



# The analysis of learning styles among high school students

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**Abstract:** *It is important for the effectiveness of learning environments to consider group or individual learners' characteristics, competences and experiences throughout the process of planning learning environments. This study aimed at investigating the differences of language learning styles between males and females and among four high school grades. The participants were 90 male (46.2%) and 105 female (53.8%) high school students studying at public religious high school (Madrasa) in Bosnia and Herzegovina. For testing the main research questions, a 5-point likert scale questionnaire was distributed to 195 high school students. While no significant correlation was found between learning styles and gender, a significant correlation was unexpectedly found between learning styles and grades. These results are a good platform for the research of gender and grade based differences among language learners.*

**Keywords:** *Learning, styles, high school students, gender, grades*

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## 1. INTRODUCTION

The learning process is present throughout human life. Sometimes a person learns consciously, directly, with the goal and within a certain scientific field, and sometimes learning takes place unconsciously, spontaneously, in a child's game or in various life situations. Hence, a proverb says that in fact learning has only its beginning and never ends. The process of learning, or the adoption, processing and the development of knowledge and experience, through formal education is different for each individual. Thus, learning styles are grouped according to the characteristics and ways of learning of individuals or groups. Hence, we have a visual learning style which prefers learning by watching and an auditory style in which listening is an easier way of learning. Some learners can have an environmental impact on the process and learning efficiency, while for others this does not at all represent an important factor in learning. It is also possible that students have the need to combine the styles mentioned above or a number of other styles. These and many other learning styles help us to look at the learning process in a more comprehensive way and to help teachers, as well as students themselves, in mastering knowledge and skills in learning.

We can determine the style of learning by offering students the opportunity to choose different activities and then monitor their functioning. Sometimes students are not even aware of their preferred learning style, they have not paid attention to it or they have not been advised. In this way, a student can reveal the style of learning that best suits him and for which he has not known. We can also conclude on the style of learning on the basis of monitoring and analyzing students' success. Students are more successful when we check their knowledge by activities that demand the application of their dominant style of learning (Jensen, 2003). There are, as we have stated, various models of learning styles. Differences between definitions and learning style models are the result of the fact that learning takes place in different ways so that authors define learning through different aspects. Shuell (1986, p. 420) states that "the different ways that individuals use to adopt and process information and to respond to phenomena around them determine their learning style". Learning styles for Jensen (1998) are one of the ways of thinking, understanding and processing information, while for Kolb (1984) learning styles are the methods of personal choice of looking and processing information. In this way, learning styles are, on the one hand, sensitive, and on the other hand, mental.

## 2. REVIEW OF LITERATURE

### 2.1. STYLES IN LANGUAGE LEARNING

Learning styles are preferred ways of processing and memorizing things being learned and throughout the research they are described as cognitive and psychological attributes that indicate how learners perceive, process, and maintain the information and knowledge. In literature there exist numerous learning styles and learning style models. For some researchers learning styles are “predispositions to particular ways of approaching learning” (Richards & Lockhart, 1994, p. 59), and for others styles serve as “the general approaches students use to learn a new subject or tackle a new problem” (Oxford et al., 1992, p. 449). One of the definitions says that “learning style is a biologically and developmentally imposed set of personal characteristics that make the same teaching method effective for some and ineffective for others” (Dunn et al., 2002, p. 75). Furthermore, Ortega (2009) defines learning styles as the “preferences people have when perceiving, remembering and using information for problem solving and for learning” (Ortega, 2009, p. 205). Dunn (2002) states that “chronobiology is also part of style: some people are “morning people”; some are “night owls” (Dunn et al., 2002, p. 76). In Lorenzo’s dissertation (2015) there is an extensive classification of learning styles classified according to different authors and their views. Styles can be seen as a means of checking how individuals operate with the intelligence they have which does not mean to measure the level of intelligence but rather to check how and to which extent they use that intelligence. We can find throughout research that people learn more when they are aware of their learning styles (O’Connor, 1997). Moreover, the determination of learners’ learning styles helps teachers and educational planners to provide students necessary educational support and supplies (Anderson & Elloumi, 2004), because learning styles are crucial factors in learners' learning. Studies about learning show that considering learning styles in planning and presenting education can improve learning processes meaningfully (Dwyer, 1998).

### 2.2. TYPES OF LEARNING STYLES

Xu (2015) writes that there are “over seventy learning style models”, and that some of them are dependent/independent style, holistic, reflective, impulsive style etc. However, all these styles, according to him, can be categorized into three major types: perceptual learning styles, cognitive learning styles, and personality learning styles (Xu, 2015, p. 414). The importance of learning styles lies in learners’ awareness of their best-working way of language learning. Since learning is the process which supposes constant efforts, being aware of their preferred way of learning is of crucial importance. After identifying the best-working style there are activities which fit for students of different learning styles. The categories of learning styles differ based on different approaches in educational research. Cassidy and Eachus (2000) state that “there are a number

of learning-related concepts, such as perception of academic control and achievement motivation which have been a focus of attention when attempting to identify factors affecting learning-related performance" (Cassidy & Eachus, 2000, p. 321). Therefore the concept of learning styles is broad and categorized into a variety of definitions, theoretical positions, models, interpretations and measures. The most used models are presented by Cassidy (2010) and the one that is used in this research is Paige et al.'s (2006) "Learning style survey: Assessing your own learning styles". This model consists of the following styles: Field-dependent learning style can be understood as a way of relying on context or a broader concept of a given issue, while in contrary a field-independent learning style tends to separate detail(s) from context (Zianuddin et al., 2007). As Cassidy (2010) describes field-independent learners are intrinsically motivated and do not need to rely on other(s) while field-dependent learners have a need for guidance from the instructor, and a desire to interact with other learners, and are thus extrinsically motivated. He continues saying that "as a style it is associated with a general preference for learning in isolation (field-independence) as opposed to integration (field-dependence)" (Cassidy, 2010, p. 425). Some people are more, and some less, influenced by the context when performing a skill or learning.

Introverted and extroverted learning styles deal usually with a learner's openness or relaxation and shyness or closure to his/her own learning space. Extroverted learners, as outgoing and comfortable, feel relaxed while working with others and in social context. Introverted, contrary, appear reserved and prefer doing things on their own. Unfortunately, through biased conclusions, extroverts in classrooms are more popular and are usually given more chances. As suggested by Lawrence (2015, p. 5) "today's contemporary society is designed to accommodate and reward only the extrovert, and this bias begins in our schools". Introverted learners cannot be marked as uninterested and uninvolved just because they are silent. They can absorb more by active listening and reflecting.

Auditory learners are those that learn better by listening and they store information in the way they hear it. As Gilakjani (2012) states "These individuals discover information through listening and interpreting information by the means of pitch, emphasis and speed. They gain knowledge from reading out loud in the classroom and may not have a full understanding of information that is written" (Gilakjani, 2012, p. 106). Visual learners learn by seeing things or concepts and by reading a written text. They prefer to see what they learn such as photos, diagrams, maps and graphs. Tactile learners prefer physical movement, touching and doing. These types of learners easily remember things that were done but may have difficulty remembering what has been seen or heard in the process.

### **2.3. AGE AND GENDER IN LANGUAGE LEARNING**

The issue of the relationship between age and gender, on the one hand, and learning success, on the other has raised great research interest so far (Bećirović, 2017; Bećirović & Hurić-Bećirović, 2017). Thus, Delić et al. (2018) investigated possible effects of age and gender on language learning process. In that paper gender differences on given research were significantly different while different grades, different ages, did not present any significant difference (Delić et al., 2018). The concept of gender has been investigated by researchers of learning styles. In one study, Ally and Fahy (2002) found differences between gender for learning style preference while Jones, Reichard, and Mokhtari (2003) found no significant differences in preferred learning by gender. In the paper *Age and Gender as Determinants of Learning Style among Medical Students* the authors have concluded that learning styles are "age and gender dependent" and they suggest that different learning styles should be applied for men and women (Mohammadi et al., 2015). According to some other papers (Greb, 1999; Pizzo, 1990; Thompson, 1975) genders differ in ways of learning. Males are likely to be more kinesthetic, tactual, and visual. When they are grouped in classroom, males learn less by listening. Females tend to be auditory, authority-oriented, and better able to sit passively at conventional classroom desks and chairs than males. They need to be more quiet while learning (Tatarintseva, 2002). Hence, the mentioned papers showed differences regarding this concept. This paper aims at contributing to these researches and at developing the concept of gender and age at the level of high school students

## **3. METHODOLOGICAL FRAMEWORK**

### **3.1. SUBJECT OF THE RESEARCH**

The subject of this research is the analysis of different learning styles among secondary school students and the examination of possible differences in the representation of learning styles between males and females of different ages.

### **3.2. RESEARCH GOALS**

The goal of this research is to analyze the awareness of the presence of certain learning styles in students. The research hypothesis anticipated that there is a significant difference between different learning styles among genders and among four high school grades.

### **3.3. PARTICIPANTS**

The sample for this study was composed of 195 high school students, the Madrasa "Osman-ef. Redžović" in Visoko, aged 14 to 20 years. There were 105

girls (53.8%) and 90 boys (46.2%). In the first grade there were 57 students (29.2%) in the second 49 (25.1%), in the third 47 (23.1%) and 44 (23.6%) in the fourth grade. Each class had two separate groups, male and female. Representation of the participants is shown in Table 1.

**Table 1 Gender, grade, and age of participants**

		Frequency	%
<b>Gender</b>	Males	90	46.2
	Females	105	53.8
<b>Grade</b>	First	57	29.2
	Second	49	25.1
	Third	45	23.1
	Fourth	44	22.6
<b>Age</b>	14	2	1.0
	15	29	14.9
	16	46	23.6
	17	59	30.3
	18	45	23.1
	19	12	6.2
	20	2	1.0

### 3.4. RESEARCH INSTRUMENT

For the purposes of this research, the instrument "Learning style survey: Assessing your own learning styles" (Paige et al., 2006) was used. The research instrument consists of two parts: The first part consists of information on the participants, gender, age and class they attend while the second part contains questions related to learning styles. It contained 42 questions. The pupils responded to the questions on the basis of the Likert scale with 5 options offered: I completely agree, I agree, I am neutral, I do not agree and I completely disagree, for which they needed about 20 minutes. The questions were grouped into 7 subscales: questions 1-10 were visual learning style questions, 11-20 auditory style, 21-30 tactile/kinesthetic style, 31-36 field-independent, 37-42 field-dependent, 43-45 extroverted, 46-48 introverted style. Descriptive characteristics of the target group were used for analysis purposes.

### 3.5. STATISTICAL ANALYSIS

The descriptive data of the representation of learning styles among students is presented in this paper. The differences in the use of styles between boys and girls and differences between different classes and departments are observed. The data was analyzed using the statistical program SPSS v. 20.

#### 4. RESULTS

As mentioned in the methodological framework in this work we were interested in possible differences in learning styles between boys and girls and different grades. In the results part we will present mean differences based on which we will conclude which group prefers which style. The results are presented in tables 2 and 3 below.

**Table 2. Analysis of the representation of learning styles between boys and girls**

Gender		Visual style	Auditory style	Tactile kinesthetic style	Extrov. style	Introv. style	Field ind. style	Field dep. style
<b>Female</b>	Mean	2.52	2.63	2.54	2.74	2.37	2.30	2.77
	N	105	105	105	105	105	105	105
	Std. Dev.	.41	.39	.45	.59	.52	.72	.67
<b>Male</b>	Mean	2.70	2.67	2.61	2.61	2.32	2.57	2.70
	N	90	90	90	90	90	90	90
	Std. Dev.	.33	.42	.51	.56	.59	.70	.69
<b>Total</b>	Mean	2.60	2.65	2.57	2.68	2.35	2.42	2.74
	N	195	195	195	195	195	195	195
	Std. Dev.	.38	.40	.48	.58	.55	.72	.68

**Table 3. Analysis of the representation of learning styles between grades**

Grade level		Visual style	Auditory style	Tactile kinesthetic style	Extrov. style	Introv. style	Field ind. style	Field dep. style
<b>First</b>	Mean	2.53	2.57	2.62	2.57	2.23	2.20	2.60
	N	57	57	57	57	57	57	57
	Std. Dev.	.45	.45	.50	.63	.51	.64	.60
<b>Second</b>	Mean	2.59	2.70	2.62	2.74	2.46	2.65	2.72
	N	49	49	49	49	49	49	49
	Std. Dev.	.32	.39	.49	.58	.57	.79	.63
<b>Third</b>	Mean	2.67	2.68	2.39	2.66	2.48	2.51	2.90
	N	45	45	45	45	45	45	45
	Std. Dev.	.34	.39	.35	.54	.63	.73	.77
<b>Fourth</b>	Mean	2.64	2.68	2.65	2.79	2.23	2.37	2.77
	N	44	44	44	44	44	44	44

	Std. Dev.	.39	.36	.51	.54	.44	.64	.71
<b>Total</b>	Mean	2.60	2.65	2.57	2.68	2.35	2.42	2.74
	N	195	195	195	195	195	195	195
	Std. Dev.	.38	.40	.48	.58	.55	.72	.68

Looking into mean differences between genders and grades we presented analysis of each type of learning styles that were asked in the questionnaire. Seven learning styles were grouped and here we will present the results on differences between them.

In terms of gender differences we can see that the highest mean among girls is found for field dependent style ( $M = 2.77, SD = .67$ ) while the lowest one is found in field independent style ( $M = 2.30, SD = .72$ ). For the scores of males we found the highest mean in field dependent style ( $M = 2.70, SD = .69$ ) and visual style ( $M = 2.70, SD = .33$ ), and the lowest mean is found in introverted style ( $M = 2.32, SD = .59$ ).

Regarding the analysis between grades and learning styles we found that the first class shows the highest mean with tactile-kinesthetic style ( $M = 2.62, SD = .50$ ) and the lowest with field independent style ( $M = 2.20, SD = .64$ ). The second class showed the highest mean with extroverted style ( $M = 2.74, SD = .58$ ) and lowest one with introverted style ( $M = 2.46, SD = .57$ ). The scores of third class showed that students from this class presented the highest mean with field dependent style ( $M = 2.90, SD = .77$ ) while the lowest mean was shown with tactile-kinesthetic style ( $M = 2.39, SD = .35$ ). And the fourth group showed the highest mean with extroverted style ( $M = 2.79, SD = .54$ ) and the lowest mean with introverted style ( $M = 2.23, SD = .44$ ).

## 5. DISCUSSION

The results shown above indicate that in some cases there is a difference among means in given questions and in some the differences are almost unrecognized. The focus on gender differences shows that both males and females indicated the highest mean for field dependent style of learning and the means they indicated are almost identical. The difference between males and females is shown in the styles where they showed the lowest mean. Thus for the males the lowest mean is shown in introverted style while for females it is the field independent style. The most interesting point in these results is the fact of expressing the most preferred style by both males and females, which is the field dependent style. Field dependent learners are by definition those that rely more on a group, peer-workers, and striving for a common goal. They prefer to work with others. This

“manual” of their work gives insights into their deeper psychological code and describes them as more sensitive to others’ feelings, opinions, and ideas. There are of course more characteristics of both field dependent and field independent types of learners but for us here the most interesting characteristic of field dependent learners is their social sense and peer work functioning. The fact that both males and females indicated this style of learning may be studying at the boarding school and spending most of their time with their class colleagues. Their out-of-class activities, free time and prescribed time for studying is always organized in groups, teams, or on a roommate base in the dormitory. This socializing pattern of their time may cause their preferred style of learning which is, as the results showed, the field dependent style. This characteristic of their learning style is expected later in their academic progress. Many of the students that continue studying at the university level prefer to learn in libraries and at other public places.

After the analysis of means of styles among different grades we can see that each of the four grades showed different learning styles means. The reason for this might lie in the fact that students in these ages face big changes throughout the syllabuses in these four grades. Each year they get some new subjects and face new insights into knowledge which may be the reason for style changes throughout the grades. Also physical changes that teenagers face in these years may contribute to mixtures and changes in learning styles. This stage of life, as one of the most important stages, impacts the educational outcomes to a large extent. Another reason for non consistency in academic achievement among grades could be so-called media-related problems. Media and technology are in that kind of rapid change that almost each month, let alone each year, we have something new. Students and teachers who use it in education, in order to stay updated, need also to follow the changes and make a shift to some new models which may in the end cause confusion in the learning process (Yaman & Bećirović, 2016). Parker et al. (2004) suggest that high school student academic achievement is connected to emotional intelligence. Catsambis (1998) in her paper “Expanding the knowledge of parental involvement in secondary education: effects on high school academic success” concludes that there exists “multidimensional nature of parental involvement in students' education” (Catsambis, 1998, p. 23).

## 6. CONCLUSION

This paper is an approach to the language learning process through the components of different learning styles. Language learning styles are methods and approaches through which students feel comfortable and eager to study. The research showed that, under different conditions, it is normal that students differ in their learning styles and that one student can have more than one style and a group of students can have one single learning style. In this research 195 students

from Medresa "Osman-ef. Redžović" participated and responded to the questionnaire.

It is suggested that teachers should try to make changes in their classroom that will be beneficial for learners to adjust to their preferred learning style. Finally, there is a need for further research, especially longitudinal studies into learning and teaching styles in Bosnian educational institutions. We believe this study will contribute to the academic community, school administration at Madrasa "Osman-ef. Redžović" and the students and we recommend this type of study to other high school institutions.

## REFERENCES

Bećirović, S. (2017). The Relationship between Gender, Motivation and Achievement in Learning English as a Foreign Language, *European Journal of Contemporary Education*, 6(2). 210-220.

Bećirović, S., & Hurić-Bećirović, R. (2017). The role of age in students' motivation and achievement in learning English as a second language. *Journal of Linguistic and Intercultural Education*, 10(1), 23-35. DOI: <https://doi.org/10.29302/jolie.2017.10.1.2>

Cassidy, S. (2010). Learning Styles: An overview of theories, models, and measures. *Educational Psychology. An International Journal of Experimental Educational Psychology*. 24(4), 419-444.

Cassidy, S., Eachus, P. (2000). Learning style, academic belief systems, self-report student proficiency and academic achievement in higher education, *Educational Psychology*, 20, 307-322.

Catsambis, S. (1998). Expanding the knowledge of parental involvement in secondary education: effects on High school academic success. Baltimore, MD: Johns Hopkins University, Center for Research of the Education of Students Placed At Risk.

Delić, H., Bećirović, S., & Čeljo, A., B. (2018). Effects of grade level and gender on foreign language learning process in Bosnian high schools. *International Journal of Educational Policy Research and Review*, 5(6), 83-89.

Delić, H., & Bećirović, S. (2018). The influence of Grade Point Average and Socioeconomic Status on Learning Strategies. *Journal of Education and Humanities*, 1(2), 53-64.

Dunn, R., Beaudry, J., S., & Klavas, A. (2000). What we know about how people learn. *California Science Teachers Association*, 2(2).

Dwyer, K., K. (1998). Communication apprehension and learning style performance: Correlation and implication for teaching. *Communication Education*, 17(2), 137- 148.

Gilakjani, A., P. (2012). Visual, Auditory, Kinaesthetic Learning Styles and Their Impacts on English Language Teaching. *Journal of Studies in Education*, 2(1), 104-113.

Jensen, E. (1998). *Introduction to Brain-Compatible Learning*. California: Corwin Press.

Kolb, D. A. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. New Jersey: Pearson Education.

Lawrence, W., K. (2015). *Learning and Personality: The Experience of Introverted Reflective Learners in a World of Extroverts*. Retrieved from <https://www.amazon.com/Learning-Personality-Experience-Introverted-Reflective/dp/1443878073>

Mohammadi, S., Mobarhan, M., G., Mohammadi, M., & Ferns, G., A., A. (2015). Age and Gender as Determinants of Learning Style among Medical Students. *British Journal of Medicine & Medical Research*, 7(4), 292-298. DOI: 10.9734/BJMMR/2015/15741

O'Connor, T. (1997). Using learning styles to adapt technology for higher education. Retrieved from <http://www.IndState.Edu/ctl/styles/learning>.

Oxford, R., M. E. Hollaway, & D. Horton-Murillo (1992) „Language Learning Styles: Research and Practical Considerations for Teaching in the Multicultural Tertiary ESL/EFL Classroom“, *System*, 20(4), 439-456.

Ortega, L. (2009). *Understanding Second Language Acquisition*, London: Hodder Education

Pizzo, J. (1990). *Responding to Students' Learning Styles*. New York: St. John's University.

Richards, J. C., & Lockhart C. (1994) *Reflective Teaching in Second Language Classrooms* Cambridge Language Education, New York: Cambridge University Press

Shuell, T., J. (1986). Cognitive Conceptions of Learning. *Review of Educational Research*, 56(4), 411-436. doi.org/10.3102/00346543056004411

Thompson, B., G. (1975). Sex Differences in Reading Attainment. *Educational Researcher*, 18(1), 16-23. doi.org/10.1080/0013188750180102

Xu, W. (2011). „Learning Styles and Their Implications in Learning and Teaching“. *Theory and Practice in Language Studies*, 1(4), 413-416.

Yaman, A. & Bećirović, S. (2016). Learning English and Media Literacy. *Imperial Journal of Interdisciplinary Research (IJIR)*, 2(6), 660-663.