



LEARNING STYLE PREFERENCES IN MEDICAL STUDENTS

Physiology

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ABSTRACT

Introduction:-Learning style is sometimes defined as the characteristic cognitive, affective, social, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment". Every student has its own preference in learning style, teachers should formulate their training programs and training methods to maximize the outcome of the training by adjusting their teaching style so that it is more congruent with a given student's or class of students' learning style. The ability to understand student learning styles can increase the teaching experience. Fleming and Mills (1995) developed an inventory of learning styles known as VARK. Most commonly and widely used learning style is Fleming's VARK (1995). The four modes in VARK are visual (V), aural (A), read/write (R), and kinesthetic (K). These modes are frequently referred to as a person's "sensory modality preferences." A person may show no preference, unimodal, or multiple modes of sensory preference. Teachers can incorporate these learning styles in their curriculum activities so that students are able to succeed in their classes.

Material and methods :- In this observational study Fleming's VARK questionnaire was applied and survey was conducted among 400 medical students in which 374 students consented for study. Proforma containing questionnaire regarding learning styles based on Fleming's VARK theory was distributed after taking informed consent for study. The most recent version of the VARK questionnaire 8.01 was used, which consists of 16 questions and identifies a person's preferred method or mode of presenting and processing information.

Conclusion :- This study shows that there are variations in learning preference. Most of the students fall within aural and kinesthetic categories. The study also confirmed that the students could possibly have more than one learning styles and the practical implication is that the trainers/teachers should adopt various learning strategies to achieve the learning objective. The purpose of this study is to increase faculty awareness and understanding of the effect of learning styles on the teaching process.

KEYWORDS

Learning Styles, VARK'S theory, Kinesthetic, unimodal, multimodal

INTRODUCTION :-

How medical students learn may have special implications for teaching and learning in the medical curriculum, particularly in activating and sustaining motivation. Different types of people have different ways of learning, known as their learning style (1). Brown (2000) defines learning styles as the manner in which individuals perceive and process information in learning situations. He argues that learning style preference is one aspect of learning style, and refers to the choice of one learning situation or condition over another (2). Learning style is sometimes defined as the characteristic cognitive, affective, social, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (3).

Learning style has an important place in the lives of individuals. When the individual knows his/her learning style, s/he will integrate it in the process of learning so s/he will learn more easily and fast and will be successful. Another advantage of the identification of the own learning style by the student is that it will help the student to become an effective problem solver. The more successful the individual is at solving the problems s/he faces, the more control s/he will take over his/her own life (4). Learning style is important for many reasons; however, there are three vital ones. First of all, people's learning styles will vary because everyone is different from one another naturally. Secondly, it offers the opportunity to teach by using a wide range of methods in an effective way. Sticking to just one model unthinkingly will create a monotonous learning environment, so not everyone will enjoy the lesson. In other words, learning and teaching will be just words and not rooted in reality. Thirdly, we can manage many things in education and communication if we really recognize the groups we are called to. Of course, we may not know every detail; however, being aware of our students' learning styles, psychological qualities and motivational differences will help us regulate our lessons appropriately and according to the conditions (5),(6),(7).

There are various researchers who studied the learning styles and developed models of learning styles. The most used and researched models were developed by Kolb (1984)(8), Honey and Mumford (1986)(9), Gregorc (1985)(10) and Fleming (1995)(11). Fleming and Mills (1995) developed an inventory of learning styles known as VARK. Most commonly and widely used learning style is Fleming's VARK (1995). The four modes in VARK are visual (V), aural (A), read/write (R), and kinesthetic (K). These modes are frequently referred to as a person's "sensory modality preferences." A person may

show no preference, unimodal, or multiple modes of sensory preferences. According to Fleming (1995), students with a visual preference learn best from presentation of materials using graphs, charts and diagrams; aural learners prefer to receive information through listening; read/write learners prefer to take in information through writing and reading from printed words; kinesthetic learners gain better understanding of materials through concrete examples and applications. His questionnaire focuses on gaining more students attention because of better match between teaching and learning styles. The most recent version of the VARK questionnaire consists of 16 questions and identifies a person's preferred method or mode of presenting and processing information. The VARK questionnaire has been widely applied to explore issues related to learning style of students. While students use all of their senses to take in information, they seem to have preferences in how they learn best. In order to help students, learn, teachers need to teach as many of these preferences as possible.

MATERIAL AND METHODS

In this observational study 400 students were included in which only 374 consented for the study. The data in this study came from student surveys based on the VARK questionnaire version 8.01, which was developed by Fleming and Mills (1995). This questionnaire consists of sixteen questions that identify the preferred learning styles of students. Students were requested to respond to the VARK questionnaire along with information on their age and gender. Each of the sixteen multiple choice questions on the VARK questionnaire has four possible choices that imply preferences for visual, aural, reading/writing, and kinesthetic learning styles respectively. Students were instructed to choose all the answers that apply to them and not be limited to just one answer to each question. Hence the raw score on each of the sensory modality (i.e., V, A, R, and K) can range from 0 to 16 for each student. Questionnaires were evaluated on the basis of previously validated scoring instructions and a chart (8). Since each of the answers represents a sensory modality preference, the same was calculated for an individual participant by adding up the responses for all 16 questions. 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 15–20 min, after which the students were asked to return the questionnaire with demographic data and other details. Depending on the preference of sensory modality, learning style of students can be unimodal (V, A, R/W, K) or multimodal i.e. bimodal (VA, AR, VK, VR), trimodal (VAR, ARK, VAK) and quodmodal (VARK).

AIMS AND OBJECTIVES:-

Our study aim was to observe the preferred learning style in medical students and effect of gender on learning style preferences.

RESULTS

Table 1. gender Distribution

Gender	Number	Percentage
Boys	146	39%
Girls	228	61%
Total	374	100%

Table 2. Sensory Modality Preference

Modality	Number	Percentage
Unimodal	90	24%
Multimodal	284	76%
Total	374	100%

Table3. Unimodal Learning Style Preferences

Learning style	Number	Percentage
V	10	11.2%
A	38	42.1%
R	19	21.1%
K	23	25.6%
Total	90	100%

Table 4. multimodal Learning Style Preferences

Learning style modality	Number	Percentage
Bimodal	47	16.6%
Trimodal	109	38.4%
Quadmodal	128	45%
Total	284	100%

Table 5. VARK * Gender Crosstabulation

			Gender		Total
			Girls	Boys	
VARK	A	Count	64	59	123
		% within VARK	52.0%	48.0%	100.0%
	K	Count	53	47	100
		% within VARK	53.0%	47.0%	100.0%
	R	Count	82	29	111
		% within VARK	73.9%	26.1%	100.0%
	V	Count	29	11	40
		% within VARK	72.5%	27.5%	100.0%
Total		Count	228	146	374
		% within VARK	61.0%	39.0%	100.0%

Table 6. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	16.798a	3	0.001	0.001
Likelihood Ratio	17.204	3	0.001	0.001
Fisher's Exact Test	16.942			0.001
N of Valid Cases	374			

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.61.

Table 7. Modality * Gender Crosstabulation

			Gender		Total
			Boys	Girls	
Modality	multimodal	Count	110	174	284
		% within Modality	38.7%	61.3%	100.0%
	unimodal	Count	36	54	90
		% within Modality	40.0%	60.0%	100.0%
Total		Count	146	228	374
		% within Modality	39.0%	61.0%	100.0%

Table 8. Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.046a	1	0.830	0.901	0.462

Continuity Correction ^b	0.008	1	0.928		
Likelihood Ratio	0.046	1	0.830	0.901	0.462
Fisher's Exact Test				0.901	0.462
N of Valid Cases	374				

DISCUSSION:

Knowledge of the learning styles has implications for both the medical teachers and the students. If students identify their learning preferences, it can help them in using the appropriate learning strategies to maximize their true potential for achieving their goal. If the teachers become aware of the student's learning styles they can incorporate teaching-learning strategies which are tailored to meet the student's learning preferences to deliver best to students.

Our study comprises of 374 students and 228(61%) among these are girls. A majority of the students (76%) preferred multimodal learning style which indicated that they preferred multiple modes of learning while as only 24% preferred unimodal learning style. The results of previous studies which were conducted among first year medical students from various other countries reported similar results. In a similar study conducted in USA, the majority (63.8%) had multimodal learning styles with only 36.1% having a unimodal learning preference; however auditory learners were only a small minority (4.8%) [12] Another study in Turkey showed similar results with the multimodal approach being the predominant style (63.9%), with only 3.2% being auditory learners. who had unimodal learning styles, 19% preferred the kinesthetic mode, 7.5% preferred the visual mode, 3.9% preferred the auditory mode and only 8.6 % preferred the read-write mode. Therefore, the kinesthetic mode was the most preferred mode and the read-write the least preferred mode of the information presentation.(13)

In this study among unimodal learning style preferences, aural mode (42.1%) was the commonest followed by kinesthetic (25.6%), read/write(21.1%) and visual(11.2%). In multimodal learning preferences most preferred is quadmodal(45%) followed by trimodal(38.4%) and bimodal(16.6%). while as the study done by Peyman H. and his team, in the unimodal learning style category, they found that the most preferred mode was the kinesthetic, followed by the visual, auditory and the read-write. They further suggested that the active learning strategies such as role playing, simulations, use of models, debates, etc which are preferred by the kinesthetic learners would be more beneficial to the students than the traditional lecture formats.(14)

On comparing the unimodal learning style preferences among boys and girls, our study shows that there is a statistically significant gender difference (p=0.001). The commonest learning style among girls was read/write(82), then aural(64), kinesthetic(53) and visual(29), while as in boys most preferred is aural(59) followed by kinesthetic(47) then read/write(29) and visual(11). Girls prefer mostly read/write learning style while as boys prefer aural learning style. Comparing the preference in modality of learning among boys and girls shows that, there is no statistically significant gender difference (p=0.462). both boys and girls prefer multimodal learning modality. Slater et al. 5 addressed the question of gender difference and learning style preference of 1st 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. (15)

CONCLUSION

Analyzing one's own particular learning style can be very helpful and beneficial to the student by aiding them in becoming more focused on an attentive learner, which ultimately will increase educational success. This is due to the fact that understanding learning styles helps the educators and the trainers to deliver relevant materials in a tailor made fashion. The researches so far conducted supported various styles of learning and urged the trainers and educational institution to plan the delivery of teaching or training as per the trainees' need than the trainers' convenience. As technological advances continue to mold the types of students entering higher education, research in this area continues to grow, teachers should make concentrated efforts to teach in a multistyle fashion that both reaches the greatest extent of students in a given class and challenges all students to grow as learners.

Understanding learning styles mean:

1. The students will be able to recognize the learning style that will help

- him to explore his potential in best possible and efficient way for maximum gain. It will also allow students for involvement in active learning process.
2. The teacher will be able to get connected with every student by finding strategies for accommodating different learning styles for teaching in most effective way.

DISCLOSURES

No conflicts of interest, financial or otherwise, are declared by the author(s).

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