The effect of metaconceptual teaching activities on 7th grade students' understandings of and attitudes towards law related concepts

Osman Sabancı [iD]
Gazi University, Faculty of Gazi Education, Ankara, Turkey, osmansabanci@gazi.edu.tr
Şefika Kurnaz [iD]
Gazi University, Faculty of Gazi Education (Emeritus), Ankara, Turkey, sefika@gazi.edu.tr
Nejla Yürük [iD]
Gazi University, Faculty of Gazi Education, Ankara, Turkey, nejlayuruk@gazi.edu.tr

Check for updates

ABSTRACT   The aim of the study is to examine the effect of teaching activities supported with metaconceptual processes on 7th grade students' conceptual understandings and attitudes of law related concepts in social studies course when compared with traditional instruction. In this quasi-experimental study, convenience-sampling method was used. This study was conducted in four classes of a social studies teacher. Two of the classes were randomly assigned as experimental group and the other two classes were randomly assigned as control group. The participants composed of 114 7th grade middle school students enrolled in a state school in Ankara. Experimental group was exposed to teaching activities supported with metaconceptual processes while control group was exposed to traditional teaching based on the current teaching program. For data collection, conceptual understanding and attitudes tests developed by researcher were used. The results indicate that teaching activities facilitating metaconceptual processes had more positive impact on students' conceptual understanding and attitudes towards law related concepts.

Keywords: Attitude, Conceptual understanding, Metaconceptual teaching activities, Law-related, Social studies

Üstkavramsal öğretim etkinliklerinin 7. sınıf öğrencilerinin hukuk ilintili kavramları anlamalarına ve tutumlarına etkisi

ÖZ   Bu çalışmanın amacı üstkavramsal faaliyetleri aktif hale getirici etkinliklerin geleneksel öğretimle karşılaştırıldığında 7. sınıf öğrencilerinin sosyal bilgiler dersindeki hukuk konularına ilişkin kavramsal anlamalarına ve sosyal bilgiler dersindeki kavramlara ilişkin tutumlarına etkisini araştırmaktır. Bu araştırma yarı deneysel araştırma deseni kullanarak tasarlanmıştır. Çalışma grubu uygun örnekleme yöntemi kullanarak oluşturulmuştur. Bu çalışma bir sosyal bilgiler öğretmeninin dört sınıfında gerçekleştirilmiştir. Sınıflardan ikisi deney ve diğer iki sınıf da kontrol grubu olarak rastgele atanmıştır. Bu dört sınıf, Ankara ilinin merkez ilçesinde okumakta olan toplam 114 7. sınıf öğrencisinden oluşmaktadır. Deney grubundaki katılımcılara üstkavramsal faaliyetleri aktif hale getiren öğretim etkinlikleri uygulanırken, kontrol grubunda ise mevcut olan geleneksel öğretim programı kullanılmıştır. Ölçme aracı olarak araştırmacı tarafından geliştirilen hukukla ilgili kavramsal anlama testi ve öğrencilerin kavramlara ilişkin tutumlarını belirlemek üzere bir tutum ölçeği kullanılmıştır. Elde edilen sonuçlara göre, üstkavramsal faaliyetleri kolaylaştıran etkinliklerin, öğrencilerin hukuk ilintili kavramlara yönelik kavramsal anlamaları ve tutumları üzerinde daha olumlu bir etkisi olduğunu göstermektedir.

Anahtar Sözcükler: Hukuk ilintili, Kavramsal anlama, Sosyal bilgiler, Tutum, Üstkavramsal öğretim etkinlikleri

154

INTRODUCTION

The set of values in the field of education currently focuses on whether students know how to learn rather than what to learn. Concepts help students to make classifications in their minds and facilitate learning and remembering. At this point, it is thought that concept learning has a key role in other learning activities (Ülgen, 2004). Nowadays, it is understood that teaching concepts involves in-depth processes rather than literal repetition of the information in books. In addition, concepts are the symbols or mental tools (Beal, Bolick, & Martorella, 2009; Carey, 2009; Yıldızlar, 2009) which are necessary for learning and thinking as well as actions and theories (Goertz, 2006) about ontology. Concepts, attitudes, beliefs, intentions, emotions, mental states, and cognitive processes ultimately reveal themselves through verbal attributes of behaviours (Krippendorff, 2004).

The need for determining the problems that students have in understanding scientific concepts has been studied excessively in many educational research studies (Beeth, 1998). These studies have repeatedly showed the difference between what is tried to be taught and what students actually learn (Zirbel, 2006). Various terms have been used in literature for the concepts constructed - by students in their minds, which are different from scientific ones. These concepts have been termed as misunderstandings (Anderson & Smith, 1984); primary concepts (Novak, 1987); alternative concepts and prejudices (established bias) by Posner, Strike, Hewson and Gertzog (1982), Hewson and Hewson (1984), Atwood and Atwood (1996), Dove (1998), Wenning (2008); alternative beliefs and naive theories (spontaneous) by West and Pines (1984); beginner theories and alternative patterns (frames) by Barnett and Morran (2002); the science of children by Gilbert, Osborne and Fensham (1982), Bell (1993); the ideas of children by Driver, Guesne and Tiberghien (1985); misconceptions, artificial models by Treagust (1988), Vosniadou (1994), Helm (1980) and Zirbel (2006). In this study, the term 'alternative concepts' is used to describe the concepts constructed by students which are different from scientific concepts. Misconceptions, named as intuitive knowledge or alternative concepts, are non-scientific cognitive structures constructed in an individual's mind (Güneş, 2017). Alternative concepts have been widely studied in science education. However, there are also a number of studies focusing on alternative conceptions in the areas of social studies, economy, history related specific terms, and geography (world, universe, climate, weather condition, rainfall, weather events, natural disasters, etc).

The aim of social studies course is to help students use concepts consciously in accordance with the definitions approved by scientists. A wide range of subjects covered by social studies (history, geography, sociology, psychology, economy, archaeology, philosophy, political, and juridical science) makes it more complicated to define social studies. Considering the variety of the subjects, social studies has become a crucial part of school education program (Beal et al., 2009). Social studies are more than the total of the facts that students memorize. They involve comprehending how human beings, earth, and circumstances are formed, how people communicate with each other and how they respond to the desires of each other. In this sense, students are supposed to analyze developments in their immediate environment and around the world, and realize each perspective that takes place in social studies because of its interdisciplinary nature (Farris & Whealon, 2012).

Many social studies teachers agree that citizenship education, development of information, values, skills, and social participation are the most fundamental goals of social studies (Naylor, 1981). In order to improve these competencies of students, social and human sciences are used in social studies. One of these disciplines is the information presented by science of law in accordance with the goals of social studies. Law, one of the social sciences, is a system of norms and these norms are related with physical and spiritual phenomena (Güriz, 2011). In this context, principal concepts about law are introduced in law-related education (Kepenekci, 2011). Within this subject area topics, such as information about

155

constitution, law and democracy, individual rights and responsibilities, justice, the process of how law is created and how law influences human life are presented to students to create meaning, values, and awareness (Hall, 1993). Thus, both social studies education, which involves the science of law, and law-related education aim to make young people ready for their roles as good citizens in sustaining constitutional democracy (Pitts, 2003). Individuals are supposed to be aware of not only their rights and freedom as a matter of social life but also missions and responsibilities they have in order to regulate the law system properly (Kepenekci & Taşkın, 2017). There is a need to give individuals an opportunity to understand the role of law, which influences their life (Nelson, 1998). Therefore, learning law-related concepts in social studies turns out to be more crucial.

Conceptual Change

Before the development of the models explaining conceptual change, researchers have found that students give different reactions when they have a conflict between what they already know and what they learn from the books in school environment (Sinatra & Mason, 2008). Various researchers in the field of cognitive psychology and education have been interested in interaction between students' previous knowledge and new concepts. Vygotsky (1962), who presents some of the first and most important examples for these studies, asserts that the difficulty in integrating daily knowledge and scientific knowledge emerges due to the fact that new concepts acquired in daily life and scientific information given at school belong to qualitatively different conceptual systems (Schnotz & Preuβ, 1999).

Since 1970s, there has been a change in researchers' views about learning. It is emphasized that students do not acquire knowledge passively but they have active roles in constructing knowledge because of their interaction with the world (Yürük, Beeth, & Andersen, 2009). The results of the various studies have shown that students come to classrooms with self-explanatory ideas and thoughts that are not compatible with scientific ideas (Duit, Treagust, & Widodo, 2008). It implies that students do not come to learning environment with minds like a blank slate (tabula rasa). This view requires students to reorganize or change their existing ideas as they learn new concepts (Hewson, 1981). In this context, there is a need for teachers who design instruction based on the constructivist theory to activate students' existing ideas so that they can draw a relationship between new knowledge and existing ideas (Farris, Kuhrt, Sandburg, & Werderich, 2012).

Over the past four decades, research on students' concepts have resulted in various theoretical approaches about conceptual change (Duit et al., 2008). One of the models that explains the conditions of how students' conceptions change with new ones is Conceptual Change Model (Posner et al., 1982). Posner et al. (1982) suggest four conditions, namely dissatisfaction, intelligibility, plausibility, and fruitfulness that are required for students to change their ideas. They use the metaphorical term 'conceptual ecology' to explain how current concepts of students affect their views on new knowledge. Students' conceptual ecology includes anomalies, analogies and metaphors, exemplars and images, past experiences, epistemological commitments, metaphysical beliefs, and knowledge in other fields (Strike & Posner, 1985). This metaphor includes some claims in itself. According to one of them, individuals have certain beliefs about the nature of knowledge, the nature of physical facts that are under investigation and what is accepted as true and real. According to the second one, concepts are situated in a network of related concepts, presuppositions, and beliefs. Any change in one concept influences how students see other concepts. According to the third claim, students' ideas struggle for the same ecological place (Hennessey, 2003).

There have been other theoretical frameworks proposed by cognitive psychologists to explain the change in conceptions of students. One of them is suggested by diSessa (1993; 2008) whose perspective is known as knowledge in pieces perspective. He explains the process of conceptual change with p-prims (phenomenological primitives). P-prims are fragmented pieces of knowledge that are generated from students' interaction with the world. They are self-explanatory and they are activated in students' minds according to the relevance of the situation. diSessa's perspective suggests that conceptual change is an

156

evolutionary process of gaining deeper and more complete explanations of phenomenon. Unlike diSessa's knowledge as elements perspective, Vosniadou (1994) and Chi (2008) suggest that students' knowledge has a coherent theory-like characters. While Vosniadou (1994) explains conceptual change as the change in students' framework theories, which are constrained by their epistemological and ontological presupposition, Chi (2008) sees conceptual change as ontological shifts. These views of conceptual change mainly focuses on cognitive factors. In recent years, the research on conceptual change has laid an emphasis on the importance of students' characteristics and metacognitive processes. In this respect, intentional conceptual change perspective is proposed by Sinatra and Pintrich (2003). This perspective of conceptual change suggests that students should play an active intentional role in the process of knowledge restructuring. Intentional conceptual change brings cognitive and metacognitive, motivational and affective factors together in explaining knowledge restructuring. Sinatra and Pintrich (2003, p. 6) characterize intentional conceptual change as "goal-directed and conscious initiation and regulation of cognitive, metacognitive, and motivational processes to bring about a change in knowledge". Limon Luque (2003) highlights the role of metacognition in conceptual change by listing the following prerequisites to be fulfilled for intentional conceptual change:

"*It is necessary for individuals to be aware of the need for change and to be able to know what to change. I call this 'metacognitive prerequisite of intentional conceptual change'.*
Individuals must want to change. They must consider change as a personal goal, not as something imposed by others. I call this 'volitional prerequisite of intentional conceptual change'.
Individuals must be able to self-regulate their process of change; that is, they must be able to plan, monitor, and evaluate their process of change. This is referred to as 'self-regulation prerequisite of intentional conceptual change' (p. 138)."

According to Limon Luque (2003) students need to notice the contradictions between their existing ideas and the ideas presented in a particular task and they need to use their metacognitive knowledge to evaluate what they already know, what they do not know and where the obstacles lie to accomplish a change in their ideas. Various empirical studies in the field of science education have been conducted that support the positive role of metacognition in the process of conceptual change (Beeth, 1998; Ezberci, 2014; Hennessey, 2003; Hewson, Beeth, & Thorley, 1998; Kırbulut, 2012; Luque, 2003; Özsoy, 2007; Saçkes, 2010; Sinatra & Pintrich, 2003; Yıldız, 2008; Yürük, 2005).

Metacognition

What enchants scientists as well as people and numerous philosophers is the self-interrogative nature of human thoughts (Metcalfe & Shimamura, 1994). Flavell and colleagues have introduced the term "metamemory" to literature for the first time after conducting a range of research on children at preschool and primary school level (Flavell, 1979). These studies have introduced the term metacognition in the most general sense as 'reflections over cognition' and 'an individual's thinking about their own thinking' (Schoenfeld, 1987). Metacognition is originally expressed as knowledge and regulation of cognitive processes of an individual during learning processes (Brown, 1978; Flavell, 1979). In short, metacognition is the way of thinking about thinking and knowing how to know (Hartman, 2002b). According to Hennessey (1999), metacognition is characterized as 1) the awareness of an individual's own thinking, 2) the awareness of the content of an individual's own concepts, 3) the active monitoring of an individual's cognitive processes, 4) an individual's regulation of his own cognitive processes, 5) the application of heuristics to organize problem solving methods of an individual.

According to Yürük (2014), metacognition is a versatile concept involving both higher order thinking activities and knowledge about one's own cognitive activities. In the relevant literature, metacognition, metacognitive, cognition knowledge, executive cognition, executive control, and self-regulation are used as terms to refer to the concept of metacognition. Saçkes and Trundle (2016) have listed the common aspects of different definitions about metacognition as knowledge about cognition, control, and regulation of cognitive activities and an awareness of mental activities and one's own concepts.

As it is seen, metacognition is defined differently by various researchers in accordance with the research area they focused on (Akın & Abacı, 2011). Particularly the latest psychological studies have evaluated the role of metacognition in learning, memory, thinking, problem solving, and decision-making (Metcalfe & Shimamura, 1994). The reason why metacognition is so popular among researchers is due to the fact that it is essential for daily reasoning and because of those who value scientific thinking as much as social interactions (Schneider, 2008).

The components of metacognition vary by the definitions of different researchers. When the studies about metacognition are analyzed, it is observed that the focus is on the components involving metacognitive knowledge and regulation of cognition. According to Pintrich, Wolters, & Baxter (2000, p. 44), metacognition is categorized in two commonly agreed components named as metacognitive knowledge, metacognitive control and regulation. Metacognitive knowledge is typically the knowledge about one's own cognition (Anderson, Krathwohl, Airasian, Cruikshank, & Mayer et al., 2001). This knowledge is about ourselves; *tasks* we encounter and *strategies* we use (Garner, 1987, p. 17). Metacognitive control is conscious and unconscious decision that we make based on the output of monitoring process. The control processes arise from an individual's behaviours related to his/her monitoring function (Schwartz & Perfect, 2002, p. 4-5). At this point, the regulation of cognition means a series of activities managing to control learning (Schraw, 2002, p. 4). Although various regulatory processes are defined in literature, three fundamental processes are involved in all definitions. These are planning, monitoring and evaluation (Schraw & Moshman, 1995, p. 354). Evaluation means changes in planning at the beginning or changes causing revision and in determining improvements towards the goal, more monitoring and more evaluation (Harris, Graham, Brindle, & Sandmel, 2009, p. 134). It is apparent that more conceptual studies are needed to find out a common definition of metacognition and its components.

From another perspective, it is thought that metacognition will have significant contributions for areas like education aimed to improve especially learning and studying since focus on most of the metacognitive applications involves some of learning types (Schwartz & Perfect, 2002). Particularly, we should organize experiences triggering students to think so that they will have new perspectives based on proofs they find persuading (Barton, 2010). Beeth (1998) points out that it is inevitable for metacognition to be associated with conceptual change and teachers should use metacognition during instruction.

Metaconceptual Change

Taking the components of metacognitive knowledge into consideration in the process of conceptual change is significant for students both to show their planning, monitoring and evaluation skills and to form mental models (Hartman, 2002a). Because the latest research proves that students come to course with self-explanatory ideas and thoughts that are not compatible with scientific opinions (Duit et al., 2008). Many researchers emphasize the role of metacognitive processes in changing students' alternative ideas (Cheng, 2012; Delgado, 2015; Demir, 2010; Georghiades, 2004; Hennessey, 1991; Kırbulut, 2012; Kırbulut, Uzuntiryaki-Kondakçı, & Beeth, 2016; Kun, 2011; Saçkes & Trundle, 2016; Thorley, 1990; Vosniadou, 1994; Vosniadou, 2003; Yıldız, 2008; Yürük, 2007; Yürük et al., 2009; Yürük & Eroğlu, 2016). According to Hennessey (2003), individuals' awareness of their own thoughts may help them to change their alternative conceptions. At this point, it is inevitable to focus on the metacognitive processes that are directly related with concept learning. Since the concept of metacognition is a wide term generally involving various knowledge and processes, it will be useful to differentiate individuals' metacognitive knowledge and processes related to their conceptual system from other metacognitive knowledge and processes. Yürük et al. (2009) has used the term 'metaconceptual' to refer to the metacognitive knowledge and processes that are directly related with one's conceptual system and the factors affecting conceptual learning. Metaconceptual knowledge and processes include a part of total knowledge and activities that are metacognitive in nature (Yürük et al., 2009). Huang (2011) expresses that metaconceptual thinking is pertained to a wider category of metacognition.

Moreover, he asserts in his study that metaconceptual thinking contributes to conceptual change. Yürük (2005) categorizes metaconceptual processes into three fundamental components: a) metaconceptual awareness, b) metaconceptual monitoring and c) metaconceptual evaluation. According to Yürük (2007), metaconceptual awareness refers to one's awareness of his/her current ideas or past ideas about natural phenomenon and elements of conceptual ecology including epistemological and ontological presupposition. Metaconceptual understanding generates information about one's current cognitive state or an ongoing cognitive process that is active while the individual is learning a new concept. Yürük (2007) lists different subcategories of metaconceptual monitoring as monitoring understanding of an idea, monitoring information coming from other people or sources, monitoring the consistency between existing idea and new information, monitoring existing idea and new experience and monitoring changes in ideas. Metaconceptual evaluation refers to a metacognitive process in which individuals make judgmental decisions about new and existing ideas and provide justifications for them. When metaconceptual evaluation is active, students make comments about the relative plausibility and usefulness of ideas, choose an idea as the valid one among several ideas and provide justifications for the validity of the chosen idea (Yürük, 2007; Yürük et al., 2009). Hewson et al. (1998) who have carried out studies on this subject, state that metacognition firstly facilitates teaching concepts, secondly takes place in the structure of conceptual change and lastly gives teachers an opportunity to monitor the learning process effectively by giving information about the status of the concept that students have learned.

Aim

The main aim of this study is to investigate the effect of teaching activities supported with metaconceptual processes on 7th grade students' understanding of law related concepts. In other words, current study is set out to determine the effects of teaching activities supported with metaconceptual processes on changing alternative concepts about law related topics in social studies course compared to the instruction applied within the scope of the current education program. In addition, the effect of teaching activities supported with metaconceptual activities on students' attitude towards the concepts acquired in social studies course is also investigated in the study. Moreover, present study compares conceptual understanding of the students in the classes where current education program was used and students in the classes where teaching activities were supported with metaconceptual processes after 14 weeks of teaching.

As the sub-goals of the study, the effect of metaconceptual teaching activities on 7th grade students' conceptual understanding before the instruction, after the instruction, and after 14 weeks following the post test. Moreover, their attitudes towards the concepts acquired in social studies are investigated before and after the teaching activities are carried out.

METHODOLOGY

The Research Design

A quasi-experimental research design was used in this study (Thyer, 2012). While teaching activities supported with metaconceptual processes were implemented in the experimental group, traditional instruction was implemented in the control group. In this study, the term "traditional instruction" refers to the implementations determined by the curriculum currently applied at schools in Turkey. In this form of instruction, teaching was mainly teacher-centered and carried out in a didactic approach with question-answer method. Students were not asked questions activating their metaconceptual processes.

159

The Study Group

The study was carried out at a state middle school located in Yenimahalle district of Ankara. The school provides education to students with a wide range of different socio-economic status. This study was carried out in four classes of a social studies teacher. The students in two of these classes formed the control group and the students in the other two formed the experimental group. The classes were assigned randomly for control or experimental group. Other teachers who had information about the participants also contributed to the study. The sample of the study consisted of 114 seventh grade students in total. Convenience sampling method was used in the study. Metaconceptual teaching activities were applied in two classes (Class B and D) and traditional instruction in accordance with the current curriculum was applied in the other two classes (Class A and C). The students did not have any formal education about law related concepts before. The number of students who took conceptual understanding test and attitude scale and the gender distribution of the students in control and experimental groups are shown in Table 1.

Table 1.
The number of participants by gender who took conceptual understanding test and attitude scale

Course	Pre-intervention	LRCUT			Gender		SSCCAS		Gender	
		Pre-test	Post-test	Delayed	F	M	Pre-Attitude	Post-Attitude	F	M
(A) Control group	31	29	28	29	14	15	30	30	16	14
(B) Experimental group	36	33	30	33	13	20	33	33	13	20
(C) Control group	31	31	28	30	15	15	31	31	15	16
(D) Experimental group	31	30	28	28	16	12	30	30	18	12
Total	129	123	114	120	58	62	124	124	62	62

Note: LRCUT is the abbreviation of Law Related Concepts Understanding Test, which stands for a test measuring the students' conceptual understandings about law related concepts. SSCCAS is the abbreviation of Social Studies Course Concepts Attitude Scale, which stands for a scale measuring the attitudes of students towards the concepts acquired in social studies course. "F" means female and "M" means male.

Sources of Data

The conceptual understanding test

A three-tier conceptual understanding test constructed by the researchers was used to assess the conceptual understanding of the students about law related subjects. The steps followed during the process of constructing conceptual understanding test are given below:

At first, a list of concepts related to law was formed. Expert opinion was taken for the concept list. Secondly, open-ended questions were asked to 252 students to determine their alternative conceptions about law related subjects. Content analysis was done for the data acquired from open-ended questions written according to the determined concept list. Two other experts were consulted during content analysis. The data acquired from the content analysis of the open-ended questions were used to prepare an item pool. The concepts involved in the law-related conceptual understanding test and their question numbers are given in the table of specifications (See Table 2). This table is the last version after all analyses and corrections.

Table 2.
Table of specifications: The conceptual understanding test about law related concepts

	Concepts	Question number		Concepts	Question number		Concepts	Question number
1.	Justice	16	14.	Power, Opposition, Coalition	28	27.	Assignment (Responsibility, Right)	20, 40
2.	Constitution	6, 24	15.	State and person respectful to human rights (Social State)	27, 39	28.	Freedom (Freedom of Opinion)	8, 33
3.	Independence	41	16.	Public Opinion	4, 25	29.	Censor	21
4.	Republic	3, 22	17.	Law	30	30.	Non-Governmental Organization	15, 29
5.	Democracy	37	18.	Participation	45	31.	Responsibility	9, 20
6.	State	36	19.	Judge of the Army	38	32.	Social State	27, 39
7.	Sovereignty	1	20.	Convention	32, 42	33.	Theocracy	18, 34
8.	Secret Vote	35	21.	Morals	11	34.	Morals	11
9.	Separation of Powers	34	22.	Secularism	5	35.	Judgement	14, 31
10.	Right	13, 40	23.	Constitutional Monarchy	44	36.	Independence of judiciary (Independent Courts)	14
11.	Law	23	24.	National Sovereignty	7, 17	37.	Legislation	10, 26
12.	State of Law	43	25.	Monarchy	12, 34	38.	Execution	2
13.	Superiority of Law	19	26.	Oligarchy	34			

Thirdly, expert opinion was taken for the items of the conceptual understanding test. In this respect, 4 experts in social studies,; 5 experts in social studies education; 2 experts in assessment and evaluation; 2 experts in educational sciences for the law related conceptual test; 2 experts in language education, and 1 social studies teacher were consulted to check the language and sentence structure of the conceptual understanding test and its appropriateness for the age group. The necessary editing in the conceptual understanding test was made for the content validity in accordance with the expert opinions. Fourthly, a pilot test was applied to 351 seventh grade students. The discrimination index (point biserial correlation coefficient) of each question of the pilot test was calculated. The discrimination indices of 43 items of the pilot test were calculated to be over 0.30. Since the item discrimination indices of two items were low, new items were written in accordance with the expert opinion and the revised test was administered to a different group of 357 seventh grade students. The reliability coefficient (KR 20) of the test with 45 items was calculated as 0.856. If the reliability coefficient KR20 is .80, it is accepted as reliable and if the coefficient is .90, it is accepted as very reliable (Fraenkel, Wallen, & Hyun, 2011, p. 157; Şencan, 2005, p. 58). The average of item difficulty index was calculated as .533. It is seen that the reliability coefficient of the study is supported with the quantitative values stated in the literature.

The item structure of the three-phased test is as follows:

A multiple-choice question was asked about law related concepts in the first phase of the law related three-phased conceptual understanding test (CUT). Students were asked to explain why they chose a particular option in the first-phase by their own sentences in the second phase of the test. In the third phase, students were asked whether they are sure about their answer. Thus, a cyclic approach was used in order to verify the results through questions answered one by one. In addition, the possibility for unintentional answers of the questions was minimized. In other words, the possibility for regarding the answers with no bases as alternative concepts was minimized. The CUT was applied to both groups before, after and fourteen weeks after the teaching activities to evaluate their conceptual understanding about law related subjects. Some items of the test can be seen in data analysis section of this article.

The attitude scale

The other data-collecting tool in the study was attitude scale towards concepts acquired in social studies course. The details about how this scale was developed are given below:

Firstly, literature was reviewed before starting to write items and it was found out that there was not any scale measuring attitudes towards concepts of a lesson in literature. Therefore, under the supervision of experts, 16 open-ended questions were asked to the students to find out their opinions about the concepts in social studies course. These questions were asked to 221 students from several elementary schools in Mamak, Sincan, Yenimahalle and Çankaya, the center districts of Ankara. After the application period, code numbers were given to each paper of the participants and content analysis was made. A data set that consisted of sentences reflecting the feelings and thoughts of the participants about the concepts in social studies course was formed. With the help of the data set, items were written. During the process of item writing, cognitive, affective, and behavioural aspects of attitudes were initially taken into consideration. After necessary analysis was completed, a draft version of attitude scale with 80 items about the concepts in social studies course was formed under the supervision of experts. 3 experts in social studies, 3 experts social studies education 3 experts in assessment and evaluation; 3 experts in language education, 4 experts in educational sciences and 3 social studies teachers were consulted to examine whether the items were appropriate for Turkish language and students' age level. The necessary editing was made with the help of these experts. The scale was applied to a small group pilot test of 30 elementary school students to get their opinions about appropriateness of the 80 items and to determine whether there were any incomprehensible items. Because of the numerous items of the scale, 3 confirmative items were used to control whether students marked their choices consciously by paying close attention. The pilot version of the attitude scale included 80 items; 50 items were positive and 30 items were negative. The positive items in the scale were marked as: Totally agree=5, Agree=4, Neutral=3, Disagree=2 and Totally disagree=1. The pilot version of the scale was applied to 363 seventh grade students. The Kaiser-Meyer-Olkin (KMO) statistics was measured as .953 showing that the number of the sample was sufficient for the factor analysis. KMO value is suggested to be .80. The measurement over .60 is acceptable and the value over .90 is accepted as perfect (Kalaycı, 2010, p. 322; Pallant, 2005; Sharma, 1996, p. 116).

Explanatory factor analysis was used to measure the data gathered from 363 students. As the explained total variance was examined, it was observed that 16 factors were found to have eigenvalue over 1. Through this scale of 16 factors, 63.684% of the characteristic that was aimed to be measured was evaluated. When factor loads were examined, 29 items whose factor load was below .40 were eliminated from the scale. 19 items whose factor loads were smaller than .10 were also extracted from the scale. When factor analysis was applied to the left 32 items, it was observed that the scale had four factors bigger than 1 eigenvalue. When the factor loads of the items gathered in four factors were analysed, it was observed that some items were loaded on few factors. Therefore, three inappropriate items were eliminated from the scale and the factor analysis was done for the third time. When the total variance was examined, it was observed that there were three factors which had eigenvalue over 1. Through this scale of three factors, totally 51.927% of the characteristic that was aimed to be measured was evaluated. The first one of the factors was named as boredom/delightfulness, the second one was named as easiness/difficulty, and the third one was named as practicality under the supervision of experts. Some of the items loaded in sub-factors of the scale are below:

1st sub-factor: I want to learn more concepts about social studies course. (Item 3)
2nd sub-factor: Learning concepts in social studies course is more difficult than the other courses. (Item 17)
3rd sub-factor: I think the concepts that I learn in social studies course will help me express my thoughts. (Item 29)

The confirmatory factor analysis was carried out for the scale with 28 items with a different sample and RMSEA, a measurement of significance of the model, was found to be .028. Confirmatory factor

analysis was implemented with 347 students. According to the results, χ^2 square statistics, the rate of similarity, was found to be χ^2 (347) = 445.11 p< .01. The model was found to be appropriate for model data fit according to χ^2/sd, RMSEA, NFI, CFI, S-RMR, RFI fit criteria (Çokluk, Şekercioğlu, & Büyüköztürk, 2010). It was verified that the 5-point Likert type scale with 28 items had only one dominant factor and 3 sub-factors which were related to each other according to fit criteria. The lowest score that can be obtained from the 28-item scale is 28 and the highest score is 140. Cronbach alpha coefficient of the scale with 28 items was calculated to determine the internal consistency of the scale and it was found out as .931, which means high reliability. The reliability of the first sub-factor was .923; one of the second sub-factor was .853 and one of the third sub-factor was found as .814. The first sub-factor consisted of 14 items, the second sub-factor consisted of 7 items and the third sub-factor consisted of 7 items. In addition, retest reliability was measured with 55 students who were randomly chosen for the whole scale and it was calculated as .821. The reliability coefficient ranges from 0 to 1. When it is close to 1, it means that reliability is high and the internal consistency between items is also high. Generally, if the reliability coefficient is around .90, it is accepted as perfect. If it is around .80, it is very good and if it is around .70, it is sufficient (Fraenkel et al., 2011, p. 157; Kalaycı, 2010; Kline, 2011, p. 70). In order to find out whether the items measured the characteristic that was aimed to be measured, item test correlations were calculated. The whole item total test correlations were over .30. Based on this finding, it might be stated that all items served the purpose of the study. In other words, the items measured what was aimed to be measured (Creswell, 2012; Crocker & Algina, 2008).

Teaching Activities

Seventh grade students of four classes of a teacher were participated in the study. Two classes of the teacher were selected as experimental group and two of them were selected as the control group. The teacher did not do any activities supported with metaconceptual processes in the group exposed to traditional instruction. In other words, in the control group the subject was taught within the scope of the existing curriculum of social studies. The teacher was at the center of teaching that was carried out mainly in the lecturing format. The teacher asked different students to read the texts about the subject provided in the textbook and during this process, students asked the points that they did not understand to the teacher. These questions were answered by certain students. In addition, what the students knew about the subject before was not taken into consideration and the concepts were associated with students' daily life at the minimum base. At the end of the unit, the evaluation questions provided in the textbook were answered together in the classroom. Moreover, students were asked to prepare a performance assignment about the subject they chose. At the end of each unit, the teacher wrote short summaries of each units, and distributed them to the students. These summaries were seen as a main source for students to study for the exams in addition to the course book.

Teaching activities supported with metaconceptual processes such as making posters, keeping diaries, concept mapping, concept caricatures and cards, course room, and group discussions were conducted in experimental group. Activating metaconceptual awareness, monitoring and evaluation activities about the concepts in the minds of the students were the aims of these activities. Before each activity, students were informed about teaching and necessary instructions were given. The researcher and the teacher met regularly to plan and evaluate the process of teaching. The teaching activities were carried out for four weeks and these four weeks were the time that course subjects would be held according to course program. *Poster making*, one of the metaconceptual activities, was used in experimental group in order to facilitate student participation in the processes of metaconceptual awareness, metaconceptual monitoring and metaconceptual evaluation. Each poster that the groups prepared with peer cooperation in a social learning environment was presented in classroom. The students were asked to revise their posters about law related concepts after four weeks. By this way, students were provided with an opportunity for monitoring the changes in their thoughts before and after they prepared their posters. The groups' spokespeople presented what they changed in the posters as well as the reasons. Another metaconceptual activity *concept mapping* was also included in teaching process to help students distinguish the relation between conceptual inputs presented to them. The students were provided with an opportunity for sharing and comparing the concept maps they organized with their classmates. By

163

this way, they had a chance to observe and monitor the ideas of their friends about concepts in a controlled classroom environment. With the help of *concept caricatures and cards*, students thought over the concept being discussed especially via caricatures. During this discussion, they were given the opportunity to bring out their alternative concepts about law related subjects by organizing a cognitive conflict environment in the classroom. Students were separated into groups and asked to prepare concept cards about their own caricatures. They are also asked to present the cards they prepared in the classroom. This activity enabled students to be aware of their own cognitive activities and monitor their friends' ideas while discussing about the concept cards and to decide whose ideas were more accurate or logical from a metaconceptual point of view. The groups with two, three, or four students *in-group discussions* were sometimes expected to participate in activities and to discuss their ideas about the presentation or any case that was presented. Thus, they became aware of their own ideas, monitored their own ideas and friends' ideas and had the opportunity to evaluate whose ideas explained the situation better. What is more, *classroom discussions* were involved into the process to make students share their ideas with their friends. The students were asked to defend why their ideas were the best option to explain the conceptual input. They were able to carry out metaconceptual evaluation by choosing the most proper explanation and explaining the reasons for it. The students were asked to *keep diaries* in which they would give details about their thoughts related to the activities they joined during the teaching process. By means of diaries, the students who could not express themselves verbally were able to participate in activities. There were questions in the diaries activating metaconceptual schemas/patterns of the students. Some examples for these questions were given below:

"Did you learn anything new in these activities? … Is there any difference when you compare your own ideas with your friends', your teacher's or those in course books? Please explain it. Whose ideas explain the situation better? Why?"

By means of such questions, students were given the opportunity to express themselves through various communication channels. The teacher regularly checked these diaries.

The teaching activities mentioned above were integrated into the following teaching activities related to the content through cyclic approach in order to activate the metaconceptual processes. Six teaching activities were designed for this aim. One of them was named as 'tell us about the concepts and their features'. This activity included concepts such as independence, republic, democracy, state, sovereignty, constitutionalism, rights, public opinion, duty, freedom, responsibility, national sovereignty, monarchy, oligarchy, theocracy, and censor. The students were asked to write a paragraph including at least eight of the sixteen concepts written in worksheets and their features with examples from their own lives. They shared these paragraphs first with their desk mates and then classmates. Afterwards, the class discussed which paragraph expressed the concepts scientifically and accurately with reasons. At last, students were asked to write the diaries distributed by the teacher according to instructions.

The second activity was 'What is my definition?'. This activity included concepts such as justice, constitution, rights, convention, rituals, national sovereignty, naive, morals and dynasty. The students were given a scientific fact and several statements about alternative ideas about the concept being discussed during the activity. The students were asked to make discussion first with their desk mates and then with the other friends in their classroom. A vote was held on the properness of the concept having discussed. The students choosing different definitions were asked to explain their choices by giving reasons and examples.

After finding out the proper definition for the concept, students also found out which concept the other definitions were related through classroom discussion. Then, the teacher asked students to write questions about metaconceptual processes on their diaries. Classroom and group discussions as well as peer assessment were carried out during these two activities.

The third activity was 'What are the hidden concepts in Atatürk's sayings?' The students were separated into groups of 5-6 students and envelopes were given to these groups. Each group was asked to prepare

a poster about the concept in Atatürk's sayings in the envelopes. The necessary stationery equipment's were provided for the students as well as a pattern about the content of this poster. The pattern included the concept that the saying expressed its definition, its significance, related concepts, and the examination of why Atatürk uttered that saying, the visuals, caricatures/acrostics, and slogans/stories about the examined concept. Each poster was presented by the spokesperson of each group. The posters were hanged on the walls of the classroom. The students were asked to evaluate the posters individually and in groups by using the given rubric. Then an election was held on this issue. At the end of the teaching process, a form was given to the students to make changes on their posters so that they would realize and monitor changes in their minds. By means of this form, the groups interacted with each other. Then the students were asked to write their thoughts on diaries using the given reminders. That is to say, they were expected do conceptual monitoring.

The fourth activity was 'Concept maps are talking' and 'Let's introduce a law!' The students were given two sets of concepts. One of these sets included concepts of judgement, council of ministers, legislation, independent courts, president, convention, prime minister, headquarters, division of powers, administration, legislation, Grand National Assembly of Turkey. The other set included concepts of constitutional state, social state, equality, constitution, democratic state, secular state, the state committed to Atatürk's nationalism, the state respectful to human rights and the ottoman basic law. The relationship between these two sets was illustrated via concept maps. Moreover, students were asked to make a law the subject of which was determined through group discussion. By this way, concepts as bill and legislative proposal were involved in the process. The students were asked to discuss about the organization of their concept maps first with their desk mates and then in the groups of 3-4 students. Newspaper reports whose content was appropriate for the students and which included the concept sets mentioned above were analysed. If required, blank concept maps were given to the students, hung, or reflected on the board. Thus, they would have the chance to compare their own concept maps with the ones prepared in groups.

The fifth activity was 'The caricatures find meaning through concept cards'. This activity dealt with republic, democracy, constitutionalism, monarchy, oligarchy and theocracy concepts. The students were divided into groups of 5 or 6. Each group was responsible for one type of regime. The concept caricatures of each regime that the groups were responsible for were hanged on the board. The students prepared concept cards individually at first. These individual cards were shared between the peers in the same group. Then, the individual cards presented in the classroom and they were stuck under the concept caricatures related to them. The students were asked to set practical role options of scholars as a teacher, a historian, or a scientist during the activity. At last, the students were asked to write the diaries with the help of the directives predetermined before.

The sixth activity was 'Let's do an interview'. The students had interviews with their parents or their elders by choosing one of the examined concepts before. They shared the details of their interviews with classmates. The activities carried out during the research were prevented from being limited to school. The students were asked to monitor their parents' ideas as well as their own ideas about the concepts during this activity. In experimental group, where teaching activities were supported with metaconceptual processes, there was a whole class participation, that is to say, all the students participated in activities rather than certain students.

Data Analysis

T-tests were used to analyse the difference between experimental and control groups in terms of their conceptual understanding and attitude towards law related concepts. The data set, which was formed as a basis for quantitative analysis, was built from pre-LRCUT, pre-SSCCAS; post-LRCUT, post-SSCCAS and LRCUT delayed test. Independent samples t-test was used to compare the conceptual understanding of students in experimental group and conceptual understanding of students in control group. The significance level was accepted as .05. In statistical hypothesis test, Cohen's d effect size standards were used to determine the level of absolute effect size (Gravetter & Wallnau, 2007; Gravetter & Wallnau,

2014). The conceptual understanding test included 45 questions and four options. While one of these options was correct, the other three options were made up of alternative structures the students expressed about law related concepts (Data Sources). The three-phased test included three variables. The students were asked a multiple-choice question about a law related concept in the first variable. If the participant chose the correct option, he got 0 point. If he chose one of the other options including alternative concepts, he got 1 point. In the second phase, if the participant expressed thoughts using sentences which were classified in alternative concepts rather than the sentences that are specified by scientists, this value was coded as 1. On the other hand, when there was confusion or lack of knowledge in the answers of the students, it was coded as 0. The third phase was structured considering the data acquired in the other phases. Accordingly, when the student was sure about his answer in the first two phases, he got 1; if he was not sure, he got 0. If the participants got 0 in any phase of the three-phased conceptual understanding test, the question was evaluated as 0. This circular structure of the evaluation process prevented the answers of the participants that have no justification from being evaluated as alternative concepts in the analysing process. In addition, the participants' sentences about law related concepts in the second phase of the conceptual understanding test were analysed through content analysis. In order to facilitate the analysis of the attitude scale about the concepts learned in social studies course, 5-point Likert scale out of a hundred points was transformed into 5-point scale. An example answer for the of the open-ended question phase of the three-phased law related conceptual understanding multiple choice test is given below:

Table 3.
An example about the concept of judgement-post-test (Student A)

Item	Questions
31.1.	Which unit of a state is emphasized in the saying "Justice is the basis of the state."?
	a) Execution b) × Jurisdiction c) Legislation d) Administration
31.2.	Explain the meaning of the option you've chosen above with your own sentences.
	Judgement is performed by independent courts. There is justice in courts, so my option is jurisdiction
31.3.	How sure are you about your option?
	a) × I'm sure b) I'm indecisive c) I'm not sure

FINDINGS

Findings of the current study, which investigated the attitudes of students towards the concepts in social studies course and their conceptual understanding about law related concepts, are given under this title.

The Findings about Conceptual Understanding

Before the implementation of teaching activities, Law Related Conceptual Understanding Test (LRCUT) was applied as a pre-test to experimental group and control group. Also, t-test was used in order to find out whether there was any significant difference between control and experimental group according to the students' conceptual understanding about law related concepts. Table 4 provides the results obtained from independent samples t-test.

Table 4.
The results of t-test according to groups of law related conceptual understanding (LRCUT) pre-test scores of control and experimental groups

Test	Group	N	x̄	s	t	df	p
Pre-test	MAITAG	63	48.75	15.39	1.015	121	0.312
	TTG	60	46.07	13.72			

Note: MAITAG is the experimental group where teaching activities were supported with metaconceptual processes and TTG is the control group in which traditional instruction was carried out.

As seen in Table 4, there is no significant difference ($p>0.05$) between control ($\bar{x}=48.75$; $s=15.39$) and experimental group ($\bar{x}=46.07$; $s=13.72$) in terms of their conceptual understandings about law related concepts that were measured before the teaching process.

LRCUT was applied to the student in control and experimental groups again after the teaching process as a post-test. Independent samples t-test was used to compare pre and post-test scores of students in experimental group where teaching activities were supported with metaconceptual processes (See Table 5) and for control group where traditional instruction was used (See Table 6).

Table 5.
The results of t-test according to pre and post-LRCUT test scores of students in experimental group

Group		N	$\bar{x}$	s	t	df	p	Cohen's *d*
MAITAG	Pre-test	58	49.88	15.32	-3.729	57	0.000*	0.65
	Post-test	58	60.50	17.50				

*p<0.05

As can be seen from the table above, the students' post-test scores ($\bar{x}=60.50$; $s=17.50$) were higher than their pre-test scores ($\bar{x}=49.88$; $s=15.32$) in experimental group. From the table we can also see that there is a statistically significant difference in conceptual understanding of students about law related concepts before and after the activities supported with metaconceptual processes were implemented ($p<0.05$). According to Cohen's (1988) classification, it is seen to be a great effect size ($d= 0.65$). Thus, it can be said that students benefit from these activities.

Table 6.
The results of t-test according to pre and post-LRCUT test scores of students in control group

Group		N	$\bar{x}$	s	t	df	p
TTG	Pre-test	56	46.87	13.73	-0.925	55	0.359
	Post-test	56	49.60	15.40			

It can be seen from the data in Table 6 that there is no significant difference ($p>0.05$) between the students' post-test scores ($\bar{x}=49.60$; $s=15.40$) and their pre-test scores ($\bar{x}=46.87$; $s=13.73$) in control group.

Post-test scores of control and experimental groups were also compared through independent samples t-test in order to understand whether there was any significant difference between conceptual understanding of students in control group and conceptual understanding of students in experimental group about law related concepts after the teaching process (See Table 7).

Table 7.
The results of t-test according to post-LRCUT scores of control and experimental groups

Test	Group	N	$\bar{x}$	s	t	df	p	Cohen's *d*
Post-test	MAITAG	58	60.50	17.50	3.525	112	0.001*	0.66
	TTG	56	49.60	15.40				

*p<0.05

As seen in Table 7, the experimental group's post-test scores ($\bar{x}=60.50$; $s=17.50$) about law related concepts measured after teaching process were significantly higher ($p<0.05$) than students who were exposed to traditional instruction post-test scores ($\bar{x}=49.60$; $s=15.40$). According to Cohen's (1988) classification, it is seen to be a large effect size ($d= 0.66$).

The Findings about Delayed

Fourteen weeks after the post-test, Law Related Conceptual Understanding Test was reapplied to control and experimental groups as a delayed test in order to find out whether there was any difference in students' conceptual understanding about law related concepts. Independent samples t-test was used to

167

analyze the difference between test scores of experimental group and the control group. The Table 8 below illustrates the t-test results.

Table 8.
The results of t-test according to law related conceptual understanding delayed test scores of control and experimental groups

Test	Group	N	x̄	s	t	df	p	Cohen's d
Delayed test	MAITAG	61	65.14	16.31	5.294	118	0.000*	0.97
	TTG	59	49.72	15.57				

*p<0.05

Fourteen weeks after the post-test, it was found out that conceptual understanding of the students who were exposed to metaconceptual processes ($\bar{x}$=65.14; s=16.31) about law related concepts was significantly higher (p<0.05) than the conceptual understanding of students who exposed to traditional instruction ($\bar{x}$=49.72; s=15.57). According to Cohen's (1988) classification, it is seen to be a large effect size (d= 0.97). Even after 14 weeks, the difference between the groups continues. It continues even with a larger effect size. In other words, students benefit from activities supported with metaconceptual processes.

The Findings about Attitude

Before the teaching process, the attitude scale about concepts (SSCCAS) was applied to both experimental and control group as a pre-test. Independent samples t-test was used to analyze whether there was any significant difference between attitude scores of students in experimental group and attitude scores of students in control group and the results were shown in Table 9.

Table 9.
The results of t-test according to pre-SSCCAS scores of control and experimental groups before teaching process

	Group	N	x̄	s	t	df	p
Attitude level	MAITAG	61	3.86	0.50	-0.881	122	0.380
	TTG	63	3.94	0.51			

From the table above we can see that there is no significant difference (p>0.05) between the attitude scores of students in control group ($\bar{x}$=3.94; s=0.51) and students in experimental group ($\bar{x}$=3.86; s=0.50) before the teaching process.

In order to understand whether student attitude towards concepts changed after the teaching process, SSCCAS was reapplied to both control and experimental group after the teaching process as a post-test. Independent samples t-test was used to compare pre and post-test scores of students in experimental group (See Table 10) and students in control group (See Table 11).

Table 10.
The results of t-test according to pre and post- SSCCAS scores of students in experimental group

Group		N	x̄	s	t	df	p	Cohen's d
MAITAG	Pre-test	63	3.94	0.51	-3.671	62	0.001*	0.36
	Post-test	63	4.11	0.43				

*p<0.05

As shown in Table 10, a significant difference exists between Pre and Post-SSCCAS scores of students in experimental group (t(62)=3.671; p<.05). Students' attitudes towards social studies concepts measured after the implementation of teaching activities ($\bar{x}$=4.11; s=0.43) were significantly higher than their attitudes measured prior to teaching ($\bar{x}$=3.94; s=0.51). The effect size calculated as 0.36 indicates a medium effect size according to Cohen's (1988) classification.

Table 11.
The results of t-test according to pre and post-SSCCAS scores of students in control group

Group		N	x̄	s	t	df	p	Cohen's *d*
TTG	Pre-test	61	3.86	0.50	-2.087	60	0.041*	0.21
	Post-test	61	3.97	0.53				

*p<0.05

As shown in Table 11, a significant difference exists between Pre and Post-SSCCAS scores of students in control group (*t*(60)=2.087; *p*< .05). Students' attitudes towards social studies concepts measured after the teaching process (*x̄*=3.97; *s*=0.53) were significantly higher than their attitudes measured prior to the instruction (*x̄*=3.86; *s*=0.50). The effect size calculated as 0.21 indicates a medium effect size according to Cohen's (1988) classification.

Independent samples t-test was used to analyze whether there was any significant difference between post-SSCCAS scores of the students in control group and experimental group and the results are shown in Table 12.

Table 12.
The t-test results according to post-SSCCAS scores of the students in control and experimental group

	Group	N	x̄	s	t	df	p
Attitude Level	TTG	61	3.97	0.53	-1.668	122	0.098
	MAITAG	63	4.11	0.43			

It can be seen from the table above, the attitude scores of students in experimental group (*x̄*=4.11; *s*=0.43) are higher than the attitude scores of students in control group (*x̄*=3.97; *s*=0.53). However, there is no statistically significant difference between the attitude scores of students in experimental group and attitude scores of students in control group that are measured after the teaching process (*p*>0.05).

DISCUSSION AND CONCLUSION

The results of the study were discussed under three titles: metaconceptual understanding, delayed and attitude. Later, suggestions were also made for further research to be done on similar subject.

Results about Conceptual Understanding

One of the aims of the current study was to find out whether different teaching methods and teaching activities supported with metaconceptual processes have any effects on the conceptual understanding of students about law related concepts compared to the traditional teaching activities planned in social studies course curriculum. For this aim, in experimental group, teaching activities supported with metaconceptual processes were used whereas in control group, traditional teaching activities were used. According to results of the test carried out before the teaching process, no significant difference was found (*t*(121)=1.015, *p*>0.05). A possible explanation for this might be that there was no statistical difference in conceptual understanding of students before the teaching activities were implemented. It is possible that both control and experimental group students understood the concepts in the same way. When the conceptual understanding of the students in experimental group was analyzed before and after the implementation of the activities, a significant difference was found between pre and post-test scores (*t*(57)=-3.729, *p*<0.05, *d*= 0.65). The effect size value (Cohen's *d*=0,65) was a great effect size (Cohen, 1988). Considering the result of this three-phased test applied to the students, the teaching activities supported with metaconceptual processes were effective in changing the students' alternative concepts about law related concepts to scientifically accepted ones. This result was consistent with the results of

169

the studies carried out by Özsoy (2007), Yıldız (2008) and Ezberci (2014). Kırbulut, et al. (2016) implied that metaconceptual activities were essential to make conceptual changes.

On the other hand, no significant difference was found between the means of the pre and post-test scores of students in the group where traditional instruction was implemented ($t(55)=-0.925$, $p>0.05$). It shows that the teaching activities carried out in traditional instruction were not effective in changing students' alternative concepts about law related concepts to scientifically accepted ones. This result was also consistent with the results of the studies carried out by Özsoy (2007) and Yıldız (2008). According to the results of the post-test that was applied to both control and experimental group, a statistically significant difference was found in the scores of students trained with teaching activities supported with metaconceptual processes compared to the scores of students trained with traditional instruction ($t(112)=3.525$, $p<0.05$, $d= 0.66$). The effect size value (Cohen's d=0.66) was the great effect size (Cohen, 1988). This result is likely to be related to the activation of the students' metaconceptual processes by using different teaching activities. This is because these activities made more contributions to students' structuring law related concepts accurately compared to the traditional activities. The scientific content included the same subjects in both groups. There were other studies showing that when the activities activating metaconceptual processes were compared with traditional instruction, the students trained with these activities were more successful in conceptual understanding (Ezberci, 2014; Hennessey, 1991; Kırbulut, 2012; Mason, 2001; Nwankwo, Achufusi, & Offiah, 2019; Özsoy, 2007; Saçkes, 2010; Yıldız, 2008; Yürük, 2005; Yürük, Beeth, & Andersen, 2009). Moreover, the conceptual understanding of the students about law related concepts in classrooms where teaching activities were supported with metaconceptual processes was significantly higher than the students' conceptual understanding in classrooms where traditional instruction was carried out. It seems possible that these results are due to the metaconceptual processes that were involved in teaching activities about law related concepts. Vosniadou (2003) stated that the students who were metaconceptually aware of the changes in their ideas were less fragile and sensitive towards learning. Through this study, students in the experimental groups not only realized both their previous and current ideas about law related concepts in social studies course but also, they had the chance to monitor the change in their ideas. During the group and classroom discussions, how an idea worked better in explaining the given cases than the others was understood by the students. Yürük (2005) stated that the students who monitored the changes in their ideas used and kept the scientifically correct ideas for a longer time. In other words, the effects resulting from resistance to changes in alternative ideas about law related concepts were restricted. This study also enabled students to comment on the validity and limitations of the conflicting concepts while they were explaining the law related concepts during metaconceptual evaluation. By this way, students attempted to take the responsibility of their learning. Starting from basic forms of evaluation, students learnt how to justify their judgmental decisions as correct (Yürük, Selvi, & Yakışan, 2017). Metaconceptual teaching activities were organized to facilitate student participation in the classrooms where metacognitive processes were activated. While designing the metaconceptual teaching activities, the teacher did not carry out ordinary teaching activities. The process was two-dimensional. It gave responsibility both to the teacher and the students. In addition, it made students to try to think about the particular concepts. The nature of metaconceptual processes provides motivation for students to structure the concepts that they cannot construct in their minds and that are appropriate to scientific knowledge (Yürük et al., 2009). At this point, it can be said that in classrooms where traditional instruction is used, the teacher organizes lesson without considering the previous knowledge of students. On the other hand, in classrooms where metaconceptual processes are integrated into teaching activities it seems that these activities facilitate thinking and participation of students.

Results about Delayed

Fourteen weeks after the post-test, the conceptual understanding of students about law related concepts in experimental group and control group were measured again and a statistically significant difference was found between the groups ($t(118)=5.294$, $p<0.05$, $d= 0.97$). Compared to control group, the mean of LRCUT scores of the students in experimental group where metaconceptual processes were integrated were statistically higher. The value showing the difference was very close to 0 and a possible explanation

170

for this might be that the possibility of finding this difference by chance was very low. The effect size, which was found as 0.97, was a great effect (Cohen, 1988). Another result was that this effect size value was greater than the effect size calculated just after the teaching process. This possibly means that the students in experimental group where metaconceptual activities were carried out kept their scientifically accepted thoughts that they constructed just after the teaching period and internalized them. In other words, at the end of the metaconceptual activities especially the students who were successful in metaconceptual monitoring learnt to use the alternative concepts that existed in their previous knowledge within the appropriate context during the process. In addition, it is possible to say that the students joined in metaconceptual activities tend to have correct ideas, as their recalling of the alternative concepts are restricted. It was seen that the students in the group of traditional instruction had more alternative law related concepts considering their delayed test scores. On the other hand, when the delayed test was carried out, the study group were on the 8th grade and the concepts in the first subjects of 8th grade Ataturk's Principles and Reforms History Course were similar to the ones acquired during the study. Therefore, the study group associated the concepts on the 8th grade Ataturk's Principles and Reforms History Course with the ones they learnt during the study. This might be because law related abstract concepts are learnt better in time. Moreover, 8th grade students were getting prepared for high school entrance exam, and they solved scanning and recall tests in order to review what they learnt during the summer holiday and used techniques that support learning. All these might be possible reasons for the significant difference between control and experimental group's delayed test results.

Results about Attitude

No significant difference was found between experimental group and control group according to the attitude scores of students about the concepts acquired in social studies course before the implementation of teaching activities ($t(122)=-0.881$, $p>0.05$). This result showed that the attitude of the students in both groups towards the concepts in social studies course were equal to each other before the teaching process. The results of the study carried out by Ezberci (2014) were consistent with this result of the study.

In order to determine whether the attitude scores of the students in experimental group changed after the teaching activities, an independent samples t-test was applied. A significant difference was found between pre and post-SSCCAS ($t(62)=-3.671$, $p<0.05$, $d= 0.36$). The value showing the difference was very close to 0. It can be said that the possibility of finding out this significant difference by chance was very low. The result showed that attitudes of the students was positive when they joined the teaching activities that activated metaconceptual processes. Another data source was the evaluation form given to the students to express their thoughts after all the activities were carried out. The sentences of some students are given here: Tuana said, "I look forward to social studies course because I have fun during the activities" and Ferhat said, "I liked the lesson with the help of the activities and could understand it better". Likewise, Tuğçe said, "The activities helped us learn the concepts better" and Arda said, "I understood the lesson better and benefitted from the activities so much". When the effect size of the difference between the students' pre and post-attitude scores in experimental group was analyzed ($d=0.36$), it was seen to be in the average size (Cohen, 1988). A possible explanation for this effect size value is that activities supported with metaconceptual processes caused almost 36% of difference between the means of students' pre and post-SSCCAS scores. In other words, the result corresponded to the average effect size over the experimental group students' pre and post-SSCCAS mean scores when metaconceptual processes were activated.

A statistically significant difference was found between the attitude scores of the students in the control group before and after the teaching period ($t(60)=-2.087$, $p<0.05$, $d= 0.21$). Post-test mean scores were higher than pre-test mean scores. When the effect size of the difference between the control group students' pre and post attitude scores was analyzed ($d=0.21$), it was seen to be in the average size (Cohen, 1988). This effect size value may be explained by almost 21% of the change in the control group students' pre and post-SSCCAS mean scores because of the traditional instruction. In other words, this result corresponded to an average effect size over the control group students' pre and post-SSCCAS

171

mean scores when traditional instruction was used. This difference might be because of the fact that the teacher integrated his teaching experiences into the teaching activities. In addition, the students' positive attitude towards the teacher affected their attitude towards the concepts in social studies course in a positive way.

Statistically no significant difference was found between the attitude scores of students in control and experimental group after the teaching activities implemented ($t(122)=-1.668$, $p>0.05$). Considering that different teaching methods were applied, the attitude scores of students in experimental group where metaconceptual processes were activated were higher than the attitude scores of the students in control group. The students in experimental group realized that their previous knowledge was invalid; monitored the changes in previous and current knowledge and evaluated these changes through expressing their ideas by giving reasons. All these activities gave particular responsibilities to the students. Although they complained about expressing opinions during the metaconceptual processes of the activities, they did not reflect these complaints on their answers for attitude scale. This situation and the result that post-test attitude scores of the students in experimental group were higher than the attitude scores of students in control group could be attributed to the positive effects of the study. However, in order to find a statistically significant difference between the groups according to attitude scores, a long-term application of metaconceptual activities needs to be carried out. According to the results of current study, the following suggestions can be made for further research:

Further research might investigate epistemological beliefs and ontological assumptions using different alternative concepts supported with metaconceptual processes.
The quality of the metaconceptual processes can be analyzed in terms of the concepts used in different learning domains and disciplines of social studies course. In addition, studies that support motivation and self-sufficiency should be carried out.
Present study analyzed the effectiveness of metaconceptual activities on students. Further research can be carried out with different samples of teachers or teacher candidates.
Longitudinal studies can be carried out by starting the process of concept teaching from families of students and going on with all grade-levels.
The activities supported with metaconceptual processes can be transformed into multimedia applications with the contribution of technology including different disciplines and the effectiveness of them can be measured.
It can be remembered that metacognitive teaching activities impose a number of obligations on both teachers and students. Students can be motivated to express their thoughts in writing.
In teaching activities supported by metaconceptual processes, the process between post-test and delayed test can be better managed.
In order to implement the elements contained in the nature of metaconceptual processes, a social learning environment in which students can follow their own ideas and other ideas and reveal the information in their minds can be created.

Acknowledgements

172

REFERENCES

Akın, A., Abacı, R., & Çetin, B. (2007). Bilişötesi farkındalık envanteri'nin Türkçe formunun geçerlik ve güvenirlik çalışması [The validity and reliability of the Turkish version of the metacognitive awareness inventory]. *Educational Sciences: Theory and Practice*, *7*(2), 7-32. ISSN-1303-0485

Akın, A., & Abacı, R. (2011). *Biliş ötesi [Metacognition]* (First edition). Ankara: Nobel.

Anderson, C. W., & Smith, E. L. (1984). Children's preconceptions and content-area textbooks. In G. G. Duffy, L. R. Rochler, & J. Mason (Eds.), *Comprehension instruction: perspectives and suggestions* (pp. 187–201). New York, NY: Forgman.

Anderson, L. W. (Ed.), Krathwohl, D. R. (Ed.), Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., Raths, J., & Wittrock, M. C. (2001). *A taxonomy for learning, teaching, and assessing: a revision of bloom's taxonomy of educational objectives* (Abridged edition). New York, NY: Longman.

Atwood, R. K., & Atwood, V. A. (1996). Preservice elementary teachers' conceptions of the causes of seasons. *Journal of Research in Science Teaching*, *33*(5), 553–563. DOI: 10.1002/(SICI)1098-2736(199605)33:5<553:AID-TEA6>3.0.CO;2-Q

Barnett, M., & Morran, J. (2002). Addressing children's alternative frameworks of the moon's phases and eclipses. *International Journal of Science Education*, *24*(8), 859–879. DOI: 10.1080/09500690110095276

Barton, K. C. (2010). Providing elementary teachers with experience of children's thinking in social studies. In E. E. Heilman, R. F. Amthor, & M. T. Missias (Eds.), *Social studies and diversity education: What we do and why we do it* (First edition, pp. 312-315). New York, NY: Routledge, Taylor & Francis.

Beal, C., Bolick, C. M., & Martorella, P. H. (2009). *Teaching social studies in middle and secondary schools* (Fifth edition). Boston, MA: Pearson Education.

Beeth, M. E. (1998). Teaching for conceptual change: using status as a metacognitive tool. *Science Education*, *82*(3), 343- 356. DOI: 10.1002/(SICI)1098-237X(199806)82:3<343:AID-SCE3>3.0.CO;2-C

Bell, B. (1993). *Children's science, constructivism and learning in science*. Victoria: Deakin University.

Brown, A. L. (1978). Knowing when, where, and how to remember: a problem of metacognition. In R. Glaser (Ed.), *Advances in instructional psychology*. Hillsdale, NJ: Lawrence Erlbaum.

Carey, S. (2009). *The origin of concepts*. New York, NY: Oxford University Press.

Cheng, M. F. (2012). *The role of metaconceptual evaluation in fifth grade students' construction of explanatory models of magnetic phenomena*. (Unpublished doctoral dissertation), University of Illinois at Urbana-Champaign, Illinois.

Chi, M. T. H. (2008). Three types of conceptual change: belief revision, mental model transformation, and categorical shift. In S. Vosniadou (Ed.), *Handbook of research on conceptual change* (pp. 61-82). Hillsdale, NJ: Erlbaum.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (Second edition). Hillsdale, NJ: Lawrence Erlbaum Associates.

Creswell, J. W. (2012). *Educational research: planning, conducting, and evaluating quantitative and qualitative research* (Fourth edition). Boston: Pearson Education.

Crocker, L., & Algina, J. (2008). *Introduction to classical and modern test theory*. New York, NY: Holt, Rinehart and Winston.

Çokluk, Ö., Şekercioğlu, G., & Büyüköztürk, Ş. (2010). *Sosyal bilimler için çok değişkenli istatistik: SPSS ve Lisrel uygulamaları [Multivariate statistics for social sciences: SPSS and Lisrel applications]* (First edition). Ankara: Pegem Akademi.

Delgado, C. (2015). Navigating tensions between conceptual and metaconceptual goals in the use of models. *Journal of Science Education and Technology*, *24*(2-3), 132-147. DOI: 10.1007/s10956-014-9495-7

Demir, M. (2010). *Üstkavramsal faaliyetlerle zenginleştirilmiş kavramsal değişim metinlerinin fen bilgisi öğretmen adaylarının kuvvet ve hareket konularını anlamalarına etkisi [The effect of conceptual change texts enriched with metaconceptual processes on preservice science teachers' conceptual understanding about force and motion]*. (Unpublished master's thesis). Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

diSessa, A. A. (1993). Toward an epistemology of physics. *Cognition and Instruction, 10*(2–3), 105–225. DOI: 10.1080/07370008.1985.9649008

diSessa, A. A. (2008). A Bird's-eye view of the "pieces" vs. "coherence" controversy (from the "pieces" side of the fence). In S. Vosniadou (Ed.), *International handbook of research on conceptual change* (First edition, pp. 35–60). New York, NY: Routledge.

Dove, J. E. (1998). Students' alternative conceptions in Earth science: a review of research and implications for teaching and learning. *Research Papers in Education*, *13*(2), 183–201. DOI: 10.1080/0267152980130205

Driver, R., Guesne, E., & Tiberghien, A. (1985). *Children's ideas in science*. U.K.: Open University Press.

Duit, R., Treagust, D. F., & Widodo, A. (2008). Teaching science for conceptual change: theory and practice. S. Vosniadou (Ed.), *International handbook of research on conceptual change* (pp. 629–646). New York, NY: Routledge.

Ezberci, E. (2014). *Üstkavramsal faaliyetleri aktif hale getirici etkinliklerle desteklenmiş 5E öğrenme döngüsü modelinin 7. sınıf öğrencilerinin Ay'ın evreleri konusundaki kavramsal anlamalarına etkisi [The effect of 5E learning cycle model supported with metaconceptual processes on 7th grade students' understanding of Moon phases]* (Unpublished master's thesis). Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

Farris, P. J., & Whealon, T. (2012). Social studies and integrated instruction: a look at social studies. P. J. Farris. (Ed.). *Elementary and middle school social studies: an interdisciplinary, multicultural approach* (Sixth edition). Long Grove, Illinois: Waveland Press.

Farris, P. J., Kuhrt, B. L., Sandburg, C., & Werderich, D. E. (2012). Facilitating learning through strategic instruction in social studies. P. J. Farris. (Ed.). *Elementary and middle school social studies: an interdisciplinary, multicultural approach* (Sixth edition). Long Grove, Illinois: Waveland Press.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental ınquiry. *American Psychologist*, *34*(10), 906–911. DOI: 10.1037/0003-066X.34.10.906

Fraenkel, J., Wallen, N., & Hyun, H. (2011). *How to design and evaluate research in education* (Eight edition). New York, NY: The McGraw-Hill.

Garner, R. (1987). *Metacognition and reading comprehension.* Norwood, NJ: Ablex.

Georghiades, P. (2004). Making pupils' conceptions of electricity more durable by means of situated metacognition. *International Journal of Science Education*, 26, 85-99. DOI: 10.1080/0950069032000070333

Gilbert, J. K., Osborne, R. J., & Fensham, P. J. (1982). Children's science and ıts consequences for teaching. *Science Education*, *66*(4), 623-633. DOI: 10.1002/sce.3730660412

Goertz, G. (2006). *Social science concepts: a user's guide.* Princeton, NJ: Princeton University Press.

Gravetter, F. J., & Wallnau, L. B. (2007). *Statistics for the behavioral sciences* (Seventh edition). Belmont, CA: Thomson Wadsworth.

Gravetter, F. J., & Wallnau, L. B. (2014). *Essentials of statistics for the behavioral sciences*. (Eighth edition). Belmont, CA: Wadsworth, Cengage Learning.

Güneş, B. (Ed.). (2017). *Doğru bilinen yanlışlardan, yanlış bilinen doğrulara: Fizikte kavram yanılgıları [From well-known mistakes to wrong-known truths: Misconceptions in physics].* Ankara: Palme Yayıncılık.

Güriz, A. (2011). *Hukuk felsefesi [Philosophy of law]* (Nineth edition). Ankara: Siyasal Kitabevi.

Hall, K. L. (1993). *The power of comparison in teaching about constitutionalism, law and democracy* (Reports, pp. 1–24). U.S.:United States Constitution, ERIC ED 369 727.

Harris, K. R., Graham, S., Brindle, M., & Sandmel, K. (2009). Metacognition and children's writing. In D. J. Hacker, J. Dunlosky, & A. C. Graessser (Eds.), *Handbook of metacognition in education* (First published, pp. 131–153). New York, NY: Routledge.

Hartman, H. J. (2002a). Developing students' metacognitive knowledge and skills. H. J. Hartman (Ed.). *Metacognition in learning and instruction*: *theory, research and practice*. (Second printing, pp. 33–68). The Netherlands: Kluwer Academic.

Hartman, H. J. (2002b). Teaching metacognitively. In H. J. Hartman (Ed.), *Metacognition in learning and instruction: theory, research and practice* (Second printing, pp. 149–172). Netherlands: Kluwer Academic.

Helm, H. (1980). Misconceptions in physics amongst South African students. *Physics Education*, *15*, 92–105.

Hennessey, M. G. (1991). *Analysis of conceptual change and status change in sixth-graders' concepts of force and motion*. (Unpublished dissertation). University of Wisconsin-Madison.

Hennessey, M. G. (1999). *Probing the dimensions of metacognition: Implications for conceptual change teaching-learning*. Paper presented at the annual meeting of the National Association for Research in Science Teaching. Boston, MA.

Hennessey, M. G. (2003). Metacognitive aspects of students' reflective discourse: implications for intentional conceptual change teaching and learning. In G. M. Sinatra & P. R. Pintrich (Eds.), *Intentional conceptual change* (pp. 105–134). Mahwah, NJ: Lawrence Erlbaum.

Hewson, P. W. (1981). A conceptual change approach to learning science. *European Journal of Science Education*, *3*(4), 383–396. DOI: 10.1080/0140528810304004

Hewson, P. W., & Hewson, M. G. A'B. (1984). The role of conceptual conflict in conceptual change and the design of science instruction. *Instructional Science*, *13*(1), 1–13. DOI: 10.1007/BF00051837

Hewson, P. W., Beeth, M. E., & Thorley, N. R. (1998). Teaching for conceptual change. In B. J. Fraser & K. G. Tobin (Eds.), *International handbook of science education* (pp. 199–218). Netherlands: Kluwer Academic.

Huang, K. (2011). *Metaconceptually-enhanced simulation-based inquiry learning: Effects on the 8th grade students' conceptual change and science epistemological beliefs.* (Unpublished dissertation). University of Oklahoma, Norman, Oklahoma.

174

Kalaycı, Ş. (2010). *SPSS uygulamalı çok değişkenli istatistik teknikleri [Multivariate statistical techniques with SPSS]* (Fifth Edition). Ankara: Asil.

Kepenekci, Y. K. (2011). Eğitim yöneticilerinin hukuk eğitimi [Education of educational administrators' about law]. *Ankara University Journal of Educational Sciences, 44*(1), 1-16. DOI: 10.1501/Egifak_0000001213

Kepenekci, Y. K., & Taşkın, P. (2017). *Eğitim hukuku [Law of Education]*. Ankara: Siyasal Kitabevi.

Kırbulut, Z. D. (2012). *The effect of metaconceptual teaching instruction on 10th grade students' understanding of states of matter, self-efficacy toward chemistry, and the nature of metaconceptual processes.* (Unpublished doctoral dissertation). Middle East Technical University, Ankara.

Kırbulut, Z. D., Uzuntiryaki-Kondakçı, E., & Beeth, M. E. (2016). Development of a metaconceptual awareness and regulation scale. *International Journal of Science Education*, *38*(13), 2152-2173. DOI: 10.1080/09500693.2016.1230791

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (Third edition). New York, NY: The Guilford Press.

Krippendorff, K. (2004). *Content analysis: an introduction to its methodology* (Second edition). Thousand Oaks, CA: Sage.

Kun, H. (2011). *Metaconceptually-enhanced simulation-based inquiry learning: effects on the 8th grade students' conceptual change and science epistemological beliefs*. (Unpublished doctoral dissertation). University of Oklahoma, Norman, Oklahoma.

Luque, M. L. (2003). The role of domain-specific knowledge in intentional conceptual change. In G. M. Sinatra & P. R. Pintrich (Eds.), *Intentional conceptual change*. Mahwah, NJ: Lawrence Erlbaum Associates.

Mason, L. (2001). Introducing talk and writing for conceptual change: a classroom study. *Learning and Instruction*, *11*(4-5), 305-329. DOI: 10.1016/S0959-4752(00)00035-9

Metcalfe, J., & Shimamura, A. P. (1994). *Metacognition: knowing about knowing.* Massachusetts: A Bradford Book, The MIT Press.

Naylor, D. T. (1981). Educating for citizenship with law-related education. *Theory into Practice*, *20*(3), 194–198. DOI: 10.1080/00405848109542952

Nelson, M. R. (1998). *Children and social studies: creative teaching in the elementary classroom* (Third edition). Orlando, FL: Hartcourt Brace College.

Novak, J. (1987). *Proceedings of the second international seminar on misconceptions in science and mathematics. Ithaca*, New York: Cornell University.

Nwankwo, M. C., Achufusi, N., & Offiah, F. C. (2019). Effect of metaconceptual teaching intervention on students' conceptual understanding in physics. *International Journal of Science and Research* (IJSR), *8*(5), 1484-1489. ISSN: 2319-7064

Özsoy, G. (2007). *İlköğretim beşinci sınıfta üstbiliş stratejileri öğretiminin problem çözme başarısına etkisi [The effect of metacognitive instruction on problem solving achievement of fifth grade primary school students]*. (Unpublished doctoral dissertation). Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

Pallant, J. F. (2005). *SPSS survival manual: a step by step guide to data analysis using SPSS.* Australia: Allen & Unwin.

Pintrich, P. R., Wolters, C. A., & Baxter, G. P. (2000). Assessing metacognition and self-regulated learning. In G. Schraw, & J. C. Impara (Eds.), *Issues in the measurement of metacognition* (pp. 43–97). Lincoln, NE: Buros Institute of Mental Measurement.

Pitts, A. B. (2003). What's in a name: Law-related and civic education. A. R. Poliakoff (Ed.). *Basic education: a journal of teaching and the liberal arts*, *47*(4), 23-27. Washington, D.C.: Council for basic education.

Posner, G. J., Strike, K. A., Hewson, P. W., & Gertzog, W. A. (1982). Accommodation of a scientific conception: toward a theory of conceptual change. *Science Education, 66*(2), 211–227. DOI: 10.1002/sce.3730660207

Saçkes, M. (2010). *The role of cognitive, metacognitive, and motivational variables in conceptual change: preservice early childhood teachers' conceptual understanding of the cause of lunar phases*. (Unpublished doctoral dissertation). University of Ohio State, Ohio.

Saçkes, M., & Trundle, K. C. (2016). Change or durability? The contribution of metaconceptual awareness in preservice early childhood teachers' learning of science concepts. *Research in Science Education*, *46*, 1-17. DOI: 10.1007/s11165-016-9522-1

Schneider, W. (2008). The development of metacognitive knowledge in children and adolescents: major trends and implications for education. *Mind, Brain and Education*, *2*(3), 114- 121. DOI: 10.1111/j.1751-228X.2008.00041.x

Schnotz, W., & Preuß, A. (1999). Task-dependent construction of mental models as a basis for conceptual change. In W. Schnotz, S. Vosniadou & M. Carretero (Eds.). *New perspectives on conceptual change* (First edition, pp. 193–222). Oxford: Pergamon (Elsevier Science).

Schoenfeld, A. H. (1987). What's all the fuss about metacognition? In A. H. Schoenfeld (Ed.), *Cognitive science and mathematics education* (pp. 189–215). Hillsdale, NJ: Lawrence Erlbaum.

Schraw, G. (2002). Promoting general metacognitive awareness. In H. J. Hartman (Ed.), *Metacognition in learning and instruction*: *theory, research and practice.* (Second printing, pp. 3–16). The Netherlands: Kluwer Academic.

Schraw, G., & Moshman, D. (1995). Metacognitive theories. *Educational Psychology Review*, *7,* 351–371. DOI: 10.1007/s10648-017-9413-7

Schwartz, B. L., & Perfect, T. J. (2002). Introduction: toward an applied metacognition. In B. L. Schwartz, & T. J. Perfect (Eds.). *Applied metacognition* (First published). United Kingdom: Cambridge University Press.

Sharma, S. (1996). *Applied multivariate techniques*. United States of America: John Wiley & Sons.

Sinatra, G. M., & Mason, L. (2008). Beyond knowledge: student characteristics influencing conceptual change. In S. Vosniadou (Eds.), *International handbook of research on conceptual change* (First published, pp. 560–582). New York, NY: Routledge.

Sinatra, G. M., & Pintrich, P. R. (2003). The role of intentions in conceptual change learning. In G. M. Sinatra & P. R. Pintrich (Eds.), *Intentional conceptual change* (pp. 1–17). Mahwah, NJ: Lawrence Erlbaum.

Strike, K. A., & Posner, G. J. (1985). A conceptual change view of learning and understanding. In L. H. T. West & A. L. Pines (Eds.), *Cognitive structure and conceptual change* (pp. 211- 231). London: Academic Press.

Şencan, H. (2005). *Sosyal ve davranışsal ölçümlerde güvenilirlik ve geçerlilik [Reliability and validity of social and behavioral measures]* (First edition). Ankara: Seçkin.

Thorley, N. R., (1990). *The role of the conceptual change model in the interpretation of classroom interactions.* (Unpublished dissertation). Wisconsin-Madison University, Wisconsin.

Thyer, B. A. (2012). *Quasi-experimental research designs.* New York: Oxford University Press, Inc.

Treagust, D. F. (1988). Development and use of diagnostic tests to evaluate students' misconceptions in science. *International Journal of Science Education*, *10*(2), 159–169. DOI: 10.1080/0950069880100204

Ülgen, G. (2004). *Kavram geliştirme kuramlar ve uygulamalar [Concept development theories and applications]* (Fourth edition). Ankara: Nobel.

Vosniadou, S. (1994). Capturing and modeling the process of conceptual change. *Learning and Instruction*, *4*, 45–69. DOI: 10.1016/0959-4752(94)90018-3

Vosniadou, S. (2003). Exploring the relationships between conceptual change and intentional learning. In G. M. Sinatra & P. R. Pintrich (Eds.), *Intentional conceptual change* (pp. 373–402). NJ: Lawrence Erlbaum.

Vygotsky, L. (1962). *Thought and language* (E. Hanf-mann & G. Vakar, Trans.). Cambridge, MA: MIT Press.

Wenning, C. J. (2008). Dealing more effectively with alternative conceptions in science. *Journal of Physics Teacher Education Online*, *5*(1), 11–19.

West, L., & Pines, L. (1984). An interpretation of research in 'conceptual understanding' within a sources-of-knowledge framework. *Research in Science Education*, *14*, 47–56. DOI: 10.1007/BF02356790

Yıldız, E. (2008). *5E modelinin kullanıldığı kavramsal değişime dayalı öğretimde üst bilişin etkileri: 7. sınıf kuvvet ve hareket ünitesine yönelik bir uygulama [The effects of metacognition during the instruction based on conceptual change used with 5E model: An application regarding the force and motion subject in the 7th grade].* (Unpublished doctoral dissertation). Dokuz Eylül Üniversitesi Eğitim Bilimleri Enstitüsü, İzmir.

Yıldızlar, M. (2009). *Öğretim ilke ve yöntemleri [Teaching principles and methods]* (First edition). Ankara: Pegem Akademi.

Yürük, N. (2005). *An analysis of the nature of students' metaconceptual processes and the effectiveness of metaconceptual teaching practices on students' conceptual understanding of force and motion*, (Unpublished dissertation). University of Ohio State, Ohio.

Yürük, N. (2007). A case study of one student's metaconceptual processes and the changes in her alternative conceptions of force and motion. *Eurasia Journal of Mathematics, Science & Technology Education, 3*(4), 305–325. DOI: 10.12973/ejmste/75411

Yürük, N. (2014). *Özdüzenlemede üstbiliş [Metacognition in self-regulation.].* G. Sakız (Ed.). *Özdüzenleme: Öğrenmeden öğretime özdüzenleme davranışlarının gelişimi, stratejiler ve öneriler [Self-regulation: development of self-regulation behaviors from learning to teaching, strategies and suggestions]* içinde (p. 28-53). Ankara: Nobel Akademik Yayıncılık.

Yürük, N., & Eroğlu, P. (2016). The effect of conceptual change texts enriched with metaconceptual processes on pre-service science teachers' conceptual understanding of heat and temperature. *Journal of Baltic Science Education*, *15*(6), 693-705. Retrieved from http://oaji.net/articles/2016/987-1482502823.pdf

Yürük, N., Beeth, M. E., & Andersen, C. (2009). Analyzing the effect of metaconceptual teaching practices on students' understanding of force and motion concepts. *Research in Science Education*, *39*(4), 449–475. DOI: 10.1007/s11165-008-9089-6

Yürük, N., Selvi, M., & Yakışan, M. (2017). Investigation of the nature of metaconceptual processes of pre-service biology teachers. *Eurasian Journal of Educational Research*, 68 (2017), 121-150. DOI: 10.14689/ejer.2017.68.7

Zirbel, E. L. (2006). Teaching to promote deep understanding and instigate conceptual change. In *Bulletin of the American Astronomical Society*, *38*, 1220.

TÜRKÇE GENİŞLETİLMİŞ ÖZET

Öğrenciler, öğrenme ortamına bilim insanlarının ortaya koydukları kavramlardan farklı alternatif kavramlarla gelmektedir (Duit, Treagust, & Widodo, 2008). Bu duruma sosyal bilgilerin içerdiği soyut kavramlar da eklendiğinde, süreç bir derece daha güçleşmektedir. Bu noktada öğrencilerin alternatif kavramları değiştirmelerini sağlayacak üstbilişsel faaliyetleri aktif hale getiren etkinliklerin sınıf içinde kullanılması önem kazanmaktadır. Bu öneme vurgu yapan pek çok araştırmacı bulunmaktadır (Cheng, 2012; Delgado, 2015; Demir, 2010; Georghiades, 2004; Hennessey, 1991; Kırbulut, 2012; Kırbulut, Uzuntiryaki-Kondakçı, & Beeth, 2016; Kun, 2011; Mason, 2001; Nwankwo, Achufusi, & Offiah, 2019; Saçkes & Trundle, 2016; Thorley, 1990; Vosniadou, 1994; Vosniadou, 2003; Yıldız, 2008; Yürük, 2007; Yürük et al., 2009; Yürük & Eroğlu, 2016). Yürük (2005) kavram temelli gerçekleştirilen üstbilişsel faaliyetleri 'üstkavramsal' olarak ifade etmiştir. Bir diğer tanıma göre, üstkavramsal düşünme üstbilişin daha geniş bir kategorisidir (Huang, 2011). Üstkavramsal faaliyetler; üstkavramsal farkındalık, üstkavramsal izleme ve üstkavramsal değerlendirme olarak üç kategoriye ayrılmıştır (Yürük, 2005).

Bu çalışmanın amacı, üstkavramsal faaliyetleri aktif hale getirici etkinliklerin geleneksel öğretimle kıyaslanarak 7. sınıf öğrencilerinin sosyal bilgiler dersindeki hukuk konularına ilişkin kavramsal anlamalarına ve sosyal bilgiler dersindeki kavramlara ilişkin tutumlarına etkisini araştırmaktır.

Araştırmada yarı deneysel yaklaşım kullanılmıştır. Thyer'e göre (2012) yarı-deneysel çalışmalar, gerçekleştirilen müdahalelerin mümkün etkilerinin ilk görüntülerinin sağlanması noktasında oldukça güvenli sonuçlara ulaşabilmektedir. Bu çalışmada seçkisiz olmayan örnekleme yöntemlerinden uygun/elverişli örneklem kullanılmıştır. Bu doğrultuda araştırma, bir sosyal bilgiler öğretmeninin derslerini yürüttüğü dört sınıfta uygulanmıştır. Çalışma grubu, deney grubu 58, kontrol grubu 56 olmak üzere toplam 114 yedinci sınıf öğrencisinden oluşmaktadır.

Araştırmanın yürütüldüğü öğrencilere öğretim uygulamasına başlanmadan önce, tamamlandıktan hemen sonra ve tamamlandıktan 14 hafta sonra araştırmacı tarafından geliştirilen sosyal bilgilerdeki hukuk konularıyla ilgili üç aşamalı, çoktan seçmeli bir kavramsal anlama testi olan 'Hukukla İlintili Kavramsal Anlama Testi (HİKAT)' uygulanmıştır. Ayrıca, deney ve kontrol grubundaki öğrencilerin sosyal bilgiler dersinde öğrendikleri kavramlara ilişkin tutum puanlarını belirlemek amacıyla geliştirilen Sosyal Bilgiler Dersinde Öğrenilen Kavramlarla İlgili Tutum Ölçeği (SBKTÖ) öğretim öncesinde ve sonrasında ön test, son test olarak deney ve kontrol gruplarına uygulanmıştır. Belirtilen test ve ölçekler eş zamanlı olarak tüm gruplara uygulanmıştır. Araştırmada gruplar arasındaki karşılaştırmalar yapılırken t-testi kullanılmıştır. Bunun yanı sıra, araştırma kapsamında gerçekleştirilen uygulamaların etki büyüklüğünü belirlemek amacıyla Cohen's *d* katsayısı hesaplanmıştır.

Deney grubunda öğrencilerin üstkavramsal faaliyetlerini aktif hale getirmek için çeşitli öğretim etkinlikleri (poster çizimi, günlük yazımı, kavram haritaları, kavram karikatürleri ve kartları, sınıf ve grup tartışması) sürece dâhil edilmiştir. Kontrol grubunda ise ağırlıklı olarak kullanılan öğretim etkinlikleri ders kitabından metinlerin okutulması ve anlaşılmayan noktaların öğretmene sorulması şeklindedir. Ayrıca ünite sonu değerlendirme sorularının öğrencilerle birlikte cevaplanması da gerçekleştirilen bir diğer etkinliktir. Kontrol grubunda öğrencilere ilgili her üniteden sonra kısa özetlerin verildiği de belirlenmiştir.

Araştırmanın sonucuna göre, deney ve kontrol grubu öğrencilerinin ön test puanlarının istatistiksel olarak birbirine denk olduğu tespit edilmiştir. Öğretim sürecinden sonra ise üstkavramsal öğretim etkinliklerinin uygulandığı öğrenci grubunun, mevcut öğretimin uygulandığı gruptaki öğrencilere göre hukuk konusuyla ilgili kavramsal anlamalarının daha yüksek olduğu belirlenmiştir. Üstkavramsal faaliyetleri aktif hale getirici etkinliklerle derslerin işlendiği öğrencilerin ön ve son HİKAT puanları

177

arasında son test puanları lehine anlamlı farklılık saptanmıştır. Bu durum, farklı düzeyde üstkavramsal faaliyetlerin aktif hale geldiği gruptaki öğrencilerin hukukla ilintili alternatif kavramlarının oransal olarak azaldığını göstermektedir. Mevcut öğretim programı çerçevesinde derslerin yürütüldüğü kontrol grubundaki öğrencilerin ise, ön ve son HİKAT puanları arasında anlamlı bir farkın olmadığı saptanmıştır. Bu sonuç, mevcut öğretim programı çerçevesinde işlenen derslerin, öğrencilerin hukuk konularıyla ilgili alternatif kavramlarını gidermede etkili olmadığını göstermektedir. Çalışma grubundaki öğrencilerin kalıcılık HİKAT sonuçları, üstkavramsal süreçler kullanıldığında öğrencilerin hukuk konusuyla ilgili kavramsal anlamalarını 14 hafta süresince muhafaza ettiklerine işaret etmektedir. Bu sonuç, üstkavramsal süreçleri içeren kavramları öğrencilerin daha uzun sürede zihinlerinde yapılandırdıklarını ortaya koymaktadır. Ancak üstkavramsal faaliyetlerin aktif hale getirildiği gruptaki öğrenciler ile mevcut öğretim programının uygulandığı gruptaki öğrencilerin son test SBKTÖ puan ortalamaları arasında anlamlı bir farklılık bulunamamıştır. Burada ifade edilmesi gereken nokta üstkavramsal süreçlerin kullanıldığı gruptaki öğrencilerin son test SBKTÖ puan ortalamalarının mevcut öğretim programın uygulandığı gruptakilerin son test SBKTÖ puan ortalamalarından daha yüksek bulunmasıdır. Bu durum, öğrencilerin üstkavramsal faaliyetleri aktif hale getiren etkinlikleri uygularken hukuk kavramlarına ilişkin oluşturduğu iş yüküne rağmen ne kadar olumlu tutum geliştirdiklerinin göstergesidir. Buna ek olarak, her iki grubun öğrencilerinin ayrı ayrı ön ve son SBKTÖ tutum puanı ortalamaları arasında anlamlı bir farklılık bulunmuştur.

Genel olarak değerlendirildiğinde, üstkavramsal faaliyetleri aktif hale getiren öğretim etkinlikleriyle derslerin işlendiği öğrencilerin hukuk konularıyla ilgili kavramsal anlamalarının mevcut öğretim programıyla derslerin işlendiği öğrencilerin anlamaları ile kıyaslandığında anlamlı düzeyde daha yüksek olduğu görülmektedir. Elde edilen bu sonuç, alan yazında bulunan daha önceki araştırmaların sonuçlarınca desteklemektedir. Bunun yanı sıra, üstkavramsal süreçlerin kullanıldığı ve mevcut öğretim programının uygulandığı gruptaki öğrencilerin son test SBKTÖ puan ortalamaları arasında anlamlı bir farklılık bulunamamıştır. Ancak, uygulanan farklı öğretim yöntemleri dikkate alındığında üstkavramsal faaliyetlerin çeşitli düzeylerde aktif hale getirildiği gruptaki öğrencilerin, mevcut programın uygulandığı öğrencilere göre son testte daha yüksek tutum puanlı aldıkları belirlenmiştir. Bir başka deyişle, üstkavramsal faaliyetlerin zenginleştirildiği etkinliklerin kavramsal anlama ve tutuma olumlu etkisinin olduğu saptanmıştır.