

# Learning Style Preferences of Para-Clinical Students: A Medical Institute Experience from Mauritius

Agnihotri, S<sup>1</sup>. & Ibrahim, T<sup>2</sup>

## Abstract

**Background:** The purpose of imparting knowledge in medical education should be well defined to give the maximum benefit to the students. This can achieve by identifying the ways in which students can learn best.

**Objective:** This study focuses on the identification of preferred learning style (visual, auditory and kinaesthetic) among the second professional MBBS students

**Methods:** Barsch questionnaire was administered to assess the predominant learning style among the second professional MBBS students at SSR Medical College.

**Results:** A total of 156 students participated. The majority (78.2%) of the students had visual preference, followed by auditory (14.7%) and then kinaesthetic (7.05%). Both males and females showed the same preference.

**Conclusion:** Our study highlights that visual learning is predominant learning style. Thus, the identification of preferred learning style can be helpful to the students in retaining the knowledge in better way.

**Keywords:** Learning style, Medicine, Medical education, Medical Student

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## Introduction

Teaching medicine is an ever-evolving process where it is extremely important to see both aspects of teaching and learning. With the vast and extensive curriculum of MBBS, the biggest challenge for teachers is to impart necessary knowledge of medicine within a limited period of time in order to be retained, remembered and effectively interpreted by students.

Traditional teaching learning methods should be replaced by newer methods. Most medical schools have acknowledged this issue and have adopted new methods of teaching and learning to varying degrees (Kohet al., 2008). It has always been the matter of argument by the teachers that students do not remember, recall and apply the knowledge given to them in efficient manner. This argument gives the school of thought that how the students should be imparted knowledge so that they can absorb maximally and reproduce effectively when required. This aim can be well- achieved by identifying the various learning styles of students.

Learning style is the process by which a person understands and retains information, thereby gaining knowledge or skills (Adesunloye et al., 2008). The knowledge regarding learning styles can be useful to both teachers and students, in which the teacher can know about the learning styles of students and impart knowledge in the way that they understand, the best (Newble & Entwistle, 1986; Lubawy, 2003).

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<sup>1</sup>Department of Pathology  
SSR Medical college,  
Mauritius

<sup>2</sup>Department of Pharmacology  
SSR Medical College,  
Mauritius

### Corresponding Author:

<sup>1</sup>Prof. Smriti Agnihotri  
MBBS, MD  
Department of Pathology  
SSR Medical College,  
Mauritius  
Mobile no. (230- 57371723)

E-mail: smritiyushi@yahoo.co.in

Similarly, students also can be empowered to identify and use the techniques of learning which suits to their individual styles. It results in greater educational satisfaction and better results. Dunn et al., (1990) defined the term 'learning style' as different and unique ways used by individuals as they prepare to learn and recall information. Learning styles may be associated with student understanding and may predict success in examination (Shankar et al., 2006). A recent research indicates that students' learning styles and approaches to study may have a significant bearing on their academic success (Newble, et al., 1985).

Three learning styles are defined including visual, auditory and kinaesthetic/tactic. Students show a wide variation on learning style. Learners can be classified as unimodal if they show predominantly one learning preference. If the learning preferences are shared between 2 or more learning styles it is called multimodal. Students learn by relying on understanding, by relying on rote memorization and reproducing memorized information, or by a combination of these methods to varying degrees. Most students possess a dominant or preferred learning style. However, some has a mixed and evenly balanced- blend of the three styles. Many models and measures of learning styles have been described in the literature, including Kolb's Learning Inventory (Kolb, 1984), VARK learning style inventory (Fleming and Mills, 1992), Gardner's Multiple Intelligence Theory (Gardner, 1993) and Barsch learning inventory (Barsch, 1980). We have used Barsch learning inventory. This inventory is an informal, self-reporting instrument that provides the student with an indication of the relative strengths and weaknesses in learning through different sensory channels: auditory, visual, and kinesthetic.

The purpose of our study was to identify the predominant learning style among the second professional students and identify measures to strengthen their learning styles.

**Method**

This study analyses the learning styles of undergraduate students in second (paraclinical) year MBBS students of SSR Medical College. Current medical students in our institution show a diverse educational, cultural, ethnic, and gender background. Barsch learning style inventory was used.(Annexure-1).

The questionnaire was distributed to the students during lectures and practical sessions. Participants were briefed about the objectives of the study, and confidentiality of responses was ensured by maintaining anonymity of responders. Each response was scored according to protocols developed by the developers. Predominant learning style was calculated using the scores of protocol.

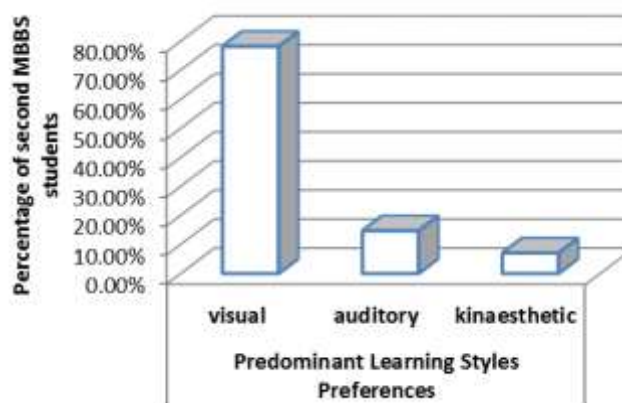
The data were compiled into a Microsoft Excel (Microsoft Corporation, USA) spreadsheet.

**Results**

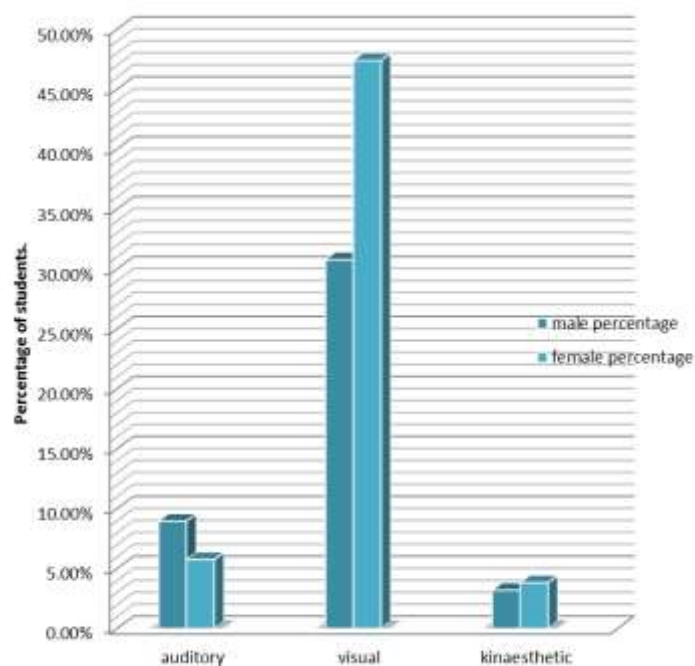
A total number of 156 students participated in this study and age range was from 20-22 years. The response rate was 100 %. Out of 156 students, 67 were males and 89 were females. Figure 1 showed the learning style preferences in which 122/156-78.2%) had visual learning preference, followed by auditory (23/156-14.7%) and then kinaesthetic (11/156-7.05%)

Figure 2 shows that gender distribution regarding the learning preferences. Visual modality was the preferred learning style among both males (48/122-30.78%) and females (74/122-47.40%).

*Figure 1: learning style preferences*



**Figure 2: Learning Style Preferences according to Gender**



## Discussion

Learning is a lifelong process and different people use their different sensory modalities to learn. MBBS students show diversity in age, sex, ethnicity, culture, learning preferences and learning styles. The present study provides a comprehensive profile of varied learning preferences in the second professional students at SSR Medical College, Mauritius. Based on Barsch inventory, the visual preference was the predominant and it was the predominant among the both groups. This finding is supported by Agnihotri et al., (2012).

It is seen that student motivation and performance improves when instructions are given to students according to their learning preferences and styles (Gardner, 1993). Identification of the different type of learning styles among students and development of appropriate learning approaches is the ultimate responsibility of the instructor for the effective teaching (Miller, 2001). In traditional lecture format, the information is given in the same manner to all the students in same pace without

seeing their comfort zone of learning. However, various studies have shown that students prefer multimodal learning style with one predominant style. Knowledge of students preferred learning style could help in developing the strategies regarding the delivering of content (Tanner & Allen, 2004). We compared the studies done by other countries. Results show diversity, which could be explained by the course taken by them, their pre-course education, their cultural background and their learning preferences. It is evident in the literature that most of the medical students prefer multimodal ways of learning (Samarakoon et al., 2013).

VAK model designed by Fleming also identifies three types of learners. It says that visual learners learn through seeing and are benefitted best in the classroom by seeing pictures, maps, charts, graphs and videos. They create vivid mental images to retain Information. Auditory -learners tend to learn through listening to lectures, speaking and presenting the facts in the form of seminar and debate. They try to think in words rather than pictures. Kinaesthetic learners learn through

moving, doing, touching and try to express themselves through movement. They have better sense of balance and eye-hand coordination. They find it difficult to sit still for long periods and better benefited by hands on experiments.

In medicine it is essential to identify all the learning styles among undergraduate students.

### Recommendations to the students

Students were informed about their preferred styles. We suggested to use graphics, colour codes to organize notes, use of different colours to highlight important points in text, use of flow charts and diagrams to visual learners. Auditory learners, were suggested to read aloud, use mnemonic devices to learn difficult things and use of verbal analogies. Kinaesthetic learners were guided in the form of making models or role play, write while reading, memorize while moving, counting on fingers, translating information into diagrams and listening of music while studying.

### Conclusion

Medical education is a constantly evolving process. It is developing everyday with new research, discoveries and ideas. Although our study highlights that visual learning is predominant learning style using Barsch inventory among second professional MBBS students further studies are required to see change in their learning style longitudinally.

### Conflict of interest:

The authors declare that there is no conflict of interest.

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## Annexure-1

## BARSCH LEARNING STYLE INVENTORY

*Place a check on the appropriate line after each statement*

S.N.		Often	Sometimes	Seldom
1.	Can remember more about a subject through listening than reading.			
2.	Follow written directions better than oral directions.			
3.	Like to write things down or take notes for visual review.			
4.	Bear down extremely hard with pen or pencil when writing.			
5.	Require explanations of diagrams, graphs, or visual directions.			
6.	Enjoy working with tools.			
7.	Am skilful and enjoy developing and making graphs and charts.			
8.	Can tell if sounds match when presented with pairs of sounds.			
9.	Remember best by writing things down several times.			
10.	Can understand and follow directions using maps.			
11.	Do better at academic subjects by listening to lectures and tapes.			
12.	Play with coins and keys in pockets.			
13.	Learn to spell better by repeating the letters out loud than by writing the word on paper.			
14.	Can better understand a news article by reading about it in the paper than by listening to the radio.			
15.	Chew gum, smoke, or snack during studies.			
16.	Feel the best way to remember is to picture it in my head.			
17.	Learn spelling by "finger spelling" the words.			
18.	Would rather listen to a good lecture or speech than read about the same material in a textbook.			
19.	Am good at working and solving jigsaw puzzles and mazes.			
20.	Grip objects in my hands during learning period.			
21.	Prefer listening to the news on the radio rather than reading about it in a newspaper.			
22.	Obtain information on an interesting subject by reading relevant materials.			
23.	Feel very comfortable touching others, hugging, handshaking, etc.			
24.	Follow oral directions better than written ones.			

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**Scoring procedures:**

Place the point value on the line next to its corresponding item number. Next, sum the values to arrive at your preference scores under each heading.

*OFTEN = 5 POINTS; SOMETIMES = 3 POINTS; SELDOM = 1 POINT*

<b>VISUAL</b>	<b>AUDITORY</b>	<b>TACTILE</b>
No. Pts.	No. Pts.	No. Pts.
2 _____	1 _____	4 _____
3 _____	5 _____	6 _____
7 _____	8 _____	9 _____
10 _____	11 _____	12 _____
14 _____	13 _____	15 _____
16 _____	18 _____	17 _____
19 _____	21 _____	20 _____
22 _____	24 _____	23 _____
<b>VPS =</b>	<b>APS =</b>	<b>TPS =</b>

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*VPS – Visual Preference Score; APS - Auditory Preference Score; TPS = Tactile Preference Score*