

# Learning Styles and Variables in Predicting Attitude towards Learning

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**Abstract-**This study aims to reveal the learning styles and variables in predicting attitudes towards learning. All high school students in Küçükçekmece Municipality constitute the target population of the study. The sample of the research consists of 1544 voluntary students from 10 different high schools. Attitude toward Learning Scale, Learning Style Scale and a fact sheet developed by the researcher were used. Multiple regression analysis was employed to present which learning style predicts the attitude towards learning best, and T test was employed to ascertain the significant difference between two variables. Furthermore, one-way ANOVA was used to test the significant differences among more than two variables, and Pearson Production-Moment Correlation Coefficient was used to test the relationship between two variables. Results of the study report that the thing which predicts attitudes towards learning styles is as follows auditory, somatic and visual learning styles. There is relationship between students' participation in cultural activities, listening to teachers carefully, high motivation towards learning and attitudes towards learning. As the attitude towards learning increases, students' success increases as well. Students who associate prior knowledge with new knowledge and those who study taking notes have more positive attitudes towards learning. Female students and students who have their own study rooms have more positive attitudes towards learning. To increase success, variables related to the attitude towards learning should be specified and school and daily life should be organized accordingly.

**Key words:** learning, learning styles, learning method

## I. INTRODUCTION

Human beings, after birth, undergo continual changes in order to harmonize with life. Depending on these changes, emotional, behavioral and mental differences occur. Therefore, human beings are recognized as psychodynamic entities. This is because human beings are always in a struggle for learning.

Learning is defined differently by many scientists. While, according to Wortock, learning is forming new dendrites and brain structures, according to Thomas, learning is the ability to comply with changes[1]-[2]. Demirel defines learning as "a result of synaptic changes among cells" [3]. Chudler, refer to learning as changes in neurons' internal structures especially in synapsis and increase in synapsis among neurons[4]. Learning is relatively permanent behavioral changes formed as a result of interaction between environment and experience[5]- [6] -[7].

Behavioral psychologists like Watson, Skinner and Pavlov state that intrinsic behaviors cannot be observed and hence, they focus on observable differences in behaviors. They define learning as this permanent intentional change. Cognitive psychologists focus on changes in knowledge and state that learning cannot be observed directly and it is intrinsic cognitive activity. By intrinsic cognitive activity, they mean thinking, remembering and problem solving [8]. Ormrod explains learning based on information processing approach in a broad perspective and does not define learning as obvious behavioral

changes[9]. He defines it as a process which involves cognitive process and relating prior knowledge with new knowledge.

In this context, learning can be defined as observable behavioral changes independent from maturation and growth. Although change in cognitive processes can be regarded as learning, it is important that this change is observable.

Undoubtedly, there may be plenty of factors in individuals' attitudes towards learning. One of them is thought to be individuals' learning styles. Keefe regards learning styles as a combination of cognitive, sensory and psychometric behaviors, how students respond to their wants, how they interact and how they perceive [10]. Felder uses learning styles as individual differences in getting and processing information[11]. Hunt states that learning styles mean how a student learns rather than what a student learns[12]. James and Galbraith states that learning style is a notion made up of seven different perceptual dimensions which include seeing, hearing, acting, touching, reading/writing, smelling/tasting and interacting with people[13]. According to researchers, these seven different dimensions are the interaction between senses and environment. According to Dunn, learning style is "A continual process which differs from person to person and starts with focusing on new and difficult information" [14]. Many learning styles are presented depending on observable differences in definitions of learning styles.

While Asch and Witkin (1948) explains learning style by categorizing as field dependent and field independent [15], Holzman and Klein (1954) defines learning style as leveling and sharpening[16]. In a research by Dunn and Dunn (1974), biological, personal and environmental features of individuals are taken into account[17]. According to Kolb, learning can be carried out by integrating new knowledge, ability, attitudes and vital learning. Learning styles are in a cycle and everybody is in somewhere in this cycle[18]. We need four different skills in order for the students to be active. These are successive four phases. Reinert (1976) categorizes learning styles into four as visual, auditory, verbal symbols and kinesthetic [17]. Visual learners prefer to learn by using their eyesight. The features of such students are drawing from diagrams, charts and pictures, liking to be directed while writing, using gestures and nodding, envisioning and making eye contact. The features of auditory students are liking to talk to themselves and to others, understanding better while reading aloud, liking to listen to others, speaking and thinking fluently, summarizing verbally [19]. Students learning with verbal symbols use verbal elements while learning. Their features are paying attention to words, summarizing verbally, liking verbal symbols rather than seeing and hearing, liking to talk, speaking fluently and using words efficiently [17]. Kinesthetic learners prefer to learn by touching and moving. Some of their features are swinging their legs while sitting, toying with something (keys, pens, books, etc.) moving frequently and wandering around, drawing things in motion[19]. In a study by Honey and Mumford, learning styles

Students' attitude towards learning and their learning styles can affect their behaviors during education. Matching students' learning styles and teachers' teaching methods shows that it may help students' success levels to increase[21]- [22] . Renninger and Snyder (1983) state that students whose learning styles match with their teachers' teaching methods learns easier than other students and are satisfied with the learning process [23]. According to Felder, students whose learning styles are compatible with their teachers' teaching methods get information for a longer time, continue learning, implement what they learn better and have more positive feelings for the lesson and subject compared to students who do not have this harmony with their teachers[24] . Hilgersom (1987) argues that teachers should be aware of students' learning styles and teaching with these in mind is more effective[23].

In this study, the aim is to get the best result in teaching by presenting students' attitudes towards learning and presenting variables related to this and taking necessary precautions. Therefore, it can be said that this study is of special significance.

## II. METHOD

The main goal of this study is to present learning styles and variables in predicting attitude towards learning. Hence, this study was applied in descriptive correlational model.

### A. Population and Sample

The population of this study is all high school students within the borders of İstanbul Küçükçekmece Municipality. 1544 voluntary students from 10 different high schools in different grades constitute the sample of this study. 782 (50.6%) of these students are female students and 762 (49.4 %) of these students are male students. 835 (54.1 %) of the students are 9<sup>th</sup> graders, 358 (23.2 %) of the students are 10<sup>th</sup> graders, 310 (20.1 %) of the students are 11<sup>th</sup> graders and 41 (2.7 %) of the students are 12<sup>th</sup> graders.

## III. FINDINGS

Table 1 shows descriptive statistics of learning styles and attitude toward learning scales which were used in the study.

TABLE I: DESCRIPTIVE STATISTICS OF LEARNING STYLES AND ATTITUDE TOWARD SCALES

Scales	N	Mean	Std. Deviation	Min.	Max.
Attitude toward Learning	1544	152,45	16,13	71,00	192,00
Learning Style	1544	142,65	17,04	40,00	192,00

Learning style scale is made up of 48 items. The highest score on the scale is 240. The average score on the scale is 142,65. Attitude toward learning scale is made

Scale of Attitude toward Learning was developed by Kara . For the reliability analysis of the scale, Cronbach Alpha internal consistency coefficient and test-retest calculations were done. As a result of analysis of the scale using four sub-dimensions, a scale of 40 items was obtained. The internal consistency coefficient of this scale is “.73”, test-retest correlation coefficient is “.87”. For the validity of the scale, explanatory factor analysis was done and it was determined that there were 4 sub-factors. KMO value of four-sub-dimensional-scale is .79, Bartlett test of Sphericity value is 3101.363, Cronbach Alpha value is .726. It was noticed that all four dimensions which constitute Scale of Attitude toward Learning had over 50% explanatoriness [25] .

BİG 16 Learning Style Inventory was developed by Şimşek in order to determine three types of learning styles which are physical, auditory and visual. According to studies, visual factor 24.22%, auditory factor 9.84% and physical 8.86% and all these three factor explain 42.92 of total variance. Cronbach Alpha coefficient was calculated for reliability of this study and reliability coefficients are as follows 0.68 for physical learning style, 0.77 for auditory learning style and 0.79 for visual learning style [26] .

Furthermore, a fact sheet about students' attitude toward learning was prepared and applied.

### C. Statistical Analysis

SPSS Windows 16.0 was used to analyze the data gathered for the study. Multiple Linear Regression Analysis Technique, which is the analysis to predict the dependent variable with the help of two or more independent variables, was used in this study. Furthermore, One Way ANOVA was used for the meaningful variance between the averages of multiple independent variables. Independent Samples T-Test was used for the meaningful variance of the averages between two variables.

### D. Procedure

First of all, students were informed about the goal of the study and scales were applied on voluntary students. This lasted almost 2 periods.

up of 40 items and the highest score on the scale is 200. The average score on the scale is 152,45.

TABLE II :RESULTS OF MULTIPLE REGRESSION ANALYSIS ABOUT LEARNING STYLES AND PREDICTING ATTITUDE TOWARD LEARNING

Variables	B	Standard Error	β	T	p	Partial r	Part r
Constant	111,820	3,111		35,942	0.00		
Physical	,317	,052	,178	6,085	,000	,277	,153
Auditory	,695	,073	,276	9,523	,000	,329	,236
Visual	-,147	,072	-,062	-2,044	,041	,177	-,052

R=0.36 R<sup>2</sup>=0.13  
F(3-1540)=76.082 P=.000

There is meaningful relation between scores of physical learning style and attitude toward learning is as follows: auditory, physical and visual. style, auditory learning style and visual learning style and student's attitude toward learning. When the results of t-test about the meaningfulness of attitude toward learning (R=0.36, R<sup>2</sup>=0.13, p<0.001). These regression coefficients are analyzed, physical, auditory and variables mentioned explain only 13 % of variance in attitude toward learning. When the results of t-test about the meaningfulness of attitude toward learning, physical, auditory and variables mentioned explain only 13 % of variance in attitude toward learning.

According to standardized regression coefficients (β), relative order of importance of predictor variables on attitude

TABLE III: RELATION BETWEEN LEARNING STYLES AND ATTITUDE TOWARD LEARNING

Attitude toward Learning	Physical	Auditory	Visual
Correlation	,48	,52	,37
Sig.	,000	,000	,000

As it can be seen in Table 3, there is positive meaningful relation between learning styles and attitude toward learning. Auditory learning style (.52), the worst relation is visual learning style (.37). best relation between learning style and attitude toward learning is

TABLE IV: ONE WAY ANOVA RESULTS OF SCORES OF SCALE ATTITUDE TOWARD LEARNING IN TERMS OF SOME VARIABLES

Variables	Σ	Σ S	Source of varia	Sum of sq	Mean sq	F	Sig.		
School Report Score	100-90	116	159,07±17,00	Between groups	32772,0	4	8193,14	34,64	,000
	89-80	271	158,19±17,00	Within groups	359428,1	1520	236,46		
	79-70	425	154,19±14,74						
	69-60	488	150,21±14,42						
	59 and lower	225	144,28±15,31	Total	392200,8	1524			
Motivation toward I	High	776	156,55±15,09	Between groups	29429,2	4	7357,31	31,07	,000
	Medium	668	149,12±15,15	Within groups	360455,8	1522	236,83		
	Low	80	142,52±19,59	Total	389885,0	1526			
Does s/he listen to t carefully?	Yes	692	156,84±16,50	Between groups	25231,3	2	12615,69	51,65	,000
	Sometimes	769	149,32±14,32	Within groups	375135,1	1536	244,22		
	No	78	144,97±19,50	Total	400366,5	1538			
Does s/he attend in activities?	Yes	573	154,85±16,21	Between groups	5798,6	2	2899,32	11,19	,000
	Sometimes	658	151,47±15,84	Within groups	395440,0	1537	257,28		
	No	309	149,99±16,14	Total	401238,7	1539			
Which method does while studying?	Underlining	289	150,90±16,14	Between groups	9081,97	3	3027,32	11,91	,000
	Taking notes	886	153,89±14,95	Within groups	38821,97	1528	254,07		
	Reading	226	147,41±18,91						
	Relating new k with prior knowlec	131	154,90±16,33						
			Total	397300,9	1531				

As it is seen on table 4, students' attitude toward learning shows meaningful significance in terms of students' increases, their attitude toward learning increases, as well. The school success göstermektedir [f (4-1520) =34,64, p<.01]. Asignificance of meaningful relation between groups was tested with Scheffe Test and it is seen that there is meaningful difference only between good perceivers and bad perceivers.

There is meaningful relation between students' attitude toward learning and listening to lessons carefully [f (2-1536) =51,65, p<.01]. As students' motivation toward lessons increases, their tendency to listen to lessons carefully

increases, as well. The significance of meaningful relation between students who said “Yes” and who said “No” to cultural activities. This meaningful difference is positive for students who said “Yes” to cultural activities. difference which was regarded meaningful is found to be said “Yes” to cultural activities. positive in terms of careful listeners.

There is meaningful relation between students’ attitude toward learning and their methods while studying [f (3-1528) toward learning and attending in cultural activities [f (2-1537),91, p<.01]. Students’ attitude toward learning is significantly =11,19, p<.01]. Students’ positive attitude toward learning is more meaningful for students who relate new knowledge with prior increases in compliance with their attendance in cultural knowledge compared to those who take notes, underline and read activities. The significance of meaningful relation between growth while studying. was tested with Scheffe Test and there is meaningful difference

TABLE V: T TEST RESULTS OF ATTITUDE TOWARD LEARNING IN TERMS OF SOME VARIABLES

Variables	N	$\bar{X} \pm S$	sd	t	p	
Gender	Femal	782	154,62±15,62	1542	5,40	.000.
	Male	762	150,22±16,35			
Does s/he have a study rc	Yes	1076	152,77±16,62	1535	2.31	.022
	No	461	149,67±16,82			

\*p<.01 \*\*p<.05

Students’ attitude toward learning shows meaningful difference in terms of gender [t (1542) =5,40, p<.01]. Female students’ attitude toward learning (x̄=154,62) is higher than male students’ (x̄=150,22). Students’ attitude toward learning shows meaningful difference whether they have a study room or not [t (1535) =2,31, p<.01]. Students who have a study room (x̄=152,77) have higher attitude toward learning than those who do not have a study room (x̄=149,67)

IV. RESULTS, DISCUSSION AND RECOMMENDATIONS

According to study results, it was noticed that the learning style which predict students’ attitude toward learning is auditory, physical and visual respectively. Besides, a higher correlation was found between auditory and physical learning styles and attitude toward learning when the relation between learning styles and attitude toward learning was studied. The main reason of this situation is thought to be because students use auditory learning methods more in class and teachers use lecturing method mostly. There was no study on learning styles predicting attitude toward learning in literature. Moreover, there was no relation between learning styles, success and motivation in a study by Shih and Gamon [27]. However, they expressed that there was positive correlation between students’ using learning strategies, motivation levels and academic success. According to regression analysis, the study mentioned showed that learning styles, motivation and learning strategies explained 35% of learning. According to a study by Gencel [28], there was a relation between social sciences and students’ learning styles. In another study by Shih [29], it was noticed that students mostly used visual and auditory learning styles and they used retrieval strategy and metacognition strategy to a high degree.

Martini presented that students who prefer physical/kinesthetic learning style in computer-assisted science instruction had a higher success level compared to students who had visual and auditory learning styles [30]. In another study by Helm, students who have visual, auditory and kinesthetic learning styles reveal similar attitude and success levels[31]. In a study by Roberts, it is presented that students who have auditory and physical learning styles have more positive attitude toward lessons[32].

When study results are examined, there are different results about relation between physical, auditory and visual learning styles, attitude toward learning and success. The main reason of this is about course contents. While auditory and visual learning

Students' attendance in cultural activities affects their attitude toward learning positively. Students who have positive attitude toward learning are thought to believe that they learn better when they attend in activities about learning.

According to research findings, most of the students use note-taking method while studying. Besides, students who have a study room have more positive attitude toward learning. This situation is relate their prior knowledge with new knowledge are observed explained by the fact that studying in a study room is believed to have a positive attitude toward learning. The main reason of this is merging.

Students' taking advantage of education given and their thought to be because they want new knowledge to be permanent by relating it with prior knowledge. In a study by Bozkurt (36) access levels are related to their attitude toward learning. In this students who try to make sense of new knowledge learn through text, it is suggested that students' learning styles should be quicker which need to be memorized. In a study by Richards (37) taken into account and curricula should be arranged accordingly. August (1975) students who underline while studying remember more information compared to those who read in their study time[41] .

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