

Original Research Article

An assessment of the learning styles of first year medical and dental students of North Bengal Medical College, Darjeeling, West Bengal, India

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ABSTRACT

Background: Learning is the act of acquiring, modifying and reinforcing existing knowledge, behavior, skills and values. This phenomenon of learning is dominated by an individual's learning style. Learning style is a popular concept in psychology and education, and it refers to how a person learns best. This study aims to identify the Learning Styles of the first year MBBS and BDS students at NBMC by administering the questionnaire of the VARK model.

Methods: This cross-sectional study was performed in the Department of Physiology at North Bengal Medical College, West Bengal after. The VARK questionnaire 7.8 version was administered to 180 first year MBBS and BDS students from the 2017-2018 batch who had volunteered for the study. The Questionnaire consisted of 16 questions, along with a scoring chart. Students were allowed to choose more than one option. If in majority of the questions they opted for a single sensory modality they were considered as unimodal learners and if they chose multiple options, they were recognized as multimodal learners.

Results: The study showed 57% of the students to be multimodal learners and 43% to be unimodal learners. Read/Write was the most preferred (31.22%) sensory modality followed by kinesthetic mode (29.57%).

Conclusions: As majority of our students are multimodal learners teachers should incorporate active teaching and learning strategies to cater to all types of learners. Also, as the most preferred method is Read/Write which includes googling and the use of internet to browse for information, we must try and incorporate e-learning into our curriculum.

Keywords: Aural, Kinaesthetic, Multimodal, Read-write, Unimodal, Visual

INTRODUCTION

A very popular phrase in education is 'Learning Style'. Learning style of an individual refers to the method through which one learns the best. Accordingly, alterations in the various teaching methods can be designed and administered to bring out the maximum

results. Since the 1970s, one theory that has been popular among schoolteachers and pervasive in education research literature in the United Kingdom and the United States is the idea of "Learning Styles," the notion that people can be categorized into one or more 'styles' of learning (e.g., Visual, Auditory, etc) and that teachers can and should tailor their curriculum to suit individual

students. The idea is that students will learn more if they are exposed to material through approaches that specifically match their learning style.¹ The most widely accepted hypothesis about the instructional relevance of learning styles is the meshing hypothesis. According to which, instruction when provided in the preferred learning format of the learner, will visibly aid and augment the whole learning process. (Eg; for a "visual learner", emphasizing on the visual presentation of information).² Neuroscience research has also revealed that significant increase in learning can be accomplished when the learning environments cater to one's predominant learning styles.³

A significant amount of resources in the educational sphere are devoted to identifying the learning styles of the students. Therefore, it makes it a matter of study, whether students learn best when the teaching methods implemented in classrooms match their learning style or preferences. From existing research papers authors realize that the concept of 'learning styles and preferences' has changed in the last few years. It has also been observed that teaching methods have been subject to alterations in order to cater to the learning style of majority of the classroom population.

The advent of internet has revolutionized learning. Discovering and retrieving information has never been simpler. The digital generation of today or the 'Y' generation, is also affectionately called the Millennials. Their ideal learning environment involves fewer lectures and more collaboration with peers. Millennials are aces to 'Googling' & discovering information.⁴ Thus the goal of trainers should be to incorporate e-learning in their curriculum so as to make learning more enjoyable for students. The innovative use of educational technologies provides valuable opportunities for educators to design an enhanced, interactive, more inclusive and engaging curriculum. In particular, access to multimedia has provided an opportunity to present multiple representations of key content areas using a combination of text, video, aural and interaction to cater more effectively to the different learning styles and modal preferences.

In order to identify our students' learning style, we administered the NEIL FLEMING's VARK model. In Fleming's model -

- 'V' refers to 'Visual learning mode'. Sometimes also referred to as the graphic mode. It includes - patterns, diagrams, charts, graphs, flow charts and meaningful symbols like arrows, circles, hierarchies etc. However, it does not include - still pictures, photographs, movies, videos or Power-Point presentations.
- 'A' refers to 'Aural/Auditory learning mode'. It describes a preference for all information that is "heard or spoken." It includes - lectures, group discussions, radio, email, using mobile phones,

speaking, web-chat and talking things through. Aural preference includes reading out loud as well as talking to oneself.

- 'R' refers to the 'Read/Write' learning mode. Here the preference is for information displayed as words. It encompasses reading and writing in all its forms especially manuals, reports, essays and assignments. It includes - power-point presentations, using internet, Google, Wikipedia, visual symbols etc.
- 'K' refers to 'Kinesthetic' learning mode. It involves perception of the topic via personal experience or through practice (simulated or real). It includes - learning from personal experiences, case studies, demonstrations, simulations, videos, movies of "real" things. The dictum is if it can be grasped, held, tasted, or felt it will probably be included in this mode.^{5,6}

Unimodal and multimodal learners

When students express a strong preference for any singular sensory mode of learning, they are referred to as unimodal learners. Whereas when they show a preference to learn by using a combination of two or more modalities they are referred to as multimodal learners.⁷

The aim of the present study is to identify the preferred learning style of 1st years MBBS and BDS students of our institution and to help teachers modify and incorporate the preferred learning modality of students so as to give maximum benefit to students.

METHODS

This descriptive, cross sectional study was performed in the Department of Physiology, North Bengal Medical College, West Bengal after obtaining the Institutional Ethics committee's approval. The target population included all the first year MBBS and BDS students of the North Bengal Medical College. A total of 180 students volunteered for the study. A written consent was taken from these volunteers. The data for this study was collected over a period of three months from 01/02/17 to 29/04/17, after completion of their first semester examination. The instrument used for the study was the 7.8 version of the VARK questionnaire. This questionnaire was administered individually to the identified group of 180 students. The questionnaire consisted of 16 questions and each question had four options. Instructions to all the different groups of students was given by the same teacher. It was clearly explained to the students that they could choose more than one option for a given question if they found it appropriate. The guidelines provided in the VARK website was used to find the VARK category that each of their answers corresponded to. When students opted for a single sensory modality to answer all the questions they were considered as unimodal learners and when they chose more than one option, they were classified as multimodal learners.

Data was then compiled and charted in Microsoft excel for statistical analysis. Descriptive statistics was used to analyze the pattern of distribution of different learning mode preferences.

The inclusion criteria for this study was that all the first year MBBS and dental students studying in North Bengal Medical College, who willingly volunteered were included in our study. The exclusion criteria used was that any student who refused to volunteer or who wanted to leave the study during the course of data collection was excluded from the study.

RESULTS

The analysis of the completed questionnaires submitted by the 180 first year MBBS and BDS students showed variations in their learning modal preferences.

Figure 1 presents the percentage of the different types of learners in our study. Of the 180 students 53%(103 students) preferred multiple learning modalities while the rest of 43%(77 students) showed a preference towards unimodal mode of learning.

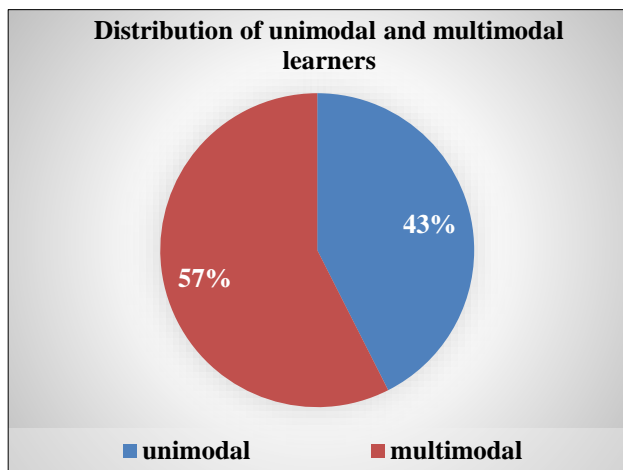


Figure 1: Pattern of the learners in the study.

Cumulative analysis of the learning modalities among the Unimodal and multimodal learners has been explained in Table 1. Analysis showed that the preference for the different sensory modalities ranged from 18.54% for the visual method, 20.65% for Aural method, 31.22% for the Read and Write method and 29.57% for the Kinesthetic method.

Table 1: Percentage distribution of different learning modalities among the 180 students.

Type of assessment	Modalities	%
Cumulative	V	18.54
	A	20.65
	R	31.22
	K	29.57

Table 2 shows the detailed assessment of the 43% of students (77 of 180 students) who showed a preference towards Unimodal learning style. Here it seen that 32.5% (25 students) opted for Read-Write mode. Second most preferred mode was the Kinesthetic mode 29.9% (23 students). Out of 77 students only 11 students opted for the visual mode, which is the least preferred.

Table 2: Percentage distribution of different learning modalities among unimodal learners.

Type of preference	Modality	No. of participants	% of students
Unimodal	V	11	14.3
	A	18	23.4
	R	25	32.5
	K	23	29.9
Total		77	

Learning preferences of students who opted for the Multimodal learning style has been displayed in Table 3. A total of 103 students preferred the multimodal style of learning. Maximum number of students (31) preferred the Read-Write mode which is 30.1%, 29.1% of students (30) preferred the kinesthetic mode followed by visual 22.3% (23 Students) and 18.4% (19 Students) the aural mode, which is the least preferred.

Table 3: Percentage distribution of different learning modalities among multimodal learners.

Type of preference	Modality	No. of participants	% of students
Multimodal	V	23	22.3
	A	19	18.4
	R	31	30.1
	K	30	29.1
Total		103	

DISCUSSION

Understanding the learning style of students is a valuable skill in education. It can be used as a tool to identify and solve the learning problems of students so that they can become effective learners. Hence, to assess the learning style of students, we conducted a study among the first year MBBS and BDS students of North Bengal Medical College, using the VARK questionnaire.

The study revealed that the majority of students preferred the Multimodal (57%) learning method as compared to the Unimodal Method (43%).

The cumulative analysis of both the unimodal and the multimodal method revealed that students showed the highest preference for the Read and Write method (31.22%), followed by the Kinesthetic method (29.57%). This was followed by the Aural (20.65%) and Visual (18.54%) methods. This is somewhat similar to the

pattern found among students who showed a preference towards unimodal learning style, where again Read and Write (32.5%) predominated over the Kinesthetic method (29.9%). Also, when only the multimodal learner was evaluated, a similar pattern was observed where again Read-Write was the most preferred (30.1%) modality followed closely by Kinesthetic mode (29.1%)

It is clear from this study that majority of these undergraduate medical and dental students are multimodal learners and have the highest preference for the Read and Write method followed by the Kinesthetic method which is supported by the unimodal as well as the cumulative analysis.

The findings of our study, which shows that the majority of students are multimodal learners (57%) is seen to be in agreement with other studies that have reported a predominant multimodal style of learning among medical students across the world.⁷⁻¹⁰ A study by Breckler and co-workers, demonstrated a multimodal style preference of 60% among undergraduate and postgraduate students.⁷ Ramirez et al, also reported a predominance of 68.9% multimodal learners out of 312 undergraduate students.⁸ Baykan and Nacar, reported 63.9% multimodality and 36.1% unimodality preference among medical students in Turkey using a Turkish version of the VARK questionnaire.⁹ Kharb et al, indicated a 61% multimodality preference with 39% being unimodal learners among the first year medical students in India using the VARK study.¹⁰

The most preferred learning style by both the unimodal and multimodal learners was Read and Write (31.22%) followed by Kinesthetic mode (29.57%). This study findings are in accordance with another study conducted by Ojeh N, et al, which also showed a preference among both unimodal and multimodal learners towards Read/Write (33.8%) followed by Kinesthetic (32.5%) mode.¹¹ Authors results are also comparable to the results of another study done on the first year medical students from Indiana, USA where students showed greater preference to read and write when compared to kinesthetic mode of learning.¹²

The Read and Write method involves learning through gathering of text-based information and it also includes the use of power-point, Internet, Google, Wikipedia and Visual Symbols. The digital generation of today is affectionately called the MILLENNIALS. It is also called the 'y' generation and the 'millennials' are aces to 'Googling' and discovering information.⁴

Even today in India, didactic teaching forms the backbone of teaching methodology implemented in the senior school level. And with digitalization and use of Smart Boards, Power point slides containing written material, pictures and diagrams, even didactic lectures have become quite interactive and appealing to the students. Also, with the introduction of PBL (Problem

Based Learning) and guiding students towards e-Learning it is rather obvious why Read and Write was the most preferred (31.22%) method by the 1st year medical and dental students.

In this study, not lagging far behind, was the kinesthetic mode of learning (29.57%). However, there are a number of studies in which students have shown a greater preference for the kinesthetic mode over the other learning methods.¹³⁻¹⁵ Lujan HL, in Detroit, Ubah JN, in Nigera, and Choudhary R and Dullo P, in India; in their studies on learning preference of medical students found kinesthetic learning to be the most preferred unimodal learning preference.¹⁴⁻¹⁶ Breckler J. et al, in San Francisco in their study on undergraduate physiology students found Kinesthetic mode to be the most preferred choice 69.3%, followed by the R (64.7%), V (50.5%), and A (48.6%).⁷

In today's era of digitalisation, introduction of countless teaching aids, along with the fact that teachers are being trained for teaching with the aid of different gadgets, a blended, wholesome teaching approach is being adopted in most schools and universities. Hence students are being exposed to different teaching methodologies and are able to learn by the method which suits them best. Multimodal learning habit develops among students as they have to prepare themselves for admission into different colleges. During this preparatory period, they use multiple modes for acquiring knowledge like attending lectures, reading textbooks, practicing test papers, googling, watching videos, making their own notes, etc.

Understanding the learning style preferences of our students will guide us to improvise our teaching strategies. Since the majority of our learners are multimodal so our teaching should preferably involve active learning strategies. Any learning strategy that caters to all types of learners is an active learning strategy. Moreover, active learning strategies have been used to enhance problem solving, decision-making and critical thinking skills as well as group participation, motivation and enthusiasm.¹⁶

Students have their own preferred learning styles and a number of factors tend to affect their learning and teachers need to recognize that every student does not learn in the same way.¹⁷ Thus teachers should try to incorporate the different modalities while preparing for the class so that maximum number of students benefit. It is important to emphasize that students will remember only 20% of what they read, 30% of what they hear, 40% of what they see and 50% of what they say and 60% of what they do. This average increases to 90% for information they say, hear, see and do.^{3,15}

Even though the pre-clinical phase practices a blended teaching approach, the predominant mode of teaching is the traditional didactic lecture format, which has long

been used in many tertiary institutions due to the ease of passing the information and covering the content. This form of teaching aids the Read-Write, Aural and Visual learners as PowerPoint slides are utilized often containing written material, pictures and diagrams.

Study involves only one limitations that is this study would have been more useful if authors could have simultaneously carried out the same study with the final year MBBS students so that learning styles could be compared and try to understand if the learning methods change over time.

CONCLUSION

From the findings of our study it can be concluded that majority of our students prefer multimodal methods of learning and are most comfortable with the Read and Write method. Following closely behind are the Kinesthetic, Aural and the Visual method of learning, respectively. As majority are multimodal learners it's advisable that teachers incorporate active teaching and learning strategies to cater to all types of learners. Also to continuously engage the interest of these "millennials" it would be advisable to incorporate more and more e-learning through online courses, online tests, etc in classroom teaching regimes. The results of this study might help the teachers to modify their teaching style and also to devise a proper learning strategy for their students.

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