

<https://doi.org/10.48047/AFJBS.6.15.2024.8846-8859>



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

Learning Styles of the students of the faculty of Medicine at Bayazid Rokhan Institute of Higher Education, Kabul: A Cross-Sectional Study

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Volume 6, Issue 15, Sep 2024

Received: 15 July 2024

Accepted: 25 Aug 2024

Published: 05 Sep 2024

doi: [10.48047/AFJBS.6.15.2024.8846-8859](https://doi.org/10.48047/AFJBS.6.15.2024.8846-8859)

Abstract

Understanding of the learning style preference is advantageous for bringing excellence in their educational performance. Medical students may adjust their learning styles based on their recent learning style preferences established on the theory. Understanding the learning preferences of Afghani students, who have unique cultural and educational context, is crucial for developing effective teaching strategies. This study aims to fill that gap by evaluating the predominant learning styles of the students. We conducted this study at Bayazid Rokhan Institute of higher education, Faculty of Medicine. An observational cross-sectional study was done among 200 students. Pashto and Dari versions of Honey and Mumford questionnaire was utilized and student were also classified based on their classification. In our study 40% of the students have strong preference for activists followed, theorists (29%), pragmatist (18%) and 14% for reflectors. The very strong and strong preference was (57%) observed for activist which recommends that the activist learning style is the most prevalent. Tailoring instructive

strategies will likely augment the learning experience and better prepare students for their upcoming occupations. We observed dual preference for learning styles which indicate that different methodologies should be employed. Further research could investigate how these learning styles influence academic performance and clinical expertise.

Keywords: Learning Styles, Medical Education, Honey and Mumford, Kabul, Afghanistan, Bayazid Rokhan Institute of Higher Education

Introduction

Achieving academic brilliance is a joint goal among medical students, yet despite having access to the same resources and teaching approaches, differences in academic performance persist. These differences can often be ascribed to the various learning approaches implemented by students. Understanding these learning styles is critical in adapting educational strategies to augment learning results.

Learning is a multidimensional process that arises both consciously and subconsciously. Alan Pritchard defines learning as "the process of gaining knowledge... a alteration in conduct as a result of practice or experience ... to increase knowledge, skill or something learnt from study, training, teaching, or experience" (Pritchard, 2009, p. 2). This definition highlights the broad scope of learning, covering both knowledge acquirement and behavioral change through various forms of practice and experience.

The idea of learning styles has been widely studied in educational research, exclusively in the perspective of medical education. Various studies have verified that the identification and understanding of students' learning styles can expressively influence teaching efficiency and student activity.

Peter Honey expands on this idea by underscoring the diverse ways individuals learn, mentioning that learning is possible through reading, watching or listening. It can be an active or passive activity. He highpoints that learning can encompass both short-term and long-term memory, enhanced by the experiences of others or personal experiences. (Honey, 2006, pp. 2-3).

Amongst the flexible theories of learning styles, David Kolb's (1984) Four well-known learning styles: intellectual conceptualization, deep observation, solid experience, and active investigation, mentioned that the learning procedure is a sequence that a learner must experience to finish the learning process. The advantage of Kolb's learning cycle is that the learner can go in the cycle at desired point and then continue through the entire cycle. This model was later advanced by Honey and Mumford and according to their Learning Style model, students of prefer activist learning style thrive on engaging, vibrant activities and are knowledgeable in current information, often shining in group debates and inventive tasks. They choose interactive

environments and are expert at solving problems, collaborating effectively, and building strong relationships.

Reflective learners, on the other hand, prefer to gather comprehensive information, take time to analyze results, and examine their actions. Theorists are drawn to complexity, seek clear explanations, and methodically prove their ideas and support distinct goals. Pragmatic learners emphasis on practical, real-world difficulties, eager to test new approaches and determine their efficiency and rationality (Czepula *et al.*, 2016).

To assist in identifying these learning styles, an 80-point structured questionnaire called the Learning Style Questionnaire (LSQ), was established by Honey and Mumford which has been extensively used to help students discover their ideal style. Research has revealed that the LSQ has higher validity and reliability compared to Kolb's Learning Style Model. (Honey and Mumford, 2000). Furthermore, Kappe *et al.*, (2009) verified that data collected from LSQ could be effectively employed to modify learning activities and instruction to ensemble individual learner predilections, thereby improving educational results. (Kappe *et al.*, 2009).

Fleming and Baume (2006) introduced the VARK model, which classifies learners into four distinct styles: Aural, Visual, Read/Write l, and Kinesthetic Aural learning styles. Their research shows that medical students often adopt a multimodal approach and integrate different sensory modalities to enhance their learning experience. This is particularly relevant in medical education, where complex information needs to be assimilated and applied in practical settings (Fleming and Baume, 2006).

Kolb's Experiential Learning Theory is chiefly applicable in medical education, where practical experience is vital for grasping clinical skills. Medical students who identify as "Convergers," for instance, are often more skilful at applying academic knowledge to practical situations, a skill critical in clinical rotations (Kolb, 1984).

In the framework of medical education, numerous studies have highlighted the variety of LS among students and the need for adaptive teaching strategies. Lujan and DiCarlo (2006) conducted a study on medical students of first professional and establish that the majority chosen a multimodal learning approach, integrating visual, auditory, and kinesthetic learning styles. This

finding is significant because it suggests that medical education programs should incorporate a variety of teaching methods, including lectures, hands-on labs, and interactive discussions, to cope the diverse learning needs of students (Lujan and DiCarlo, 2006).

A study by Nuzhat *et al.* (2013) on medical students in Saudi Arabia found that most students preferred the "Reflector" learning style, as per the Honey and Mumford model. Reflectors incline to observe and reason wisely before acting, which bring into line with the demands of medical education, where careful consideration and reflection are crucial in clinical decision-making (Nuzhat *et al.*, 2013).

These studies jointly highpoint the vital role that understanding learning styles and applying relevant learning theories play in augmenting academic outcomes, predominantly in a demanding field like medical education. Teachers can effectively help students achieve academic success by implementing student-centered strategies that take into account different learning styles.

While numerous studies have evaluated the learning styles of medical students worldwide, there is a notable gap in research focusing on the learning styles of medical students in Afghanistan, particularly at Bayazid Rokhan Institute of Higher Education, Kabul.

A thorough understanding of students' learning preferences in this unique educational and cultural environment is critical to developing effective instructional strategies. By analyzing the most common LS of the students of MD, this study aims to fill the knowledge gap and provide recommendations for improving educational strategies that help Afghan students achieve academic success.

Understanding the learning preferences of students in this unique cultural and educational context is crucial for developing effective teaching strategies. This study aims to fill that gap by evaluating the predominant learning styles of these students, providing insights that can enhance educational practices and support academic success in Afghanistan.

Materials and Methods

This study was done at Bayazid Rokhan Institute of higher education, Faculty of Medicine. Main research committee of Bayazid Rohan approved this study. In this cross-sectional study, 200 students of Faculty of Medicine from 1st, 2nd 3rd, and 4th year took part in this study. Informed consent was take first and then each of the students was required to complete the questionnaire. Learning style questionnaire (LSQ), used in this study was established and validated by Honey and Mumford (Honey and Mumford, 1992). Pashto and Dari versions of this questionnaire was utilized. The LSQ included 80 points, 20 for each of the four learning styles categorized as reflector, activist, theorist, and pragmatist. One score was assigned for each correct attempt while no score was given for unattempt questions. There were 20 scores for each learning style. The LSQ took about 25 minutes to complete. The score of each student for every learning style was noted, and according to the Honey-Mumford classification individual preferences for each category was recorded, [Table 1] and then the students with preference for a specific LS was recorded.

Table 1: Honey-Mumford scale of preference for each LS (1992)

	Very Strong	Strong	Moderate	Low	VeryLow
Activist	13-20	11-12	7-10	4-6	0-3
Reflector	18-20	15-17	12-14	9-11	0-8
Theorist	16-20	14-15	11-13	8-10	0-7
Pragmatist	17-20	15-16	12-14	9-11	0-8

Results

In our study, all 200 students were male, as university education for female students remains halted in Afghanistan, pending further government directives. The participant's mean age was 23 years (18 to 30). Upon categorizing based on the preferred LS, very strong (40%) preference was observed for activists followed, theorists (29%), pragmatist (18%) and 14% for reflectors. It should be noted that many individuals have the same preferences for more than one learning style, as shown by the finding that the total number of students in each style is greater than 100% [Table2]. The very strong and strong preference was (57%) observed for activist, 44.5% for theorists, pragmatist (40%) and reflector was (34%). This recommends that the most prevalent learning style in our students of faculty of Medicine was the activist. Figure 1 and Table 2 characterize the preferences for each of the learning style. More than one learning styles were preferred by about 42% of students. Activist-reflector combination was 30%, activist-theorist combination was 20.5% and reflector-theorist styles combination was 13%. As well as, 14% the students shown preference for three or more LS and hence were marked as to have no specific learning style.

Table 2: The percentage of intensity of preferences among faculty of Medicine students for Honey-Mumford's LS

Preference	Activist	Reflector	Theorist	Pragmatist
Very strong preference	80	28	29	36
Strong preference	34	40	26	44
Moderate preference	56	67	75	51
Low preference	18	29	53	36
Very low preference	12	36	17	33
Total	200	200	200	200

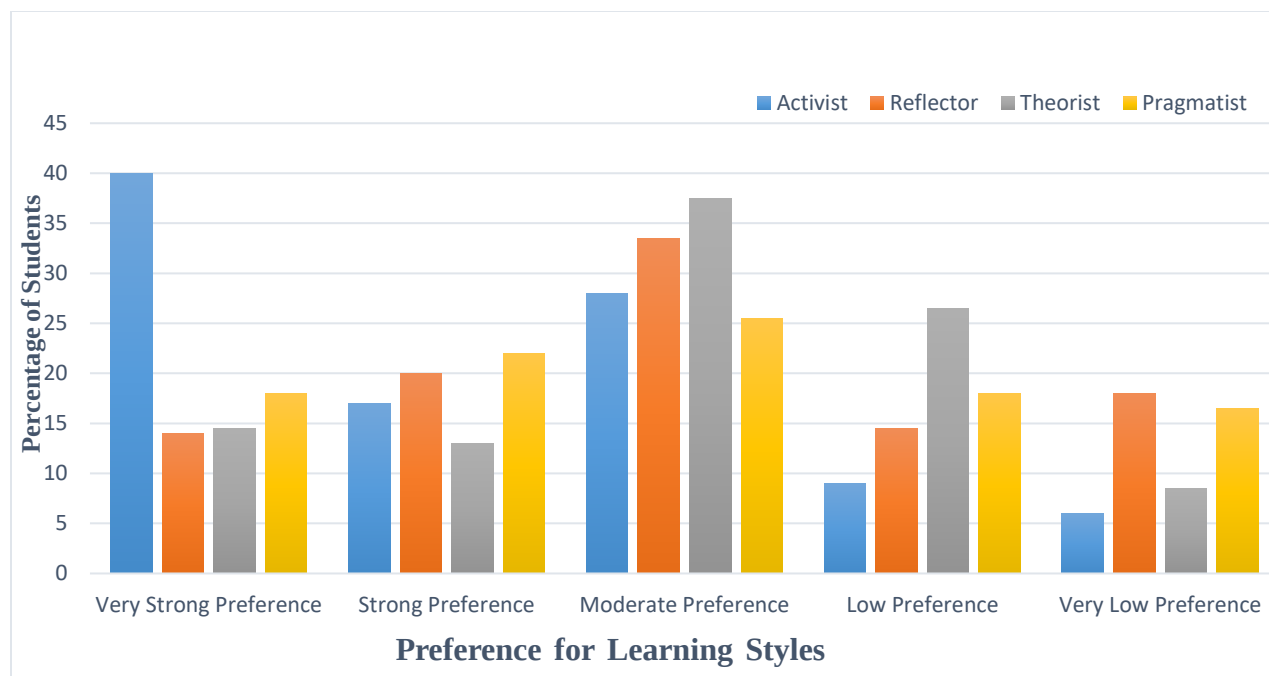
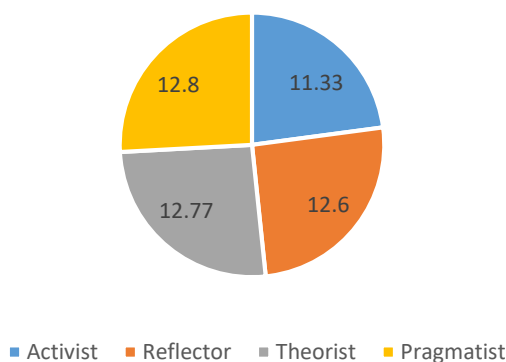


Figure 1: Clustered Graph illustrating the medical students percentages having diverse level of preferences for the LS devised by Honey and Mumford.

Descriptive statistics scores for each LS, as shown in Table 3, displays highest mean 12.79 and median 13.5 values for the pragmatist styles. Pie diagram demonstrating the preferred LS of the whole sample of this study [Figure 2]. The activist style scored low values of mean and median, although being the most frequent style with very strong preference.

Figure 2: Pie diagram illustrating the mean values of LS among the students of faculty of Medicine



If we refer to Table 1, it comes to be clear that this may be ascribed to the lower values in the sequences used for classifying the preferences for activist style.

Table 3: Descriptive statistics for the learning style scores of faculty of Medicine students in the present study

	Activist	Reflector	Theorist	Pragmatist
Mean	11.33	12.6	12.77	12.795
SD	4.428	4.11	3.80	3.94
Median	12	13	13	13.5
Skewness	-0.2073	-0.2955	-0.13173	-0.3593
Maximum	19	20	20	20
Minimum	2	2	3	4

Discussion

Every child has a natural capability of learning and is altered depending on experience of different situations. The students have different strengths, weaknesses, and preferences in obtaining the information. Some are comfortable with visual forms of information, others oral explanation, some prefer to learn actively, and some of them learn passively. (Felder, 1996)

Understanding of the LS preferences, is advantageous for learners to acquire enhanced educational and clinical outcomes. Medical students are capable of adjusting their learning atmosphere based on their new LS preference based on the theory. The instructors or teachers' knowledge concerning their students' LS was valuable as well as in providing the finest learning practice for the students. (Guraya *et al.*, 2014)

LS is not the depicter of the broad picture of the learning competences of a student but preferred LS of the student helps in providing an outline with key points to ponder while designing the teaching strategy. (Czepula AI *et al.*, 2016) One more exciting observation in the earlier as well as in our study, is the fact that these LS are not equally exclusive but are rather likings with variable levels of strengths. Most of the learners in any profession and at any level would possess

a blend of varied strengths of these preferences, directing to deviations among learners within the same LS with very strong preferences. (Czepula *et al.*, 2016)

In this study activist (40%) LS was strongly preferred followed by theorist style (29%). And the reflector style (66%) was least preferred by medical students, having low and low to moderate preference for this style. Activist learners are flexible, eagerness for action, and are optimist for new activities and situations and try to learn going through experiences. In contrast, reflectors are careful, systematic, and logical with good attending competences before making conclusions through reflective observations. Learners with preference for theorist LS are logical, sensible, and objective intellectuals with methodical approach and are the best at asking questions and developing intellectual conceptualization. Learners with Pragmatist LS are keen to investigate policies into practice, technique oriented and via active experimentation they try to learn. (Rolfe and Cheek, 2012).

The findings of a study reported that the undergraduate nursing student's preference is the reflector LS and this dimension is constant with results from previous nursing studies. (Rassool GH and Rawaf S., 2008). In another study they found the 33.3% students with a very strong preference for theorists, activists (30.6%), reflectors (27.9%), and least preference for pragmatists (14.2%). (I Gusti Agung Ayu Andra Yusari *et al.*, 2022)

Assessment of LS of the students from medical background has produced more diverse results. One of the study (Bhalli *et al.*, 2015) established that the most frequent LS are reflector and pragmatist, whereas (Shukr *et al.*, 2013) found the strong preference for activist LS by undergraduate medical students. A study done by (Johnson *et al.*, 2020) reported that overall respondents (Pharmacists) of their study preferred activist (46%) or pragmatist (29%) learning styles.

We, while doing our study observed dual learning styles, including the activist-reflector and activist-theorist combinations, reflect the flexible and adaptable learning methods of medical students. Multimodal learning, as exhibited by 14% of students of our students who preferred

three or more styles, has been noted in other studies as a valuable trait in medical education, allowing students to familiarize with varying learning environments (Kappe *et al.*, 2009).

This proposes that some students may not depend on a single learning style but rather utilize a combination to better suit the varied stresses of medical education. However, these as mentioned in other studies as “all-rounders” or “dual learners” create a strong challenge for instructors to combine multipart teaching methods that support and endorse the learning flexibility. Effective application of a composed teaching method helps the students with more than one preferred learning style become dynamic learners. (Meehan-Andrews, 2009)

Subsequent to the findings of our study, the academic staff of the faculty of Medicine Byazid Rokhan Institute of Higher Education has been described the idea of LS and counseled to utilize the findings of our study in the enhancement of learning method. For example, for our students who have preferences for activist LS, practical experience of the clinical and surgical activities accompanied by their explanation, observation, and assessment followed by contribution in the practical and problem-solving repeated activities has been recommended.

Conclusion

The correlation between our outcomes and existing studies among various medical fields highlights the importance of understanding learning style preferences in medical education. A preference for activist and reflector styles is common among medical, nursing, pharmacy,

stomatology, and laboratory science students, recommending that dynamic and experiential learning plays a critical role in determining the professional competencies compulsory in healthcare system. Tailoring instructive strategies to accommodate these preferences will likely augment the learning experience and better prepare students for their upcoming occupations. The presence of dual and multimodal learning styles among a significant portion of students suggests that medical education programs may need to adopt more flexible and varied teaching tactics to cater to these varied preferences. Regrettably, many instructors are unaware to their students' preferred LS and consequently use a inadequate number of teaching methods, which can be damaging to students. Further research could investigate how these learning styles influence academic performance and clinical expertise.

LIMITATIONS

This study was restricted to a simply one institution having a limited number of students.

Additionally our study was cross-sectional observation in contrast to longitudinal which gives no idea about changes in LS over time.

Influence of factors such as culture, ethnicity and geography on LS was not found out in our research.

Education for female students remain halted in Afghanistan, pending further government directives so we could not find difference of preference between male and female students.

FUTURE SUGGESTIONS

The future researches in Afghanistan should be longitudinal rather than cross-sectional to find out the changes in learning styles over time.

Future studies should find out the relationship between LS and academic performance.

Differences in learning styles need to be find out on cultural, ethnical and geographical basis because Afghans share unique ethnic, cultural and geographical backgrounds.

Data availability

All the supporting material related to our study is available which can be request upon contacting the corresponding author.

Conflict of Interests

We don't have any conflict of interests to report.

Funding

We did not receive any funds for this study to be done

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