

# Changes in the Learning Style in Medical Students during Their MBBS Course

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**Abstract-** Learning style is the way students begin to focus on the process, internalize, and remember new and difficult information. In the medical college, students of different culture, background, environment and knowledge have varied learning styles and approaches. We observed that our I year MBBS students predominantly had unimodal learning style. In the later years of their course they examine patients and have more interactive sessions. We decided to evaluate if this change in teaching learning methods influenced their learning style. This study was conducted by department of physiology at Sri Devaraj Urs Medical College Tamaka, Kolar. The learning style of the students was determined by using visual, auditory, kinesthetic (VAK) questionnaire. 199 students who were involved in the study during the I year MBBS course were administered questionnaire when they were in final year to assess their learning style. We have observed that in the I year MBBS the unimodal learning style was 62.31%, bi modal was 25.62% and trimodal 12.06% but during the final MBBS the learning style of unimodal was 47.73% bimodal was 30.15% and trimodal was 22.11%. The multi modal learning style has increased from 12.06% to 22.11% in final year MBBS. This could be because, in their I year teaching learning method is confined to blackboard and question answer type. From II year onwards they are exposed to patient interview, clinical examination, problem solving, reasoning, interactive sessions that stimulate two or more modalities of learning, and they shift from the unimodal to multimodal learning style.

**Index Terms-** Learning style, unimodal, multimodal, visual, auditory, kinesthetic

## I. INTRODUCTION

Learning style is the way in which students begin to focus on the process, internalize and remember new and difficult information. Keefe has stated learning style is “the composite of cognitive, affective and physiological characteristics that serve as relatively stable indicators of how a learner perceives, interacts and responds to the learning environment”<sup>[1]</sup> The new information learnt can be categorized according to specific learning styles. In the present scenario there are many models that describe learning style or learning preferences.<sup>[2]</sup> Educators and teachers have a great deal of interest in this subject as the approach to teaching learning methods will be greatly influenced by this.<sup>[3, 4, 5]</sup> In most professional colleges, students come from different states, culture, environment and background

knowledge. This results in students having varied learning style and approaches.

Characterization of learning styles depends on the sensory modality used by the learner to perceive new information. The sensory modality used may be predominantly visual, aural or kinaesthetic. Visual learners learn by seeing drawings, pictures and other image-rich teaching tools, auditory learners learn by listening to lectures, exploring material during discussions, and talking through ideas and kinesthetic learners learn through touching and experiences that emphasize doing, physical involvement, and manipulation of objects. VAK is an acronym that stands for these three major sensory modes of learning, which can be assessed by the popular Fleming’s VAK questionnaire.

## II. AIM

The aim of our study was to assess the learning styles of our students when they enter medical school and to see if their learning styles have changed in their clinical years of study where they spend a lot of time interviewing and examining patients.

## III. MATERIALS AND METHODOLOGY

This study was conducted by department of physiology at Sri Devaraj Urs Medical College, Kolar after obtaining institutional ethics committee approval. 199 MBBS students volunteered for the study and written consent was taken. The VAK questionnaire was administered individually to the students when they joined the college. Questionnaire consisted of 15 questions with A for auditory, B for kinesthetic and C for visual as options.. The students were allowed to choose more than one option if they deemed . The students were categorized as auditory, kinaesthetic or visual learner depending on the predominant option they choose. If they opted a single sensory preference they were considered as unimodal, two preferences as bimodal and more than two as tri/multimodal. The questionnaire was administered to the same 199 students again when they were in final year MBBS and their learning styles were assessed .The statistical analysis was done using Stat Pac statistic version 4-2011.

## IV. RESULTS

Completed questionnaire was obtained from 199 students of which 124 (62.31%). students in the 1<sup>st</sup> year MBBS preferred

unimodal learning style Among them 56.45% (70) were visual learners, 11.29 % (14) were auditory, and 32.25% (40) were kinesthetic learners. 25.62% (51) had bimodal learning style, of which 64.7 % ( 33 ) were visual and kinesthetic learners,31.37% (16) were visual and auditory learners and 3.9 % ( 2) were auditory and kinesthetic learners. The rest12.06 % (24) students preferred tri modal. In the final year MBBS of the 199 participants 95 (47.73%) ) preferred unimodal learning style of whom 49.47%(47 ) were visual learners, 6.31%(6) were auditory, and 44.21% (42 ) were kinesthetic learners. 30.15% (60 ) had bimodal learning style, with 65 % ( 39 ) being visual and kinesthetic learners. 31.66% (19) visual and auditory learners

and 3.33% (2 ) auditory and kinesthetic, learners. The rest of the 44 students 22.11% preferred tri modal. In the first year of their course there was statically significant(p=0.0004) difference between unimodal and multimodal learning styles, but the same was not observed in the final year. When comparison was made in three learning styles between the students when they were in first and final year there was no statistical significance.

**Table.1 Comparison of learning style by students during 1<sup>st</sup> and Final year MBBS course in the table rearrange**

VAK GROUPING	VAK MODALITY	I YEAR MBBS NO OF STUDENTS	TOTAL	PERCENTAGE	FINAL YEAR MBBS NO OF STUDENTS	TOTAL	PERCENTAGE
UNIMODAL	V	71	116	62.31	47	95	47.73
	A	15			6		
	K	40			42		
BIMODAL	AK	02	51	25.62	02	60	30.15
	VK	33			39		
	VA	16			19		
TRIMODAL	VAK	24	24	12.06	44	44	22.11

V. DISCUSSION

Knowing the learning style of students is a valuable skill in education, which may help educators identify and solve learning problems of students. We have observed that among the unimodal learners, there were more kinesthetic learners compared to visual and auditory.

In the present study multimodal learning style has been preferred by 22.11% in final year when compared to 12.06% in the 1st year. The unimodal learning style has reduced from 62.31% in the 1st year to 47.73% in the final year, which infers that the students prefer receive information from different modes ,hence most students may benefit from active learning strategies over the traditional lecture format where lot of emphasis is given on black board teaching and question answering. But when students are exposed to various learning methods like problem solving, interactive sessions,interaction and examination of patients,it stimulates two or more modalities

of learning and hence the learning style shifts from unimodal to multimodal. 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 [8] as seen in our study. **Figure 1.** Many studies have shown that students learn better by active learning strategies because active learning strategies help all type of learners. [9, 10, 11] Discussion in class, cooperative learning exercises, role-plays, simulations, debates, and games are active learning strategies that can be used which promotes enthusiasm and motivation[9] . It involves thinking through reasoning and improves problem solving and decision making skills which can be improved from the beginning of the course itself. Teaching methods should include combinations of audio visual aids to help them shift from unimodal to multimodal learning style. Hence it is thought that discussion in class role play and debates can be introduced to the students as they enter the course to make them multimodal learners. Therefore in our study we found that the multimodal learners in the final MBBS were found to be 22.1% which was 12.06% in the final year hence we can come to a conclusion that

to bring up the multimodal style we have to drastically reduce the lecture hours and prepare more problem based curriculum which will help the future student to become a multimodal learner.

#### CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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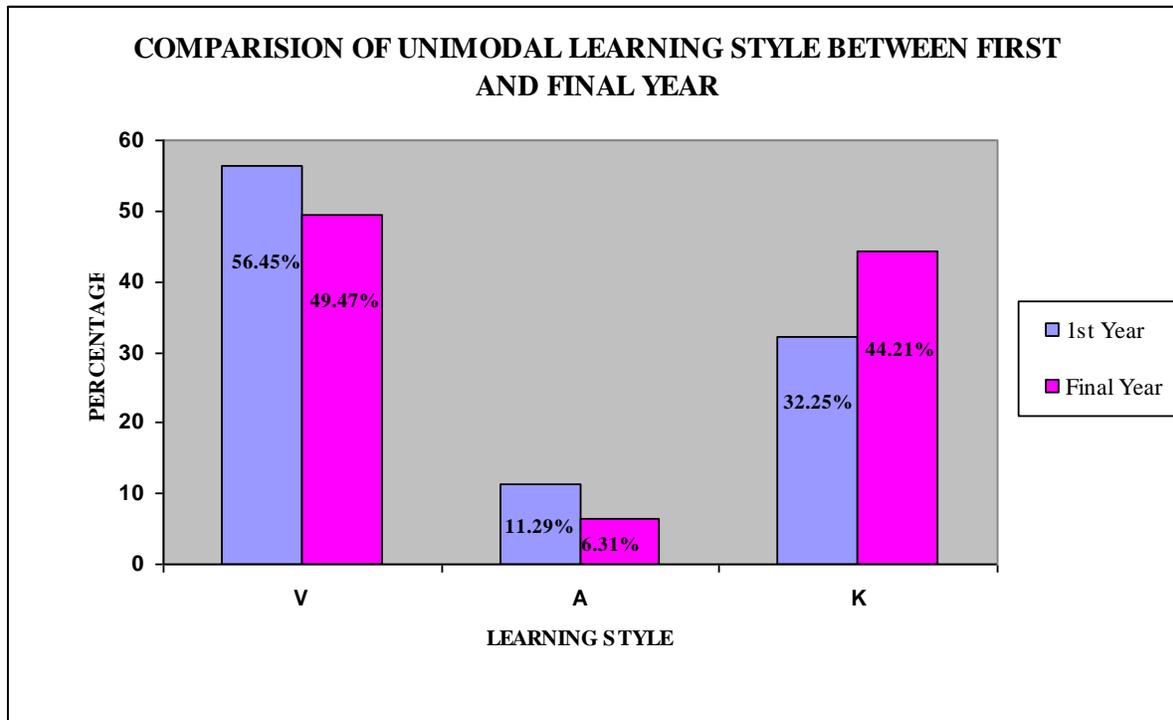


Figure 1: Comparison of unimodal learning style between first and final year students

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