

RESEARCH ARTICLE

Learning style preferences of nursing students at two universities in Iran and Malaysia

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Abstract

Purpose: Learning style preferences vary within the nursing field and there is no consensus on a predominant learning style preference in nursing students. The current study compared the learning style preferences of nursing students at two universities in Iran and Malaysia. **Methods:** A purposive sampling method was used to collect data from the two study populations. Data were collected using the Learning Style Scale (LSS), which is a valid and reliable inventory. The LSS consists of 22 items with five subscales including perceptive, solitary, analytic, imaginative, and competitive. The questionnaires were distributed at the end of the academic year during regular class time for optimum response. The Mann-Whitney U-test was used to compare the learning style preferences between the two study populations. **Results:** A significant difference was found in perceptive, solitary, and analytic learning styles between two groups of nursing students. However, there was no significant difference in imaginative and competitive learning styles between the two groups. Most of the students were in the middle range of the learning styles. **Conclusion:** There were similarities and differences in learning style preferences between Zabol Medical Sciences University (ZBMU) and University Sains Malaysia (USM) nursing students. The USM nursing students were more sociable and analytic learners, whereas the ZBMU nursing students were more solitary and perceptive learners.

Key Words: Achievement; Consensus; Learning; Nursing students; Questionnaires

INTRODUCTION

Learning styles help students learn more easily, remember information longer, think more positively about school and learning subjects, achieve academic goals quickly, and utilize information effectively. Mismatched teaching and learning styles can lead to poor performance, challenges, and uncomfortable learning experiences for the students [1]. Thus, identifying students' learning style preferences (LSPs) is essential for providing successful learning opportunities. This study compared the LSPs of nursing students at two universities in Iran and Malaysia.

METHODS

Subjects

This descriptive-comparative study was conducted at Zabol Medical Sciences University (ZBMU), Iran and University Sains Malaysia (USM), Malaysia. The study populations were Muslim, female, and full-time-undergraduate degree students. Male and non-Muslim nursing students were excluded from the study because there was only one male student at USM and one non-Muslim at ZBMU.

Technical information

A purposive sampling method was used to collect data from the two study populations. In order to compare the means of the two study populations, a-priori sample size was estimated based on alpha of 0.05, power (1- β) of 0.80, and a medium effect size (Cohen's *d*) of 0.5. The minimum required sample

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size was 64 per group for a two-tailed t-test [2]. Of the 241 nursing students, 156 met the inclusion criteria.

Data were collected using the Learning Style Scale (LSS), which is a valid and reliable inventory. The LSS consists of 22 items with five subscales including perceptive, solitary, analytic, imaginative, and competitive. The items range on a six-point Likert-type scale from strongly disagree ‘1’ to strongly agree ‘6’ without a neutral point. The Cronbach’s alpha was over 0.70 for all subscales [3]. The raw scores were standardized to T-scores. To calculate T-scores, the raw data was, first, standardized to Z-scores, multiplied by 10, and then 50 was added (T-score = 10 × Z-score + 50). The T-scores ranged from 20 to 80, which were then categorized into 3 groups, including low (< 40), middle (40-60), and high (> 60) to calculate individual preferences.

Ethical approval was obtained from the Ethics and Research Board (human) of USM. The participants had the right to take part anonymously and voluntarily. Informed consent was achieved through a cover letter. The questionnaires were distributed at the end of the academic year during regular class time for optimum response.

Statistics

The data were analyzed using IBM SPSS ver. 20.0 (IBM Co., Armonk, NY, USA). The demographic data and the LSPs at the individual level were analyzed using descriptive statistical methods. The normality of distributions of learning style subscales was assessed using the Shapiro-Wilk test. As the distributions were non-normal, the non-parametric Mann-Whitney U-test was used to compare the LSPs between the two study populations.

RESULTS

Of the 156 participants, 45.51% (71) were from ZBMU, Iran and 54.49% (85) were from USM, Malaysia. The average age of the ZBMU students (20.87 ± 1.35) and the USM students (21.74 ± 1.13) was significantly different (P < 0.001). All of the

participants were female and Muslim.

The Shapiro-Wilk test showed that the distribution of perceptive, solitary, analytic, competitive, and imaginative learning styles were significantly non-normal for both of the study populations (Table 1). Therefore, the Mann-Whitney U-test was used to compare the learning styles between them. Table 2 shows significant differences in perceptive (P < 0.001), solitary (P < 0.001), and analytic (P = 0.009) learning styles between the ZBMU and the USM nursing students. The effect size of perceptive and solitary learning styles was large (r > 0.3), which suggests a true difference between the ZBMU and the USM nursing students. In addition, a medium effect size (r = -0.21) for the analytic learning style indicates the differences are trustworthy. However, no significant differences were found in the competitive and imaginative learning style preferences between the two groups (both P > 0.05). Table 3 shows the middle range (40-60) of the learning styles was preferred by most of the nursing students at both universities. ZBMU’s nursing students highly preferred the perceptive, solitary, and imaginative learning styles. However, one-fourth of ZBMU’s nursing students preferred the low imaginative learning styles. USM nursing students highly preferred the competitive, analytic, and imaginative learning styles.

Table 1. The Shapiro-Wilk test of normality for the Learning Style Scales questionnaire for nursing students at ZBMU, Iran and USM, Malaysia

Learning styles	ZBMU (n = 71)		USM (n = 85)	
	Statistic ^{a)}	P-value	Statistic ^{a)}	P-value
Perceptive	0.681	< 0.001	0.935	< 0.001
Solitary	0.911	< 0.001	0.916	< 0.001
Analytic	0.952	0.009	0.966	0.023
Competitive	0.862	< 0.001	0.905	< 0.001
Imaginative	0.851	< 0.001	0.951	0.003

ZBMU, Zabol Medical Sciences University; USM, University Sains Malaysia.

^{a)}Shapiro-Wilk test.

Table 2. Comparison of learning style preferences between two groups of nursing students at ZBMU, Iran and USM, Malaysia

Learning styles	Median (interquartile range)		U	Z-stat	P-value ^{a)}	r
	ZBMU	USM				
Perceptive	53.53 (6.21)	49.83 (10.35)	1,922.50	-3.92	< 0.001	-0.31
Solitary	55.93 (6.21)	43.98 (9.56)	1,575	-5.16	< 0.001	-0.41
Analytic	47.34 (13.76)	52.84 (8.26)	2,284.50	-2.62	0.009	-0.21
Competitive	51.77 (17.31)	54.66 (10.10)	2,647	-1.33	0.184	-0.09
Imaginative	53.33 (21.66)	50.62 (9.48)	2,814	-0.73	0.465	-0.06

ZBMU, Zabol Medical Sciences University; USM, University Sains Malaysia.

^{a)}Mann-Whitney U-test.

Table 3. The proportion of learning style preferences at individual levels between students at ZBMU, Iran and USM, Malaysia (%)

Learning styles	ZBMU (n = 71)			USM (n = 85)		
	Low	Middle	High	Low	Middle	High
Perceptive	9.9	66.2	23.9	15.3	77.6	7.1
Solitary vs. sociable	14.1	49.3	36.6	9.4	87.1	3.5
Analytic	22.5	63.4	14.1	7.1	81.2	11.8
Competitive	21.1	60.6	18.3	2.4	83.5	14.1
Imaginative	25.4	46.5	28.2	7.1	81.2	11.8

ZBMU, Zabol Medical Sciences University; USM, University Sains Malaysia.

DISCUSSION

The current study investigated and compared the LSPs between two groups of nursing students from two Asian countries. The participants were Muslim, female, and undergraduate degree students. The discussion is based on 156 students.

Significant differences were found in the median scores of perceptive, solitary, and analytic learning styles between the two study populations. The perceptive learning style was more preferred by the ZBMU nursing students than the USM ones. As sensory modalities are the common ways of acquiring information, perceptive learners gain advantages through multisensory learning and teaching materials such as PowerPoint, demonstrations, and being involved in tasks. Using multimodal learning approaches indicates that adult learners integrate the information they receive via the senses. The ZBMU nursing students' preference for the perceptive learning style may indicate more reliance on the immediate experience of observing and doing [4,5], facts, and empirical evidence, with involvement in practical nursing care and educational technology such as PowerPoint as a new phenomenon in the classrooms. The majority of nursing students preferred the perceptual style, which is consistent with other studies [6]. In order to establish an effective teaching and learning environment, the instructors should provide a variety of learning experiences and assignments [7], and apply appropriate learning opportunities based on the students' learning style preferences.

The USM nursing students were more analytic than ZBMU's. The findings support Yong [8]'s argument that Malaysian students are analytic. The finding suggests USM nursing students were more detailed in their learning approaches. Student-centered teaching and learning methods are more common in USM educational environments. The USM nursing students usually have a comprehensive exam at the end of each semester with different kinds of questions including multiple choice, modified essay questions, short and long essays, objective structured clinical examinations, and a short dissertation in the fourth year of the program. However, the ZBMU nursing stu-

dents usually sit for a multiple-choice exam for each course at the middle or end of the semester. They also have a practical exam for the clinical courses. They seldom have essay questions on exams. There is also no dissertation course for them. Instructors publish the results as soon as possible after exams. These factors, thus, may offer more opportunities and responsibilities for USM nursing students to be more detailed or analytic deep learners. On the other hand, the ZBMU educational system seems more conventional and encourages more rote learning, resulting in more passive and superficial learning. The analytic learners need time to take notes, do assignments, and respond to the questions. Thus, the instructors should offer more time to students when lecturing or giving assignments.

The solitary learning style was more preferred by the ZBMU students and the sociable learning style by the USM nursing students. Group learning is common in Malaysian classrooms [8]. A tendency to sociable or group learning style suggests a variety of teaching-learning methods in the USM nursing program. The nursing program at USM offers the student-centered approach and more opportunities for small group work, assignments, discussions and team approach in fieldwork and clinical settings compared to the more conventional teacher-centered approaches in the ZBMU nursing program. The cultural background of the USM students also allows them to study in mixed-gender groups, in contrast to the ZBMU student culture, which inhibits any informal mixed-gender relationships in academic environments. A high preference for working with peers may also indicate independence of the teachers [9], but dependence on peers or external motivators [8]. The sociable students, perhaps, were aural learners [3], who gain information through discussions and listening to explanations. However, the solitary students effectively learned new material when they studied alone. They prefer a private and independent environment to concentrate on details, doing tasks, developing study plans, and other effective strategies. The solitary students may be independent and internally motivated learners. The nursing profession needs nurses to be independent as well as dependent on the team in critical situations to care for patients and clients. Nevertheless, the solitary learners should be reinforced for group working, which is an essential skill for nursing professionals in multi-professional and interdisciplinary health care teams.

The preference for competitive learning style was not significantly different between two study populations. Only 2.4% of the USM students and 21.1% of the ZBMU students preferred low competitive style. The competitive learners prefer teacher-centered learning, compete with other students, and intend to gain higher scores to be acknowledged and rewarded by teachers and parents [10]. They are motivated through external sources such as peers, instructors, and parents. They are also

encouraged by providing clear objectives, expectations, valuable rewards, and offering corrective feedback. In addition, they are also motivated through internal sources such as setting their own learning needs and goals, developing an action plan, searching for a variety of activities and sensory stimulations to create and/or maintain their own curiosity. Instructors should drive the internal and external motivators of students to provide an acceptable competitive learning environment as well. A competitive teaching-learning environment is traditionally encouraged by society members such as teachers, parents, or peers. It seems to be a cultural force in addition to individual interests that encourage or inhibit competition. In feminine societies, any attempt to be excellent is easily ridiculed and leads to jealousy; failure is a relatively minor incident; teachers praise and encourage weaker students rather than good ones [11]. These factors may suggest why one-fifth of ZBMU's nursing students were reluctant to be competitive learners. However, the Malaysian competitive economic program may encourage members to be competitive as well. Competition is neither good nor bad, but it should be healthy and non-destructive. In a healthy competition, students respect each other and do not feel victory when they achieve in the courses [12].

No significant difference was found in the median score of imaginative learning style between the ZBMU and USM nursing students. The imaginative learners are able to alter concrete information into abstract or vice versa; that is, they are able to integrate the left and right brain functions simultaneously and pay more attention to the details. Therefore, offering sensible and direct knowledge is as important as theoretical or conceptual knowledge to create an imaginative mind. Of the ZBMU nursing students, approximately 25% did not prefer the imaginative learning style. This may indicate these students may not reflect thoroughly on subjects so they learn superficially. Alternatively, the learning programs are inadequate to improve the students' imagination. Instructors should stimulate the students' imagination through creating a challenging critical thinking and educational environment. To be a competent nurse, the students have to integrate theoretical and practical issues or be imaginative.

The results show that, most of the participants were in the middle range of LSPs, which is consistent with flexible or multimodal nursing students. These students learn deeply and adapt to instructions without any special requirements when they are enthusiastic about the topics. However, they learn superficially when not interested [9]. Therefore, the instructors should present teaching materials using multisensory instructional methods and apply flexible, creative, and student-centered teaching strategies. They should provide activities based on student learning styles and interests, and formulate clear

objectives when the assignments do not match with the students' learning styles. The instructors should encourage students to promote their less preferred learning styles through developing new ways of learning and combining different educational approaches. In addition, the preference for the middle range may reflect the flexibility of the students as well as the course [9].

The generalizability of results is limited due to sample characteristics (e.g., Muslim and female). However, the findings of the study are applicable to teaching and learning situations in multicultural environments. The instructors can develop pedagogical strategies based on the preferred learning styles of the students despite the questionable effects of matching teaching styles to learning styles [13]. They should identify the students' learning style preferences to offer suitable strategies and materials for all learners. They also should acknowledge cultural differences that may affect the students' acquisition of new knowledge.

In conclusion, the USM nursing students were more sociable and analytic, whereas the ZBMU nursing students were more solitary and perceptive. However, there was no significant difference in imaginative and competitive LSPs between the ZBMU and the USM nursing students. The LSPs were varied despite the same educational program, gender, and religion of the two study populations. Although the average age of the populations was significantly different, a one-year difference seems negligible. In addition, the results may be attributed to the cultural and learning environments [13,14]. Therefore, future studies should investigate the impacts of cultural values and demographics on the LSPs. It is also worth bearing in mind that the LSS, like other inventories is not a diagnostic test; it is a simple self-report questionnaire for determining how students learn and remember materials best, especially in educational environments.

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CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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SUPPLEMENTARY MATERIAL

Audio recording of the abstract.

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