

Study of E-Learning Patterns According to the VARK Model Among Female Students at the Faculty of Physical Education for Girls at Helwan University

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Research Abstract:

This study aims to **examine** the learning styles of second-year female students at the Faculty of Sports Education for Girls, Helwan University, with a **specific** focus on identifying the learning style that **most significantly influences** academic achievement. The research employed a descriptive survey methodology, which is **well-suited** to achieving the study's objectives. The results revealed a **notable variance** in learning style preferences based on the VARK model, with mean scores ranging from 3.09 to 4.97. The **Visual** style had the highest mean score (4.97), followed by the **Auditory** style (4.21), the **Reading/Writing** style (3.73), and the **Kinesthetic** style, which had the lowest mean score (3.09). The researcher recommends **incorporating** learning styles based on the VARK model into course instruction and **highlights** the importance of considering these styles in **curriculum development** at the faculty level.

Keywords:

Learning Pattern, VARK Model, E-learning, Adaptive Learning.

المستخلص باللغة العربية :

تهدف هذه الدراسة إلى دراسة وتحليل أنماط التعلم لدى طالبات الفرقة الثانية بكلية التربية الرياضية للبنات - جامعة حلوان، مع التركيز بشكل خاص على تحديد نمط التعلم الأكثر تأثيراً على التحصيل الأكاديمي. وقد استخدمت الدراسة المنهج الوصفي المسحي، والذي يتناسب بشكل ملائم مع تحقيق أهداف الدراسة.

وقد أظهرت النتائج تبايناً ملحوظاً في تفضيلات أنماط التعلم وفقاً لنموذج VARK ، حيث تراوحت المتوسطات الحسابية ما بين ٣.٠٩ إلى ٤.٩٧. وقد حصل النمط البصري على أعلى متوسط حسابي (٤.٩٧)، يليه النمط السمعي (٤.٢١)، ثم نمط القراءة/الكتابة (٣.٧٣)، في حين سجل النمط الحركي أدنى متوسط حسابي (٣.٠٩).
وتوصي الباحثة بضرورة دمج أنماط التعلم المستندة إلى نموذج VARK في طرق التدريس ، كما تؤكد على أهمية مراعاة هذه الأنماط في تطوير المناهج الدراسية على مستوى الكلية.

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1. Research Introduction:

The process of teaching and learning is complex and challenging, especially when considering the unique characteristics that everyone brings to the learning environment. These unique traits result in specific learning styles and methods of knowledge acquisition through educational experiences. Students naturally develop **preferred approaches** to handling these experiences. "Educational programs and units should be developed with modern teaching methods that empower students to discover solutions while performing athletic skills. Engaging in these activities often cultivates personality traits that influence students' learning styles" (Kadhim, M. A. A., 2021) (16); (Rahim, 2021) (17).

Educators generally agree that students vary in their **capabilities, motivation toward learning, and approaches to solving real-life problems**. Modern trends have increasingly emphasized learner-centered instruction, which recognizes individual differences among students and tailors the learning experience to their unique styles. This has led to significant interest in **learning style theories** as an educational focus. Consequently, providing educational experiences, teaching methods, and curricula that align with students' preferred learning styles may potentially enhance their academic achievement (Wafaa Al-Zaghl, 2016) (11).

The concept of learning styles is based on the understanding that all students differ in **intelligence, personality, thinking methods, and learning preferences**. Recognizing these differences can create an environment and provide experiences that encourage students to achieve their highest potential, leading to effective learning. "Offering learners information that they can integrate with their prior knowledge promotes

reflective thinking during performance. This requires the integration of mental and motor skills to form accurate responses in various situations."

Many theories have addressed learning styles from different perspectives. Some theories focus on personality traits, others on how learners receive, process, and store information, while some emphasize the sensory-perceptual medium preferred by learners. Therefore, teachers should adopt **methods that engage learners in discovering correct technical performance and encourage practical application of tasks** (Fathi Al-Zayat, 2004) (3).

The VARK model, developed by **Fleming and Bonwell**, identifies four learning styles commonly preferred by students, represented in the model's name as: V for Visual, A for Auditory, R for Read/write, and K for Kinesthetic (152:13).

There is a need to examine educational learning systems with teaching models and strategies that effectively achieve educational objectives. The VARK model is a systematic approach that aids teachers in delivering instruction effectively (Mohammed Salem, Ahmed Abdullah, 2013) (6).

The VARK model is characterized by:

1. Emphasizing the roles of both teacher and learner, with the teacher serving as a guide, mentor, and evaluator, while the learner is an active participant.
2. Focusing on teaching processes and the utilization of **educational aids**.
3. A structured, step-by-step approach.
4. Acknowledging the importance of learners' prior knowledge, continuous assessment, selecting appropriate methods and strategies, and providing feedback.
5. Prioritizing training procedures and **supporting diverse teaching strategies and methods to meet individual differences**, with ongoing evaluation (**Bergman, Daniel J, 2007**) (12).

Given the educational process's continuous need for **innovative elements and beneficial strategies that foster students' cognitive development and life skills**, the researcher was motivated to conduct this study.

2. Research Problem:

The researcher seeks alternative methods to address **low academic achievement** in general teaching contexts. This study aims to identify learning styles among second-year female students at the Faculty of Physical Education for Girls, Helwan University, and to determine the most effective learning style under the current teaching methodologies.

The research problem emerges as a **scientific inquiry** to identify learning styles, particularly the dominant style among these students.

The main research question is as follows:

- What are the preferred learning styles among second-year female students?
- Which learning styles are most effective during teaching practice?

3. Research Objective:

- To identify prevalent learning styles according to the VARK model among second-year female students at the Faculty of Physical Education for Girls, Helwan University.

4. Research Hypothesis:

Based on the research objective, the researcher hypothesizes:

- There are varied positive **preferences** for learning styles according to the VARK model among second-year female students at the Faculty of Physical Education for Girls, Helwan University.

5. Research Domains:

- **Human Domain:** Second-year female students at the Faculty of Physical Education for Girls, Helwan University, for the academic year 2023-2024.
- **Time Domain:** 10-2-2024 to 1-5-2024
- **Spatial Domain:** Faculty of Physical Education for Girls, Helwan University.

6. Research Terminology:

Learning Styles: According to **Lamia Al-Diwan et al. (2019)**: "The personal approach used by individuals to engage with information during the learning process and their method of addressing educational and social problems based on personal and external experiences" (93:5).

According to **Fathi Al-Zayat (2004)**: "The cognitive, motivational, psychological, and temperamental factors that influence how learners process information and respond within a learning environment" (4:3).

Operational Definition: The approach female students take toward learning problems based on their preferences and capacities, through which they acquire knowledge and skills.

VAR K Model: Defined by **Noura Saleh Al-Zweikh (2016)** as: "The learning method students prefer when answering questions. The VARK model provides four patterns (Visual-Auditory-Reading/Writing-Kinesthetic) based on students' selections."

- **Visual:** Learning through visual aids like images and diagrams.
- **Auditory:** Learning through discussion and dialogue.
- **Reading/Writing:** Learning through reading and writing activities.
- **Kinesthetic:** Learning through hands-on activities and modeling.

7. Research Procedures

Research Methodology: The **descriptive survey** method was chosen for its suitability to the research.

Research Population: Composed of **663 second-year female students** at the Faculty of Physical Education for Girls, Helwan University.

Research Sample: The sample included **125 second-year female students**, representing **18.85%**.

Equipment, Tools, and Data Collection: To achieve the research objectives and test the hypothesis, the following tools were used:

- Arabic and foreign sources
- Internet resources
- Standardized **VARK questionnaire** to assess learning styles

After reviewing relevant literature and previous studies, the researcher prepared a modified version of the VARK scale, adapted for the **Egyptian context**, consisting of **16 questions** assessing sensory-perceptual learning preferences.

8. Scientific Validity of the Scale

Item Formulation: Guided by literature, items were created according to the following:

1. Items must be relevant to the **VARK model objectives**.
2. Items should be concise and clear.
3. Statements should express one idea.
4. Statements should be easily understood.

Validity:

- **Face Validity:** Assessed by presenting the scale to a group of experts for feedback on clarity and relevance.
- **Content Validity:** Expert feedback led to unanimous approval (100%).

Reliability: The **test-retest method** was used by administering the scale twice with a 15-day gap. Pearson correlation coefficients ranged from **0.801 to 0.819**, indicating reliability.

Table (1)

Test-Retest Reliability Coefficients for the VARK Learning Styles Assessment **Tool**

Learning Style	Number of items	Reliability Coefficient
Visual	4	0.811
Auditory	4	0.814
Reading / Writing	4	0.852
Kinesthetic	4	0.801
VARK Learning Styles (Overall)	16	0.819

9. Final Research Application:

The questionnaires were distributed on **Sunday, February 25, 2024**. Upon completing the scale **administration**, the researcher collected, reviewed, and organized the response forms according to students' learning **styles**.

10. Statistical Methods:

The researcher applied statistical methods in this study using **SPSS (Statistical Program for the Social Sciences)** for data analysis, including:

- Pearson correlation coefficient
- Arithmetic mean
- Standard deviation

11. Presentation and Discussion of Results:

The findings indicated **positive variations in the prevalence** of learning styles according to the VARK model among second-year students at the Faculty of Physical Education for Girls at Helwan University.

To address this, **arithmetic means and standard deviations** were calculated based on the learning style scores of second-year students at the Faculty of Physical Education for Girls at Helwan University.

Table (2)

Arithmetic Means and Standard Deviations **Based on VARK Model Score Order** for Students at the Faculty of Physical Education for Girls at Helwan University

No.	Learning Style	Mean	Standard Deviation	Rank
1	Visual	4.97	2.086	1
2	Auditory	4.21	1.660	2
3	Writing / Reading	3.73	1.892	3
4	Kinesthetic	3.09	1.679	4

Table 2 **presents** the arithmetic means of learning style scores among second-year students, which range from 3.09 to 4.97. The Visual learning style **exhibited** the highest mean score of 4.97 (SD = 2.086), followed by the Auditory learning style with a mean of 4.21 (SD = 1.660). The Reading/Writing style **registered** a mean score of 3.73 (SD = 1.892), while the Kinesthetic learning style had the lowest mean score of 3.09 (SD = 1.679).

These results **demonstrate** a notable variation in preferred learning styles among second-year students, **aligning** with observations made by Fathi Al-Zayyat (2004). The data **suggest** that the Visual learning style is predominant among students at the Faculty of Physical Education, Helwan University. This preference **implies** a tendency to favor learning through observation and visual aids, such as video demonstrations, animations, images, and diagrams.

Heilat Al-Zoghbi (2010) **highlights** that students who favor this style **excel** in interpreting visual stimuli, discerning relationships between visual elements, and **exhibiting** strong skills in processing visual experiences. This **enhances** their comprehension of educational content delivered via visual media.

The researcher **attributes** these differences to individual variations that influence cognitive achievement. It is essential for educators to consider these differences, as each student **deserves** tailored educational experiences that **align** with their preferred sensory and perceptual modalities. **Integrating** multiple representational systems in teaching can **enhance** comprehension and academic performance. This finding **concurs** with previous studies by Lubna Tareef (2010) and Ashraf Abu Ghazal (2008).

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