

Instructional Modes of Teaching and Students' Preferences in Basic Medical Sciences of Services Institute of Medical Sciences, Lahore

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ABSTRACT

Aim: To study the instructional modes of teaching in basic medical sciences of SIMS, Lahore.

Study design: A cross-sectional study was conducted.

Place and duration of study: The study was carried out in Services Institute of Medical Sciences, Lahore, which is a medical college attached to the University of Health and Sciences, Lahore. Study was conducted from April-June 2018.

Methodology: A sample size of 232 students was calculated by WHO software S size at confidence level 95% and 5% margin of error, using total population size of 600 and anticipated population proportion 0.5.

Simple random sampling technique (lottery method) was used, with equal representation to all three years. Selected students were given a standardized questionnaire, with face to face interview. It consisted of closed ended questions with multiple answers regarding the student preferences for the different instructional modes.

Results: Results show that although the lectures were available, only 31% students (less than one-third), out of 232 students of 1st, 2nd and 3rd year that took part in our study, preferred these traditional lectures. The remaining 69% preferred different varieties of the small-scale teaching methods. However, the advanced techniques of small-scale teaching were not completely available, in their true forms therefore students contradicted in their opinion regarding their availability in the institute.

Conclusion: Our study showed that lectures, tutorials and demonstrations were the teaching modes available to the students of Services Institute of Medical Sciences. However, the advanced techniques of small-scale teaching were not completely available, in their true forms therefore students contradicted in their opinion regarding their availability in the institute. Less than one-third students preferred the large-scale teaching through lectures, which were available in the traditional form.

Key words: Large-scale learning, small-scale teaching, active learning, passive learning, lectures, discussions.

INTRODUCTION

Instructional mode of teaching' refers to the techniques or methods of delivery which the instructor uses to impart knowledge to his students¹.

The methods or modes of teaching can be broadly classified as teacher/instructor centered methods, learner centered methods, content focused methods, interactive/participation methods. Further categorization includes lecture and demonstration method, discussion method, assignment method, buzz group method used in tutorials and brainstorming technique².

Basic medical sciences commonly referred to as the basic sciences refers to the initial 2–3 years in medical colleges where medical students are taught basic knowledge upon which their prowess in clinical training and medicine is based. Basic medical sciences include anatomy, biochemistry, physiology, pharmacology, pathology and microbiology³.

The Medical Faculty of the University of Cologne in Germany incorporated "Problem Based Learning" into its curriculum in basic pharmacology for about seven semesters. Results of the experiment were based on a pharmacology test in which one group had studied in form of PBL and the other in lectures. The students who had studied via PBL performed better in the category of short-essay questions⁴.

Martin and co-workers (2011) determined the relationships between learning styles, leadership styles and Grade Point Average (GPA) of undergraduate medical students of the University of the West Indies, St. Augustine Campus, using a former VAK questionnaire and the Kurt Lewin Leadership Style model. They used the VARK model which

stands for visual (V), aural (A), read/write (R) and kinesthetic (K). The VARK tool, helps in the study of individual learning styles based on the four basic sensory modalities used by people to perceive new information⁵.

Preference of multimodal teaching has also been reported by authors from Turkey who carried out research on instructional modes based on the VARK questionnaire⁶. The VARK questionnaire was also given to the pre-clinical students doing MBBS in the University of the West Indies, Cave Hill Campus, Barbados⁷. Students at King Saud University in Riyadh, Saudi Arabia who had a unimodal learning style preference had a lower grade than those with multimodal learning style preferences⁸.

Improving the contentment of the students from their modes of teaching is a challenge most instructors at medical schools have to deal with. Students also get accustomed to those methods that will help them maximize learning from their institutes⁹. It has been shown that in the long run, it is more profitable for the teachers to shift the current student learning culture to one that involves an active learning curriculum¹⁰.

Most medical professionals reckon that dissection enables learning anatomy with appropriate clinical correlates and helps in development of expertise that is required in health care setups¹¹. The study conducted on first semester medical students who were enrolled at SMS & R, Sharda University, India showed that practical and dissection was most effective as a teaching method for them. However, a single approach by the instructor may not be effective for all students. Various teaching methods such as direct instruction methods (lectures and demonstrations), interactive instruction methods (tutorials), experimental learning methods (practicals and dissections) and independent study methods (self-study) are used to convey knowledge of the basic sciences to the medical students¹².

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Students consider the interactive lectures as effective methods for improving learning attitudes and motivating the students for healthy classroom learning¹³. The faculty everywhere around the world needs to be aware of their students and how they prefer to be taught, so that they can choose teaching strategies effectively and maximize the output of a teaching session. Different subjects require to be taught by different strategies and incorporating the different teaching modes will help students learn better and maintain their interest in the subject being taught. It is the responsibility of the instructors and mentor to coordinate their teaching strategies with the learning needs of the students. For this purpose, teachers can rely on recent researches that address the learning needs of the students to maximize their academic performance¹⁴.

Recent years have seen a change in the trends of medical education from a teacher-centered learning to a student-centered learning. Therefore, teachers must recognize the importance of adjusting their methods of teaching according to student preference¹⁵. Teaching in most Asian countries is dominated by teacher-centered classrooms¹⁶.

MATERIAL AND METHODS

A cross-sectional study was conducted in Services Institute of Medical Sciences, Lahore, from April-June 2018. Sample size of 232 students was calculated by WHO software S size at confidence level 95% and 5% margin of error, using total population size of 600 and anticipated population proportion 0.5. Simple random (Lottery method) sampling technique will be used, with equal representation to all three years. Students selected by simple random sampling technique were given a standardized questionnaire, with face to face interview. It consisted of closed ended questions with multiple answers regarding the student preferences for the different instructional modes. Data was analyzed using SPSS software and organized in a tabulated form with frequency and percentages. Bar graphs and pie charts were made to represent the data.

RESULTS

A cross-sectional study was carried out that showed the availability of the instructional modes to the students of basic medical sciences in Services Institute of Medical Sciences, Lahore. Results are shown in Table no. 1. Percentages show that the advanced techniques of small-scale teaching were not completely available to the students in their true forms therefore students contradicted in their opinion regarding their availability in their institute.

Table no.2 shows that when studied further for student preferences, we saw that only 31% students preferred the traditional lecture method of learning which is considered a large-scale teaching method. The remaining 69% preferred different varieties of the small-scale teaching methods. It has also been represented as a bar chart.

Majority of the students wanted brief and interactive lectures, covering only important details of the topic. This is shown in table no.3. These percentages show that even students who prefer lectures, do not prefer the traditional style lectures.

Table 4 shows the percentage preferences of the students regarding the various small-scale teaching methods. Maximum students preferred demonstrations, integrated curriculum and tutorials.

Table 1: Availability of the instructional modes of teaching to students of services institute of medical sciences

Instructional mode of teaching	Availability according to students (%)
Lectures	100
Demonstration	97
Practical classes	99
Tutorials	98
Problem based learning session	47
Dissections (anatomy)	90
Buzzer method session	12
Short presentation	55
Group projects	25
Simulations/role plays	24
Integrated Curriculum of conceptual learning	34

Among the most preferred small-scale teaching methods among the students of Services institute of Medical Sciences, integrated curriculum was not available in the institute so further questions were asked regarding the demonstrations and tutorials only. Table 5 shows that students preferred discussions, questioning and student-centered active learning as a part of their demonstrations and tutorials.

It was seen that visual sensation (according to the VARK model- visual, aural, read and write, kinesthetic) helped most of the students in learning, followed by the kinesthetic method, 46% and 21% respectively.

Further study showed that among the visual and aural aid, students preferred the online conceptual lectures over the traditional class room lectures delivered in the institute. This was followed by reading and discussions of the topic to be the second most preferred choice, 43% and 25% respectively. The learning of new information made easier through the respective sensory modality (Table 6)

Table 2: Preference of students for small scale teaching methods vs large scale teaching methods

Instructional mode	%age preference
Large scale teaching method (traditional lecture format)	31
Small scale teaching method	69

Table 3: Preferences regarding the type of lecture

Types of lectures slides	Preference
Pictorial with headings and striking points only	45.4%
Short, brief with important points only	45%
Long, but with complete relevant information	9.6%
Teaching Style In Lectures	
Interaction during lectures	41.7%
Summarization and key mcq points to conclude	38.3%
Question answer session at the end	13.9%
Short assignment at the end	6.1%

Table 4: Preferences of the students regarding the various small-scale teaching methods (N=160)

Small scale teaching method	%age preference
Demonstration	16.8
Integrated Curriculum of conceptual learning	16.1
Tutorial	15.5
Group projects	11.3
Short Presentations	10
Practical classes	8.9
Problem based learning	7.1
Dissections	5.8
Simulation /role plays	5.2
Buzzer method sessions	3.2

Table 5: Types of demonstrations and tutorials preferred

Most worthwhile and beneficial in method	%age	Frequency
Demonstrations		
Friendly learning environment, student centred learning, discussions	77.6 %	180
There is a strict teacher-centred delivery of information regarding the topic	22.4 %	52
Tutorials		
Class discussions and questioning	48.3 %	112
Group discussions followed by the presentation by a single group member	45.7%	106
Assignment making	6.0%	14

Table 6: Method of learning new information

Method of learning new information	%age
Lecture in a classroom	15
Reading and writing down	17
Online lectures	43
Reading and discussion	25

DISCUSSION

Instructional mode of teaching refers to the techniques or methods of delivery which the instructor uses to impart knowledge to his students. The methods or modes of teaching have been broadly classified as teacher /instructor centered methods, learner centered methods, content focused methods, interactive/participation methods. Further categorization includes lecture and demonstration method, discussion method, assignment method, buzzer group method used in tutorials and brainstorming techniques. Changes in medical education have affected both modes of teaching and students' preferences in basic medical sciences.

This research further dealt with the student preferences, the results of which show that only about one-third of the 232 students who took part in our study had preferred the traditional lecture method of learning which, when broadly classified, is a large-scale teaching method. The remaining students (more than two-thirds) preferred different varieties of the small-scale teaching methods, for which we gave diverse options to the students. When small-group discussions were studied by Fischer and his co-mates, against lecture format, there was a significantly higher level of satisfaction and brain stimulation in the discussion group. Vasan NS¹, DeFouw DO and Holland BK also carried out a research comparing the traditional lecture-based learning with team-based learning sessions. Students performed better in all exams following a team-based learning approach due to the active learning environment it created. Students also acknowledged that such sessions allowed them to actively teach and learn from peers, and this served to improve their own exam performances^{18,19,20}. These results are similar to those concluded from the current research.

Another research that studied the scores of the students after being taught through TBL (team-based learning) showed improved scores as compared to traditional lectures²¹. The discussions, past examination questions and pre-assigned topics given for the TBL sessions correlate with the type of preferences that students of Services Institute of Medical Sciences, Lahore have given.

Student perceptions of active learning in an integrated curriculum were studied by other researchers as well. However, students from that research perceived that lecture and passive pedagogies were more effective for learning, whereas faculty felt active and collaborative learning was more effective for development of lifelong learning. Researchers attributed this difference of opinion to lack of exposure of the students to new technique of learning.¹⁷

Furthermore, the study showed that in the lectures, students wanted interaction and a system of summarization with key mcq points to conclude. They wanted the lectures slides to be brief and covering the important details of the topic or pictorial with headings and striking points only which helped them retain information better. Similarly, the research by Luscombe also showed that the usefulness of the lectures was found to be in elaboration by the instructor, of what was on the slides, summary slides and clear structure with learning objectives. The negative aspects of large group teaching were found to be unexplained abbreviations, too much information in the slides, unexplained points in the lecture slides and unclear learning objectives¹⁰.

The percentage preferences of the students derived from the current research regarding the various small-scale teaching methods shows that maximum students preferred demonstrations, integrated curriculum and tutorials. In the process of learning through these modes, students preferred discussions, questioning and student-centered active learning. A previous research, however, showed that lectures and passive pedagogies were more preferred by students. Those researchers concluded that students are not familiar with the process of learning because in the teachers who took part in the same research preferred active learning for development of lifelong skills in their students¹⁷.

The last part of the current research deals with the assessment of the sensory modalities of the students and the role they play in learning. According to the VARK model (visual, aural, read and write, kinesthetic), it was seen that visual sensation, followed by the kinesthetic method helped most of the students in learning new skills, 46% and 21% respectively. Aural was found to be least preferred. A study similar to this one was carried out in King Saud University in Riyadh, Saudi Arabia by Loulwa Mohammed Saad Al-Saud in 2012, to investigate the learning style preferences of a group of first-year dental students. The results of that study show that the most common single learning preferences were aural (20 percent) followed by kinesthetic (15.2 percent). [8] Difference in results could be due to the smaller sample size (113 students) and involvement of only first year students in the research carried out at Kind Saud University as compared to 232 students of first, second and third year that represented the results obtained from Services Institute of Medical Sciences, Lahore.

This research further showed that among the visual and aural aid that helped students in learning new information and retaining it, students preferred the online conceptual lectures over the traditional class room lectures that were being delivered in the institute. This was followed by reading and discussions of the topic to be the second most preferred choice, 43% and 25% respectively. A similar research carried out in 2017 by Asad MR Reader, used a questionnaire based on the VARK model to ask students from first, second and third year regarding their perceptions. It was found that the students perceive interactive lecture as an effective tool for facilitating visual and auditory learning modes¹³. Use of audio-visual resources has also been shown to improve the students' dissection experiences and scores in anatomy classes²².

Studies have been conducted by different researchers in the past, to check student preferences for Problem-based learning sessions (PBL) and the effectiveness of such sessions against the traditional Lecture-based learning. PBL students by average showed greater interest, knowledge and understanding of the subject, besides improved scores^{23,24,25}. The results of the current study show that although 69% students preferred small scale learning and majority found

active learning sessions and discussions as effective learning methodologies, only about 7%, among those preferring small-scale learning, preferred PBL. This difference could be due to the unavailability of this method of teaching in the institute and students being deprived of the experience of such sessions.

The current research was carried out to check the availability of the different instructional modes to the students of basic medical sciences in Services Institute of Medical Sciences, Lahore. The percentages calculated by analysis of data show that students unanimously agreed that lectures were available to them. Demonstrations, practicals and tutorials were also found to be available as majority of the students taking part in the study said so. On the contrary, the advanced techniques of small-scale teaching were not completely available to the students, in their true forms, therefore students contradicted in their opinion regarding their availability in their institute. However, sufficient data regarding availability of the instructional modes studied in this research could not be found from previous researches.

CONCLUSION

The results of the study show that the traditional lectures were available to the students of Services Institute of Medical Sciences, Lahore, as claimed by all the 232 students that participated in our research. Practical classes, demonstrations and tutorials were also available as is the view of the majority. However, the advanced techniques of small-scale teaching were not completely available, in their true forms, therefore the students contradicted in their opinion regarding their availability in the institute.

Further study in the research was based on student preferences, results of which show that less than one-third students preferred the traditional lecture method of learning whereas, the remaining preferred different varieties of the small-scale teaching methods, maximum preference being for demonstrations, integrated curriculum and tutorials. Also, majority of the students wanted the lectures to provide them with an active learning experience consisting of class interaction.

The last part of the research dealt with the assessment of the sensory modalities of the students and the role they play in learning. It was seen that according to the VARK model (visual, aural, read and write, kinesthetic), visual sensation helped most of the students in learning, followed by the kinesthetic method, 46% and 21% respectively..

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