

LEARNING STYLE PREFERENCES OF DOCTOR OF PHYSICAL THERAPY UNDERGRADUATE STUDENT

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Abstract-

Main objective of the study was to determine the preferred learning style of Doctor of Physical Therapy students across different universities of Lahore, Pakistan.

Methods:

A non-experimental cross-sectional survey was conducted. Data from 370 students from DPT undergraduate students at Rashid Latif medical college (RLMC), King Edward medical university (K.E), and (UOL) the University of Lahore through questionnaire named "Index of Learning style (ILS)" were collected during the time period of June 2021 to December 2021.

Results:

The learning style of DPT undergraduate students was judged on ILS and the first category, active/reflective. More students (54.1%) were activists with a mild preference for reflective learning. In the second category which was sensing/intuitive, more of the students (64.1%) were sensing having a mild preference for the sensing type of learning. In the third category which is visual/verbal, more of the students (77.6%) were visual and they had both mild and moderate preference for the visual type of learning and the last category which is sequential/global, the more of the students (54.6%) had the sequential type of learning having a mild preference for global one.

Conclusion

According to the survey, the majority of DPT undergraduate students preferred sequential learning over global learning and preferred active, sensory, and visual learning modes. These results underline how crucial it is to take into account each student's preferred learning style while developing instructional plans for DPT students.

Index Terms- Index of learning styles, Doctor of Physical Therapy, visual/verbal, sensing/intuitive, sequential/global, reading/writing, Felder-Silverman learning style model.

I. INTRODUCTION

Learning styles are characterized by "Personal characteristics which impact a student's ability to gain knowledge, build

relationships with classmates and instructors, and to otherwise participate in learning experiences" (1). The term learning style came out from psychology perspective of human beings and can be defined in terms of the ways in which someone adapts himself to problem-solving (2). Both students and instructors are accountable for achieving this result (3) It is vital to modify teaching methods and assess their efficacy in order to address various learning styles (4). Someone's ability to be coherent, emotive, and exhibit biological actions determines how they respond to the learning environment and how they reward it (5). Different learning theories aid in understanding how students see information using a range of perceptual models. In contrast to the externally recognized measure, the humanistic philosophy places more emphasis on pupils' personal characteristics (6). In primary-level education, techniques based on augmented reality (AR) and focused learning theory work best for activities requiring some focus and cognitive demands(7) The best understanding at higher level schooling came from the transformative learning paradigm (8). Different studies have been conducted in the past and different learning style theories have been presented in different perspectives and showed different intellectual behavior of students. As BDS first-year and second-year students whose learning styles were examined were found to be more uni-model than multi-model, with preferences for kinesthetic manner, aural manner, reading/writing manner, and least visual manner, studies conducted on various populations revealed varying results depending on their professional demands (9). As results were very much close for university students of business schools and the University of Bahrain students (10, 11) and showed multimodal learning style and students from the professional school of international business administration had preference order reading/writing, kinesthetic, auditory and least were having visual modes and preference order for later was kinesthetic, visual, auditory, and reading/writing at the last. Fourth- and fifth-year medical students preferred taking and reread class notes, concentrate in silence, be engaged in online resources, and choose practical experience over involvement in classes (12). Occupational therapy students, preferred convergent and divergent styles (13) and IT students showed convergent learning styles more as compared to divergent, accommodator and assimilator learning styles (14). After reviewing research papers from 2000 to 2015, specific key findings have been drawn regarding these methodologies, various learning styles, and issues with e-learning. Of the 129 papers examined, 47 (37%) research papers indicated that the primary issue is LPG (Learning path generation

problems). Other than LPG, the issues include POC (personalization of content)/CLP (Context learning problem), which was used in 22 (17%) studies, and OR (object recommendation), which was used in 27 (21%) papers. Additionally, 17 (13%) publications employed DOC (Domain Ontology Construction Problem), and 16 (12%) papers used additional issues including IR (Information Retrieval problem)⁽¹⁵⁾. The Index of Learning Survey (ILS), created by Felder and Silverman, was originally intended for implementation in engineering education but has since been validated among medical students⁽¹⁶⁾. The Index of Learning Style (ILS) divides people into four categories: active vs reflective processing of data, preferences for information perception (sensory or intuitive; visual or verbal), and sequential versus global progression to understanding information⁽¹⁷⁾. A variety of fields and states' allied health students have had their learning styles examined⁽¹⁸⁾. Learners from various allied health specialties were shown to have varied preferred methods of learning⁽¹⁹⁾. Previous studies have shown that Converger was the favored approach to learning across physiotherapy students, while Diverger was the least favored⁽²⁰⁾. This study had a complete focus on the learning styles of undergraduate physiotherapy students by using an Index of Learning Style (ILS) questionnaire having four parts each with 2 subcategories. That will help the instructor to know whether the student has an active or reflective learning style, sensing or might have an intuitive learning style, sequential or global, and possibly visual or verbal learning styles. Teachers can create instructional techniques that will help students learn more effectively and efficiently by identifying the preferred learning styles of these students. To the best of researcher's knowledge, the preferred learning styles of undergraduate students pursuing a Doctor of Physical Therapy have not been the subject of sufficient research. There has been little research done specifically on learning preferences and styles in the field of physical therapy, even though there is a lot of research on these topics in other academic fields. The best teaching techniques for Doctor of Physical Therapy Undergraduate Students are also not widely agreed upon. As a result, this study can bridge a knowledge

III. RESULTS

This study showed that more participants were females (75.1%) than males (24.9%) and the majority of students had metric (98.6%) and FSC (99.2%) as their basic education as compared to O'levels and A' levels. Students from each year equally participated in the survey and the majority of the students were from the University of Lahore (44.1%).

By using ILS, it showed that in the first category which was active/reflective, more of the students (54.1%) were activists having a mild preference for the reflective type of learning. In the second category which was sensing/intuitive, more of the students (64.1%) were sensing having a mild preference for the sensing type of learning. In the third category which is visual/verbal, more of the students (77.6%) were visual and they had both mild and moderate preference for the visual type of learning and the last category which is sequential/global, the more of the students (54.6%) had the sequential type of learning having a mild preference for global one.

vacuum and offer insightful information on how these students learn most effectively.

It will modify the way they transfer information and students will be able to perceive more efficiently during lectures. The aim of the study was to know the preference of learning style of DPT undergraduate students across different universities in Lahore, Pakistan.

II. MATERIALS AND METHODS

The cross-sectional survey has been conducted after approval of the ethical committee of Rashid Latif Medical College. Data from 370 students were collected from DPT undergraduate students at Rashid Latif medical college (RLMC), King Edward medical university (K.E), and (UOL) the University of Lahore. A sample of 370 students was selected with non-probability convenience sampling. Index of learning style ILS by Silver and Felderman has been used as an outcome measuring tool. Each different category has two subcategories indicating "a" and "b". The tool has a total of 44 questions 11 in each category. Preference can be observed on a scale for every dimension numbered from 0 to 11 if we talk about two subcategories "a" and "b" of one dimension then 0-1 is a high preference value for the "a" category, 2-3 moderate preference value for "a" 4-5 mild preference value for "a" and 6-7 mild preference value for "b", 8-9 moderate preference value for "b", 10-11 strong preference for "b"⁽²¹⁾. The reliability of the ILS scale ranges from 0.68 to 0.85 for all the domains⁽²²⁾. previous studies support the construct validity of this questionnaire, index of learning styles (ILS)⁽²³⁾.

Data were collected during covid-19 pandemic from June 2021 to December 2021 through an online questionnaire sent to them via computer-generated email at the end of the lecture. Proper guidance was delivered to them before sending the questionnaire about filling it. All the online students at the time when the email was just sent filled out the questionnaire.

Data were analyzed by SPSS 20.

IV. DISCUSSION

Different studies have been conducted on learning styles by using the ILS questionnaire. One of the studies used ILS and was translated into the Turkish language by 4 different instructors. It showed high validity and reliability for this new Turkish-translated ILS⁽²⁴⁾ and this study have been conducted on an original English-based ILS questionnaire no need for translation was required as the students were well aware and familiar with the English language.

A study conducted on styles of Informatics Engineering students to know their learning styles by using ILS⁽²⁵⁾ showed that they were more active as compared to reflective having moderate preference (34%) and strong preference (55%), sensing as compared to intuitive having moderate preference (36%) and strong preference (55%), visual as compared to verbal having moderate (28%) and strong preference (53%), and sequential as compared to global having moderate (34%) and strong preference (17%). As this study was conducted on DPT undergraduate students and the variations in results were due to variations in achieving their

outcomes as they were mainly concerned with designing and construction works and they had to do more with calculations as compared to DPT students.

A study conducted on nurses came up with the results that they were balanced in the active reflective subcategory, more sensing than intuitive, more visual than verbal, and balanced in the sequential-global subcategory having somehow preference towards the sequential subcategory ⁽²⁶⁾ After comparing gender difference it indicated that among nurses visual learning styles are strongly preferred (17%) by males as compared to females. The differences with this research were because nursing students had to work in challenging environments dealing with patients indoors for long duty hours and also had to perform night duties.

Comparing results of the learning styles of students enrolled in gross anatomy courses, revealed that these undergraduate students from the active/reflective category preferred the active learning style (54.9%), from the sensing/intuitive category preferred sensing (85.1%), from the visual/verbal category preferred visual (81.2%), and from sequential/global category preferred sequential learning style (74.4%) ⁽²⁷⁾ While this study showed the learning style preference of DPT undergraduate students with very close percentages and it emphasized learning styles of individual students were more of activist (54.1%) in the active-reflective category, more of sensing (64.1%) in the sensing-intuitive category, more of visual (77.6%) in the visual-verbal category, and more of sequential (54.6%) in the sequential-global category. This similarity was due to the fact that physiotherapy was a field to deal with patients' movement-related impairments and it required a strong knowledge of anatomy that's why both of these students learned by interacting (activist), practical knowledge (sensing), visualizing, and imagining (visual), and in an organized way (sequential).

V. CONCLUSION

This study concluded that in the first group which was active/reflective, the majority of students were activists. In the second group which was sensing/intuitive, the majority of students were sensing while in the third group which was visual/verbal, the majority of students were visual and in the fourth group which was sequential/global, the majority of students were visual.

Students preferred learning styles that were activist, visual, sensing, and sequential. By knowing the learning styles of students, the teaching environment for maximum and efficient learning could be modified.

Table 1: Demographics

Gender	Male	92 (24.9%)
	Female	278 (75.1%)
Education	Matric	365 (98.6%)
	O'levels	5 (1.4%)
	FSC	367 (99.2%)
	A'levels	3 (8%)
Years	1 st year	72 (19.5%)
	2 nd year	76 (20.5%)
	3 rd year	73 (19.7%)
	4 th year	74 (20%)
	5 th year	75 (20.3%)
Institute	RLMC (Rashid Latif Medical College)	146 (39.5%)
	UOL (University of Lahore)	163 (44.1%)
	K.E (King Edward Medical University)	61 (16.5 %)

Table 2: categories with preferences

Categories	Mild	Moderate	Strong
Active	127 (34.3%)	69 (18.6%)	4 (1.1%)
Reflective	131 (35.4%)	38 (10.3%)	1 (3%)
Sensing	139 (37.6%)	81 (21.9%)	17 (4.6%)
Intuitive	106 (28.6%)	25 (6.8%)	2 (5%)
Visual	120 (32.4%)	120 (32.4%)	47 (12.7%)
Verbal	55 (14.9%)	24 (6.5%)	4 (1.1%)
Sequential	114 (30.8%)	76 (20.5%)	12 (3.2%)
global	127 (34.3%)	35 (9.5%)	6 (1.6%)

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