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RESEARCH ARTICLE

Descriptive Study of Nursing Students' Learning Styles. Case Study of the Professional Bachelor's Degree Cycle in Nursing of the Higher Institute of Nursing Professions and Health Techniques of Casablanca, Morocco

Abderrahmane Lamiri^{1,2,*} , Rabia Qaisar^{1,2} , Driss Khoaja¹ , Omar Abidi^{1,2} , Hind Bouzoubaa¹  and Abderrahim Khyati¹ 

¹Interdisciplinary Group of Didactics of Science & Educational Sciences (GIDS&SE-ENSC), The Multidisciplinary Laboratory in Sciences and Information Communication and Education Technology (LAPSTICE), Faculty of Sciences Ben M'sik, Hassan II. University of Casablanca, Casablanca, Morocco

²The Higher Institute of Nursing Professions and Health Techniques of Casablanca (ISPITSC), Morocco

Abstract:

Background:

Learning difficulties experienced by learners are among the most recurring problems in education and, without doubt, the most worrying. Thus, at the beginning of each year, we at the Higher Institute of Nursing Professions and Health Techniques of Casablanca, Morocco (ISPITSC) note the diversity of intrinsic characteristics in our students in the initial training of the Professional Bachelor's (PB) degree cycle in initial nursing training. We believe these characteristics are related to the varied difficulties of adaptation and learning encountered in the first year. However, a lack of knowledge of the learning styles adopted by our students prevents the teaching staff from detecting the difficulties encountered by the learners in assimilating new knowledge during the 3 years of their training course. The identification of these learning styles and subsequent readjustments in training would help improve the quality of training and guarantee an effective mobilisation of knowledge during various care activities, while allowing the acquisition of necessary skills in the context of quality care that meets the needs of patients.

Objective:

The objective of this study is to identify the learning styles of nursing students in the BP nursing cycle at ISPITS Casablanca in Morocco and to classify their origin and nature according to the typology described by Honey and Mumford.

Methods:

Our research used a diagnostic and screening instrument for learning styles developed by Honey and Mumford, the "Learning Style Questionnaire" (LSQ), an abbreviated French version of which (LSQ-Fa) has been translated by Fortin *et al.* A sample of 49 students received the data collection instrument.

Results:

The study obtained a response rate of 87.75% (43 students). The results are similar to the research that shows that reflector style is the preferred learning style of learners in PB nursing education. However, the study also identified an important category of students who have dual learning styles.

Conclusion:

Given the gap between learners' teaching style and learning style and its consequences for the assimilation of the knowledge provided, nursing educators should adapt their educational strategies to the particularities of their students in order to reduce learning difficulties and promote the effective mobilisation of knowledge in various complex learning situations.

Keywords: Learning style, Nursing care, Nursing students, Nursing education, Learning difficulties, Educational strategies.

Article History

Received: August 13, 2020

Revised: December 11, 2020

Accepted: December 14, 2020

1. INTRODUCTION

The role of nursing schools is to facilitate learning by helping students absorb new knowledge, apply it in practice and adopt attitudes that are central to the nursing profession [1 - 9]. The collection and diagnosis of nursing students' Learning needs are essential for innovative professional development activities to fill training gaps and ensure care that meets standards of patient safety and well-being [10 - 15].

It is fundamental to take into account the learners' preferences in relation to learning styles in pedagogical practice in order to guide nursing educators in their mission to develop effective teaching strategies [16 - 22]. We need to better understand our diverse array of students through a description of their learning styles that serves to diagnose and identify learning difficulties, so as to further prevent the failure to acquire and assimilate knowledge [23 - 25].

Nursing educators can help students identify personal preferences in relation to learning style, create educational activities adapted to students' preferences in relation to learning style, and ensure learning opportunities that correspond to preferred learning styles [22, 25 - 28].

Learning styles have been studied through the learner-centred cognitive approach, which has proved that the adoption of new pedagogical approaches can improve student satisfaction [18 - 20, 22]. Although their objectives have been different, researches using this approach have produced interesting results. Our research was designed to use this approach to describe the learning styles of students in the nursing program at ISPITSC.

1.1. Literature Review

A comprehensive teaching-learning approach must take learning styles into consideration in order to ensure a more effective educational approach [16, 29].

In the literature, the terms learning style and cognitive style are employed interchangeably. From 1970 onwards, this last word was substituted for the first word for the reason that an individual's cognitive style is just one aspect of his or her own learning style [30]. In addition, learning styles reflect the learner's chosen learning approach, learning setting, key learning interests and overall delivery practices [31].

There are many definitions of learning styles using different methods and schools of thought. Jonassen and Grabowski [32] choose as their definition that learning style is: "the preference of students for different kinds of learning and teaching activities". Thus, learning consisted of adopting strategies, interests, and preferences for teaching". Another more recent definition specifies that learning styles delineate

aspects of behaviour in its common cognitive and affective dimensions, that characterise the way in which any individual interferes with learning conditions or environments [33, 34]. Under this definition, the learning style can be presented as: characterisation of the attitudes and behaviours that define preferred individual learning styles [6].

Kolb [35] has identified a repertoire of several learning styles that can be considered as a continuum of learning phases [cycles] ranging from "thoughtful and attentive observation, to concrete experience of action, to abstract and theoretical conceptualization, and finally to action experimentation". According to Kolb, every learner prefers a different learning style according to his or her own preferences, which he classifies through the following traits:

- Divergent
- Assimilator
- Convergent
- Accommodating

According to Kolb [36], understanding students' learning styles is very important for improving student effectiveness (Table 1).

Note that learning styles are dynamic, like any behavioural model. Despite this, most individuals have strong preferences for one learning style over another. However, Kolb *et al.* [37] agree that each individual's learning style is not necessarily fixed or static.

Honey and Mumford [5, 6] developed their questionnaire on learning styles based on Kolb's frame of reference [35] through an experiential process.

Their four proposed learning styles are Activist, Reflector, Theorist and Pragmatist (Table 2).

These four learning styles – activist, reflector, theorist and pragmatist – overlap and are the product of combinations of stages of a learning experience.

2. METHODOLOGY

2.1. Design

The purpose of our research focused on identifying the predominant learning style chosen by nursing students in the PB Nursing cycle at ISPITSC in Morocco based on the four styles described by Honey and Mumford [12, 16]. To achieve this objective, a quantitative and descriptive study was carried out. The study was designed to include a comprehensive sample of mental health nursing students enrolled in a PB diploma course at ISPITSC.

Data was analysed according to the Learning Style Questionnaire, abbreviated French version (LSQ-Fa) ; this diagnostic and screening instrument for learning styles was developed by Honey and Mumford and translated by Fortin et al [7].

* Address correspondence to this author at Ben M'sik Faculty of Science, Hassan II University, Interdisciplinary Group of Didactics of Science & Educational Sciences (GIDS&SE-ENSC), Multidisciplinary Laboratory in Sciences and Information Communication and Education Technology (LAPSTICE), Casablanca, Morocco;
Tel: 00212 5227-04671; E-mail: abderrahmane.lamiri-etu@etu.univh2c.ma

Table 1. Learning styles according to Kolb.

<i>Learning styles</i>	<i>Characteristics</i>
<i>Divergent</i>	Learn well through practical experience and observation. Emotional, creative and open with other people. Frequently prefers trades such as human resource development, consulting or nursing. Excellent in Brainstorming activities.
<i>Assimilator</i>	Oriented towards less important people, has more interest in ideas and representations of an abstract nature. Presentation format and organization of information characterized by clarity and logic. In a predicative learning environment, individuals who prefer this style enjoy reading, teaching, discovering analytical models and having time to think.
<i>Convergent</i>	Has the ability to solve problems and enjoys activities of a technical nature; is not very concerned with individuals and interpersonal aspects. People with this style are less people-oriented. Usually choose careers in the technology sector. Excellent at hands-on experience and active experimentation and prefer to take a hands-on or experiential approach.
<i>Accommodating</i>	Learn well through hands-on experience and active experimentation. They have a practical or experiential preference. They are attracted to new challenges and experiences and to the execution of plans. Their learning is people centred and active.

Table 2. Learning style, according to Honey and Mumford.

<i>Learning styles</i>	<i>Characteristics</i>
<i>Activist</i>	They are guided by current experience and are essentially captivated by the here and now. They prefer to take on new challenges and be self-centred.
<i>Reflector</i>	Are observers of experiences and prefer to analyse them in depth before action. They are good listeners, cautious, and tend to adopt a discreet and reserved attitude.
<i>Theorist</i>	Like to opt for a rational problem-solving approach, but at the same time they require a clear structure and a precise goal. When they are called upon to carry out ambiguous activities, with no obvious objective and a lack of organization, and especially when emotions come first, theorists learn the least.
<i>Pragmatist</i>	Pragmatists are interested in experimenting with ideas and methods to test how they work in practice. They are practical people who prefer to make decisions and solve problems.

The LSQ-Fa is a questionnaire or inventory designed to identify a preferred mode of cognitive functioning in a learning situation. There is no judgment associated with each style (as would be found for a test where one performance is judged to be better than another). Although everyone tends to find that their personal functioning is “better” than that of another person with a different style, no style is judged better in itself. For the authors, each style has its own value in itself and has strengths and weaknesses in different life situations. It is very important that people who respond to the LSQ-Fa be aware of this characteristic of learning styles [7] (Fig. 1).

The French adaptation of Honey and Mumford's learning style questionnaire [7] studies a person's learning style through 48 questions, 12 questions are assigned to every learning style (active, reflector, theorist and pragmatist), and uses a seven-point Likert scale for the answers. The QSL-Fa was not tested as part of this research, because the questionnaire was validated by its use with nursing students.

The questionnaire was administered to students in the nursing stream of the ISPITSC Mental Health Nursing Option in accordance with the administration procedures set by the authors, and the response rate exceeded 87%. Data collection was conducted over a one-month period during the 2019-2020 academic year. In the context of this study, we have received permission from the authors to use the questionnaire.

2.2. Background

The present study took place during the 2019/2020 academic year at the ISPITSC, a non-university higher education institution created by Decree No. 2.13.658 of 30 September 2013. The institute has five options and three levels of study; the option of choice for this study was mental health nurses, with a total of 49 students distributed, as shown in Table 3.

2.3. Data Collection

After authorization from its authors, the abbreviated French version (LSQ-Fa) of the Learning Style Questionnaire was sent to ISPITSC nursing students in accordance with the terms and conditions set by the authors. The response rate exceeded 87%. Data collection was conducted over a one-month period during the 2019-2020 academic year.

2.4. Data Analysis

For the analysis of the data collected by the questionnaire, we used a scale compilation sheet and descriptive analysis. The variables have been summarised using frequency and percentage distributions and presented in graphical form.

The variables were summarized using frequency and percentage distributions and presented in graphical form. For each learner, the data collected from the learning style questionnaire was recorded and transcribed into a table in order

to define the learner's preferred learning style (Figs 2 and 3).

2.5. Ethical Considerations

As with all research, this study took ethical issues into consideration, namely: (a) the right to self-determination: participants are free to participate or not to participate in this study, and informed consent was presented to participants before they completed the questionnaire; (b) the right to anonymity and confidentiality: this was respected in the data collection instruments.

3. RESULTS

The sample includes 49 students. Of these, 43 responded to the questionnaire and the response rate was 85.71%. The demographic characteristics of the non-responding students are similar to those of the respondents. The participants were 10 (23%) males and 33 (77%) females. The average age of the students was 20.5 (SD = 1.35) with a variance of 17 to 24 years. Fifteen of the respondents (36%) had a Bachelor of Science in the science of life and earth series, 28 (64%) had a Physics and Chemistry series.

In terms of the level of study of the students in the current training, twenty-two respondents (51%) were in their third year (Semester 5), 15 (35%) were in their second year (Semester 3), and 6 (14%) were in early training in their first year (S1) (Table 4).

Table 3. Number of students per year of study.

<i>Level of study</i>	<i>Number of students</i>
Semester 1 (1st year)	06 students
Semester 3 (2nd year)	25 students
Semester 5 (3rd year)	18 students
Total	49 Students

Table 4. Standards for the adapted and abbreviated French version (LSQ-Fa) of the Learning Styles Questionnaire (LSQ) Fortin et al..

	Very High Preference	High Preference	Medium Preference	Low Preference	Very Low Preference
Activist	84-72	71-68	65-64	56-53	49-12
			63-62		
		67-66	61-59	52-50	
			58-57		
Reflector	84-76	75-73	69-68	56-52	51-12
			67-65		
		72-70	64-62	50-47	
			61-60		
Theorist	84-70	69-66	63-62	53-51	46-12
			61-60		
		65-64	59-57	50-47	
			56-54		
Pragmatist	84-73	72-69	66-56	58-56	50-12
			64-63		
		68-67	62-61	55-51	
			60-59		
			31-40		

Fig. (1) compares the average scores obtained by our study (in blue) and those of the standard described by Fortin *et al.* (7) in the abbreviated French LSQ version (in orange) with respect to the preferred learning style adopted by the students.

Fig. (2) summarises the distribution of learners' dominant learning styles according to their degree of preference for one of the four learning styles listed.

A descriptive study of the frequency of students' preferred learning styles shows a predominance of the reflector style (45%), indicating that the most in the sample fall into this category. The pragmatic style, which represents (29%) of the learners, comes in second place, followed by the active (12%) and the theorist (10%).

The dual learning style category accounts for 62% of the sample, with respondents in this category having the highest scores in two categories, both of which were ranked at the strong or very strong preference level.

Fig. (3) shows the frequency of the distribution of participants with dual learning styles. The dual learning style category resulted in five combinations: active/pragmatic, active/reflector, reflector/pragmatic, reflector/theorist, theorist/pragmatic. Dual learning styles were identified among 26 students (out of 43). In this group, the dominant category is the reflector/pragmatic learning style (42%).

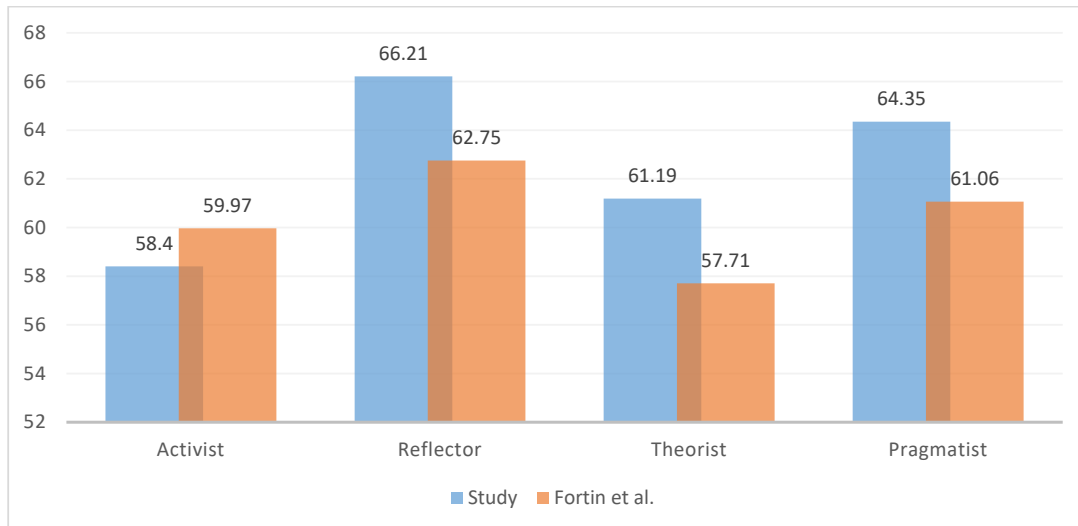


Fig. (1). Compilation of average scores obtained in relation to those of the standards in the adapted and abbreviated French version (LSQ-Fa) of the Learning Styles Questionnaire (LSQ) Fortin *et al.*,2000.

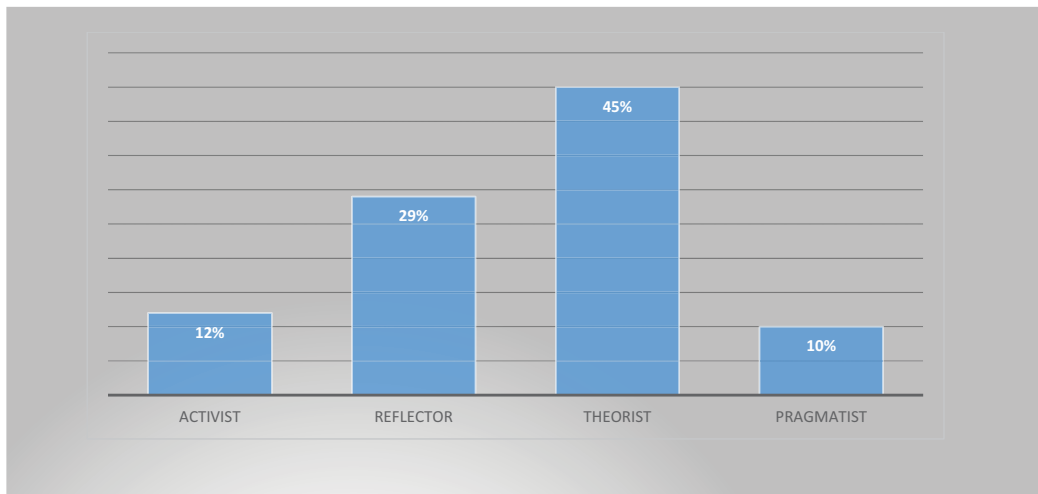


Fig (2). Distribution of dominant preferred learning styles among students.

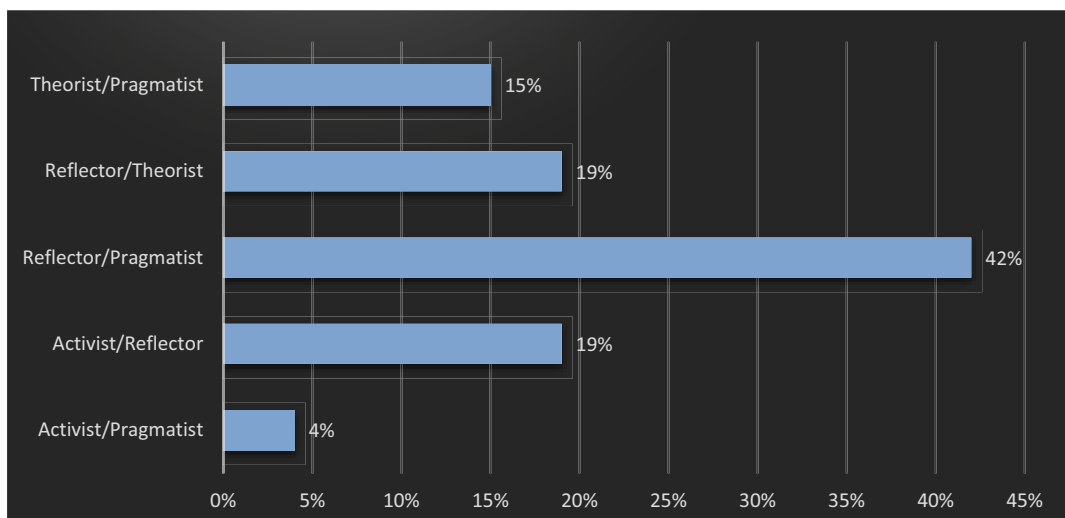


Fig. (3). Distribution of participants with dual learning styles.

4. DISCUSSION

The results of the student questionnaire showed that 67% of the student population is between 17 and 20 years of age. The female gender is predominant (77%). The majority of the students registered at ISPITSC have an SVT Bachelor's degree (64%), of which 50% are in the second-year level of the PB.

The study showed that the reflector style is the most dominant style amongst the PB students in the nursing cycle at ISPITSC, which is consistent with the results of other studies [10, 26, 38, 39].

Based on Honey and Mumford's [6] questionnaire of learning styles, several studies conducted among a population of medical sciences students have confirmed a significant prevalence of reflector style [33, 40, 41]. Our results are consistent with these studies. Health professionals seem to have preferences for similar learning styles because they have the same scope of practice. According to Fortin *et al.* [7], "this reflector style is a return to the experiential phase, which is characterized by the importance of distancing oneself from people and things. It is marked by caution and careful reflection before making a decision and before taking action, without time constraints".

Cavanagh *et al.* [26] found that the learning style with the lowest average score was the active style. In this study, however, compared to the other preferred learning styles, the theoretical learning style recorded the lowest means (Fig. 2). According to Fortin *et al.* [7], "this theoretical learning style is the conclusion phase, which is characterized by the search for logic and coherence ... with models and theories."

In addition, the results showed that a significant proportion of students (62%) have a strong preference for a dual learning style. There are few data on this phenomenon in the literature, apart from a few studies on nursing care [10, 23, 42] and others carried out among physiotherapy students [43] and general practitioners [33, 40].

Similarly, a study by Olson and Scanlan [43] of physiotherapy students showed that almost one third of the sample had a preference for dual learning styles. In addition, studies conducted among general practitioners have found a preference for dual learning styles, in particular the reflector-theoretical style [33, 40].

In this study, the characteristics of the sample of PB nursing students may explain the heavy representation of learners adopting the dual learning style. As adults, they have a greater capacity to adapt to the particular training context by developing certain competencies essential to meet the training requirements.

By the same perspective, the preference for dual learning styles observed in this research may also be in line with the reality of nursing sciences, which is mainly people oriented (reflector) and practical (pragmatic). The results of this research are consistent with Kolb's findings style [35], which confirm that no learning setting leads to a single learning.

Kolb also stated that successful learning requires the ability to apply the skills required for each of the learning modes in any learning situation. He also adds that, as the individual's

developmental process increases, the four learning modes must be integrated into the repertoire [36].

CONCLUSION

Ultimately, this work aims to identify the learning styles of learners in the nursing branch of the PB cycle of the ISPITSC. The results reveal a diversity of styles, with a predominance of the reflector style, and highlight the importance of taking learning styles into consideration when choosing teaching methods to better meet the needs of students and ensure better results.

Understanding preferences of students' learning styles, would allow teaching styles to be adapted with students' learning styles, which would make instruction more effective.

LIMITATION

This research provides a clear picture of the predominant and preferred learning style of students in a nursing program in an Moroccan Higher Institute of Nursing Training. However, because the study was conducted in a single institution and with a limited sample of students, we cannot claim to be able to generalise the results, although it seems to us that the students, selected on a national scale, certainly have the characteristics of the population of all institutes on Moroccan territory, which confirms our findings. It is up to the reader to decide on the applicability of the conclusions to his or her own context. For further research, it would be advisable to conduct a study that includes several sites and a larger number of nursing students.

Another limitation in this research is related to the criticism by several researchers of the reliability and stability of learning styles [44, 45]. Such criticism argues that learning styles are less susceptible to be exacts or conforms and are not static and unchangeable entities. On the other hand, through several studies Kolb's learning style inventory and Honey and Mumford's learning style questionnaire have received several criticisms in relation to their psychometric properties and the reliability and validation standards used. This proves that the model lacks proof of stability and cannot be generalised due to moderate internal consistency and the weakness of the instrument [45 - 48].

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the local ethics committee of the Higher Institute of Nursing Professions and Health Techniques of Casablanca, Morocco.

HUMAN AND ANIMAL RIGHTS

No animals/humans were used for studies that are the basis of this research.

CONSENT FOR PUBLICATION

Informed consent was obtained from all participants.

AVAILABILITY OF DATA AND MATERIALS

Data supporting the conclusions of the article are available from the corresponding author [L.A] upon request.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

ACKNOWLEDGEMENTS

Declared none.

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