



Original Research Article

## Learning Styles among the First Year Dental Students

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### ABSTRACT

Students have preferences for the ways in which they receive information. Learning style is defined as the learners' preferred mode of learning in terms of the sensory modality by which they prefer to take in new information. Each learner has distinct and consistent preferred ways of perception, organization and retention. The visual, auditory & kinesthetic (VAK) questionnaire identifies student's preferences for particular modes of information presentation. We administered the VAK questionnaire to our first-year dental students studying at Vinayaka Mission's Dental College, Salem and sixty six out of hundred students (66%) returned the completed questionnaire. Most of the students 57.96 % of the students preferred a single mode of information presentation. Among these students, 17.24 % preferred visual (learning from graphs, charts, and flow diagrams), 22.62 % preferred auditory (learning from speech), and 18.1% preferred kinesthetic (learning from touch, smell, and taste.). In contrast, 42.04 % students preferred multiple modes [two modes (37.07%), three modes (4.97 %)] of information presentation. Knowing the students preferred modes can 1. Help to avoid mismatches in the styles between instructors and learners. 2. Assist students to build confidence and more effectively manage their own learning 3. Overcome the predisposition to treat all students in a similar way, and 4. Motivate teachers to move from their preferred mode(s) to using others.

**Key words:** visual, auditory, kinesthetic, learning modes, dental education.

### INTRODUCTION

Learning is acquisition of information & memory is the retention, storage and retrieval of the information. [1] For memory to be consolidated there has to be repeated learning. While learning each of us have our own preferences for the way in which we receive information. A learning style or preference is the complex manner in which, and conditions under which, learners

most efficiently and most effectively perceive, process, store, and recall what they are attempting to learn. [2]

If we are able to find out the learning styles of the students, accordingly we can deliver our lectures more effectively. In higher education the students represent a broad spectrum in terms of ethnics, culture, background, age, experience, environment states, nation, level of preparedness &

knowledge along with different learning styles and skills. This diversity is welcomed & addressed; however, it also presents a challenge for instructors to meet the educational needs of all students. Though the students have different learning styles, it is the responsibility of the instructor to address this diversity to develop & adapt appropriate learning approaches in order to motivate and improve their performance in academics. [3]

### ***Why to Look at Learning Style?***

First and foremost we need to be aware of learning styles to avoid mismatches in the styles between instructors and learners. When we teach using our own preferred style not all of our students will have the identical style. Inevitably learning will be enhanced in some and diminished for some. Secondly, we need to assist our students to identify their learning styles in order that they to build confidence and more effectively manage their own learning. Thirdly, their our own preferred learning style can influence our approach to planning, implementing and evaluating instruction, it is equally important for us to be conscious of our style.

Many learning style tests are available for example, those from Dunn, Kolb, Keefe, Gregorc, Felder Fleming and Soloman. Fleming introduced VAK questionnaire to test the learning preferences. [4] Though learners use all of these sensory modes of learning, one mode is often dominant and preferred. For example, visual learners learn through seeing drawings, pictures, and other image-rich teaching tools. Auditory learners learn by listening to lectures, exploring material through discussions, and talking through ideas whereas kinesthetic learners learn through touching and experiences that emphasize doing, physical involvement, and manipulation of objects.

VAK is an acronym that stands for three major sensory modes of learning: visual, aural, and kinesthetic, depending on the neural system with which a learner prefers to receive information. Thus VAK is a perceptual, instructional preference model that categorizes learning by sensory preferences. The visual, auditory, kinesthetic (VAK) questionnaire identifies student's preferences for particular modes of information presentation. So the present study is designed to assess the different learning styles among the first year dental students & to compare among them.

### **MATERIALS & METHODS**

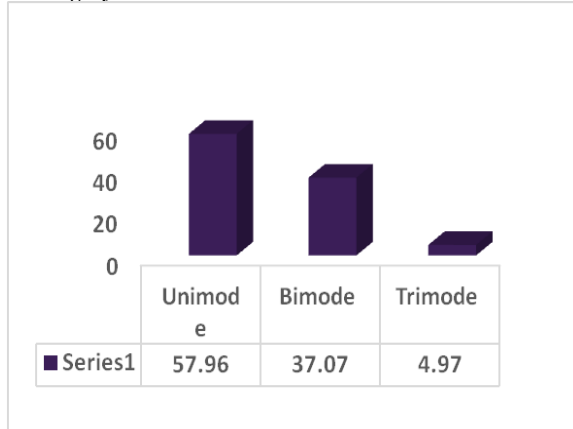
Hundred first year dental students studying at Vinayaka Mission's Dental College, Salem were included for the study. Informed consent was taken from the participants. The study was approved by Institutional Ethical Committee, Vinayaka Mission's Kirupananda Variyar Medical College, Salem. Learning styles of the students were determined by Fleming's VAK questionnaire. Questionnaire consisted of 30 questions with A for auditory, B for kinesthetic and C for visual as options. The VAK questionnaire was administered individually during renal component of medical physiology class to the students. The VAK questionnaire with instructions can be obtained online free of charge. The students were allowed to choose best mode they prefer. The students were then categorized as visual, auditory or kinesthetic learner depending on the predominant option they choose. If they preferred a single sensory modality then they were considered as unimodal, two preferences as bimodal and three as trimodal learners.

Analysis: The number of students who preferred each mode of learning was divided by the total number of responses to determine the percentage of students in each category.

## RESULTS

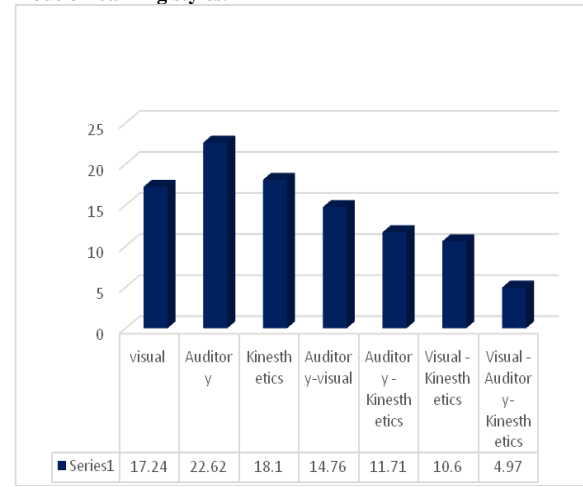
Figure 1 Shows percentage of students who preferred single mode (57.96 %), two modes (37.07 %), and three modes (4.97%) of information presentation. Most of the students (57.96 %) preferred single mode of information presentation with visual (17.24%), auditory (22.62%) & kinesthetic (18.1%). Among the sixty six students, 42.04% students preferred more than one (multiple) mode of information presentation; 37.07% preferred two modes, and 4.97% preferred three modes.

**Fig 1: Percentage of students who preferred different modes of learning style.**



Among the students who preferred two modes of information presentation, 14.76% students preferred visual and auditory, 11.71% students preferred auditory and kinesthetic, and 10.6% students preferred visual and kinesthetic. Figure 2 Shows Percentage of Dental Students who preferred different mode of learning styles. [Single mode of information with visual (12%), auditory (14.3%), kinesthetic (11.9%) & two modes of information with visual and auditory (14.6 %), auditory and kinesthetic (11.5%), and visual and kinesthetic (10.6%) and 4.97% preferred all the three modes.]

**Fig 2: Percentage of Dental Students who preferred different mode of learning styles.**



## DISCUSSION

Learning and memory are the two sides of a coin, without learning memory cannot be consolidated. Learning style is defined as the learners' preferred mode of learning in terms of the sensory modality by which they prefer to take in new information. The transition period from undergraduate to higher education; dental can be difficult for students because of the dramatic increase in the volume of content and mode they leaned in schooling and Pre University. As this continues to happen, students begin to lose their confidence and resent school because of repeated failure. [5] Learning problems are not related to the difficulty of the subject matter but rather to the type and level of cognitive process required to learn the material. [6]

Keefe stated learning style as “the composite of cognitive, affective and physiological domains which are influenced by environmental factors that serve as the most powerful leverage, available to educators to analyze, motivate, and assist students. It is the foundation of a truly modern approach to education. [7]

Cognitive styles are the information processing habits of an individual. These represent a person's typical modes of

perceiving, thinking, remembering, and problem solving. [8] External information is received through the network of perceptual modalities. This information is the raw data that the brain processes for learning to occur. If there is a deficit in a perceptual modality the brain will receive incorrect or incomplete data and limited or inappropriate learning will occur. [6]

Affective components of learning styles include personality and emotional characteristics related to the areas of persistence, responsibility, motivation and peer interaction. [5] The physiological components of learning styles are biologically based modes of response that are founded on sex-related differences, personal nutrition and health, and reactions to the physical environment. [8]

According to Dunn, Beaudry, and Klavas, "Learning style is a biologically and developmentally imposed set of personal characteristics that make the same teaching method effective for some and ineffective for others." Every person has a learning style-it's as individual as a signature. [9] Models, inventories, surveys, and instruments of all kinds were developed to quantify, measure, and examine students' ways of perceiving and absorbing information.

One should recognize that students come to the classes with diverse ways of perceiving information and that students need suitable climates in order to perform to their maximum ability. Learning style is not simply a concept; it is the key to improve school climate. All students do not achievement the same, and at the same time all students do not learn in the same way. In all facets of education, students must be given the opportunity to explore their learning capabilities to succeed academically. Carbo and Hodges explain that "Students who understand and then are provided opportunities to make use of their

learning styles tend to feel valued, respected, and empowered." [10] Hein and Bundy similarly stated, "Acknowledgement of students' individual learning styles can play a critical role in the learning process. [11] Furthermore, the use of formal learning style assessments can provide useful information that benefits the student as well as the instructor."

In our study, we administered the VAK questionnaire to our first-year dental students to determine their preferred modes of information presentation. Sixty six students of hundred students (66%) returned the completed questionnaire. Most of the students preferred a single mode (57.96 %) of information presentation (visual, auditory or kinesthetic). Among the students who preferred a single mode of information presentation, only 17.24% of the students preferred the visual. These students prefer information to arrive in the form of graphs, charts, and flow diagrams. They are sensitive to different or changing spatial arrangements and can work easily with symbols. Similarly, only 22.62% of the students preferred receiving information by speech, which arrives to the learner 's ear and is therefore coded as auditory by the questionnaire. Only 18.1% of the students preferred their learning by using all their senses, including preferred their learning by using all their senses, including touch, hearing, smell, taste, and sight. This group was described as kinesthetic. These students prefer concrete, multisensory experiences in their learning. Although learning by doing matches their needs, they can easily learn conceptual and abstract material provided it arrives with suitable analogies, real-life examples, or metaphors. [11] Among the sixty seven students 42.04% preferred more than one (multiple) modes of information presentation. 37.07% preferred two modes of information presentation with visual and auditory 14.76 %, auditory and kinesthetic

11.71% & visual and kinesthetic 10.6%. Only 4.7% students preferred all the three visual, auditory, and kinesthetic modes of information presentation

Teachers and students feel most comfortable when they are working within the parameters of their own dominant learning styles. Hunt states that more they attempt to stretch their styles into other cognitive delineations, the greater the amount of discomfort they will feel which has both intrapersonal and interpersonal effects. Teachers must therefore strike a shifting balance between their own and their students' individual cognitive comfort zones, so as to nurture supportive learning environments based on intrapersonal self-discovery and experimentation, and interpersonal trust and communication. [12]

Mismatches exist between common learning styles of dental students and traditional teaching styles of professors. As a consequence, students become bored and inattentive in class, do poorly on tests, get discouraged about the courses, the curriculum, and themselves, and in some cases change to other curricula or drop out of school. We the teaching faculty, confronted by low test grades, unresponsive or hostile classes, poor attendance and dropouts, knew something is not working; they may become overly critical of our students (making things even worse) or begin to wonder if they are in the right profession. Most seriously, society loses potentially excellent doctors if it happens!

Teachers should be willing to explore alternative teaching practices that indulge their learners' preferences, but they should also encourage their students to engage in unfamiliar learning activities. Students should seek out work assignments that match their preferred conditions for learning, but they should also be willing to learn in unfamiliar ways.

One should interact with the students about learning styles in classes. Students have to be reassured to find their academic difficulties which are not always being due to personal inadequacies. Explaining the struggling learners how they learn most efficiently may be an important step in helping them reshape their learning experiences so that they can be successful in their learning process. While they are painfully aware of the drawbacks of their learning style, it is usually a revelation to them that they also enjoy advantages—that their creativity and breadth of vision can be exceptionally valuable to future employers and to society.

As teachers actively restructure the learning environment in order to accommodate various learning styles, evaluation has to be done to determine the effectiveness of the teaching and learning process. Exploring and implementing alternative evaluation methods will provide the teacher with more complete and accurate information about the capabilities of their students. For example, student products, students working in cooperative groups, role-playing or simulated situations, questions on audiotapes or computers are other avenues through which we can test students rather than the traditional paper and pencil method. [5]

Students who understand their learning styles and who exercise active control over their cognitive skills do better in school. They are better adjusted, have more positive attitudes toward learning and achieve at higher levels than their less skillful peers. [8]

The questionnaire can motivate teachers to move from their preferred mode(s) to using others. In so doing, they can reach more students because of the better match between teacher and learner styles. [13-19]

When the students are exposed to a teaching style that matches their learning style, students score higher marks on tests than those not taught in their learning style; and it is advantageous to teach and test students in their preferred modalities. [20]

## CONCLUSION

1. Knowing the students preferred modes can help to avoid mismatches in the styles between instructors and learners, which ultimately prevents professorial frustration and a loss to society of many potentially excellent doctors.
2. When the students are exposed to a teaching style that matches their learning style, students do well in their academics than those not taught in their learning style.
3. We can assist students to build confidence and more effectively manage their own learning.
4. We can overcome the predisposition to treat all students in a similar way. If we wish students to have optimum learning in our class, we must change the way we deliver instruction.
5. Motivate teachers to move from their preferred mode(s) to using others. Teaching style that is both effective for students and comfortable for the professor will evolve naturally and relatively painless, with a potentially dramatic effect on the quality of learning.

### **Scope for the study:**

Further study can be extended by intervention and instructors' tailored to the requirements of the students' learning styles. In spite of changed instruction, if the student continues to fail to respond to then we must retrain his or her cognitive styles to make school successful. Every student has predominant learning style; the other or

weaker preferences should be enriched by instructor employing the student in problem solving, simulations, quiz & many more.

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