

# Learning Style among Undergraduate Medical Students of Different Phases

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## Abstract

**Introduction:** Knowing the learning style of our students will enable the facilitators for a better curriculum planning. We are not aware, whether there is a difference in the learning style of students across different regions and countries. As this gap in our knowledge exists, this study was planned.

**Objective:** To identify the learning style of undergraduate medical students from Phases I to III.

**Materials and Methods:** Study design: This was an observational study. Study setting: This study was conducted at Government Medical College, Kottayam. Data collection: Visual, auditory, read/write, and kinesthetic questionnaire-7.8 and a peer reviewed set of questionnaire were collected.

**Results and Conclusion:** Students generally prefer polymodal learning. Auditory is the most preferred mode. There is no gender difference in learning styles. Students are interested to learn psychomotor, affective, and communication skills.

**Key words:** Learning style, Visual; auditory; read/write; and kinesthetic, Auditory, Polymodal, Skills

## INTRODUCTION

Styles of thinking and learning are as important as intellectual ability and ignoring it will put teaching and learning to jeopardy. Learning style is an individual's unique approach to learning based on strength, weaknesses, and preferences. It is an overall pattern providing direction to teaching and learning. Styles influence how students learn, teachers teach, and how the two interact. Learning style is defined as the composite characteristic, cognitive, affective, and physiological characters that serve as stable indicators of how a learner perceives, interacts with, and responds to the learning environment.<sup>1,2</sup> Educational researchers supposed that everyone had different learning styles, and if the method of information delivery to them conforms to their particular learning style, they

will learn better. Students' learning style is one of the most important factors for academic and career success. Learning style could be a set of factors, behaviors, and attitudes facilitating learning for an individual in a given situation. Style can be considered as a contextual variable because what the learner brings to the learning experience is as much a part of the context as are the important features of the experience itself.

An important quality of a successful doctor is his/her ability to be a lifelong learner. Thus, for both academic achievement and career, medical students should be lifelong learners. Identifying learning styles leads to most effective teaching-learning methods. Self-learning also will become more effective if learning style is identified. Knowing the learning style of our students will enable the facilitators for a better curriculum planning. We are not aware, whether there is a difference in the learning style of students across different regions and countries. As this gap in our knowledge exists, this study was planned.

## Objective

The aim of this study is to identify the learning style of undergraduate medical students from Phases I to III.

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## MATERIALS AND METHODS

### Study Design

This was an observational study.

### Study Setting

This study was conducted at Government Medical College, Kottayam.

### Sampling

Convenient sampling - Participation in the study was voluntary and anonymous. Verbal consent was taken.

### Study Period

1-month after getting IRB Clearance (August 2016).

### Data Collection

VARK questionnaire-7.8. (VARK - An acronym for visual,<sup>3</sup> auditory, read/write, and kinesthetic) international validated version containing 16 questions and an additional 8 questions which are peer validated were used for collecting data from 100 undergraduate medical students; one-third from each phase. The respondents were permitted to omit a question or choose more than one response. They had the freedom of not to hand back the questionnaire.

### Data Analysis

Data from VARK responses were decoded into visual, auditory, read/write, and kinesthetic or mixed. VARK score was calculated by dividing the number of responses in a mode by the number of students.

Responses of peer-validated questionnaire were handled by simple summation statistics.

## RESULTS

Pro forma and questionnaires were distributed to 100 students, and 94 students responded. The responses obtained were decoded to VARK, and VARK score was calculated. After calculating the VARK score, it was observed that there is no gender difference between the students (Tables 1 and 2).

**Table 1: VARK score phase wise**

Students	V	A	R	K	Bimodal	Trimodal	Quad modal
Phase I	2.53	6.15	3.68	5.12	1.10	0.16	0
Phase II	3.29	9.25	4.13	6.23	4.74	0.39	0.09
Phase III	5.29	6	4.71	6.16	4.25	0.45	0

VARK: Visual, auditory, read/write, and kinesthetic

**Table 2: Reading methods**

Time preference	Early morning	Evening	Late night	Available time
Percentage	36	27	39	20
Method preference	Alone	Pairs	Group	Opportunistic
Percentage	69	22	16	20
Duration of daily reading	Less than 30 min	0.5-1 h	1-2 h	More than 2 h
Percentage	23	13	36	32
Reading material	Lecture notes (self)	Single text	Notes from seniors	Multiple texts
Percentage	26	70	1	26

## DISCUSSION

Students' approach to learning has been a topic of interest for medical educators for quite some time. Although everybody uses all learning mode, depending on the circumstances, the relative ease and interest for a given learning challenge or discipline will differ according to the predominant learning mode involved. Learning style is a term used to the methods of gathering, processing, interpreting, organizing, and thinking about information.

The ability to visit all learning modes is important to medical students. They have to master the basic sciences for which conceptualization and reflection are required as well as the interpersonal relationships that promote the ability to connect empathetically with the patient, effectively and efficiently in critical circumstances.

Shetty analyzed the learning pattern of 1<sup>st</sup> year medical students by VARK test and found that majority preferred to learn by multiple modalities - trimodal for 5% and quadruple modal for 95%.<sup>4</sup> Findings in this study are different, bimodal, trimodal are less, and quad modal does not exist in the first phase.

Slater *et al.*<sup>5</sup> addressed the question of gender difference and learning style preference of 1<sup>st</sup> year medical students using VARK questionnaire and reported both male and female students preferred multiple modes of information presentation, and there was no statistically significant difference between the two groups. The present study agrees with this.

Bitran *et al.*<sup>6</sup> using Kolbe's learning style inventory found that medical students changed their preferred way of learning, evolving from abstract passive, reflexive learners to abstract active learners. This shows an adaptation to the

curriculum evolving from lecture-based teacher-centered approach to problem-based student-centered approach. This is indirectly reflected in our study, where the students of, second and final phase were preferring bi and trimodal which aids in problem solving. "This method is different from first phase approach.

Anu *et al.* assessed the learning style of students of various medical colleges in Tamil Nadu and they also found similar results, in a group of 450 1<sup>st</sup> year and 2<sup>nd</sup> year students, where about 70.6% preferred multiple learning styles by a different inventory of VAK questionnaire.<sup>7</sup>

Renganath and Priya found that though majority were multimodal learners, most preferred kinesthetic method study.<sup>8</sup> Of the 128 preclinical medical students, 61% were multimodal, 29% quad modal; among unimodal, kinesthetic forms the majority of 56.8%. We found that the majority were multimodal, but auditory ranked first in almost all the phases and quad modal is the least common.

Samarakoon<sup>9</sup> compared 1<sup>st</sup> year, final years and residents and found both 1<sup>st</sup> and final years have multimodal learning preferences, of 69.9% and 67.5%, respectively. They found that multimodal with auditory preference is seen in preclinical, which is the similar finding in this study also. They have also found that the fundamental learning style do not change over the years.

Prithishkumar and Michael<sup>10</sup> also found multimodal learning preferences than unimodal, 79 versus 12 in 1<sup>st</sup> year medical students.

In the present study, analysis of VARK questionnaire reveals that in the first phase of studies, visual and polymodal learning are less. The majority of them learn by auditory, reading, and kinesthetic modes. As the students climb up the phases, visual and polymodal are increasing. Auditory and kinesthetic are remaining almost at the same level. No difference was found between boys and girls as far as learning styles were concerned. All the studies referred here are showing similar results as far as gender difference is concerned. Studies done by authors like Prithishkumar and Michael,<sup>10</sup> Lujan and DiCarlo,<sup>11</sup> and Kharb *et al.*<sup>12</sup> found that first-phase medical students prefer polymodal style of learning.

In the present series, in the first phase, though the students (no-32) were having polymodal preference, they belong to the Type-1 polymodal group, meaning that they used all the modalities, but only a single preference was noticeable to a specific situation. On taking the VARK score, auditory preference was standing out with 6.15, followed by kinesthetic and the least was for visual with read/

write in between. In the first phase, polymodal should be encouraged for making the learning easier.

In the second phase, of 31 students, auditory ranked very high of 9.25 score followed by kinesthetic of 6.23; next came read/write (4.13) and the least preferred mode was visual (3.29).

In the final or third phase, of 24 students, score was highest for kinesthetic of 6.16, followed by auditory of 6, visual preference of 5.29, and last came read/write. For bimodal, the score was 4.71 in VR, followed by VA of score 4.25. Trimodal was 0.45 and quad modal 0.21. This shows the importance of lecture classes for the students even though their preference when asked for is less for lectures.

When duration of daily reading was considered, it was observed that in the first phase, majority of students are reading for more than 2 h daily. Duration of reading is declining thereafter. Early morning and late night are the preferred timings for reading, and majority are interested to read alone. Single text is the preferred reading material.

It is worth mentioning that for more than 50% of students, learning is not happening during lecture classes. This is their perception which is not in line with findings of VARK. This direct response against lecture is a biased response. Learning happens whenever a skill is imparted. Similarly, students are concentrating whenever an affective domain is stressed by the teacher or when communication skill is addressed in the classes. Learning happens in such situations. These opinions are nearing 90%. These observations show that students are interested in learning psychomotor, affective, and communication skills.

## CONCLUSIONS

- The medical students of all phases use polymodal style for leaning. Students of Phase-1 are Type-1 multimodal and students of other two phases are Type-2 multimodal.
- Among the different modes, auditory is the most preferred one in all phases. This shows the importance of teacher-assisted small and large group learning opportunities.
- This fact is contradicted using the peer-reviewed questionnaire which may be a biased response as it is directly asked.
- Almost 90% of students are learning when a skill is taught or whenever affective domain is addressed. About 90% learning is happening when communication is taught.

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