seidel and Richards, 2001; Haidet *et al*., 2002; Mcinerney, 2003; Hunt *et al*., 2003; Levine *et al*., 2004; Dunaway, 2005). 'TBL is a structured form of small-group learning that emphasizes student preparation out of class and application of knowledge in class. Students are organised

into diverse teams of 5-7 students that work together throughout the class. Before each unit or module of the course, students prepare by reading prior to class' (Brame). TBL is guided by the facilitator and promotes and develops how to transform knowledge in practical situation. This method works in a small group and in a particular setting (Searle *et al*., 2003). The advantage of this method is that it increases students involvement which actually increase more commitment (Tai and Koh, 2008; Vasan and DeFouw, 2005; Haidet *et al*., 2002). As students are more involved with teaching learning process, so TBL actually promotes active learning and environment become more congenial, thus learning is more enjoyable (Vasan and DeFouw, 2007; Tai and Koh, 2008; Thomas and Bowen, 2011; Vasan and DeFouw, 2005; Haidet *et al*., 2002; Haidet *et al*., 2004; Levine *et al*., 2004). These are probable reasons that TBL is getting more popular method of teaching in both preclinical and clinical settings of any medical school (Haidet and Fecile, 2006). UniSZA medical school do not have TBL as a method of teaching but our study respondent expressed that small group discussion among friends actually promotes their understanding and improve their quality of learning. Thus these findings indirectly are at par with mentioned studies (Table 6).

Problem based learning (PBL) is explained by eminent scientist as 'In PBL students use "triggers" from the problem case or scenario to define their own learning objectives. Subsequently they do independent, self-directed study before returning to the group to discuss and refine their acquired knowledge. Thus, PBL is not about problem solving per se, but rather it uses appropriate problems to increase knowledge and understanding. The process is clearly defined, and the several variations that exist all follow a similar series of steps' (Wood, 2003). Again in USA PBL is defined as 'PBL is seen as a student-driven process in which the student sets the pace and the role of the teacher becomes one of guide, facilitator, and resource' (Donner and Bickley, 1993). As because PBL is student-centred approach rather than traditional educational teaching method; thus students feel PBL is more substantial and pleasant to learn. As PBL is student centred and through active learning process thus medical students develop better understanding of the topic. Therefore it is reported that students evaluate PBL experience with higher rate (Weimer, 2012). Our study respondents also rate as high as 94% that PBL generates critical thinking process and majority agreed that it is helpful to understand the topic (Table 7).

The study shows majority of the students do preferred interactive teaching and learning methodologies to be applied in their study. The lecturer's creativity in transferring the information, clear illustrations, imagination, and demonstration about the core concept of the topic and practicing of two-way communication during lecture session seem to be their preference style of teaching and learning. Present study population really enjoys group discussion in order to enhance their assimilation of knowledge and soft skills but they are having problem to practise it regularly due to time restriction and lack of core concepts understanding.

**Table. 1:** Comparison between Gender and Year of Study Ranking of Teaching and Learning Sessions.

| Class sessions | Gender, mean (SD) | | 95% CI | *p*-value* | Year of study, mean (SD) | | 95% CI | *p*-value* |
|---|---|---|---|---|---|---|---|---|
| | Male (n=20) | Female (n=30) | | | 1st year (n=25) | 2nd year (n=25) | | |
| Lecture | 1.35 (0.75) | 1.43 (0.94) | -0.59, 0.42 | 0.740 | 1.32 (0.69) | 1.48 (1.00) | -0.65, 0.33 | 0.515 |
| Problem Based Learning | 2.95 (1.19) | 3.17 (1.02) | -0.85, 0.42 | 0.495 | 3.32 (1.14) | 2.84 (0.99) | -0.13, 1.09 | 0.119 |
| Tutorial | 3.75 (1.55) | 3.30 (1.32) | -0.37, 1.27 | 0.276 | 3.00 (1.35) | 3.96 (1.34) | -1.73, -0.19 | 0.015 |
| Practical | 3.40 (1.14) | 2.90 (1.18) | -0.18, 1.18 | 0.145 | 3.04 (1.17) | 3.16 (1.21) | -0.80, 0.56 | 0.724 |
| Early Clinical Exposure | 4.25 (1.45) | 4.53 (1.22) | -1.05, 0.48 | 0.460 | 4.52 (0.87) | 4.32 (1.65) | -0.56, 0.96 | 0.596 |
| Computer Learning Activity | 5.30 (1.17) | 5.67 (0.80) | -0.98, 0.25 | 0.195 | 5.80 (0.65) | 5.24 (1.16) | 0.02, 1.10 | 0.042 |

*independent t-test; 1=highest, 6=lowest

**Table 2:** Respondents' opinion regarding the factors that affect their interest in study.

| Factors affecting interest in study | Respondents Answer (%) |
|---|---|
| The clinical importance of the topic | 60 |
| Creativity of lecturer in teaching | 40 |

**Table. 3:** Problems encountered during teaching and learning session.

| Problem Encountered During | Problems | Respondents Answer (%) |
|---|---|---|
| Lecture | Lecturer's teaching method is non-interactive | 38 |
| | The topic itself is hard to understand | 24 |
| | Student's attitude (sleep during class, not focus) | 38 |
| Practical | Too many students in a group | 94 |
| | Lack of technologies facilities | 6 |
| Self-study | Dependent on the lecture note only | 46 |
| | Difficult to remember | 54 |

**Table. 4:** Respondents' opinion regarding the preparation before the lecture.

| Questions | Respondents Answer (%) | |
|---|---|---|
| | YES | NO |
| Imagine this. Tomorrow, your lecturer will give you a lecture about 'Anti-Epileptic Drugs', do you read about this topic on the day before the lecture will be held? | 14 | 86 |
| In your opinion, do you think that reading about the topic before the lecture will help you to understand the lecture better? | 92 | 8 |
| Is it hard to be done in your circumstance as a student? | 66 | 34 |
| If it is mandatory as a part regulation that student needs to read the topic and list down the problems they encountered to understand and conceptualised the topic –will it trigger you to read first before entering the lecture class on next day. | 74 | 26 |
| If the mentioned technique is one of the method of continuous assessment for your merit system, do you think it will trigger the students to read the topic in advance? | 88 | 12 |

**Table. 5:** Respondents' opinion regarding the interactive lecture session.

| Questions | Respondents Answer (%) | | |
|---|---|---|---|
| Lecturer's creativity in transferring the information during lecture session is important to create a fun learning environment. | Agree (100) | | Disagree (0) |
| Do you think pictures drew by the lecturers on the whiteboard help you to imagine and remember efficiently, rather than power point presentation only? | Yes (96) | | No (4) |
| Based on your experience, did you felt that your focus is easier to waver after 20 to 30 minutes of lecture that based on talk only? | Yes (86) | | No (14) |
| Which one of the following methods that you prefer to be done during the lecture? | One-way communication (24) | | Two-way communication (76) |
| Did your lecturers practice interactive learning methods (pneumonic, analogy, story-telling) during lecture session? | None (2) | Few of them (92) | Most of them (6) |

**Table. 6:** Respondents' opinion regarding the group discussion.

| Questions | Respondents Answer (%) | | |
|---|---|---|---|
| Do you think discussing with your friends can improve your understanding in a certain topic? | Yes (94) | | No (6) |
| How many people are you prefer to be involved in the discussion? | ≤ 2 (24) | 3-4 (72) | ≥ 5 (4) |
| How much do you think a group discussion can help you in improving your language skills and confidence in speaking? | 0%-45% (16) | 46%-75% (64) | 76%-100% (20) |
| Which of the following is the best time to do the discussion? | Just after the lecture or the same day of lecture (36) | After 2/3 days of the lecture (14) | During weekends (50) |

**Table. 7:** Respondents' opinion regarding the question-based learning.

| Questions | Respondents Answer (%) | | |
|---|---|---|---|
| Do you think problem-based learning (PBL) is the best way to access your critical thinking? | Yes (94) | | No (6) |
| How far PBL methods can help you in your understanding about the topic? | Very helpful (50) | Just a little Bit (48) | Not at all (2) |
| How many questions that you aspect from the lecturers to give you to answers within 5 minutes before the end lecture? | 1-2 (64) | 3-5 (26) | >5 (10) |

The study also indicates question-based learning is very helpful for them to train their critical thinking and attract their attention during the lecture.

In conclusion, the preclinical students of UniSZA preferred an active participation during the lecture class. Therefore, some improvement in teaching and learning methodologies of integrated system in UniSZA, need to be done in order to contribute towards the development of knowledgeable and highly skilled healthcare in future. Well-designed prospective research in Teaching-Learning process is advocated to ensure better quality medical graduates who will serve Malaysia and rest of the world on basis of science and humanity.

## ACKNOWLEDGEMENTS

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