

# LEARNING STYLES AND ACADEMIC PERFORMANCE AMONG STUDENTS

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## ABSTRACT

*The purpose of this study is to identify whether students' academic performance is influenced by their learning style. The research addressed students in the field of educational sciences. To collect research data, a questionnaire was applied to a number of 143 students aged between 19 and 56 years. The research data were statistically analyzed using the Kruskal Wallis Test. The statistical results indicate significant differences between students with auditory, visual and practical learning styles depending on the academic performance and the year of study. Our results can be used in the teaching-learning process by the teacher.*

**KEYWORDS:** auditory style, learning styles, practical style, students, visual style

## 1. Introduction

Students' success in the learning process and achieving high academic results can also be influenced by their predominant learning style or the combination of two of the learning styles. Some students may have a predominantly visual learning style and learn through diagrams, pictures, graphs, while others may have an auditory style and learn through lectures (Hagart, 2011, apud Ariastuti, Wahyudin, 2022; Lincă et al., 2022).

Shamsuddin, Kaur (2020) define learning style as a distinctive way of acquiring knowledge, skills or attitudes through study. For a teacher, learning styles can help identify and solve students' learning problems (Shah, Ahmed, Shenoy,

Srikant, 2017; Matei, 2021; 2022). This will encourage students to learn more effectively and the teacher will be able to choose educational material that resonates with their learning style.

In the specialized literature, the three learning styles were described as follows.

Students with a **practical learning style** are very hands-on. They learn best by touching, moving and doing physically. Hands-on students draw, build or make something by trial and error. These students learn through practical activities, they have difficulties in staying attentive and still, they have a lot of energy (Abante et al., 2014; Aisyah, 2017).

Being a **visual learner** involves:

–thinking in pictures rather than words;

- using graphs, tables, charts, maps and colours;
- taking a holistic approach instead of piecemeal sequencing of lessons;
- appealing to the big picture, sometimes losing the details (Albeta et al., 2021).

Students with an **auditory learning style** have the following characteristics:

- talk a lot;
- prefer verbal instructions;
- often have difficulty keeping their attention focused in environments where the noise level is high;
- they are happy when they have many discussions with others;
- remember names and very few faces;
- frequently express their emotions through the tone and volume of their voice;
- musical mind (Baihaqi et al., 2020; Bakri et al., 2019; Balasubramaniam, 2016).

This article focuses on visual, auditory, and practical learning styles. The research has the intention, first of all, to identify the predominant style of the students and to what extent the academic results are influenced by the learning style.

## 2. Material and methods

### 2.1. Objectives

The current study aims to investigate if there are differences between students regarding the average of the previous year of study, age and year of study according to learning styles.

### 2.2. Hypotheses

H1. It is assumed that there are differences between pedagogy students depending on the average of the previous year of study in terms of learning styles (visual, auditory and practical).

H2. It is assumed that there are differences between educational sciences

students depending on the age in terms of learning styles (visual, auditory and practical).

H3. It is assumed that there are differences between educational sciences students depending on the year of study in terms of learning styles (visual, auditory and practical).

### 2.3. Methodology

The participants completed a questionnaire which targeted 3 learning styles: visual, auditory, practical. The questionnaire contains 39 questions with dichotomous answers, yes = 1, no = 0. Sample items from the questionnaire: “Do you like to move freely when you work?”, “When performing certain tasks, do you follow certain diagrams?”. The score is calculated based on 3 learning styles and the style with the highest score is taken into account as the predominant style of the person. A psychologist, a pedagogue and a translator contributed to the creation of the questionnaire. All the methodological norms in force for the adaptation to the specifics of the Romanian language of the questionnaire based on Grasha-Riechmann student learning style scales (Kumar et al., 2004), Three learning style (Dantas & Cunha, 2020). After translating and adapting the questionnaire to the specifics of the Romanian language, it was applied to 34 students and the Cronbach alpha index was 0.89. On our sample, the Cronbach alpha fidelity index was 0.93.

The statistical analysis of the data was carried out with the help of RStudio, by applying descriptive analyses, but also by applying the Kruskal Wallis Test for the difference in the average ranks of three groups, the equivalent of the parametric ANOVA test.

### 2.4. Sample

The study was attended by 143 students from the field of pedagogy, 6 boys and 137 girls, aged between 19 and 56 years,  $M = 28.77$ ,  $SD = 11.68$ . 120 students are at the bachelor's degree and 23 at the master's degree. 45.5% of

students have an auditory learning style, and 36.4% have a visual learning style. The fewest students, 18.2%, have a practical learning style. At the level of the entire sample, the average of the last year of study is 8.17 (Table no. 1 & 2).

**Table no.1**  
*Demography data*

Gender	Frequency	Percent
1	6	4,2
2	137	95,8
Year of study		
1	28	19,6
2	62	43,4
3	30	21,0
4	23	16,1
learning style		
visual	52	36,4
auditory	65	45,5
practical	26	18,2
Total	143	100,0

**Table no. 2**  
*Descriptive statistics academic performance and age*

	Mean of the last year	Age
Valid	143	143
Mean	8.755	28.779
Std. Deviation	0.819	11.689
Minimum	6	19
Maximum	10	56

### 3. Results

There are statistically significant differences between students with visual, auditory and practical learning styles depending on the average of the last year of study ( $W(2) = 5.02$ ,  $p = 0.041$ ,  $p < 0.05$ ) (Table no. 3).

The highest rank is recorded in the case of the visual learning style,

$M = 81.6$  (Table no. 4). The highest the average is, the more the student appeals to the visual learning style. It is possible that pedagogy students have a lot of texts to learn and use the structuring of the material in the form of a conceptual map or in the form of a fish scale, visual learning methods.

**Table no. 3**  
*Kruskal Wallis test<sup>a</sup>*

	Mean	Age
Chi-Square	5.023	0.496
df	2	2
p.	0.041	0.780

a. Grouping Variable: learning\_style

**Table no. 4**  
*Ranks*

	learning_style	N	Mean Rank
Mean	visual	52	81.60
	auditory	65	68.69
	practical	26	51.08
	Total	143	
Age	visual	52	74.12
	auditory	65	69.35
	practical	26	74.38
	Total	143	

In addition, there are no statistically significant differences between students with visual, auditory and practical learning

styles depending on their age,  $p > 0.05$  (Table no. 3).

**Table no. 5**  
*Kruskal Wallis test<sup>a</sup>*

	visual learning_style	auditory learning_style	practical learning_style
Chi-Square	2,850	16,977	3,235
df	3	3	3
Asymp. Sig.	,415	,001	,357

a. Grouping Variable: Year\_of\_study

There are differences between pedagogy students depending on the year of study in terms of auditory learning styles. ( $W(3) = 16.97$ ,  $p = 0.001$ ,  $p < 0.01$ ) (Table no. 5).

The auditory learning style is characteristic of 1st year students, with an average rank of 97.68 (Table no. 5). Although for the practical learning style we do not have a significant difference between

the years of study, we notice that the highest average ranks are also obtained by the students from the 1st year (Table no. 5 & 6). We can conclude that although the auditory style is predominant, the practical style is also frequently used, which illustrates that the students in year 1 are oriented towards actions with concrete results or re-doing the activities step by step in an orderly manner.

**Table no. 6**  
*Ranks – year of study*

	Year of study	N	Mean Rank
visual_learning_style	1	28	79,39
	2	62	73,08
	3	30	61,97
	4	23	73,17
	Total	143	
auditory_learning_style	1	28	97,68
	2	62	63,32
	3	30	76,33
	4	23	58,48
	Total	143	
practical_learning_style	1	28	82,61
	2	62	72,02
	3	30	69,30
	4	23	62,57
	Total	143	

#### 4. Conclusions

In conclusion, the current study assessed that there are differences between students depending on the average of the previous year of study in terms of learning styles (visual, auditory and practical). Our results can be used to adapt the teaching-learning process to the style and characteristics of the students.

A limitation of the study is the relatively small number of participants. In addition, students participated in the study voluntary, which means that they have an inclination to learn.

A future direction would be to expand the sample with participants from the technical field.

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