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An Examination of the Links between Pre-service Teachers' Metacognitive Level, Learning Styles and Their Achievement of History Class

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Abstract

In this study, it is aimed to explore the relationship between pre-service teachers' levels of metacognition, learning styles and academic success of Atatürk's Principles and the History of Revolution. For this purpose, the study is conducted at Faculty of Education, Mustafa Kemal University. 175 pre-service teachers that were studying in primary teaching program participated in the study. In gathering data, 'Metacognition Activity Inventory', 'Learning Style Inventory' and 'History Achievement Test' were used. The results 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. In addition, a significant positive correlation was found between teachers' levels of metacognition and independent, collaborative, competitive, and participant learning styles.

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1. Introduction

Certain issues concerning the methods for the knowledge acquisition of individuals, and whether they are familiar with ways of "learning to learn", have been much discussed. These issues have recently gained importance in the teaching process. If we suppose that teachers should be guides in the teaching process, ways of learning should be taught to the students. In this way, students can attain knowledge and learn on a regular basis (Çakıroğlu, 2007).

Metacognition is one of the theories to have increased the integrity of constructivist learning theory. Metacognition enables students to relate their existing knowledge with new knowledge, to observe their own learning, to interiorise the knowledge by using the acquired knowledge in new fields (Victor, 2004). Brown (1978) defined metacognition as the awareness and arrangement of the thinking process that students use in planned learning and problem solving situations. Eggen and Kauchak (2001) defined metacognition as the students' own determination of study strategies and investigated metacognition as a "learning strategy". There are some important

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factors in the acquisition of learning. Students should comprehend their own learning processes and teachers should help students in their learning by understanding their learning effort in the learning environments. Students' comprehension of their own learning processes make it possible to regulate this process according to the students' own characteristics, and helps students attain self-regulatory skills (Alcı & Altun, 2007).

It was determined that students with high academic achievement levels had considerable metacognitive skills. Students with good academic performance show better metacognitive ability when compared with the students with poor academic ability. Students with poor metacognitive skills can benefit from metacognitive education to develop their metacognitive skills. There are individual differences in metacognition and when students with poor metacognitive skills are compared with their peers, they are considered to be individuals with insufficient strength in metacognition (Countinho, 2007).

Metacognitive development includes the individuals' planning of their learning processes with the comprehension of their learning status. There are some factors that affect the accuracy and permanence of the learning, such as an awareness of their own learning strategies and whether they have the ability to control, plan and regulate these strategies (Kaya & Firat, 2011).

On the other hand, much recent research in the field of education has focused on student-centred education methods to make education and training more effective. Studies on more effective and better learning methods for each individual are conducted by drawing attention away from individual differences existing among the students to their learning styles (Kabadayı, 2004).

Learning style is one of the most important concepts that suggest individual differences (Ekici, 2002). "Learning styles" are the characteristics that show the learning-oriented dispositions or preferences of the individual. (Güven & Kürüm, 2006). According to Kolb, learning styles are the individual preferences of students during the period when they are obtaining and processing information. The sources of the learning style differences are their previous experiences and their expectations (Ülgen, 1995). In addition to this, experiences of family, school and the workplace differentiate the learning styles of individuals (Güven & Kürüm, 2006). Keefe (1990) defined the learning style as the cognitive, affective and physiological behaviour characteristics that determine how the student learns, comprehends and how he/she interacts with the learning environment and what their environment-oriented reactions are. Grasha (1996), defined learning style as the student's gathering of his/her skills and learning experiences during the period of knowledge acquisition.

According to Biggs (2001), a learning style has an important place in an individual's life. When the individual knows his/her own learning style, he/she can use this style. In this way, the individual can learn both more easily and quickly and he/she will most probably be successful in the learning period.

The classroom environment includes individuals with different learning styles (Peker, 2003). Dwyer emphasizes that the learning styles of the students should be taken into consideration irrespective of the learning environment (Kılıç & Karadeniz, 2004). It is necessary to educate students in parallel with their learning styles (Marshall, 1990). Regulating the learning experiences according to the learning styles will make it easier to reach the targets. Otherwise, one student may fail while another is successful in the same circumstances (Mutlu & Aydoğdu, 2003). According to Babadoğan (2000), if the learning styles of the individuals are determined then it will be easier to estimate the way in which the individual learns and what kinds of instructional design can be applied (Tatar and Tatar, 2007).

According to Truluck and Courtenay (1999), if an educator has information on the learning style it helps the educator to be sensitive to the needs of the learner, especially while educating mature students. Knowing the learning style of the learner is an important technique as a guide to ways of including the learner in the learning experience, making them interested in their own learning, and enabling the educators to use different approaches while conducting educational activities (Yıldırım & Aslan, 2008).

Reiff (1992) states that if the teacher is aware of the different learning styles in the classroom, the communication between the student and the teacher improves, the success and self-confidence of the student will increase, individuals with different learning styles will study accordingly, versatility, which is vital for learning, will be fostered and the communication will improve between managers, parents, guides and other educators (As cited in Tatar & Tatar, 2007).

Studies on metacognition and learning styles should be conducted with teachers. The knowledge levels of teachers concerning metacognition and learning styles should be determined. In this way, studies on developing the metacognitive skills and learning styles of teachers could be conducted by first determining their deficiencies.

Thus, teachers should have metacognitive skills and an awareness of learning styles and know how to improve these metacognitive skills and be able to teach them to their students.

The aim of this study was to investigate the relationship between the level of metacognitive skills and the learning styles of a group of teachers, together with their success levels in conducting the lesson known as “Atatürk’s Principles and the History of the Turkish Revolution”.

2. Method

2.1. Sample

A major purpose of correlational research used in this study is to clarify and identify relationships among students ‘academic achievement in history course, metacognitive level and learning styles.

The sample of this study was comprised of 175 pre-service teachers who were receiving education in the spring term of the academic year 2011-2012, in the Department of Primary School Teaching, Faculty of Education, at the Mustafa Kemal University.

2.2. Data collection instrument

The “Metacognitive Activity Inventory” that was developed by Cooper, Urena and Stevens (2008) and adapted to Turkish by Tüysüz, Karakuyu and Bilgin (2008) was used in this study to collect data. The “Learning Style Scale” that was developed by Grasha and Riechmann (1982) and adapted to Turkish by Uzuntiryaki, Bilgin and Geban (2003) was also used in this study. The Achievement Test of History that was developed by the present researcher was also used in this study.

2.2.1. Metacognitive Activity Inventory

This scale was used in this study to determine the metacognitive level of the prospective teachers. The Metacognitive Activity Inventory, the original version of which was developed by Cooper, Urena and Stevens (2008) and adapted to Turkish by Tüysüz et al. (2008) was used. In this study, the reliability coefficient of the scale was calculated as Cronbach α and the coefficient of internal consistency was calculated as 0.732. This scale is composed of 27 articles.

2.2.2. Learning Style Scale

The Learning Style Scale, the original version of which was developed by Grasha and Riechmann (1982) and adapted to Turkish by Uzuntiryaki et al. (2003) was used in this study.

Grasha and Riechmann defined 6 different learning styles as, “independent, Avoidant, Collaborative, dependent, competitive and participant”. The Cronbach α internal consistency coefficient as the indicator of reliability was calculated as 0.68.

2.2.3. History Achievement Test

This test was developed by researcher and included 50 multiple choice items from related subjects; Turkish War of Independence, Establishment of the New Turkish State, Turkish Foreign Policy, Atatürk’s Principles, Atatürk’s reforms, and Transition to Democracy Essays. The items were evaluated by two instructors working in the field of history education and one language expert in order to review the items. In the light of the expert opinions, necessary

revisions were made to the items for content validity. Then the test was applied 175 students and reliability of the test was found to be $KR-21 = 0,84$.

2.3. Application

The present study was conducted at the end of the lessons taught during the spring semester (28 hours period) in the course on Atatürk's Principles and the History of the Turkish Revolution II, which was in the program of the Department of Primary School Teaching, Faculty of Education at the Mustafa Kemal University in the academic year 2011-2012.

3. Findings and Comments

The achievement and metacognition of the pre-service teachers included in the study and the values of arithmetic mean and standard deviation dependent on each learning style are shown in Table 1.

Table 1: The Values of Arithmetic Mean and Standard Deviation for Achievement, Metacognition and Learning Styles

	Variables	N	Mean	Std. Deviation
Learning Styles	Achievement	175	78.13	12.52
	Metacognition	175	95.65	8.23
	Independent	175	3.59	0.59
	Avoidant	175	2.97	0.98
	Colloborative	175	3.75	1.27
	Dependent	175	3.68	1.05
	Competitive	175	3.35	1.12
	Participant	175	3.47	1.06

Grasha and Reichmann determined 3 different levels for each learning style as low, Moderate and high. The average limit values for each learning style are shown in Table 2 and the results of the analysis after the practice are shown in Table 3.

Table 2: Average Limit Values for Each Learning Style of Grasha and Reichmann

	Low	Moderate	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]
Colloborative	[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]

Table 3: The Results of the Analysis of Learning Style Scale

	N	X	Level
Independent	175	3.59	Moderate
Avoidant	175	2.97	Moderate
Colloborative	175	3.75	High
Dependent	175	3.68	Moderate
Competitive	175	3.35	High
Participant	175	3.47	Moderate

The levels of learning styles of Collaborative and Competitive of the pre-service teachers were found to be high and the levels of Avoidant, Participant, Dependent and Independent were found to be moderate. This result shows that prospective teachers are inclined towards group activities and are Collaborative with the other individuals in the learning environment.

The relationship between the achievement of pre-service teachers in the history lesson and their metacognitive levels and learning styles were calculated with the Pearson correlation coefficient and the findings are shown in Table 4.

Table 4: The Relationship Between Achievement, Metacognitive and Learning Styles

	Metacognition	Independent	Avoidant	Collaborative	Dependent	Competitive	Participant
Achievement	.029	-.061	-.275**	-.039	.068	.015	.207**
Metacognition		.311**	-.085	.415**	.162*	.290**	.451**
Independent			.173*	.308**	.248**	.310**	.359**
Avoidant				-.212**	.172*	-.215**	-.454**
Collaborative					.201**	.310**	.479**
Dependent						.264**	.239**
Competitive							.554**
Participant							

A positive correlation between the learning styles of pre-service teachers who had a participant learning style and their achievement in the history lesson, and a negative correlation between the learning styles of pre-service teachers who had an Avoidant learning style and their achievement in the history lesson were found to be 0.01.

A significant correlation between the learning styles of pre-service teachers who had independent, Collaborative, competitive and participant learning styles and their metacognition level was found to be 0.01. A significant correlation between the learning styles of prospective teachers who had dependent learning styles and their metacognition level was found to be 0.05

4. Conclusion and Discussion

The aim of the present study was to investigate the metacognition level, learning styles and the achievements of the pre-service teachers in the lesson known as Atatürk's Principles and the History of the Turkish Revolution. The population of the study was comprised of 175 pre-service teachers who were receiving education in the Department of Primary School Teaching, Faculty of Education, at the Mustafa Kemal University.

The "Metacognitive Activity Inventory" that was developed by Cooper, Urena and Stevens (2008) and adapted to Turkish by Tüysüz, Karakuyu and Bilgin (2008) was used in this study to collect data. The "Learning Style Scale" that was developed by Grasha and Riechmann (1982) and adapted to Turkish by Uzuntiryaki, Bilgin and Geban (2003) was also used in this study. The "Achievement Test of History" that was developed by the present researcher was also used in this study.

A positive correlation between the achievements of pre-service teachers and their participant learning styles, and a negative correlation between their participant learning styles and Avoidant learning styles, were found at the end of the analysis of the obtained data in the study. In addition, a significant correlation in a positive way was found between the metacognition level of the prospective teachers and the learning styles of independent, competitive and participant.

According to Martinez (2006), teachers understand the importance of metacognition intuitively but they are unaware many of the dimensions of metacognition. That is why Martinez stated that all of the dimensions of

metacognition should be taught to learners of all ages. Butler and Winne (1995) stated that a definite modelling which reflected the cognitive and metacognitive thinking processes was needed for the development of students' metacognitive skills.

However, Thomas and McRobbie (2001) stated that such mentality was generally not found in classrooms. Thus, the education approach in the schools should be changed from a traditional approach to a constructivist learning approach for the development of metacognitive abilities of the students. Teachers, who play an important role in carrying out these changes, should offer a model to their students through both their cognitive and metacognitive skills (Yıldız & Ergin, 2007). The cognitive and metacognitive skills of the students will improve in parallel with the definitiveness and distinctness of the modelling. Teachers can attract the attention of the students through presenting their own experiences to the students in the modelling, and thus enable the students to understand the importance of these skills (Thomas & McRobbie, 2001).

Teachers should know the learning styles of the students. With this aim, the learning styles of the students should be determined through carrying out learning style inventories at the beginning of the education period. Teaching methods in accordance with these learning styles should be developed. Teaching materials that are prepared according to different learning styles should be used by teachers (Tatar & Tatar, 2007).

Lectures on this specialized field should be included in the faculties of education in order that teachers are able to educate the students according to the different learning styles. In-service education programmes should be prepared for teachers already in employment. Teachers can direct the future lives of the students in a positive way by determining the students' learning styles. The determination of the learning styles may enable the individuals to be more successful in their academic lives and organize their own teaching adventures. Therefore, individuals should determine their own learning styles. In order to enable individual and social development by complying with the requirements and understanding the innovations of the era, individuals should know their own individual differences.

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