

## **TYOLOGY OF STUDENTS ACCORDING TO LEARNING STYLES: INSIGHTS FOR ECONOMIC INNOVATION**

Rumyana Angelova Jeleva<sup>1\*</sup>

Received 03.04.2025.

| Send to review 13.04.2025.

| Accepted 23.07.2025.

### Original Article



<sup>1</sup> University of National and World Economy, Sofia, Bulgaria

#### **Corresponding Author:**

Rumyana Angelova Jeleva

Email: [rzheleva@unwe.bg](mailto:rzheleva@unwe.bg)

#### **JEL Classification:**

A2, A12, A14, A11

**Doi:** 10.61432/CPNE0301133j

**UDK:** 330.341.1:378.4.01

#### **Article Classification:**

Original scientific paper

### **ABSTRACT**

This paper presents and justifies a typology of students in the fields of Economics and Administration and Management based on their learning styles, using a sample of undergraduate and graduate students at the University of National and World Economy, Sofia. Learning style is understood as a set of stable cognitive patterns through which students prefer to receive, perceive, process, and understand information in the learning process. In line with this understanding, four key dimensions of student interaction with information are defined: receiving information (visually or verbally), perceiving information (concretely or abstractly), processing information (actively or reflectively), and understanding information (linearly or globally).

A representative empirical study was conducted using a stratified-cluster sample of 720 students. Data were collected through a self-administered questionnaire consisting of a battery of 16 Likert-scale items. The measurement instrument successfully passed the tests for validity and reliability. The results of the study indicate the distribution of students across the four key dimensions and reveal five distinct clusters of students with different learning profiles. The cluster analysis confirms that dominant learning styles influence student engagement and academic performance.

The findings provide valuable insights for adapting teaching methods, curricula, and programs to better align with the dominant learning styles among students. Understanding these preferences can enhance creativity, adaptability, and sustainable growth in an evolving global economy. This study highlights the strategic importance of educational innovation in preparing students for future challenges.

**Keywords:** *Learning styles, Theories of learning styles, Educational innovation, Cluster analysis, Student engagement*

## **1. INTRODUCTION**

In a rapidly changing global economy, aligning educational strategies with students' learning styles is essential for fostering innovation and adaptability. Understanding how students receive, perceive, process, and apply information allows for the development of more effective teaching methods. This study explores the typology of learning styles among students in Economics and Administration & Management, highlighting the connection between educational approaches and innovative thinking. Adapting teaching strategies to dominant learning preferences can enhance student engagement and prepare future professionals for the challenges of a sustainable economy. The findings emphasize the role of tailored educational practices in building capacity for creativity and long-term growth.

In the present paper, the theoretical and methodological frameworks of different learning styles theories are used to study students' learning styles. The aim is to develop a typology of learning styles based on an empirical study conducted among students in the two main fields of study at UNWE – Economics and Administration and Management.

The theories of learning styles were particularly actively developed in the 1980s and 1990s, although their roots can be traced earlier in the works of Carl Jung on archetypes, for example. Below we briefly outline the main authors and their works.

**Experiential Learning Theory (ELT) by David Kolb (1984).** Kolb's Experiential Learning Theory proposes a cyclic model of learning consisting of four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. According to Kolb, learning styles are formed based on individual preferences for different combinations of these stages. "Learning is the process whereby knowledge is created through the transformation of experience." (Kolb, 1984). He identifies four primary learning styles: convergers, divergers, assimilators, and accommodators.

**Felder-Silverman Learning Styles Model (FSLSM) (1988).** Developed by Richard Felder and Linda Silverman, this model classifies learning styles along four dimensions: active/reflective, sensing/intuitive, visual/verbal, and sequential/global. FSLSM is particularly popular in the field of engineering and technical education, emphasizing how different students process and perceive information. "Different students have different learning styles, and teachers can best reach all of them by understanding the differences." (Felder & Silverman, 1988).

**Honey and Mumford's Learning Styles (1986).** Peter Honey and Alan Mumford adapted Kolb's model and identified four learning styles: activists, reflectors, theorists, and pragmatists. According to them, individuals prefer certain styles depending on how they approach new information and experiences. "Learning is most effective when it is matched to an individual's preferred learning style." (Honey & Mumford, 1986, p. 15)

**VARK Model (Fleming, 1992).** Developed by Neil Fleming, the VARK model focuses on learners' sensory preferences: visual, aural, reading/writing, and kinesthetic. This model is widely used in educational practice to develop personalized learning strategies. "VARK helps students understand how they prefer to learn, which can lead to more effective study habits." (Fleming, 1992)

**Study Process Questionnaire (SPQ) by John Biggs (1987).** SPQ assesses students' approaches to learning through three main categories: deep approach, surface approach, and strategic approach. This model examines the relationship between motivation, cognitive strategies, and learning outcomes. "Students approach learning tasks with different intentions, which shape the strategies they adopt." (Biggs, 1987).

**Inventory of Learning Styles by Vermunt (1996).** The ILS applies a systematic approach to studying the cognitive and motivational aspects of learning by identifying different styles according to how students—and learners more generally—perceive, process, evaluate, and use information. "Learning styles represent coherent patterns in learning activities, influenced by cognitive and affective factors." (Vermunt, 1996). Vermunt identifies four primary learning styles: directive (characterized by a strong dependence on the teacher); reproductive (focused on memorizing and reproducing information); meaning-Directed (encourages active searching for meaning and understanding of the learning material); self-regulated (emphasizes learners' ability to manage their own learning, including planning, monitoring, and evaluating their progress). These styles are not mutually exclusive. Learners can demonstrate elements of different styles depending on the learning context and content.

**Approaches and Study Skills Inventory for Students (ASSIST) (Entwistle, 2000).** ASSIST is an instrument developed by Noel Entwistle and colleagues to assess learning approaches. It identifies three main approaches: deep, strategic, and surface—similar to Biggs's model but with a more detailed examination of motivational factors. "The quality of learning outcomes is closely related to the approach students take to studying." (Entwistle & McCune, 2000).

## 2. METHODOLOGY

The present report is based on an empirical study conducted as part of a broader scientific research project funded by the Scientific Research Fund of the University of National and World Economy (UNWE), Sofia.

### 2.1. METHODOLOGICAL PARAMETERS OF THE EMPIRICAL STUDY

For the sake of brevity, the methodological parameters of the study are presented in Table 1.

Table 1. Methodological Parameters of the Empirical Study

Parameter	Description
Target population	Students of UNWE in the fields of „Economics“ and „Administration and Management,“ full-time study, bachelor’s (2nd, 3rd, and 4th year) and master’s students for the 2024/2025 academic year.
Sample type and size	Stratified-cluster sample, size of 720 students.
Data collection method	Self-administered paper-based survey.
Research instrument	Structured questionnaire with 38 closed questions, with an average completion time of approximately 20 minutes.
Fieldwork execution	The fieldwork was conducted from October to November 2024 in the classrooms of UNWE.
Analytical tools	Various data transformations were applied, primarily to create complex scales from simple baseline data. The analysis included tests for significance of differences, factor and cluster analysis.

Source: Empirical study “Learning styles and motivation for learning”, academic project funded by the Scientific Research Fund of the UNWE, Sofia

### 2.2. CONCEPTUAL AND OPERATIONAL DEFINITION OF LEARNING STYLES

#### 2.2.1. CONCEPTUAL DEFINITION

In the present study, we adopt the following conceptual definition of learning styles: stable but somewhat flexible cognitive patterns through which learners prefer to receive, perceive, process, and understand information during the learning process.

#### 2.2.2. OPERATIONAL DEFINITION

According to this definition, four dimensions of interaction with information are distinguished:

- **Receiving information** – How learners prefer to receive information (visually – through images, photos, video, or verbally – through narration, oral explanation, clarifications).
- **Perceiving information** – How learners prefer to perceive information (concretely – through examples, cases, precise tasks, or abstractly – through theories, models, schemes).
- **Processing information** – How learners prefer to process information (actively – through discussions, role plays, joint projects, or reflectively – through independent reflection on the material and solving cases and tasks).
- **Understanding information** – How learners prefer to understand information (linearly – step by step, or globally – first grasping the big picture and then focusing on details).

According to this understanding, the following pairs of learning styles emerge (Table 2).

Table 2. Learning Styles

Dimensions of Interaction with Information	Learning Styles
Receiving Information	Visual – Verbal
Perceiving Information	Concrete – Abstract
Processing Information	Active – Reflective
Understanding Information	Linear – Global

Source: Empirical study “Learning styles and motivation for learning”, academic project funded by the Scientific Research Fund of the UNWE, Sofia

To measure students' learning styles across the four dimensions, a Likert-scale technique was used. Each style was assessed using two Likert-type statements, resulting in a total of 16 statements (two for each of the eight learning styles). The response scale consisted of five options: „Does not apply at all,“ „Rather does not apply,“ „Neutral,“ „Rather applies,“ and „Fully applies.“

Table 3. Likert Scales for Learning Styles

No	Dimensions and statements
	Active – Reflective
1	„I learn best in subjects where there are opportunities for group discussions and collaborative projects.“
2	„I prefer subjects that include interactive activities, such as problem-solving sessions or simulations.“
3	„I find it useful to take time to review and reflect independently on the material taught after class.“
4	„I prefer tasks that allow me to reflect on what I have learned.“
	<b>Concrete – Abstract</b>
5	„I prefer subjects that present clear statements and concrete examples.“
6	„I prefer instructors who focus on practical applications and real-life examples.“
7	„I enjoy subjects that explore theoretical concepts.“
8	„I prefer tasks that challenge me to think abstractly.“
	<b>Visual – Verbal</b>
9	„I understand the learning material more easily when it is presented through visual aids – diagrams, charts, and videos.“
10	„I prefer teaching that includes visual aids – PowerPoint presentations, whiteboard drawings, and visual illustrations.“
11	„I learn best by reading textbooks and class notes.“
12	„I prefer lectures where the instructor explains concepts in detail and provides in-depth oral explanations.“
	<b>Linear – Global</b>
13	„I like subjects that are structured in a logical way, step-by-step, progressing from simple to complex topics.“
14	„I prefer to follow the course syllabus strictly, progressing through the material in an organized manner.“
15	„I aim to first grasp the overall meaning of the studied problem and then understand the details.“
16	„I prefer subjects that present the big picture before diving into details.“

Source: Empirical study “Learning styles and motivation for learning”, academic project funded by the Scientific Research Fund of the UNWE, Sofia

### 2.3. TESTING THE INSTRUMENT FOR RELIABILITY AND VALIDITY

The measurement instrument was tested for reliability (whether it provides stable and consistent results) and validity (whether it measures what it is intended to measure).

#### 2.3.1. RELIABILITY TESTING

To assess the reliability of the measurement instrument, Cronbach's Alpha coefficient was used. The calculations were performed using the SPSS v.23 software package. The interpretation of Cronbach's Alpha test results is as follows:

- If  $\alpha < 0.7$ , reliability is weak
- If  $\alpha > 0.7$ , reliability is acceptable
- If  $\alpha > 0.8$ , reliability is good
- If  $\alpha > 0.9$ , reliability is very good

The calculations established that the value of Cronbach's Alpha is 0.753, which indicates acceptable reliability. Removing only one of the 16 statements (No 11 in table 3) would improve the Cronbach's Alpha value to 0.756, which is an insignificant increase. However, such a modification would disrupt the internal logic of the model.

### **2.3.2. VALIDITY TESTING**

The validity check was performed using Principal Component Factor Analysis to test the construct validity of the measurement instrument. The interpretation of the validity criteria follows these guidelines:

- If the value of the Kaiser-Meyer-Olkin (KMO) coefficient is greater than 0.6, the data are suitable for factor analysis.
- If the value of Bartlett's Test of Sphericity is  $p < 0.05$ , the correlations between the statements are statistically significant.
- Factor structure:
  - If there are 2 or more factors → learning styles are likely grouped into different categories.
  - If there is 1 factor → all statements measure the same theoretical construct.

The analysis established that the data are suitable for factor analysis — the value of the Kaiser-Meyer-Olkin (KMO) coefficient is 0.776 (i.e., greater than 0.6). The value of Bartlett's Test of Sphericity is  $p = 0.000$  (i.e., less than 0.05), which indicates that the correlations between the statements are statistically significant. The rotated component matrix (using the Varimax rotation method) identified five factors that summarize the 16 statements, indicating a multidimensional structure of the measurement component, consistent with the original design of the instrument. All of this provides a basis for concluding that the instrument is valid.

### **2.4. DATA TRANSFORMATION**

To obtain an overall picture of learning styles, appropriate transformations of the data from the responses to the 16 Likert-type statements were carried out. The transformation involved two key steps:

- 1. Recoding the original response scale codes** into new codes based on the orientation of the statement toward one or the other style within each of the four pairs of learning styles:

- Does not apply at all                      1 → | 2 |
- Rather does not apply                      2 → | 1 |
- Neutral    3 → | 0 |
- Rather applies                                      4 → | 1 |
- Fully applies                                        5 → | 2 |

- 2. Summing the responses** for the four pairs of styles and creating new variables based on the transformed original variables to assess how students are distributed across styles within each pair. Each new variable has five possible values:

- Very belonging to one style
- Belonging to one style
- Undecided
- Belonging to the opposite style
- Very belonging to the opposite style

## 2.5. TYPOLOGY OF STUDENTS THROUGH K-MEANS CLUSTER ANALYSIS

To group students simultaneously across the four dimensions and develop a typology based on learning styles, the K-means cluster analysis method was used.

To determine the optimal number of clusters in K-means clustering, the elbow rule was applied. In this method, the analysis starts with a small number of clusters and progressively increases the number – in this case, from 2, 3, 4, 5, to 6 clusters. At each step, the corresponding ANOVA tables are calculated, based on which the within-cluster sum of squares (WSS) is computed for each number of clusters.

Let us examine the ANOVA table for the five-cluster solution and the calculation of the within-cluster sum of squares (WSS).

ANOVA table for K-means cluster analysis using SPSS

**ANOVA**

	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
q15Visual_VerbalTR	82,337	4	,124	624	663,599	,000
q15Specif_AbstracTR	,637	4	,325	624	1,959	,099
q15Act_ReflecTr	87,346	4	,252	624	346,084	,000
q15Line_GlobalTR	58,982	4	,331	624	178,310	,000

The F tests should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters. The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal.

Computatins based on: Empirical study “Learning styles and motivation for lurning”, academic project funded by the Scientific Research Fund of the UNWE, Sofia

The first column shows the variables used for clustering (the four dimensions of learning styles). Cluster Mean Square indicates the variation between clusters. Error Mean Square indicates the variation within clusters, while F represents the ratio between the two. The Sig. column shows whether the differences between the clusters are statistically significant for the respective variable (in this case, all variables are statistically significant at a significance level of 0.05, except for the second variable – the dimension of information perception „concrete-abstract“).

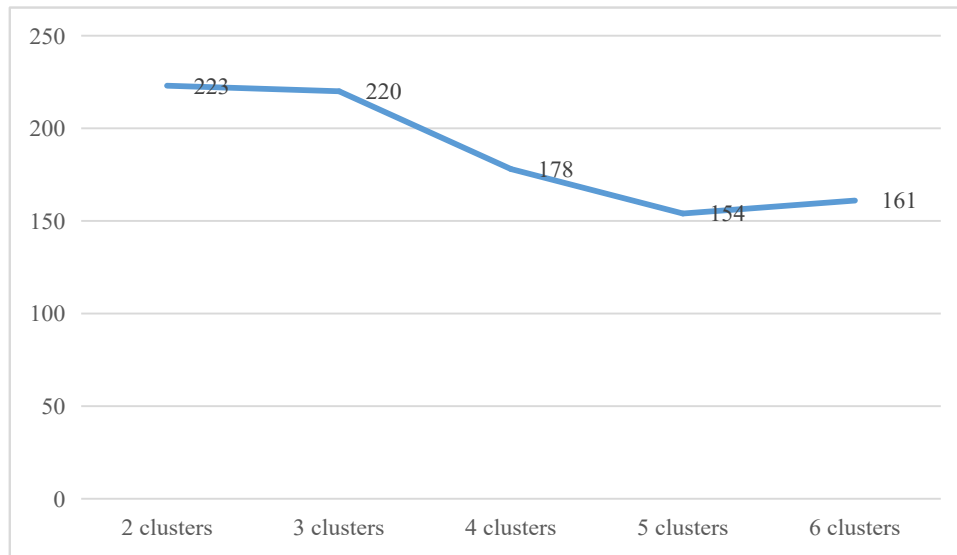
The within-cluster sum of squares (WSS) is not calculated automatically by SPSS v.23, which necessitates some manual work. WSS is the sum of the products of Error Mean Square and df for each clustering variable, as follows:

$$WSS=0.124*624+0.325*624+0.252*624+0.331*624=644 \tag{1}$$

The same calculation is performed for 2, 3, 4, and 6 clusters. The elbow rule is based on the following principle: a graph is drawn where the x-axis represents the number of clusters and the y-axis represents WSS. The point at which the curve starts to flatten is the optimal number of clusters. The interpretation is as follows: at the beginning (with a small number of clusters), WSS decreases sharply because adding clusters significantly improves the grouping. After a certain point (the „elbow point“), additional clusters lead to progressively smaller improvements (if any), as WSS decreases at a much slower rate. The optimal number of clusters is at this „elbow“ point.

The WSS values for the respective number of clusters are shown in Figure 1. The conclusion based on the elbow rule is that the optimal number of clusters is 5.

Figure 1. WSS values for 2, 3, 4, 5, and 6 clusters



Source: Empirical study “Learning styles and motivation for learning”, academic project funded by the Scientific Research Fund of the UNWE, Sofia

Although the variable „concrete-abstract information perception“ is not statistically significant at a 95% confidence level, we consider that the five-cluster solution is the optimal one. This conclusion is supported by both the results of the elbow rule and the interpretative value of the model. Although this clustering variable is not statistically significant at a 95% confidence level, retaining it in the analysis is justified due to the clear dominance in student preferences – 67.8% prefer concrete information perception (very concrete 4.4% plus 63.4% concrete), compared to only 2.3% for abstract perception (2.3% abstract plus 0% very abstract), undecided – 29.9% - see Table 5). This categorical dominance indicates a structural difference in the data, which is essential for building a stable classification of learning styles. For this reason, the five-cluster model remains the most informative and interpretatively valid solution in the context of the study.

### 3.3. RESULTS AND DISCUSSION

#### 3.1. PREVALENCE OF LEARNING STYLES ACROSS THE FOUR DIMENSIONS

Table 5 presents the prevalence of learning styles across the four dimensions. What are the most notable conclusions that can be drawn from these univariate distributions?

- Statistically significant differences in the distribution of preferred learning styles were established for all dimensions using the Chi-square test. The differences were particularly pronounced for two dimensions – „concrete-abstract“ (in favor of concrete) and „visual-verbal“ (in favor of visual).
- For the „linear-global“ dimension, the differences were significant in favor of the „global“ style (24.7%) compared to the „linear“ style (11.2%).
- Only in the „active-reflective“ dimension was there a relative parity between the two styles.
- The position of the „undecided“ response varied in strength across the different dimensions – more pronounced in some, less pronounced in others.

Table 4 shows the prevalence of different learning styles among students. The data can outline the “optimal” teaching strategy for lecturers working with students in the fields of Economics and Administration and Management. If an lecturer aims to maximize success in delivering the course content, they should primarily focus on students who prefer:

- Visual reception of information (46.4% vs. 10.7% for verbal reception);
- Concrete perception of information (67.8% vs. 2.3% for abstract perception);
- Reflective processing of information (27.3% vs. 24% for active processing);
- Global understanding of information (24.7% vs. 11.2% for linear understanding).

**Test Statistics**

	q15_Act. Ref_5	q15_Spe. Abs_5	q15_Vis. Ver_5	q15_II.Glo_5
Chi-Square	561,551 <sup>a</sup>	665,527 <sup>b</sup>	651,331 <sup>c</sup>	967,988 <sup>d</sup>
df	4	3	4	4
Asymp. Sig.	,000	,000	,000	,000

a. 0 cells (0,0%) have expected frequencies less than 5. The minimum expected cell frequency is 138,0.

b. 0 cells (0,0%) have expected frequencies less than 5. The minimum expected cell frequency is 170,8.

c. 0 cells (0,0%) have expected frequencies less than 5. The minimum expected cell frequency is 138,8.

d. 0 cells (0,0%) have expected frequencies less than 5. The minimum expected cell frequency is 137,6.

Table 4. Prevalence of Learning Styles (Share of Students in %)

Interaction with Information	Prevalence of Learning Styles (Share of Students in %)				
	Very visual	Visual	Undecided	Verbal	Very verbal
Receiving Information (Visual-Verbal)	2.6	43.8	42.9	10.4	0.3
Perceiving Information (Concrete-Abstract)	4.4	63.4	29.9	2.3	0
Processing Information (Active-Reflective)	0.6	26.7	48.7	23.3	0.7
Understanding Information (Linear-Global)	0.4	10.8	64.1	24.3	0.4

Source: Empirical study “Learning styles and motivation for learning”, academic project funded by the Scientific Research Fund of the UNWE, Sofia

**3.2. SIZE AND COMPOSITION OF THE CLUSTERS IN THE FIVE-CLUSTER SOLUTION**

Table 5 presents the names of the clusters, their size as a proportion of students belonging to each cluster, their key characteristics, and the suitable teaching methods.

Table 5. Cluster Name, Size and Description of Cluster Composition

Clusters	Key Characteristics	Suitable Teaching Methods
Cluster 1: Visually-Active Globalists (22.1%)	Highly visual, concrete perception, active information processing, global thinking style	Project-based learning, case studies and simulations, visual materials, group discussions
Cluster 2: Verbally-Concrete with a Linear Style (15.7%)	Verbal, concrete perception, oscillating between active and reflective processing, linear thinking style	Traditional lectures and tutorials, structured presentations, worksheets, written exercises
Cluster 3: Verbally-Active Globalists (27.8%)	Verbal, concrete perception, active information processing, global thinking style	Discussions and debates, case study analysis, seminars, interdisciplinary tasks
Cluster 4: Highly Visual and Reflective Globalists (16.2%)	Highly visual, concrete perception, reflective style, global thinking	Independent projects, visual essays and presentations, video lectures, interactive platforms
Cluster 5: Visually-Active Linears (18.1%)	Visual, concrete perception, active information processing, linear thinking style	Video lessons with demonstrations, hands-on training with visual guides, model-based exercises

Source: Empirical study “Learning styles and motivation for learning”, academic project funded by the Scientific Research Fund of the UNWE, Sofia

To determine the presence of statistically significant differences between the five clusters concerning the nominally scaled variables gender (male/female), degree level (bachelor's/master's), and field of study (economics/administration and management), the Chi-square test was applied. As shown in Table 6, there is no statistically significant difference between the clusters for two of these three variables (see the p-value column).

To establish the presence or absence of statistically significant differences between the clusters for the other variables listed in Table 6 (ordinally scaled), the Kruskal-Wallis H test for three or more independent variables was used. Where this test indicated a statistically significant difference, the Mann-Whitney U test (with Holm-Bonferroni correction) was subsequently applied to identify which two clusters exhibit a significant difference.

The Holm-Bonferroni correction is less conservative than the standard Bonferroni correction and aims to balance between controlling for Type I error (false positive differences) and maintaining statistical power. In contrast, the Bonferroni correction is excessively strict and may lead to too many false-negative results (Type II error), thereby potentially hiding real differences that actually exist.

As shown in Table 6, statistically significant differences between the clusters were identified for only one variable: preparation for classes and exams (see the corrected p-values Holm-Bonferroni column). The possible reason for that may lie in the relative homogeneity of the groups in terms of the examined extracluster variables. If students in different clusters share similar socio-demographic characteristics and behavioral patterns, this would explain the lack of distinct differences. The Holm-Bonferroni correction reduces the risk of a Type I error but also makes the test more conservative, which limits the detection of finer differences. The test power is likely sufficient, given the sample size and the even distribution of clusters, but the extracluster variables themselves may have a weaker influence on cluster formation. This suggests that the clusters are probably more strongly determined by learning styles than by socio-demographic factors.

Table 6. Pairwise Comparison of Clusters for the Presence or Absence of Statistically Significant Differences in Key Non-Clustering Variables

Variables	Pairwise Comparison										p-value	Corrected p-values Holm-Bonferroni
	1-2	1-3	1-4	1-5	2-3	2-4	2-5	3-4	3-5	4-5		
Gender											0.004*	-
Degree level											0.058	-
Field of study											0.164	-
Average grade											0.007*	0,063
Class attendance											0.16	0,16
Preparation for classes and exams		*	*	*	*				*		0.000*	0*
Interest in the studied subjects											0.04*	0,16
Reason for choosing UNWE											0.4	0,4
Working while studying											0.03*	0,15
Source of financial support											0.02*	0,14
Intention to leave the country											0.32	0,32
Time for class preparation		*			*	*			*		0.01*	0,08
Time for exam preparation											0.13	0,26
Stress during class preparation				*	*	*	*				0.51	0,51

Variables	Pairwise Comparison										p-value	Corrected p-values Holm-Bonferroni
	1-2	1-3	1-4	1-5	2-3	2-4	2-5	3-4	3-5	4-5		
Stress during exam preparation											0.31	0,31
Expectations regarding learning requirements											0.02*	0,12
Expectations regarding the level of education											0.096	0,288
HH income											0.94	0,94

Note: Variables marked with an asterisk (\*) indicate statistically significant differences, as well as the specific cluster pairs between which these differences occur

Source: Empirical study “Learning styles and motivation for learning”, academic project funded by the Scientific Research Fund of the UNWE, Sofia

### Key Findings:

1. The study identified **five distinct student clusters based on learning styles**. Each cluster reflects a unique combination of perception type (visual/verbal), cognitive processing (active/reflective), and thinking style (global/linear). Appropriate teaching methods are recommended for each profile to align with the learners’ preferences.
2. **Dominance of certain learning styles** – Statistically significant differences in learning styles were observed across all dimensions. Most students prefer concrete over abstract perception, visual over verbal reception, reflective over active processing, and global over linear understanding.
3. **Implications for teaching strategies** – The findings suggest that teaching strategies should focus on visual and concrete information delivery, with an emphasis on reflective and global learning approaches to align with the dominant learning preferences of the student population.
4. The findings suggest that **students can be effectively grouped** according to their learning styles, with each cluster requiring a tailored teaching approach. The lack of major differences across most external variables implies that learning styles serve as a more meaningful basis for instructional planning than demographic characteristics.

### 4.CONCLUSION

The study provides a comprehensive analysis of the learning styles of students in the fields of Economics and Administration & Management at UNWE. The typology, based on different learning styles theories, successfully identified five distinct clusters of students with different preferences for receiving, perceiving, processing, and understanding information.

The findings indicate that most students prefer concrete over abstract information, visual over verbal reception, reflective over active processing, and global over linear understanding. This suggests that teaching strategies should prioritize visual and concrete materials, emphasize reflective learning approaches, and support global understanding to enhance student engagement and learning outcomes.

The cluster analysis revealed five distinct student profiles: Cluster 1: Visually-Active Globalists (22.1%); Cluster 2: Verbally-Concrete with a Linear Style (15.7%); Cluster 3: Verbally-Active Globalists (27.8%); Cluster 4: Highly Visual and Reflective Globalists (16.2%); Cluster 5: Visually-Active Linears (18.1%)

The study confirms that aligning teaching methods with students’ dominant learning styles can enhance educational effectiveness. Strategies focusing on visual and concrete information delivery, reflective learning, and global understanding are likely to produce the most positive learning outcomes for the studied student population.

## REFERENCES

- Biggs, J. (1987). *Study Process Questionnaire (SPQ): Manual*. Hawthorn, Victoria: Australian Council for Educational Research. [https://www.researchgate.net/publication/242530091\\_Study\\_Process\\_Questionnaire\\_Manual](https://www.researchgate.net/publication/242530091_Study_Process_Questionnaire_Manual)
- Entwistle, N. J., & McCune, V. (2000). The Conceptual Bases of Study Strategy Inventories. *Educational Psychology Review*, 12(3). [https://www.researchgate.net/publication/238310341\\_The\\_Conceptual\\_Bases\\_of\\_Study\\_Strategy\\_Inventories](https://www.researchgate.net/publication/238310341_The_Conceptual_Bases_of_Study_Strategy_Inventories)
- Felder, R. M., & Silverman, L. K. (1988). Learning and teaching styles in engineering education. *Engineering education*, 78(7). [https://www.researchgate.net/publication/309120076\\_Learning\\_and\\_teaching\\_styles\\_in\\_engineering\\_education\\_Engr](https://www.researchgate.net/publication/309120076_Learning_and_teaching_styles_in_engineering_education_Engr)
- Fleming, N. D. (1992). *Teaching and Learning Styles: VARK Strategies*. Christchurch, New Zealand: N.D. Fleming. <https://atozpdfbooks.com/download/4832164-teaching-and-learning-styles-var-k-strategies>
- Honey, P., & Mumford, A. (1986). *The Manual of Learning Styles*. Maidenhead: Peter Honey Publications. <https://archive.org/details/manualoflearning0000pete/mode/2up>
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall. [https://www.researchgate.net/publication/235701029\\_Experiential\\_Learning\\_Experience\\_As\\_The\\_Source\\_Of\\_Learning\\_And\\_Development](https://www.researchgate.net/publication/235701029_Experiential_Learning_Experience_As_The_Source_Of_Learning_And_Development)
- Lemaallem, H., & Saadi, A. (2025). Productivity and Trade Openness: A Sectoral Analysis of Morocco's Economy. *Economics - Innovative and economics research journal*, 13(2). <https://doi.org/10.2478/eoik-2025-0052>
- Nurgaliuly, A., & Smagulova, S. (2025). Economic Assessment of Energy Security of the Regions of Kazakhstan. *Economics - Innovative and economics research journal*, 13(2). <https://doi.org/10.2478/eoik-2025-0038>
- Vermunt, J. D. (1996). Metacognitive, cognitive and affective aspects of learning styles and strategies: A phenomenographic analysis. *Higher Education*, 31(1). [https://www.researchgate.net/publication/227157812\\_Meta-cognitive\\_cognitive\\_and\\_affective\\_aspects\\_of\\_learning\\_styles\\_and\\_strategies\\_A\\_phenomenographic\\_analysis](https://www.researchgate.net/publication/227157812_Meta-cognitive_cognitive_and_affective_aspects_of_learning_styles_and_strategies_A_phenomenographic_analysis)