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The investigating pre-service teachers' learning styles with respect to the gender and grade level variables

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Abstract

The aim of this study is to investigate pre-service teachers' learning styles in terms of gender and grade level variables. The study was carried out at spring semester of 2010. The sample of the study consisted of 347 pre-service teachers at the Department of Primary and Science Teacher Education in Faculty of Education at Artvin Çoruh University. "Kolb Learning Style Inventory" was used as a data collection tool. The data were analyzed by using frequency, percentage, means, standard deviation, independent samples t-test and one-way ANOVA. The results show that the dominant learning style among the students is accommodator and it is followed by convergent, divergent and assimilator learning style. There was not significantly difference between students' learning style and gender and between students' learning style and grade level.

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1. Introduction

Each individual has different physiological, psychological and cognitive structure. These differences create different learning styles. When the individual know own learning style, she/he put into this style in learning process. So, she/he can learn more easily and quickly and can be more successful (Biggs, 2001). As it is known, the effectiveness of teaching-learning process happens that learning would be easy, efficient and appropriate for all students (Fidan, 1986). For this, teachers should know each student's learning style and they should perform new learning method and style during learning and teaching activities. Otherwise the students who are in compatible with the teacher's style can be successful not the others (Güven, 2004).

According to Kolb (1985), learning style is the way in which the learner prefers during the process of receiving and processing information. The term of learning style has gained an important seat thanks to Experimental learning style which is developed by Kolb. According to experimental learning theory, thoughts are not stationary; they can be changed constantly depending on experiments (Kolb, 1984). At experimental learning theory, learning is designed as learning ring/circle. There are four basic learning types in this learning ring. These are concrete experience, reflective observation, abstract conceptualization, active experience.

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Concrete Experience: It is important to feel and deal with the problems and experience. Intuitional approach is chosen instead of scientific approach while solving the problems. The individuals who have this learning type become happy when they are with the others. They are also open to every idea and opinion (Kolb, 1984).

Reflective Observation: Instead of application, the answer of what is the truth is searched by grasp the essence of the events. Generally, individuals which have this learning style can understand by the help of their thoughts and feelings, they can have their own view when they trust their ideas and thoughts (Kolb, 1984). The individual try to observe the things what the others have done and try to learn them.

Abstract Conceptualization: At this learning style, it is focused on logic/reason, thought and term. Individuals try to understand the problems and the situations. After they have done the logical analytic, they prefer to learn by thinking (Kolb, 1984).

Active Experience: These individuals are successful and sensitive in risk-taking for completion a task and achieving their goals. At this learning style, students attached importance to application instead of watching something (Kolb, 1984). Learning takes place in an active way.

That with combination of these learning types, the learning styles are consisted. These learning styles are Diverging, Assimilating, Converging and Accommodating (Kolb, 1985).

Diverging Learning Style: It emphasizes concrete experience and reflective observation. The persons who have the diverging learning style have. They attach importance to their feelings and have very large field of interests.

Assimilating Learning Style: They deal with knowledge at abstract conceptualization step, built up it at the reflective observation step. They use inductive method and reasoning to develop theoretical models. According to Kolb, these individuals prefer to study in the searching area (Kolb 1984; Kolb 1985).

Converging Learning Style: The knowledge which can be learned at the abstract conceptualization step is built up at the active experimentation step. They try to find practical application. They like the situation which has only one answer. They prefer dealing with things rather than people. They make systematic planning and decide what to do very quickly during problem solving (Kolb, 1984; Kolb, 1985).

Accommodating Learning Style: They get the knowledge with concrete experience way and built up it with active experimentation way. They prefer flexible situation and can be easily harmony with changing and tend to trial and error. They think that the theories are invalid if they are not well-matched with the truth/reality. They prefer to make a carrier in business world.

In literature, it was seen that there are some researches about determinate pre-service teachers' learning styles. Kaf Hasırcı (2006) was carried out determining university students' learning styles on classroom and teaching department variables. It was found that learning styles cannot be changed according to classroom levels. Besides, Numanoğlu and Şen (2007) have an investigation on the learning style of students which educated information and communication technology department. They could not find a significant difference among the students when he compares their learning styles according to their high schools, genders and branches variables. In addition to that Demir (2008) was found that most of Turkish pre-service teachers have divergent and assimilating learning styles, and there is no a significant difference between their learning styles and gender and high school success variables. Gürsoy (2008) carried out a study. In the study it was revealed that there was no difference between learning styles and gender, and also he found that the primary pre-service teachers and science teacher had different learning styles according to grade level variable. Cavaş (2010) was carried out a study determining learning styles of student who educated department of science, primary school and mathematics education in Turkey. It was found that students' learning styles cannot change according to gender in this study.

If a pre-service teacher does not know his own learning style, she/he will not care about students' learning styles when he starts his job. Besides; if she/he does not know how to teach according to learning styles, she/he will not be able to teach with different learning styles. An educator cannot reach the desired level unless he knows that everybody learn in a different way and in a different leaning styles. Because answer of "How do I learn?" question at is answer "How do I teach?" question at the same time (Çaycı and Ünal, 2007). So, the aim of this study is to investigate pre-service teachers' learning styles in terms of gender and grade level variables.

2. Method

In this study, survey model was used to determine the pre-service teachers' learning style and the variation of the pre-service teachers' learning style according to gender and grade level.

2.1. Sample

The study was carried out at fall semester of 2010 with 347 pre-service teachers at the Department of Primary and Science Teacher Education in Faculty of Education at Artvin Çoruh University. According to gender variable, 150 (43.2%) male and 197 (56.8 %) female pre-service teachers participated in the study. Grade level variable consist of 231 freshman, 55 sophomore, 26 junior and 35 senior students.

2.2. Instrument

The data of researches were collected with a questionnaire that included two parts as “Demographic Question” and “Learning Styles Inventory Scale” (LSI). In the first part of questionnaire, there are some demographic questions as independent variables such as gender and class level, the second part of the tool, “Learning Styles Inventory”, was developed by (Kolb, 1984) and translated into Turkish by Aşkar and Akkoyunlu, (1993). There are four statements in each 12 items inventory whose validity and reliability were tested. The first one is Concrete Experience (CE), the second one is Reflective Observation (RO), the third one is Abstract Conceptualization (AC) and the last one is Active Experimentation (AE). For each of the statements in the inventory, there is a rating scale of four choices as to be “most appropriate 4, the second appropriate 3, the third appropriate 2 and the least appropriate 1”. The scores taken from LSI are between 12 and 48 in each part. After this process by subtracting each student’s CE scores from AC scores and RO scores from AE scores, the learning style of each participant was classified either as ‘accommodating’, ‘diverging’, ‘assimilating’ or ‘converging’. The scores of AE-RO and AC-CE vary between -36 and +36. While, the positive score obtained from AC-CE shows that the learning is abstract, the negative score indicate that learning is concrete. Similarly, the positive score obtained from AE-RO indicate that the learning is active and the negative score shows that the learning is reflective (Aşkar and Akkoyunlu, 1993; Kaya, Özabacı and Tezel, 2009; Cavaş, 2010).

2.3. Data Analyses

While the obtained data were evaluated in this study, some descriptive statistical calculations were effected on the Learning Styles Inventory Scale for the independent variables in the first part. Means, percentages, standard deviations of the scale were calculated. In order to test whether the pre-service teachers’ scores differ according to gender Independent Sample t-test was used. Also, One-way ANOVA test based on $p=0.05$ significance level were used to determine whether the students’ answers to the items in the scale differ according to gender and grade. These were examined for statistical significance by carrying out independent-samples t-test and one-way Anova techniques and data were given on tables.

3. Finding

In order to determine which learning style pre-service teachers have, how frequencies and percentage of learning style types calculate. The scores can be seen in Table 1.

Table 1 Descriptive statistics of the total scores for LSI

Learning Style	n	%
Accommodating	89	25.6
Converging	87	25.1
Diverging	86	24.8
Assimilating	85	24.5

As seen Table 1, among the students, the most prevalent learning style is accommodating (25.6%) and it is followed by Converging (25.1%), Diverging (24.8%) and Assimilating (24.5%). According to the score, pre-service teachers prefer more accommodate learning style than others learning styles.

In order to determine whether learning style scores differed between genders of pre-service teachers, an independent-sample t-test was conducted. The independent-sample t-test scores can be seen in Tab 2.

Table 2 Independent sample t-test scores in terms of genders

	Gender					
	Male (n=150)			Female (n=197)		
	$\bar{X}$	Ss	$\bar{X}$	Ss	t	P
CE	29,09	3,995	29,01	3,385	,193	,070
RO	30,68	3,461	30,04	3,155	1,807	,177
AC	28,31	3,269	28,40	3,588	-,239	,180
AE	31,87	4,748	32,55	4,143	-1,421	,059
AE-RO	1,193	6,595	2,518	5,989	-1,953	,262
AC-CE	-,780	5,284	-,614	5,5110	-,283	,439

$\bar{X}$: Means, ss: Standard division

As seen Table 2, there was no significant difference in Concrete Experience (CE) scores for males ($\bar{x}=29.09$), and females [$\bar{x}=29.01$; $t=.193$, $p=.070$]; Reflective Observation (RO) scores for males ($\bar{x}=30.68$), and females [$\bar{x}=30.04$; $t=1.807$, $p=.177$]; Abstract Conceptualization (AC) scores for males ($\bar{x}=28.31$), and females [$\bar{x}=28.40$; $t=-0.239$, $p=.180$]; Active Experimentation (AE) scores for males ($\bar{x}=31.87$), and females [$\bar{x}=32.55$; $t=-1.421$, $p=.059$]; AE-RO scores for males ($\bar{x}=1.93$), and females [$\bar{x}=2.518$; $t=-1.953$, $p=.262$]; AC-CE scores for males ($\bar{x}=-.780$) and females [$\bar{x}=-.614$; $t=-.283$, $p=.439$]. According to the score, it can be said that while male pre-service teachers prefer Concrete Experience (CE) and Reflective Observation (RO), female pre-service teachers prefer Active Experimentation (AE) and Abstract Conceptualization (AC). There was no significant difference between male pre-service teachers' learning styles and female pre-service teachers' learning styles.

In order to determine whether learning style scores differed in the term of grade levels of students, one-way between-groups ANOVA test was conducted. The summary of one way ANOVA is given in Table 3.

Table 3 Summary of one way ANOVA on grade level

	Freshman (n=231)		Sophomore (n=55)		Junior (n=26)		Senior (n=35)		F	P
	$\bar{X}$	Ss	$\bar{X}$	ss	$\bar{X}$	Ss	$\bar{X}$	ss		
CE	29,19	3,540	28,95	3,788	28,85	4,076	28,37	3,949	,555	,645
RO	30,39	3,452	29,76	2,680	29,35	2,591	31,37	3,396	2,530	,057
AC	28,34	3,610	28,62	3,263	28,23	2,957	28,14	3,060	,162	,922
AE	32,05	4,468	32,65	4,394	33,46	4,188	32,11	4,317	,969	,407
AE-RO	1,656	6,504	2,891	5,685	4,115	4,761	,743	6,363	2,056	,106
AC-CE	-,849	5,457	-,327	5,420	-,6154	5,044	-,229	5,483	,234	,873

The students' learning style and components according to grade level were given in table 3. The highest averages for freshman students are ($\bar{x}=32.05$), for sophomore students are ($\bar{x}=32.65$), for junior students are ($\bar{x}=33.46$), for senior students are ($\bar{x}=32.11$) in Active Experimentation (AE). Although junior students have the highest averages in AE-RO with 4.115, senior students have the highest averages in AC-CE with -.229. Besides, as the results of ANOVA test show in the term of grade level, there is not statistically difference at the $p>.05$ level in students' learning style.

4. Discussion and Results

When we investigate the findings, it is seen that students prefer firstly accommodating, secondly converging, thirdly diverging, fourthly assimilating learning styles. Even though students' learning styles preference's percentage is not so far from each other, they overwhelmingly prefer accommodating learning styles. The pre-service teachers who prefer accommodating learning styles are successful about discovering and configuring the information on their own. They can find solution for problems. They tend to learn active experience learning styles and prefer the environments which attach importance to details and address several sense organs. It is known that constructivist approach require designing environment which gives opportunity to students by learning from experience and they can be active in learning process (Baki, 2008). In our search, most of the students have chosen

the accommodating learning style. It can be result from, lessons were thought to students depend on constructivist approach, and they have disciplined themselves according to this approach. When the literature is examined, some studies can be found that students have accommodating learning styles (Lukow, 2002; Fox and Ranskowski, 1997), but generally there are so many studies which it were found that pre-service teachers have assimilating learning styles (Firat, Durdukoca and Arıbaş, 2010; Gürsoy, 2008; Kaf Hasırcı, 2006). It is expectable/normal result to find differences among pre-service teachers' learning styles. That is because; the chosen examples for each search are different from each other and they have hallmark learning styles.

After investigating the findings, it was found that there was no difference between learning styles and gender. In literature, there are many consistent researches related our research (Firat Durdukoca and Arıbaş, 2010; Cavaş, 2010; Demir, 2008; Gürsoy, 2008; Evin Gencel, 2006; Kayes, 2005; Janes and Reichard, 2003).

When the findings are investigated, it is seen that students' learning styles do not change according to their grade level. In literature, there are also some searches which show that students' learning styles do not change according to their grade level (Numanoğlu and Şen, 2007; Arsal and Özen, 2007; Kaf Hasırcı, 2006).

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