LEARNING STYLES-UNDERSTANDING FOR LEARNING STRATEGIES

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ABSTRACT

Objective: To explore the learning preferences of the preclinical students.

Place and Duration of Study: Department of Anatomy, Army Medical College from April 2015 to June 2015

Study Design: A descriptive study.

Material and Methods: Undergraduate students belonging to first and second-year were invited to participate in the exercise. Self-perceived learning style preference was identified. Version 7.8 of the VARK questionnaire in a printed form was used. It consisted of 16 questions with 4 options each. The score for each VARK component of the entire study sample was added up and divided by the total number of study participants to obtain mean scores. A *p*-value of less than 0.05 was taken as statistically significant.

Results: Among 294 students, 153 (52%) unimodal learning style preference was the largest one. Among the unimodal group 34% of the students were auditory learners and 35.9% were kinesthetic learners. Mean scores of individual VARK components based on gender showed no significant difference in terms of unimodal or multimodal learning preferences. More female students compared with male students preferred the A mode (5.32 ± 2.277 versus 5.21 ± 2.767) and the K mode (6.10 ± 2.504 versus 6.05 ± 2).

Conclusion: The largest percentage of students with trimodal preferences showed preferences for the auditory and kinesthetic learning strategies.

Keywords: Learning preferences, Undergraduate students, VARK test.

INTRODUCTION

One of the most established identifications of learning styles is that student learning styles fall into three "types:" Visual Learners, Auditory Learners and Kinesthetic Learners. VARK is an abbreviation that refers to the four types of learning styles: Visual, Auditory, Reading, and Kinesthetic[1]. The VARK model concedes that students have different ways to process information, referred to as "preferred learning approaches". The concept of learning styles has developed among professional educators at all stages of the educational organization. Some students seem to learn better when information is presented through words (verbal learners), whereas others seem to learn better when it is presented through pictures (visual learners)''. The interface of these elements occurs differently in everyone. To disclose these usual trends and styles, it is important to use a broad classical learning style that classifies each learner's strengths and predilections across the complete range of functional, sociological, spiritual, expressive, and conservational basis[2].

The learning means should counterpart learning strategies for various types of learners. Students' preferred learning modes as these have significant influence on their behavior and learning. Students have particular learning styles and these styles should be lodged by instruction designed to those learning styles. Information that is accessed through students' use of their learning preferences shows an increase in their levels of understanding, stimulus and metacognition[3]. Identifying your students as visual, auditory, reading or kinesthetic learners, and bringing into line with your course these learning styles, will prove to be very valuable. The rationale of the present study is to identify the learning preferences of the preclinical students

MATERIAL AND METHODS

This study was performed at the Department of Anatomy at Army Medical College after the approval of the institutional ethics committee. During the first phase of the study 400 undergraduate students belonging to

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first and second-year were invited to participate in the exercise. The purpose of the study was explained to the students, and written informed consent was obtained before the VARK version 7.8 questionnaire was administered. It consisted of 16 questions with 4 options each. Each option correlated to a particular sensual modality preference. Hence, the modality that received the highest marks was the favorite sensory modality. Since students were free to select more than one option, multiple modalities of varying combinations could be obtained. The questions labeled situations of common occurrence in everyday life, thereby relating to an individual's learning exercise. Students were instructed to choose the answer that best explained their predilection. They could choose more than one option or leave blank any inapplicable question. Questionnaires were evaluated on the basis of previously corroborated scoring instructions and a chart The score for each VARK component for the entire study sample was added up and divided by the total number of study participants to obtain mean scores. The entire exercise was completed in a single session, after which the students were asked to return the questionnaire with all relevant details.

Second phase of the study:

1. Scores of the data were calculated and the principle learning style was identified.

2. Students were individually advocated about their learning styles and learning approaches were advised.

Ethical aspect of the research article was declared.

Data Analysis

Sensory modality preferences/VARK mode distributions are expressed as percentages of students in each category. Scores of individual VARK components are expressed as means ± SD. Comparison of VARK scores based on sex and modality was done using an independent samples t-test and one-way ANOVA with Tukey's post hoc test, respectively. Comparison of unimodal sensory modality preference and VARK mode distribution among both sexes was done using a x^2-test. SPSS (version 21) was used for statistical analysis. A p-value <0.05 was considered significant.

RESULTS

Of the 400 undergraduate students invited to participate in the exercise, 294 (73.5%) consented to provide demographic details and answer the VARK questionnaire. Of these 294 students, 159 (54.1%) were males and 135 (45.9%) were females. One hundred and fifty six (53.1%) students were from first year and 138 (46.9%) were from second year. Mean scores of individual VARK components are given in table-1.

Out of 294, gender distributions of students were 45% female and 54% male students. A total of 99% were Pakistani students; rest of them had British and Canadian nationalities and were admitted in the medical college on the foreign seats. Among 294 students 153 students (52%) preferred unimodal learning style. This was the most popular learnig style. Among the unimodal group VARK mode dispersal among undergraduate medical learners beliefs were stated in percentages, 34% of the students were auditory learners and 35.9% were kinesthetic learners. In fact, kinesthetic preference was the strongest of all preferences shown by the students. Mean scores of individual VARK constituents based on gender showed no significant variance in terms of unimodal or multimodal learning predilections (table-2). Among the male and female students who showed a predilection for two modes of information presentation, more female learners as compared to male counterpart preferred the A modes (5.32 ± 2.277 versus 5.21 ± 2.767) and the K modes (6.10 ± 2.504 versus 6.05 ± 2). The V and R modes and the A and K modes were preferred by nearly equal percentages of male and female students. Comparison of Mean VARK scores based on sex and sensorymodality are given in table-2. Mean scores of individual VARK components based on different strategies were compared and found to be statistically significant (table-3). None of the students showed a preference to

the single visual or the reading/writing modes. The largest proportion of students with trimodal preferences showed predilections for the auditory and kinesthetic learning strategies. Students with unimodal, bimodal and trimodal predilections also showed likings for the auditory and kinesthetic learning strategies. Comparison among the different modes showed highly significant results (table-3).

DISCUSSION

multimodal learning style preferences in these studies varied from 59-85%[6]. Active learning approaches have to be applied in our teaching to improve problem-solving and judgment-making skills through small group discussions in classes. However, large-sized teaching, lack of sufficient teaching time, and lack of means and learning aids that support active learning and alertness of the teachers could hamper the use of the kinesthetic learning strategies[7]. A

Table-1: Mean scores of individual VARK components.

	N	Mean	SD
VS	294	3.86	2.109
AS	293	5.27	2.511
RS	294	3.93	2.223
KS	294	6.08	2.526

Table-2: Mean scores of individual VARK components based on gender.

	Gender		
Mean Scores of	Male Mean ± SD	Female Mean ± SD	p-value
VS	3.58 ± 2.014	4.19 ± 2.179	0.015
AS	5.32 ± 2.277	5.21 ± 2.767	0.428
RS	3.51 ± 1.838	4.41± 2.526	0.005
KS	6.10 ± 2.504	6.05 ± 2.561	0.870

Table-3: Mean scores of individual VARK components based on modality.

	Modal				
Mean Scores of	Unimodal Mean ± SD	Bimodal Mean ± SD	Trimodal Mean ± SD	Quadmodal Mean±SD	p-value
VS	3.28 ± 1.628	4.15 ± 2.236	5.40 ± 2.207	4.92 ± 2.465	<0.001
AS	4.20 ± 2.026	5.87 ± 2.190	7.30 ± 2.950	8.54 ± 1.613	<0.001
RS	3.38 ± 1.902	3.98 ± 2.247	5.60 ± 2.175	6.08 ± 2.517	<0.001
KS	4.98 ± 2.208	6.72 ± 2.104	8.70 ± 2.307	8.08 ± 2.253	<0.001

The occurrence of a single, leading, learning style for students within the substitute group may show the need for a course outline using different prospects to lodge ideal learning using these styles. Such a teaching tactic may address the wants of students who experience academic challenges better than those who go through more traditional classroom structures[4].

This study proved that the majority of the forthcoming research approach learners prefer the multimodal method[5]. The results of previous studies which were conducted on first year medical students from various other countries also reported similar results; however, the percentage of students with

kinesthetic learner has a strong urge to discover material through doing and to move systematically. For both of these reasons, they can prosper in learning activities, such as those that include laboratory experiments, role playing and field visits. Our findings were comparable to the results of the study which was conducted by Baykan and Nacar on first year medical students from Turkey[8].

Kinesthetic learners prefer to operate things in the setting and one of the best kinesthetic learning strategies is to find creative ways that lessons can be strengthened through accomplishments[9]. Long continuous sections of learning can lead kinesthetic learners to become

burned out. Working together, especially with someone of the same learning style, opens up even more avenues of possibility for taking advantage of these kinesthetic learning activities. The kinesthetic learning style predominant among at-risk learners may also be reinforced by group dynamics as well as through laboratory-based courses like human gross anatomy[10]. Therefore, it may be critical to retain additional experiential learning environments like medical histology and medical microbiology, where laboratory-based manipulations and microscopy can be used to reinforce concepts derived from lectures. Awareness of student learning style and personality type could provide a basis for instructors to optimize teaching methods for diverse student populations. Some previous studies have reported that certain teaching-learning methods, such as problem based learning, are favored over the traditional methods i.e. lectures[11].

During the second phase of the study students were counseled and guided in different small groups. They were individually clarified their scores and defined learning styles. Different learning strategies with reference to the learning style were discussed with each student.

Freshman students can assume diverse tactics to study once they are conscious of their learning preferences. The visual ones would learn most by pictures, flow charts, graphs, and underlining/emphasizing using different colors. The auditory ones would like to attend to lectures, discuss with peers, and attend workshops. They would advantage by using a voice recorder. The reading ones would prefer handouts, class notes and textbooks[12]. They would prefer to employ time in the library, rather than having a discussion class.

The kinesthetic ones would like to attend workshops or assemblies. They would like to devote more time in simulation laboratories. They would learn better by simulation or demonstretions[13]. They would like a case presentation more than a theory class. To augment the learning practice, students can use approaches based on their preferences.

CONCLUSION

The majority of preclinical students are trimodal in their learning predilection and the kinesthetic modality is their strongest single inclination.

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CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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