

Does regular smartphone use lead to a change in learning style among medical students?

Rinku Garg^{1*}, Abhishek Sinha², Navpreet Mann³

¹Professor and HOD, ²Associate Professor, ³Assistant Professor, Dept. of Physiology, Santosh Medical College, Ghaziabad, Uttar Pradesh, India

***Corresponding Author: Rinku Garg**

Email: rgrinkigarg6@gmail.com

Abstract

Introduction: Learning styles account for different methods of individuals learning, namely visual, auditory and kinaesthetic identified by the acronym VAK. All students do not learn from the same teaching methodologies. Hence it is important to find out the types of students in relation to their preference for effective teaching of concepts and skills. Smartphone use is increasingly becoming popular among medical students.

Objective: This study is being carried out in order to improve on the teaching methodology used in undergraduate medical classes taking in to consideration the preference of students who are using smartphones for one to two hours on a daily basis.

Materials and Methods: A 40 question questionnaire was circulated amongst 50 medical students volunteers to categorise them in accordance to their preferences of learning styles. Their daily smartphone usage was also recorded.

Results: It was seen that majority of students are Visual learners and smartphone usage had increased the number from previous studies.

Conclusion: More emphasis needs to be placed on visual learning techniques like slideshow presentations and demonstrations especially among smartphone proficient medical students.

Keywords: Kinaesthetic, Visual, Auditory, Teaching methodology, Learning modes, First year MBBS students.

Introduction

Individuals differ in their general skills, aptitudes and preferences for processing information, constructing meaning from it and applying it to new situations.¹ As already known, learning style has been defined as the composite of characteristic cognitive, affective and physiological factors that serve as stable indicators of how a learner perceives, interacts with and responds to the learning environment.² Based on physical modality preference, there are three kinds of learners Visual, Auditory and Kinesthetic.

The Auditory learner is one who learns most by listening, like in the case of a lecture, discussion or recording. The Visual learner learns mostly by reading like print, diagrams or closes the eyes to recall. The Kinesthetic learner on the other hand needs whole body movement for the learning process like visiting a museum, participating in acting, interviewing, building and designing things.¹ With these things in mind, the aim of medical teacher should be to find cluster of people who use similar patterns for perceiving and interpreting situations because based on this knowledge, teaching can be adjusted to make the educational environment a more efficient and successful place.³ Also, if an instructional experience does not include the instructional strategies required for acquisition of desired knowledge or skill, then effective learning does not take place.⁴

It has been shown by multiple studies that regardless of the learning style of student, then the goal of instruction, as measured by test consistent with this goal are consistent with strategies used to teach this goal, then learning is optimal.⁵⁻⁷ It has also been argued that people are different in their intelligence, for example if somebody is kinesthetically intelligent, then he or she might learn to dance very well while having trouble learning mathematics or science.⁸ In an earlier study, it has already been demonstrated that there are

specific percentages of types of Auditory, Visual and Kinesthetic learners among first year MBBS students.⁹

Since the last few years, smartphones have become an integral parts of our lives and increasingly popular in both personal and professional spheres¹⁰ especially among medical students.¹¹ Given the vast popularity, easy availability, cheap internet access and good penetration rate, the impact of smartphones in educational sector in developing countries, there is a need to study their impact, especially on medical education.¹² In a study conducted in India, it has been shown that more than 90% medical students, irrespective of their professional year feel that smartphones are useful for medical education.¹³

With this background in mind, we decided to study whether the frequent use of smartphone has any effect on the preference for the type of learning style among the current batch of First year MBBS students.

Materials and Methods

A cross-sectional study was conducted at Santosh Medical College, Ghaziabad. Ethical approval was taken from the institutional ethical committee. After taking informed consent fifty medical students of first professional MBBS of 2018-2019 batch were randomly selected for the study. A questionnaire comprising of 40 questions which had to be filled by every student. They were asked to pick one of the options with the options being namely A. Visual, B. Auditory and C. Kinesthetic respectively. Number of choices entered for each three was calculated for each student and entered in to Microsoft Excel sheet and stored for further analysis.

All students were asked about their daily duration of use of smartphone and asked to note it down on a paper handed over to them, preferably in the form of a range like 1-2 or 2-

3 hours per 24 hours. This record was also entered in to Microsoft Excel and saved for further analysis.

Results

The range of duration of smartphone use for all of the study population was reported to be between 2-3 hours / 24 hours. Coming to the learning styles, as can be seen from the Table 1 and Fig. 1, 48% (24 students) were Visual-dominant type, 36% (18 students) were Auditory-dominant type and 16% (8 students) were Kinesthetic-dominant type learners.

Table 1: Number of students according to learning style preference

Learning style	No of students	% of students
Visual	24	48
Auditory	18	36
Kinesthetic	8	16

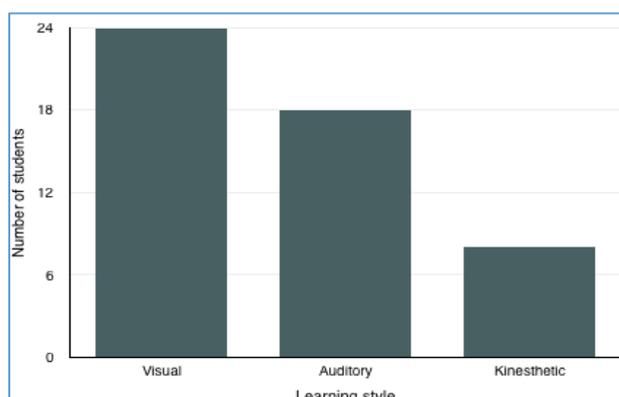


Fig. 1: Histogram showing the learning style preference among students.

Discussions

It has already been established that in the general population, almost sixty five percent of the people are Visual-dominant learners, almost 30% of the people are Auditory-dominant learners and about 5% of the people are Kinesthetic-dominant learners.^{2,8,14-19} The learning styles along with examples for all of these three types of learners has been discussed in the introduction. The focus of our study was to see whether there was a difference or change in trend among the medical students with respect to learning styles considering the fact that they devote significant time looking at screens of smartphones i.e. 1-2 hours daily.

We found that the majority (48% of students) were were Visually dominant learners. If we compare this to the percentage of students in an earlier study conducted by Malhotra et al. 2013,⁹ we can see that the percentage of visually dominant preference learners has increased from 46.67 to 48. We propose that this increase is due to the increased time spent on smartphone screens which leads to a shift in their preference towards visual stimuli and hence the increase in Visual-learning style preference.

Due to the same reason, we also propose that the percentage of auditory learner preference and Kinesthetic learner preference remained same 36.1 vs 36 and decreased 26.67 vs 18 respectively.

Conclusion

Based on these findings, it is advisable for the medical teachers to use visual-learning style teaching methods like projected presentations, graphs, charts and instructional videos for explaining key concepts and Virtual Simulators for explain skills to the medical students. Designing or using visually engaging smartphone apps can also be a very effective technique for getting key concept across to the medical students.

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Conflict of interest

None.

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