

The Investigation of the Learning Styles of University Students

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ABSTRACT

The subject of this study is to determine the learning styles of university students and to compare it with gender, and departments differences. In this study, McVay Lynch Learning Style Inventory was used. The learning style inventory ,which consists of 59 articles and which is 3-Likert-Type scaled, includes three modes of learning called 'visual learning style', 'auditory learning style' and kinesthetic learning style'. According to the result of the study, it was seen that approximately half of the students learned visually. By observing the influence of the gender on the learning styles of the students, it was found out that, in visual learning, girls had obvious higher averages rather than boys in statistical terms. In addition, it was also noted that, neither the departments of the students nor the common effect of the gender nor the department doesn't affect the learning styles.

Keywords: *learning, Investigation, learning styles*

INTRODUCTION

People, use learning every day as it is the period of processing the data. The purpose of people using learning is to manage and adopt the conditions which result in different learning styles (Brown, 2009). Thus, here it is seen that individuals might differ in learning styles. When we ask the meaning of learning styles, we can easily notice that it is not a brand new topic in education and can be encountered in the studies that took place in the last 20 years. It has been observed by lots of different researchers and has always been one of the topics that has been taken into consideration within the framework of learning (Huston and Cohen, 1995, as cited in Brown et al. 2009; Ballone and Czerniak, 2001). 'Learning Style' was described as the path which individuals prefer in order to adopt the new data and strategies that they process for active learning. In other words, learning styles are conceptual, cognitive, behavioral patterns which are exposed to time and duties (Guild, 1994, as cited in Ballone and Czerniak,2001).

Experts defined the learning styles in various ways as they made their assessments in different orientations. Due to this, learning styles have different definitions and classifications (Yılmaz – Soylu ve Akkoyunlu, 2002). For example, the learning styles of Gregoric consist of four dimensions that include concrete-consecutive,abstract-consecutive, concrete-random and abstract-random (Guild and Garger, 1985, as cited in Ballone and Czerniak, 2001).

In the learning styles of Kolb, there are also four styles. These are: accommodator,diverger,converger and assimilator (Can, 2011; Yılmaz-Soylu ve Akkoyunlu, 2002). In the learning styles of Felder ve Soloman four different learning styles exist and these are the active-reflective scale, the sensing /intuitive scale,the visual/verbal scale and the sequential /global Scale (Samancı and Keskin, 2007). Vester mentioned three learning styles in his book called 'Think-Learn-Forget' which was published in 1975. According to Vester, there are auditive, visual and haptic learning styles (Beck, 2005). The McVay Lych Learning Styles Inventory which was used in this study consists of three dimensions called visual, auditory and kinesthetic. When these dimensions are observed;

- In visual learning students learn through seeing. Visual learners prefer visual aids like pictures, figures and tables (Mills et al.. 2010).

- In auditory learning, students learn through hearing. They tend to prefer verbal and written materials (Mills et al., 2010).
- In kinesthetic learning, students learn as they perform.

Learning styles are not stable. Students might adopt different styles depending on their subject and their learning environment (Pritchard, 2009, as cited in Alharbi et al., 2011). For example, some students might have one or two of the learning styles like visual, auditory and kinesthetic while others might have all of them.

Determining the learning styles of students is of vital importance in order to collect data about their preferences. It creates awareness for the student. This awareness provides the learner to gain knowledge during his effort to learn and also acts as a motive for the learner to use the gained knowledge (Federico 2000, as cited in Brown et al., 2009). Learning styles not only creates awareness for the students but they can also be used to inform them about their strengths and weaknesses. Being cognizant of their strengths and weaknesses might trigger them to be more motivated to learn (Coffield et al., 2004). Starting from this point, the target was to determine different learning styles among the university students that are registered to different departments. Consequently, the research was based on the preparatory school students since they vary in terms of departments.

In this study, it was aimed to determine the learning styles of the students who study at a private university's prep school in Northern Cyprus. In addition, it was also aimed to see the impact of their genders and their departments on their learning styles, these two elements (their genders and departments) were assessed both mutually and separately. The data obtained from this study is thought to be useful for the studies that are done on learning strategies and also to be beneficial for educational activities which are oriented on university students. The answers to the following questions were sought:

- What are the style of prep students like?
- Does gender has an impact on learning styles of these students?
- Do the departments of the students affect learning modes?
- Do the genders and the departments of the students have a mutual effect on students' learning styles?

Revealing the learning problems of the students, finding out the preferences of them, helping students find out the suitable learning methods and contributing the studies conducted on this subject can be accepted as the benefits of observing learning strategies

MATERIALS AND METHOD

The study group consists of 120 students (62 girls and 58 boys) who study at a prep school of a private university in the Northern Cyprus. The mean values of age of these students who were chosen randomly is 19.5 (Sd. 1.3). The reason why these prep students were chosen is that they would continue to study different departments after completing their prep year. Thus, it was a great opportunity to see varied learning strategies. The departments that these students would proceed are given below:

Nutrition and Dietetics (20 students)

Faculty of Pharmacy (17 students)

Nursing (33 students)

Business Management (29 students)

Faculty of Engineering. (21 students)

Maggie McVay Lynch Learning Strategy Inventory was used in this study. Maggie McVay Lynch Inventory was adapted into Turkish by Dağhan and Akkoyunlu in 2011. This 3 Likert-type-scaled inventory's actual form has 60 items. However, the adaptation of it contains 59 items. Inventory is made up of three dimensions and these are: 1. Visual learning style (21 items), 2. Auditory Learning Style (19 items), 3. Kinesthetic Learning Style (19 items). For the reliability of this research, Cronbach Alpha value was calculated and the reliability of this study was found .80, where

as the Turkish adaptation’s reliability was .95.

The reliability of the learning strategies are given below:

- Visual Learning : .68
- Auditory Learning : .56
- Kinesthetic Learning: .58

While evaluating the data, frequency, mean, standard deviation and percentage techniques were used. T test, one-way ANOVA and two-way ANOVA techniques were used while assessing the separate and mutual effect of the genders and the departments on learning styles of the students. For the normalcy, the assumptions were controlled. As the kurtosis and skewness were between -1 and +1, the distribution was accepted as normal. (skewness:.138; kurtosis: .95)

RESULTS

In this part, the data collected from the analyses are given under the headings of ‘The Distribution Of The Learning Styles of Students’, ‘The Effect Of Gender On the Learning Styles’, ‘The Effect of Departments on The Learning Styles’, and ‘The Mutual Effect Of the Gender and Departments On Learning Styles’.

The Distribution Of The Learning Styles of Students

Table 1. shows the distribution of the learning styles of students.

Table 1. Percentages for the learning styles of students

	Visual	Auditory	Kinesthetic	Visual-Kinesthetic	Total
f	55	25	39	1	120
%	41.7	18.9	29.5	0.8	100

According to Table 1, the most common learning styles is visual. About half of the students (41.7 %) have visual learning style. The following learning style is Kinesthetic (29.5%). The 18.9 % of the students use auditory learning mode.

The Effect of Gender on Learning Styles

Table 2 presents the results of t test analysis.

Table 2. The comparison of gender differences on learning strategies

		f	\bar{x}	Sd.	t	p*
Visual Learning Style	Women	62	2.34	0.27	2.55	.01
	Men	58	2.22	0.28		
Auditory Learning Style	Women	62	2.22	0.26	.99	.32
	Men	58	2.18	0.24		
Kinesthetic Learning Style	Women	62	2.22	0.25	.33	.74
	Men	58	2.20	0.24		

*.05

The average of women are higher than men in terms of visual, auditory and kinesthetic learning styles. However, the most important difference on average is on visual learning. To put it another way, a crucial difference on visual learning which is beneficial for women was found. ($t_{(118)}=2.55, p>0.05$).

The Effect of Departments on The Learning Strategies

Table 3 illustrates the results of one-way varyans analysis (one-way ANOVA) tecnique.

Table 3. The Comparison of Students according to their departments

Variants	Group Type	f	\bar{x}	Sd.
Visual Learning Style	Nutrition and Dietetics	20	2.32	.22
	Pharmacy	17	2.30	.24
	Nursing	33	2.30	.30
	Engineering	21	2.23	.28
	Business Administration	29	2.25	.33
Auditory Learning Style	Nutrition and Dietetics	20	2.24	.21
	Pharmacy	17	2.19	.26
	Nursing	33	2.20	.28
	Engineering	21	2.24	.27
	Business Administration	29	2.15	.21
Kinesthetic Learning Style	Nutrition	20	2.13	.24
	Pharmacy	17	2.25	.19
	Nursing	33	2.25	.24
	Engineering	21	2.22	.23
	Business Administration	29	2.18	.29
One-Way ANOVA				
Visual Learning Style	SS*=.130; MS*=.003; F* ₄₋₁₁₅ =.400; p*=.81			
Auditory Learning Style	SS*=.140; MS*=.580; F* ₄₋₁₁₅ =.580; p*=.68			
Kinesthetic Learning Style	SS*=.240; MS*=1.00; F* ₄₋₁₁₅ =1.00; p*=.41			

* SS: Sum of Squares; MS: Mean Square; F values; p: significance

When Table 3 was observed, it was seen that the departments of the students do not have considerable effect on the learning strategies. According to this study, the students of Nutrition and Dietetics, Pharmacy, Nursing and Business Administration have visual learning style, whereas the ones who would study at Engineering have auditory learning style.

The Mutual effec Of the Gender and Departments On Learning Styles

Table 4. shows two way varyans analysis (two way-ANOVA) whether the departments and gender of students have an influence on the learning styles of students.

Table 4: The mutual effect of the gender and departments on Learning Styles

Variants	Department	Women			Men		
		f	\bar{x}	Sd.	f	\bar{x}	Sd.
Visual Learning Style	Nutrition and Dietetics	16	2.31	.24	4	2.39	.14
	Pharmacy	10	2.37	.24	7	2.20	.21
	Nursing	26	2.35	.27	7	2.12	.35
	Engineering	2	2.15	.36	19	2.24	.28
	Business Administration	8	2.40	.41	21	2.20	.29
Auditory Learning Style	Nutrition and Dietetics	16	2.25	.22	4	2.21	.16
	Pharmacy	10	2.17	.26	7	2.21	.30
	Nursing	26	2.22	.30	7	2.14	.21
	Engineering	2	2.33	.17	19	2.23	.28
	Business Administration	8	2.21	.24	21	2.13	.21
Kinesthetic Learning Style	Nutrition and Dietetics	16	2.09	.24	4	2.29	.13
	Pharmacy	10	2.27	.23	7	2.21	.14
	Nursing	26	2.28	.22	7	2.16	.29
	Engineering	2	2.47	.07	19	2.19	.23
	Business Administration	8	2.11	.32	21	2.20	.24
Two -Way ANOVA							
Visual Learning Style	SS*=.330; MS*=.082; F* ₉₋₁₁₀ =1.054; p*=.38						
Auditory Learning Style	SS*=.047; MS*=.012; F* ₉₋₁₁₀ =.183; p*=.95						
Kinesthetic Learning Style	SS*=.414; MS*=.104; F* ₉₋₁₁₀ =1.724; p*=.15						

* SS: Sum of Squares; MS: Mean Square; F values; p: significance

Having observed Table 4, it was seen that the common effect of the gender and the departments of the students is not significant. The highest average value is from the women students of Engineering faculty and it is in Kinesthetic Learning Style ($\bar{x}=2.47$). The lowest average is the women students from Nutrition and Dietetics in Kinesthetic Learning Style ($\bar{x}=2.09$)

CONCLUSIONS AND DISCUSSION

In this study, it was aimed to determine the learning styles of the students who study at the Preparatory School. In addition, it was also aimed to see the effect of their genders and their departments on their learning styles, these two elements (their genders and departments) were assessed both mutually and separately. The most prevalent learning style adopted by the students who participated in this study is visual learning. MacCarter (2008) mentioned in his research that the most dominant learning style is visual learning. Visual learners form mental images with the things they learn and keep them in their mind (Dunn and Dunn, 2003, as cited in Pender and Tekavčič, 2009; Pender, Tekavčič and Dimovski, 2008). Among the learning styles, such as visual, auditory and kinesthetic, one or two of them are normally dominant (Pender and Tekavčič, 2009). Some students have a preference among these learning styles because the learning style is a consistent path in which students respond to the stimuluses and use it*.

When the crucial importance of the gender on the learning modes was observed, it was seen that gender had no effect on the students who learned by auditory learning and by performance. However, the influence of gender is significant on visual learners. It was seen that this effect was beneficial for girls. This result is similar to another study in which some other learning styles were observed (Can, 2011; Deniz, 2011). On the other hand, it brings out a contrast when it is compared with another study concerning the learning styles of students (Oktar-Ergün, 2010).

When the relation between the student's departments and the learning strategies were observed, it was seen that the difference in terms of departments does not have an important effect on learning strategies. Some studies also support this result (Özen and Eren 2009); while others do not (Kahyaoglu, 2011).

As it was also stated in Samancı and Keskin's study in 2007, the common effect of the gender and the department does not have a noteworthy influence on the learning styles of the students. As a result of these findings, it can be noted that the departments of the students do not have an effect upon the learning styles of the students.

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