Analytical Study for the VARK Learning Styles among the Jordanian Universities Students while Using Distance Learning During the Corona Pandemic.

Osama Abdel Fattah1,*
The Ministry of Education (Jordan),
osamhsaf.2811@gmail.com

Ghazi El Kailani 2
University of Jordan (Jordan) ,
ghazykylany@gmail.com

Ayed Zureigat 3
University of Jordan (Jordan),
A.Zureigat@ju.edu.jo

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Abstract:
This paper aims to explore the learning styles prevailing among students in Jordanian public universities during the Corona pandemic, and the differences in those patterns according to (scientific specialization, academic stage, and gender). To achieve this, the researchers used the descriptive approach on a sample (1090) students (female, 700 and male, 390). The VARK Questionnaire (Version 8.01) has been used as an electronic questionnaire by using (Google form), which consists of (16) items that deal with the learning styles. The researchers also used percentages and Frequencies by using SPSS version 24. The study's results showed that (68.48) % of female students in scientific faculties prefer the kinesthetic style. In comparison, (60.45) % of male students prefer this pattern. In addition, most students in science and humanities faculties prefer a unilateral style of learning, as the highest percentage was (79.51%) among male students in humanities faculties. In light of the study results, it is necessary to provide and design various educational activities and the lecturers should be use various educational activities in the classroom after the Pandemic.

Key Words: Learning styles, Universities, Distance learning, Coronavirus

الملخص:
يهدف هذا البحث إلى استكشاف أنماط التعلم السائدة بين طلاب الجامعات الأردنية الحكومية خلال جائحة كورونا، كذلك الاختلافات في تلك الأنماط وفقًا للتخصص العلمي والمرحلة الدراسية والجنس. ولتحقيق ذلك استخدم الباحثون المنهج الوصفي على عينة تكونت من (1090) طالبًا وطالبة (390 طالب و700 طالبة). وتم استخدام استبيان VARK (الإصدار 8.01) بواسطة (Google Form)، حيث شملت الاستبانة (16) فقرة متعلقة باساليب التعلم. ولمعالجة بيانات الدراسة استخدم الباحثون النسب المئوية والتكرارات من خلال برنامج SPSS الإصدار 24. وأظهرت نتائج الدراسة أن (68.48)% من طالبات الكليات العلمية يفضلن نمط التعلم الحركي، بينما يفضل (60.45)% من الطلاب هذا النمط. بالإضافة إلى ذلك، يفضل معظم الطلاب في الكليات العلمية و الإنسانية نمطًا وحيداً في التعلم. وفي ضوء نتائج الدراسة، من الضروري توفير وتصميم أنشطة تعليمية متنوعة، كذلك يجب على المحاضرين استخدام أنشطة تعليمية متنوعة داخل الغرفة الصفية بعد جائحة كورونا

كلمات مفتاحية: اساليب التعلم، الجامعات، التعليم عن بعد، فايروس كورونا

***corresponding author: Osama Abdel Fattah**

1 . Introduction

The rapid spread of the Coronavirus caused a global health and economic crisis and affected all social rituals of individuals (Schulten, 2020). Consequently, closures and home quarantine have become among the methods that countries around the world have used to limit this spread (De Brouwer et al., 2020). In the same direction, these closures were part of the emergency protocol that our country relied on, as the first closure was implemented in March 2020 and lasted for (60) days (Khachfe et al., 2020).

Because of these events, schools and universities were closed indefinitely, and there was an increasing movement in countries around the world toward online education (Martinez, 2020). Thus, this education became an educational shift from the traditional methods to the new approach to education through the creation and development of many learning platforms, where many students and teachers found themselves in front of a new academic experience (Lederman, 2020). The process of shifting towards online learning was accompanied by many challenges and problems such as weak infrastructure, low lecturers experience, the complex environment at home, and Poor use of technology by students (Murgatrotd, 2020). Online learning has led to ambiguities and disagreements about what to learn and how to do it, increasing the burden on students and teachers (Zhang et al., 2020).

Thus, finding effective ways and methods of teaching is one of the most critical challenges faced by lecturers in order to enhance learning activities and improve students' academic achievement; where a good lecturer must change his teaching methods to match the learning styles of students because this contributes positively to the development of student's skills and improves their cognitive level (Damavandi et al., 2011; Sison, 2011). Therefore, faculty staff must constantly review their teaching methods to ensure that students have sufficient information to improve their academic performance (Khachfe et al., 2013). Because of these emergency conditions, we need to consider individual differences in learning styles, as those differ according to many factors, including cultural, personal, and emotional. The learning style describes the activities, behaviors, and attitudes that determine students' preferences toward teaching (Honey & Mumford, 2000).

The most widely known classification of different learning styles is the Visual, Auditory, Read-Write, and Kinesthetic (VARK) model (Peyman et al., 2014; Shah et al.,

2011). In the Visual style, the students learn better by noticing pictures and graphs. In contrast, in the Auditory style, students learn better by listening or talking to themselves or others, while in the Read-Write style, students learn better through texts and words, while students learn best in a Kinesthetic style through physical participation and by touching and manipulating materials (Baykan & Nacar, 2007; Dobson, 2010). Studies indicated that 56-73% of students prefer a multimodal learning style (Baykan & Nacar, 2007). At the same time, 54% of students prefer a uni-modal of learning and 46% prefer multiple learning models.

Habibpour et al.(2016) also point out that medical students prefer the reading and writing model. On the contrary, AL-Saud (2013) indicates that the learning model prevalent among most medical students was multimodal. In contrast, Aisiri (2016) indicates that dental students in Saudi Arabia prefer the auditory modal. Aldosari et al. (2018) indicate that medical students in Iran prefer the kinetic pattern. Thus, there are a variety of learning styles present in the classroom, and there are differences in those styles according to the gender variable (Erica et al., 2007).

Based on the previous presentation, **this study aims to** explore the learning styles prevailing among students in Jordanian public universities during the Corona pandemic and the differences in those patterns according to (scientific specialization, academic stage, and gender) variables. To facilitate and encourage students to learn effectively and assist those in charge of the educational process in redesigning the educational system to suit the requirements of this pandemic and similar circumstances by formulating strategies and learning methods according to the prevailing learning patterns.

2. Method and Tools.

2.1. Participants

To achieve the objectives of this study, we have been using the descriptive approach on (1090) Jordanian students (390 males and 700 females) randomly selected. As shown in Table 1.

Table (1): Distribution of the study sample (N=1090)

Variables	Category	Frequency	Percentage %
Gender	Male	390	35.78
	Female	700	64.22

Variables	Category	Frequency	Percentage %
	Total	**1090**	**100**
Collage	Scientific	709	65.05
	Humanity	381	34.95
	Total	**1090**	**100**
Educational level	Bachelor	996	91.38
	Master	60	5.50
	Doctorate	24	2.20
	Total	**1090**	**100**

2.2. Study design

Due to curfew in the country and to reduce interaction face to face, The VARK Questionnaire (Version 8.01) has been used as an electronic questionnaire by using (the Google questionnaire), which consists of (16) paragraphs that deal with the learning styles. In addition, before sending the questionnaire link to the students, approvals were obtained from the universities.

2.3. Ethical considerations

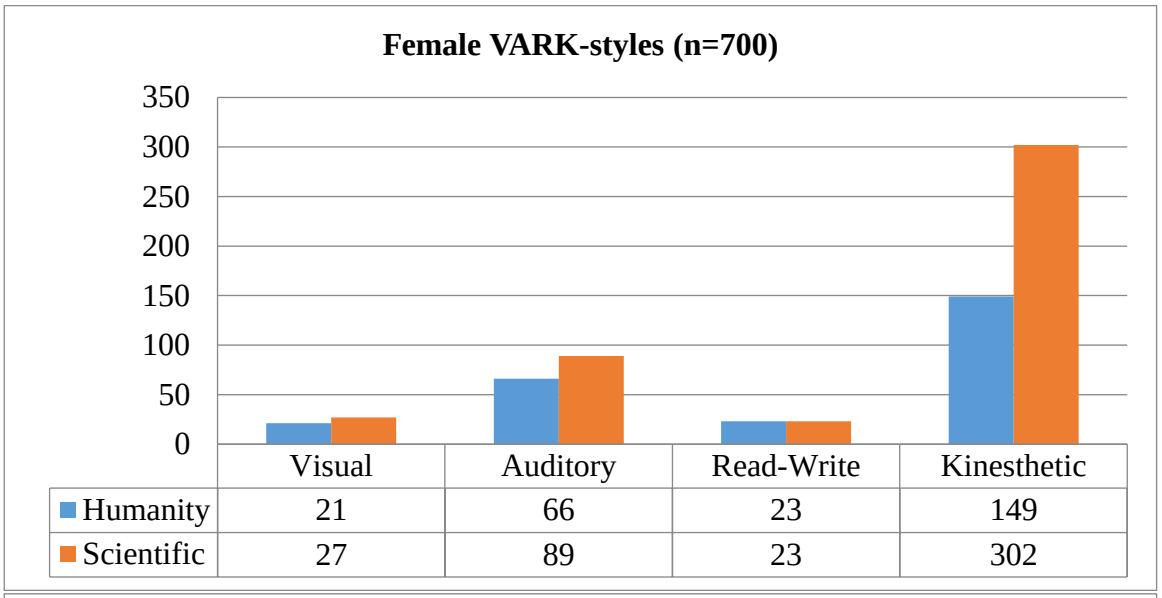
The participants' rights were protected by explaining the purpose and significance of the study. The students were informed that their participation in the survey would remain anonymous and that their privacy was respected. They were provided with a comprehensive explanation that their involvement in the study was voluntary and that they could withdraw at any time. All participants' approval was obtained when filling out the study tool. Accordingly, there was no need for support from the Ethics Committee at the University of Jordan.

2.4. Statistical Analysis

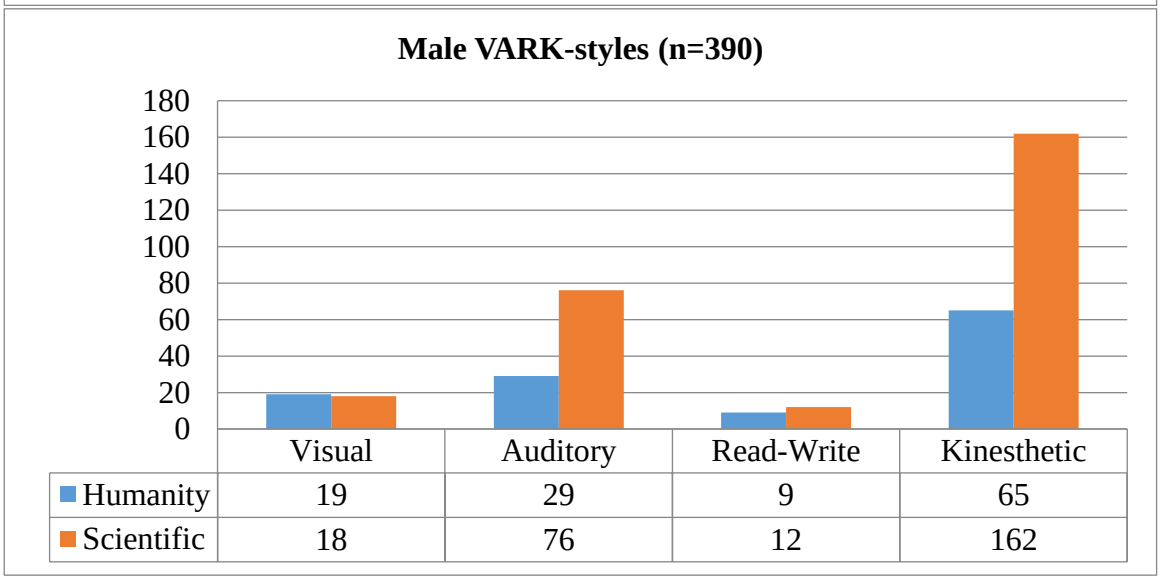
To achieve the study's objectives, the researchers used percentages and Frequencies using SPSS version 24 with a confidence level of 95% ($p < 0.05$).

3. Results and Discussion

The data collected from (1090) students in three educational stages, contained in Figures (1 and 2), reveals the frequency and percentage of study sample responses about the VARK and learning styles.



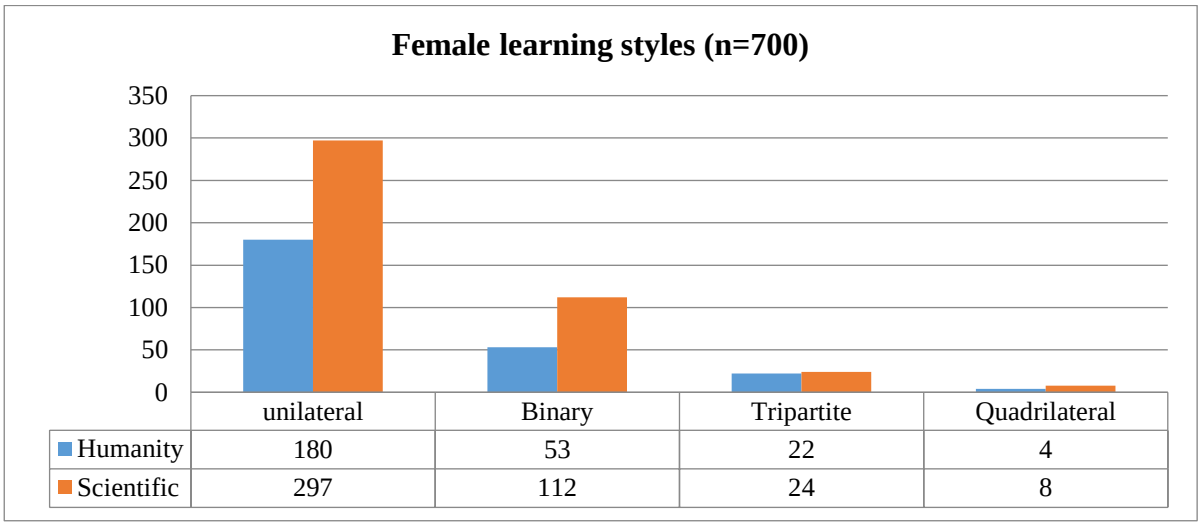
	Visual	Auditory	Read-Write	Kinesthetic
Humanity	21	66	23	149
Scientific	27	89	23	302



	Visual	Auditory	Read-Write	Kinesthetic
Humanity	19	29	9	65
Scientific	18	76	12	162

Figure (1): The frequency of study sample responses about the VARK-styles

Source: Osama Abdel Fattah et al., 2025



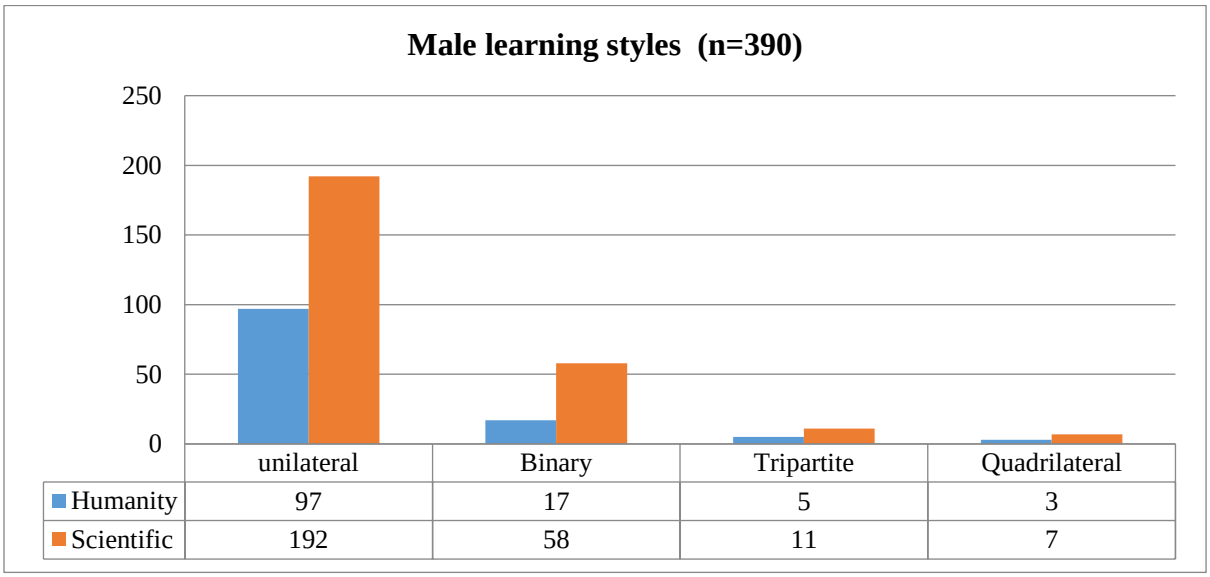


Figure (2): The frequency of study sample responses about the learning styles
Source: Osama Abdel Fattah et al., 2025

Figures (3 and 4), reveals the frequency and percentage of female study sample responses about the VARK and learning styles according to the study stage variables (Bachelor, Master, and Doctorate).

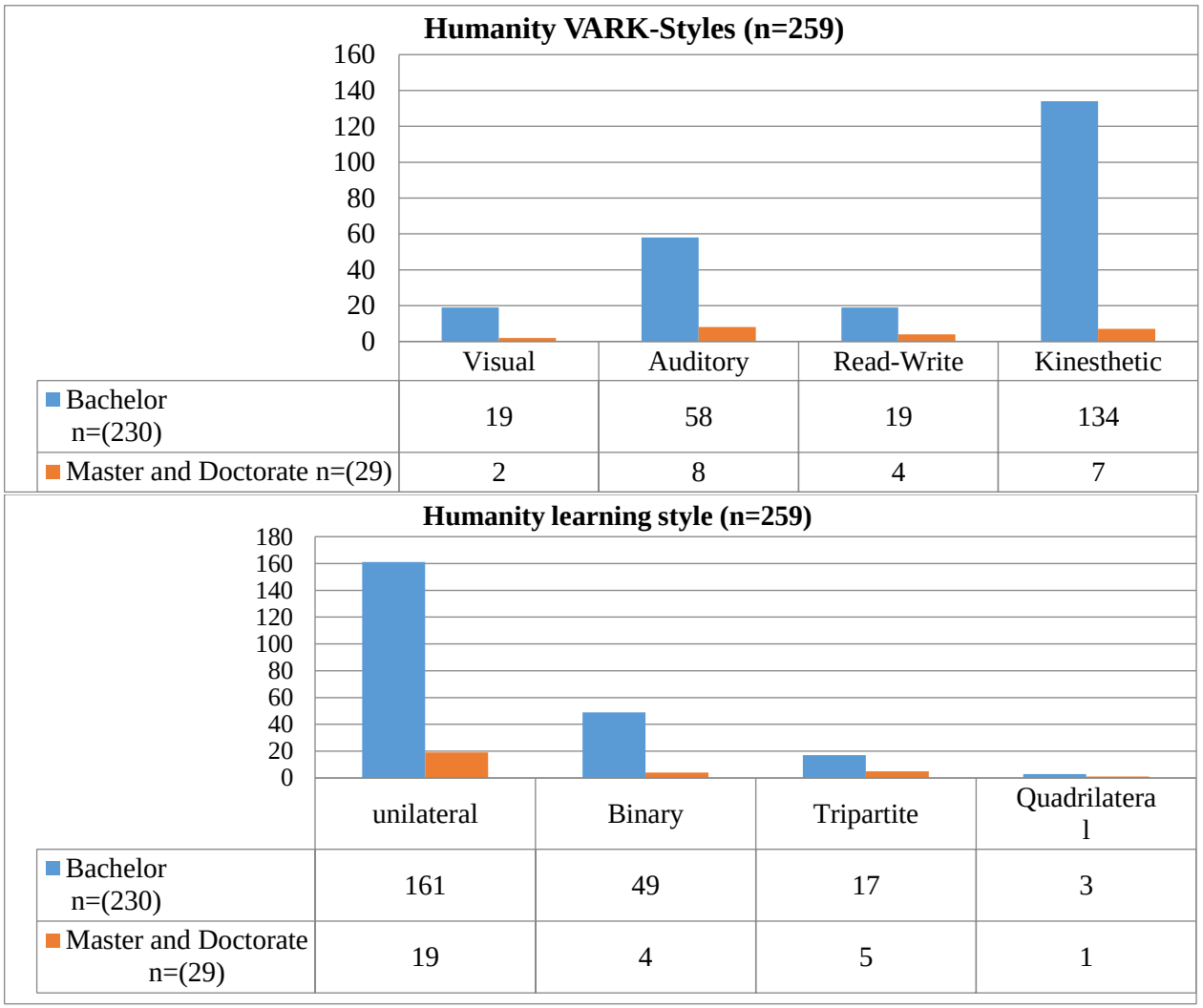
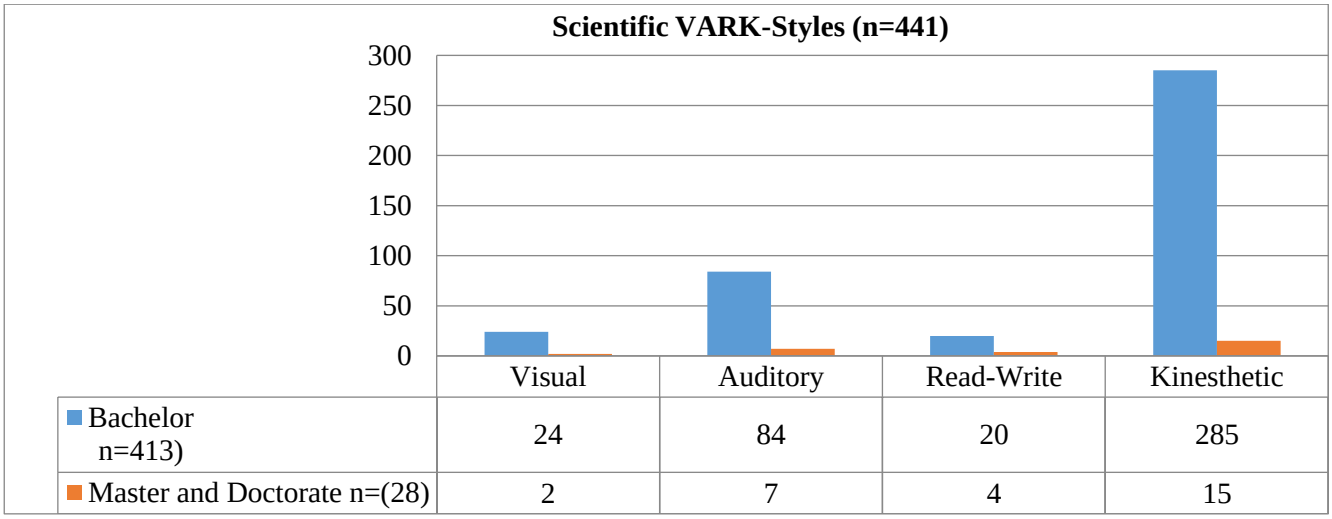


Figure (3): The frequency of humanity study sample responses about the VARK and learning-styles

Source: Osama Abdel Fattah et al., 2025



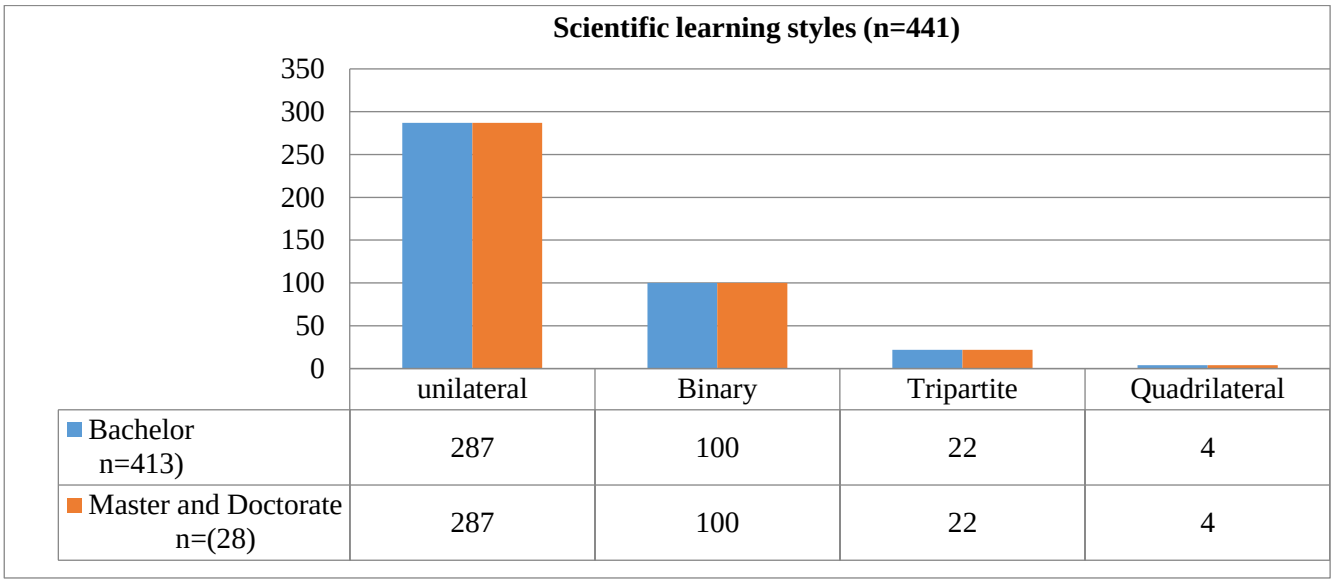


Figure (4): The frequency of scientific study sample responses about the VARK and learning-styles

Source: Osama Abdel Fattah et al., 2025

Figures (5 and 6), reveals the frequency and percentage of male study sample responses about the VARK and learning styles according to the study stage variables (Bachelor, Master, and Doctorate).

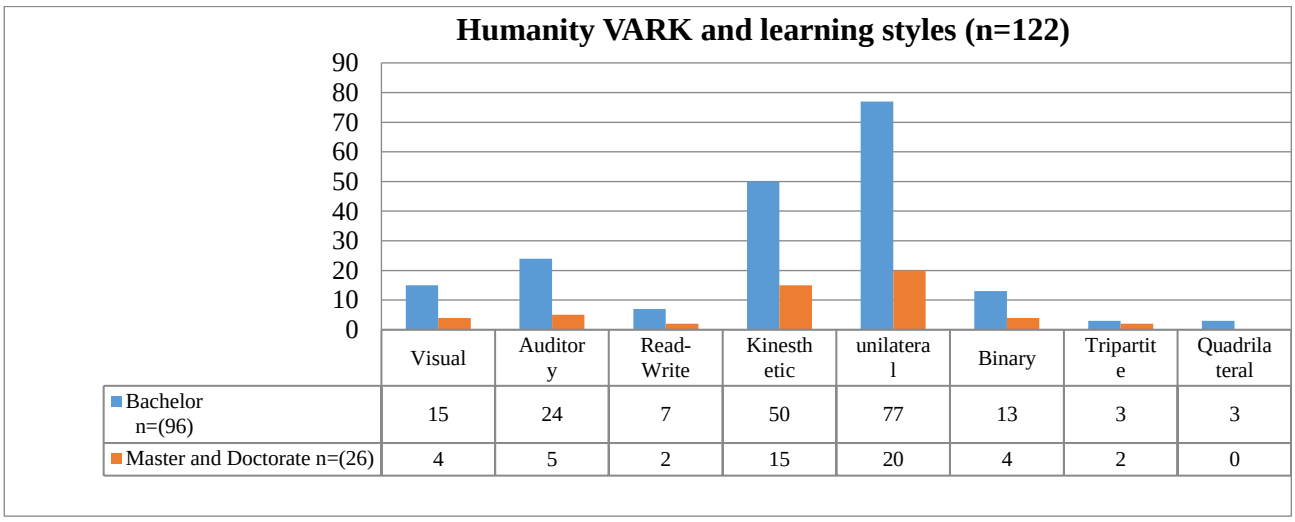


Figure (5): The frequency of scientific male study sample responses about the VARK and learning-styles

Source: Osama Abdel Fattah et al., 2025

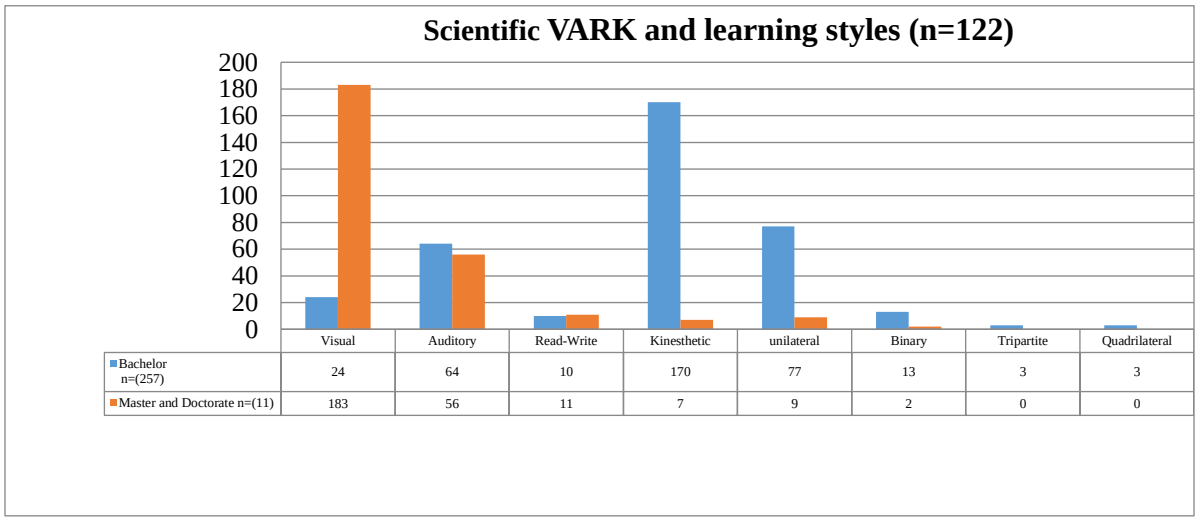


Figure (6): The frequency of scientific male study sample responses about the VARK and learning-styles

Source: Osama Abdel Fattah et al., 2025

The results showed a diversity of learning styles to receive and understand information, with the kinesthetic and unilateral patterns the dominant patterns of the study sample. Students in the kinesthetic style depend on the method of practical training and conducting experiments to understand the scientific material's content. Accordingly, we find that (68.48) % of female students in scientific faculties prefers the kinesthetic style. In comparison, (60.45) % of male students prefer this pattern, and these values are greater than those achieved by students in humanities faculties. The researchers believe that the nature of the specialization (medicine, pharmacy, and medical laboratories) requires fieldwork, experiments, and touches and deals with materials. These values different from the Habibpour et al. (2016) study, which indicated that medical students prefer the reading and writing style of learning, and the Asiry (2016) study, which stated that dental students prefer the auditory style of learning. While we find that the students in the visual style rely on analysis, this requires using graphs, maps, videos, and models to remember the information contained in those means and then make mental maps of the educational material.

On the other hand, the auditory style came in second place. Those with an auditory style rely on sound by listening to lectures and scientific discussions through educational groups. In addition, we find that students who prefer the read-write style rely on intensive

writing of the educational material and then reformulate the main ideas in the educational material.

The results also showed that most students in science and humanities faculties prefer a unilateral style of learning, as the highest percentage was (79.51%) among male students in humanities faculties. This result is consistent with the (Murgatrotd, 2020) study, which indicated that (54%) of students prefer the unilateral style of learning, and this is in the same line with the concept of learning style, which refers to the trends that determine students' preferences towards learning. The researchers believe that the conditions students experienced during the Corona pandemic affected the diversity in the learning style provided by the lecturers during distance learning.

Furthermore, there are differences between students learning styles according to the gender variable and in favor of females, whereas Erica (2007) indicates various learning styles within the classroom. There are differences in those styles according to the gender variable, and the learning style is affected by individuals' cultural, personal, and emotional factors. Notably, females are more affected by the elements of images, touch, and pronunciation, and they prefer to form a mental image of new or complex information. However, the differences in the percentage between males and females were low due to the exposure of both genders to the same conditions of home quarantine and the closures that the state had taken as a precautionary measure to limit the rapid spread of the Coronavirus.

The results also showed that there are low differences between students in learning styles according to the scientific specialization variable and favor of the scientific faculties, as the students in this style believe that experience is the best teacher because it helps them gather information more efficiently. Where educators point out that individuals do not learn in the same style but differ among themselves according to their preferences for ways of thinking and learning styles. Therefore, everyone develops their skills differently and according to their learning style. Undoubtedly, students' academic achievement is positively affected by their preferred learning style. Likewise, the nature of the subjects prescribed for students in scientific disciplines requires skills and mental abilities.

This requires preferred learning patterns for students and improves students' motivation toward learning. The theories that explain students' learning styles indicated a

difference in environmental, emotional, and cognitive ways in favor of scientific disciplines. The researchers believe that learning styles are more related to personal, social, and cultural traits and are connected to students' scientific inclinations and mental abilities. Therefore, we find that students of scientific colleges have spent many years studying scientific subjects and thus formed their preferences towards specific educational styles.

As for the differences in those patterns according to the study stage variable, it came in favor of the bachelor stage, and the researchers believe that the preferred learning patterns tend to be stable over time, so we find that bachelor students are at the beginning of a new educational stage, so learning patterns are less inclined to stability compared to the Masters and Doctorate location. It should be noted that many studies deal with learning styles based on the dominant brain side of the students (Sison, 2011). Some of them prefer the left side of the brain, and accordingly, we find that style is characterized as verbal-analytical and focuses on logical and causal thinking. Others prefer the right-brain style, and accordingly, we find this style is characterized by concentrating on higher mental functions related to intuition, creativity, perception, analysis, and innovation. Those with the integrated pattern are marked by the ability to employ the right and left hemispheres of the brain.

4. Conclusion

The study results showed various patterns among students, and the kinesthetic and unilateral patterns dominated the study sample, which helps the lecturers take into account the individual differences between students and provide an atmosphere and experience that help students improve academic achievement. The researchers recommend conducting more studies on learning patterns and their relationship to other variables that the current study did not address, such as academic achievement. There is a need to focus on diversity in learning styles and not on one type, given that students are the focus of the educational process. It is also necessary to provide and design various educational activities to suit different learning styles to shorten the time and effort required to communicate information to students.

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