Learning Styles as the Predictor of Academic Success of the Pre-Service History Teachers

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Abstract: In this study, the relations between learning styles and academic success of pre-service history teachers were examined. The study group of this research was comprised of 142 pre-service history teachers, who attended Bayburt University, Faculty of Humanities and Social Sciences, Department of History in spring quarter of 2017-2018 academic year. "Grasha-Reichmann Learning Style Scale" was used in collection of data for the research. As per the academic success of the pre-service history teachers, averages of their four major area course grades were recorded. In the analysis of the research data, descriptive statistics, t-test for the independent groups, and multiple regression analysis were used. It was understood that the dominant learning styles of pre-service history teachers were, respectively, dependent, independent, participant, collaborator, avoidant, and competitive learning styles. Also, it was found that gender variable has not significant effect on pre-service history teachers' learning style. In the regression analysis, it was discovered that the learning styles of pre-service history teachers are predictive for their academic success. Moreover, it was understood that only participant and competitive learning styles significantly predicted the academic success. In other words, learning styles of pre-service history teachers accounted for 28 % of academic success of the pre-service history teachers.

Keywords: *Learning style, academic achievement, history pre-service teachers, history education, history teaching.*

Introduction

In education and training, student-centered approaches (constructivism) emphasize the importance of the learner in learning process. That the learners have different learning types is one of the important elements of this principle.

It can be mentioned that individuals are different based on their learning styles as they differ one from another concerning weight, height, gender, race, self-esteem, and confidence (Gozutok, 2011, p.75). Thus, learning style is a different preference of each individual about learning. When the definitions for learning styles are examined, it is observed that "preference" is in common among all of these definitions. In other words, how the individuals prefer to learn is their learning style (Arslangilay, 2015, p. 62). Indeed, each individual has strengths and weaknesses, different motivations and working methods (Gokce, 2014, p. 183).

When the learning style models in the literature are examined, some models standing above from others are as follows: Dunn and Dunn learning style model, Kolb Experimental Learning Model, Gregorg Learning Style Model, Honey and Mumford Learning Style Model, Grasha-Reichmann Learning Style Model, Fleming and Mill Learning Style Model (Arslangilay, 2015, p.64-84), and Memletics Intensive Learning Styles (Gokce, 2014, p.180-183).

Another issue to handle with learning styles is academic success (Sidekli & Akdogdu, 2018). Most of the teachers attribute the failure of their students to their comprehension level. However, the research show that this might be related with learning styles (Gokce, 2014, p. 183). The relation between academic success and learning style was mentioned in the literature. Some of the learning style methods, which were used in the research studies conducted on relation between academic success and learning styles, are as follows: "Dunn & Dunn learning style model (1974), Grasha and Reichmann learning styles classification (1975), learning styles model of Kolb (1976), learning styles model

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of Reinart (1976), psychological types (learning type) theory of Jung (1977), learning styles classification of Gregorc (1982), learning preferences of Honey & Mumford (1986)" (Sidekli & Akdogdu, 2018, p.504).

In this research study, academic success of the students was analyzed by the researcher via Grasha and Reichmann learning style model. The reason why Grasha and Reichman learning styles are preferred in the research is that the validity and reliability of the scale is tested several times before. In addition, the scale has been examined in terms of academic achievement of chemistry, physics, and classroom education (Inal, 2013; Karakuyu & Tortop, 2010; Sidekli & Akdogdu, 2018; Topuz & Karamustafaoglu, 2013; Tuysuz & Tatar, 2008). However, there are no studies investigating relation between Grasha and Reichman learning styles and history overall academic achievement. On the other hand, Grasha (2002, p.128), stated learning styles and general class preferences of the students with these learning styles as follows:

Competitive: Students in this learning style want to be better than the other students. They want to draw attention and to be known in their class with their success. They lead the group during discussions. They are better than other students in class activities.

Cooperative: This type of students think that skills and opinions are learned as they are shared. They cooperate with the teacher and the students like studying as well. They like small group discussions, small seminars, and group projects in the lessons.

Avoidant: The students, who have no interest in the lesson content and learning environment, are in this classification. Students with this learning style attend neither the classes nor the students. Students with avoidant learning style are indifferent about what is happening in the classroom. They are closed to the activities of the classroom. Tests are not among their preferences. They dislike eager teachers and being addressed in the classroom.

Participant: They are happy to attend the class and lessons. They do whatever they can in the lessons. They prefer discussions and class readings during the lessons.

Dependent: Students displaying the least interest and only learning the basic things are in this group. They look for an authoritarian figure about what to do. They perceive the teacher as the source of directive. They prefer the assignment to have a due date and to be clear. Moreover, they prefer teacher-centered approaches.

Independent: Students who learn themselves and who rely on their learning skills are in this group. Different from other students, they prefer to study alone. They prefer assignments providing free learning and free thinking, individual projects, and student-centered lesson designs.

On the other hand, some researches show that there is a relationship between learning styles, active learning techniques and history academic achievement, social studies academic achievement (Bozkurt, 2013; McCarthy & Anderson, 2000; Seker & Yilmaz, 2011). However, no study has been conducted on the relationship between the Grasha and Reichman learning styles and the history overall academic achievement of history teacher candidates. In this context, whether the learning styles of pre-service history teachers are predictive with their general academic success levels is examined in this research study. The problems of the study are as follows:

1. What are the prominent learning styles of pre-service history teachers?

2. Is there a differentiation in the learning styles of the pre-service history teachers concerning the gender variable?

3. Do the learning styles of pre-service history teachers predict the academic success?

Methodology

Research Method

In order to determine the relation between the learning styles and academic success, correlative research design was used. Relational research studies aim to show the relations between the variables (Sonmez & Alacapinar, 2016, p.50). In other words, correlational research methods are used in determining relation levels among the variables (Buyukozkturk, Cakmak, Akgun, Karadeniz & Demirel, 2010, p.226).

Sample and Data Collection

The universe of the research study is comprised of pre-service history teachers, who attended Bayburt University, Faculty of Humanities and Social Sciences, Department of History in spring quarter of 2017-2018 academic year. Without applying any sample in the study, all of the pre-service teachers within the universe of the research were attempted to reach. Thus, 142 pre-service history teachers (83 females and 59 males) participated in the research study.

In order to determine the learning styles of the pre-service history teachers "Grasha-Reichmann Learning Style Scale" was used. University course grades of the pre-service history teachers were used for academic success.

Grasha-Reichmann Learning Style Scale

Learning Style scale was used in the study. Grasha and Reichman developed it. The interpretation was carried out by Saritas and Sural (2010). The scale is comprised of 6 dimensions. These dimensions are independent, dependent, participant, avoidant, collaborative, and competent learning styles. There are 10 items for each dimension, in total, 60 items. Reliability co-efficient for the whole scale was .802 and language validity correlation was .62. These results show that the scale can be used in the sample groups in Turkey. According to the Grasha-Reichmann Learning Style Scale, each learning style is either in "low", "medium", or "high" level. These levels are given on Table 1: (Saritas & Sural, 2010).

Table 1. Grasha-Reichmann learning style scale grading.

Learning Styles	Grading of Learning Styles		
	Low	Medium	High
Independent	1.0-2.7	2.8-3.8	3,9-5.0
Avoidant	1.0-1.8	1.9-3.1	3.2-5.0
Collaborative	1.0-2.7	2.8-3.4	3.5-5.0
Dependent	1.0-2.9	3.0-4.0	4.1-5.0
Competitive	1.0-1.7	1.8-2.8	2.9-5.0
Participant	1.0-3.0	3.1-4.1	4.2-5.0

Data Analysis

In order to decide the method to use in the analysis of the data obtained in the study, normal distribution and variance homogeneity of the data was observed. Since the data had a normal distribution and the variances were homogeneous, it was found that the analyses were suitable for parametric tests. T-test was used for the relation between the gender variable and learning style and independent samples. Multiple regression analysis was conducted in order to examine whether the learning styles are predictive for the academic success of the history classes. Normal distribution of the dependent variable was checked in order for the regression analysis, and it was determined that the distribution was normal. Moreover, in this mentioned regression analysis, it was checked whether there was multiple connection among the independent variables. In order to examine whether there was a multiple linkage among the predictors, Pearson's correlation co-efficient, variance inflation factor (VIF), and tolerance values were checked. According to these results, the correlation was lower than $0{,}7 (r_{max=}0{,}46)$; VIF value was lower than 10 ($VIF_{max}=1{,}627$), and tolerance value was higher than $0{,}10$ ($tolerance_{min-max}=,615{-}867$). These values proved that there was no multiple linkage (Pallant, 2016, p.176).

Findings

The statistical results showing the learning styles and levels of the pre-service history teachers are presented on table 2.

Table 2. Statistical results of the learning styles of pre-service history teachers

Learning Styles	N	$\bar{X}$	Level
Independent	142	3,68	Medium
Avoidant	142	2,71	Medium
Collaborative	142	3,63	High
Dependent	142	3,85	Medium
Competitive	142	2,91	High
Participant	142	3,53	Medium

On Table 2, it was discovered that collaborative and competitive learning styles of the pre-service history teachers were high, while their independent, avoidant, dependent, and participant learning styles were in medium level. The dominant learning styles of 142 pre-service history teachers are presented on Table 3.

Table 3. Learning styles of pre-service history teachers

Learning Styles	f	%
Dependent	50	35,2
Independent	41	28,9
Participant	24	16,9
Collaborative	22	15,5
Avoidant	4	2,8
Competitive	1	,7
Total	142	100

The analysis results whether the gender variable created significant difference among the learning styles of the pre-service history teachers are on Table 4.

Table 4. Gender-based t-test results concerning the learning styles of the pre-service history

Learning Style	Gender	n	$\bar{X}$	S	sd	t	p
Competitive	Female	83	2,91	,07	140	-,116	,91
	Male	59	2,92	,09	140		
Collaborative	Female	83	3,60	,06	140	-,566	,57
	Male	59	3,66	,08	140		
Avoidant	Female	83	2,64	,06	140	-1,708	,09
	Male	59	2,81	,08	140		
Participant	Female	83	3,58	,06	140	1,221	,22
	Male	59	3,45	,09	140		
Dependent	Female	83	3,89	,04	140	1,288	,20
	Male	59	3,80	,06	140		
Independent	Female	83	3,68	,05	140	-,056	,96
	Male	59	3,68	,07	140		

When the findings on Table 4 are examined, it is observed that there is not a significant difference among the averages of competitive [t(140)=-,116], collaborative [t(140)=-,566], avoidant [t(140)=-1,708], participant [t(140)=1,221], dependent [t(140)=1,228] and independent [t(140)=-,056] learning styles of the pre-service teachers concerning the gender variable (p>0,05).

Findings are shown on Table 5 regarding the multiple regression analysis, which was conducted to examine the effects of the learning styles of pre-service history teachers on their academic success.

Table 5. Multiple regression analysis regarding the prediction of learning styles and academic success

Variable	B	Standard Error	β	t	p	Dual-r	Partial-r
Constant	13,997	16,356		,856	,394		
Independent	-,083	2,605	-,002	-,032	,975	-,003	-,002
Avoidant	-2,491	2,315	-,090	-1,076	,284	-,092	-,0783
Collaborative	3,361	2,171	,121	1,548	,124	,132	,112
Dependent	2,282	2,279	,061	,766	,445	,194	,056
Competitive	-6,593	2,095	-,272	-3,147	,002	-,228	,707
Participant	12,761	2,446	,483	5,217	,000	,410	,378
R=0,538	R^2=0,289						
F(6-135)=9,162	P=0,000						

When the analysis results on Table 5 are examined, it is observed that there is a significant and medium level multiple correlation (R=0,538, R^2=0,289) between the six learning styles and academic success of the pre-service history teachers (F(6-135)=9,162, p<0,01). Besides, the learning styles all together, account for 28 % of the change in the academic success R^2 (0,289). Considering the significance tests of regression co-efficient, it is understood that only participant and competitive learning styles significantly predict the academic success. According to standardized regression co-efficient, relative order of importance of the learning styles on academic success, can be stated as participant (β=,466) and competitive(β=-,272). Considering the coefficients of these predictors, it can be mentioned that one-unit increase in the participant learning style will cause 12,761-unit increase in the academic success; while one-unit increase in the competitive learning style will cause 6,593-unit decrease in the academic success.

Discussion and Conclusion

In the research study, it was understood that the collaborative and competitive learning styles of the pre-service history teachers were in high levels, while their independent, avoidant, dependent, and participant learning style levels were moderate. Considering the dominant learning style, it was observed that 35,2 % of the 142 pre-service teachers had dependent, 28,9 % of them had independent, 16,9 % had participant, 15,5 % had collaborative, 2,8 % had avoidant, and 0,7 % had competent dominant learning style. In a study conducted by Aydemir et al., similar to the findings of this study, it was found that competitive learning style of the pre-service primary school teachers was in high level, and their independent, dependent, participant, avoidant, and cooperative learning styles were in moderate levels (Aydemir, Kocoglu & Karali, 2016). In another research study, it was discovered that participant, dependent, and independent learning styles of pre-service primary school teachers were in high levels, and their avoidant learning style was low, while their competitive and cooperative learning styles were moderate (Sidekli & Akdogdu, 2018). In the research study of Bilgin & Bahar, the averages of cooperative/competitive sub-dimensions of pre-service primary school teachers were detected in high levels (Bilgin & Bahar, 2008). Tuysuz & Tatar found that competent and cooperative learning styles of pre-service primary school teachers were in high levels (Tuysuz & Tatar, 2008). These results are similar to that of this research study. Moreover, learning styles of the pre-service history teachers did not show difference based on gender variable. The results concerning gender variable are different from the findings of Sidekli & Akdogdu (Sidekli and Akdogdu, 2018). This result can be explained by the fact that the effect of gender difference on learning styles is not a strong factor in the current research.

In this research study, it was discovered that the learning styles of pre-service history teachers are predictive for their academic success. In other words, the learning styles of the pre-service history teachers accounted for 28 % of the academic success of the pre-service history teachers. For the most part of the previous studies, it is observed that learning style is effective on academic success (Bozkurt, 2013; Sidekli & Akdogdu, 2018; Karakuyu &Tortop, 2010; Inal, 2013; Tuysuz & Tatar, 2008). The results in Bozkurt's research indicated that there was a significant positive correlation between teachers' achievement and participant learning styles, but a negative relationship between achievement and passive learning style (Bozkurt, 2013). Sidekli & Akdogdu found out that there are significant and moderate multiple correlations between the six learning styles and the academic achievement of the primary school pre-service teachers in their research (Sidekli & Akdogdu, 2018). Karakuyu & Tortop found out that learning style has an effect of pre-service teachers' Physics success and attitudes toward Physics (Karakuyu & Tortop, 2010). Inal's research showed that "course taught with materials intended for learning styles in experiment group increased chemistry academic success when compared to course taught with traditional teaching in control group" (Inal, 2013). Tuysuz & Tatar found out that learning style has an effect of pre-service teachers' chemistry success and attitudes toward chemistry (Tuysuz & Tatar, 2008). In a few researches, it is asserted that this effect cannot be detected (Bayir, 2007; Topuz & Karamustafaoglu, 2014). According to Bayir's research, "there was no significant difference between success and permanency points of both groups in favour of the experimental group which was used the learner control was constructed with the learning style in web based education" (Bayir, 2007). Topuz & Karamustafaoglu found out there was no significant relationship between the learning styles of the prospective science teachers and their academic achievement (Topuz & Karamustafaoglu, 2014). In the current research, only participant and competitive learning styles significantly predict the academic success. There was no relationship between other four learning styles (Independent, avoidant, collaborative, and dependent) and academic achievement. Learning culture in Turkey (Sidekli & Akdogdu, 2018) and history teacher types effect on this result. In addition, teaching strategy, methods and techniques can effect this result. Considering other different variables accounting for the academic success, this result is important regarding teaching and learning processes.

In this context, considering the results obtained, in the training of the history teachers, individual differences and particularly learning style differences should be paid regard. Initially, the teachers should be aware of the learning styles of the students (Gokce, 2014, p. 183). In more perceptible terms, when individual differences and learning styles are considered, this awareness will influence the decision of the teaching method, motivations of the students, communication with the students, class activities, managing the lesson duration, managing the class order, and reinforce decision (Gozutok, 2011, p. 75-91).

As an example, it is observed that for the most part the teachers in the universe of the study have, respectively, dependent, independent, participant, and collaborative learning styles. In this case, a project-based teaching approach can be used for the dependent students in history teaching. During the project, the history teacher should be the source of the directive for the dependent learners. For the students with independent learning style, project assignments can

be given. However, in this case, the history teacher will not play the good directive-giving role but will play a role, which sets the student free and alone. When the history teacher assigns a project to the students with collaborative learning style, he/she should play neither the directive-giving role nor the setting-free role. In project assignments, the history teacher should encourage the students with collaborative learning style to teamwork. On the other hand, in history lessons, drama method can be an effective way for the students with competitive learning style.

On the other hand, activities such as history projects based on collaboration, and classroom discussions of modern-day historians' interpretations can be conducted for the students with collaborative learning style (Dilek, 2007, p. 76). Another important issue is that in collaborative approaches, it is desired to bring together the team members wisely (Kottler and Gallavan, 2013, p. 126). Question and answer teaching method might not be a suitable technique for the students with avoidant learning style (particularly for the avoidant students, who do not like to speak and who have lack of confidence). "For the ones with independent learning style, resource-based teaching activities can be used." (Turan, 2009, p.34-46). For the students with participant and collaborative styles, museum visits might be a good approach and this approach can provide an active learning setting for the students, who will have the chance to learn by experience (Ata, 2009, p. 125-126). Similarly, verbal history activities can be applied for the students with participant and collaborative learning styles. Because it is a method, which can be applied through all echelons of education and in which the students can use their skills actively (Kabapinar, 2014, p. 290; Kottler & Gallavan, 2013, p. 176). In history lessons, the learning styles and individual differences of the students should be followed while deciding the course materials (Ozturk, 2012, p.18-19). In brief, history teachers should maximize their teaching methods (Turan, 2009, p. 47). In addition, learning styles of students should be taken into account not only in the learning and teaching process but also in the assessment and evaluation process. In the meanwhile, for an effective teaching that will significantly contribute to both the teacher and the students.

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