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The Outcomes of Constructivist Learnıng Envıroments from the Perspectives of Secondary School Students

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Abstract

Constructivist learning environments are those in which individuals absorb knowledge by conducting in-depth research and analysis. In these environments, the individuals are aware of why and how to learn the information, realize their mistakes by testing the knowledge they have learned before and reach new information by correcting these mistakes. The purpose of this research is to determine the secondary school students' levels of perception about constructivist learning environments in terms of different variables (gender, access to a suitable place to study, grade level, and mother and father educational attainment). The research was held in the central district of a province in the Central Anatolia Region in the spring semester of the 2018-2019 academic year. The study group of the research, selected on voluntary basis with simple random method, consists of 205 students; 100 male and 105 female, who continue their education in the 6th, 7th and 8th grades of a secondary school affiliated to the Ministry of National Education. The results of the research revealed that students have a moderate constructivist learning environment perception. It was found that there was no statistically significant difference in their perceptions in terms of gender and grade level.

Keywords: learning environment, constructivist learning, secondary school students

1. Introduction

Education theories strive to provide the best education in terms of their theories, foundations and principles of implementation. The aim of various researches and applications is to increase the superior aspects of the theories using the data obtained. Constructivism, which is one of the learning theories, is frequently mentioned in the literature as an approach based on the nature of information and how the individuals know and configure information. Constructivism is based on an anti-positivist structure and subjectivist paradigm. It has a long history in terms of ontological and epistemological discussions (Özden, 2003) and Socrates is considered the first major constructivist. According to Socrates; teachers and learners reveal, interpret and create the information hidden in their souls by talking to each other and asking questions to one another. Socrates taught the Pythagorean Theorem by asking questions to a slave who had never been trained, revealing the secret information in the slave's mind. Socrates revealed the information existing in the mind of the individual with his questions and enabled the individual to reach the answer (Cevizci, 2012; Sönmez, 2009).

Glasersfeld defines constructivism as "an information theory whose roots are in philosophy, psychology and cybernetics" (Murphy, 1997) and qualifies Giambattista Vico, an 18th century philosophers, as one of the first constructivists. Vico defines constructivism stating, "One who knows something can explain it." (Özden, 2003), which means that knowing is the explanation of how the learner knows that information. The act of knowing does not take place independent of the individual and can be achieved when it is explained. Kuhn, Wittgenstein and Rorty, who are among the 20th century philosophers, advocate for the active participation of the individual in the learning action. These philosophers have focused on the applicability of information rather than its accuracy and stated that it is important for the individual to structure the information originally (Erdem, 2001).Piaget has theorized constructivism in modern sense by laying its philosophical foundations with the concepts of schema (structure), balancing, adaptation and organization. John Dewey, Bruner and Vygotsky are other important thinkers of constructivism (Duffy & Cunningham, 1996; Arslan, 2007; Ergin, 2014). Constructivism, according to these thinkers, is an approach in which learning occurs through individual or social activities by which the learners interpret the subject to be learned (Kutluca, 2013; Bruning, Schraw, & Norby, 2011). In constructivism, which

aims to direct the individuals to new expansions and researches regarding the information and its formation, the individuals create new thoughts and opinions by blending the existing information with the information they acquired in the past. Educationally, constructivism is a learning-centred educational approach 'in which we learn and internalize new information based on old knowledge structures or experiences' (Crowther, 1997). Individuals internalize the information according to themselves because real information is not certain and the measure of reality is the individual itself (Sönmez, 2011).

Learning environments are the study areas that enable students to do research about the problems they face and help them find meaningful solutions by providing the necessary resources for them. On the other hand, constructivist learning environments are those in which learners improve their problem solving skills by constructing knowledge and carry out meaningful activities. In constructivist learning environments, first a well-prepared problem is identified so that learning can occur. Then, similar samples/case studies are presented to the individual. Various conversations, chats and meetings are organized so that individuals can communicate with each other (Wilson, 1996). During these conversations and meetings, the seating orders of the students are designed in a different way according to the method and technique of the lesson by the common consent of the teachers and learners. In order to increase the functionality of the teaching environment, back-to-back arrangement, which is the traditional seating order, is not used. Seating orders such as semi-circle, group work or "U" work are also included, which enables students to take more responsibility in the learning process. With such seating orders, students establish face-to-face communication by implementing strategies such as cooperative learning and problem-based learning, enabling a more effective learning environment (Odacı & Uludağ, 2002; Aykaç, 2005; Sünbül, 2007, Yazıcı, 2009). Constructivist learning environments aim to help learners achieve scientific knowledge understanding and do not see the subject to be learned as a stack of information that must be memorized (Üredi & Üredi, 2009). Learners do research, observation and investigation by interpreting the parts of the overall, make inferences by associating the information they obtain with each other and absorb the information. As a result, they have the opportunity to actively develop their own scientific thinking skills (Şimşek, 2007).

Today, the dominant sense of world is a postmodern one in which the subject/actor is unique, subjectivity is credited and nothing is stable and predictable (Hok-chun, 2002, pp. 56-73). The Ministry of Education in Turkey has started to renew the educational programs since 2005 so that they adapt to changes and modern educational constructions. One of the main objectives of this renewal is to replace the traditional learning environments with constructivist learning environments. In this context, the purpose of this research is to determine the perceptions of secondary school students about constructivist learning environments in terms of different variables. In the research, the answers to the following sub-problems were sought for this main purpose:

- What is the perception level of secondary school students regarding constructivist learning environments?
- What is the perception level of secondary school students on constructivist learning environments in terms of gender?
- What is the perception level of secondary school students on constructivist learning environments in terms of whether they have access to a suitable place to study?
- What is the perception level of secondary school students on constructivist learning environments in terms of grade level?
- What is the perception level of secondary school students on constructivist learning environments in terms of mothers' educational attainment level?
- What is the perception level of secondary school students on constructivist learning environments in terms of fathers' educational attainment level?

2. Method

This research, whose purpose is to determine the perceptions of secondary school students about constructivist learning environments in terms of different variables, was carried out through descriptive survey method. Descriptive surveys are research methods that aim to describe a past or present situation as it is (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz, & Demirel, 2008).

2.1 Study Group

The research was conducted at a public secondary school in the centre of a province in the Central Anatolia Region in the spring term of the 2018-2019 academic year. The study group consists of students who continue their education in the 6th, 7th and 8th grades of the secondary school. The participation in the research was on voluntary basis and the study group who were selected by simple random method covers a total of 205 students, including

100 boys and 105 girls. Include in these subsections the information essential to comprehend and replicate the study. Insufficient detail leaves the reader with questions; too much detail burdens the reader with irrelevant information. Consider using appendices and/or a supplemental website for more detailed information.

2.2 Data Collection Tool

The data of the research were collected through "Personal Information Form" and "Constructivist Learning Environment Scale".

Personal Information Form: The Personal Information Form was prepared by the researchers. In the form, there are variables such as the participants' gender, whether they have access to a suitable place to study, the grade levels and parents' the educational attainment levels.

Constructivist Learning Environment Scale: Constructivist Learning Environment Survey (CLES) was developed by Taylor, Fraser, and Fisher (1997), adapted into Turkish by Küçüközer, Kırtak-Ad, Ayverdi, and Eğdir (2012) and translated into English by 3 different English language experts. Then, the translated versions of the scale were combined within a single form through the panel translation method. In addition, the scale was translated from English to Turkish using the double translation method by 2 English language experts. The scale was evaluated in terms of content validity by 4 field experts and the required corrections were made according to the results of the evaluation. In order to ensure the language equivalence of the scale, the original English form of the scale and its Turkish translation were applied to 36 students studying at the Department of English Language Teaching at the Faculty of Necatibey Education at Balıkesir University at 4-week interval.

Using the data obtained, the Pearson moments multiplication correlation coefficient was examined. The relationship between the total scores of the answers given in Turkish and English forms was found to be 0.728. Since the result showed that the scale's consistency for the application is high, the scale was ready for pilot application. Exploratory factor analysis (AFA) and confirmatory factor analysis (DFA) were performed to determine the construct validity of CLES. In this study, AFA was used to reveal the structure of CLES on Turkish students/the study group/the participants while DFA was used to examine whether the factor structure of the form was confirmed on Turkish students/the study group/the participants (Küçüközer, Kırtak-Ad, Ayverdi, & Eğdir, 2012). Cronbach Alpha coefficient value obtained in this research was calculated as 87.

2.3 Data Analysis

In this research, independent samples t-test was conducted to determine whether the scores of the study group obtained from the scale differed in terms of gender and students' access to a suitable place to study. On the other hand, whether the scores of the study group obtained from the scale differed in terms of grade level and parents' educational attainment levels was examined through one-factor ANOVA analysis for unrelated samples. The statistical analysis of the data obtained from the research was made using the IBM SPSS 24.0 program and the level of significance was accepted as [p = <. 05] in the research. The calculation of the arithmetic mean scores of the responds given by secondary school students to the items in the constructivist learning environment scale was based on the following intervals: Almost never (1.00 <≤1.80), Rarely (1.81 <≤2.60), Sometimes (2.61 <≤3.40), Often (3.41 < ≤4.20), Almost always (4.21 <≤5.00).

2.3.1 Sample Size, Power, and Precision

Along with the description of subjects, give the mended size of the sample and number of individuals meant to be in each condition if separate conditions were used. State whether the achieved sample differed in known ways from the target population. Conclusions and interpretations should not go beyond what the sample would warrant.

2.3.2 Measures and Covariates

Include in the Method section information that provides definitions of all primary and secondary outcome measures and covariates, including measures collected but not included in this report. Describe the methods used to collect data (e.g., written questionnaires, interviews, observations) as well as methods used to enhance the quality of the measurements (e.g., the training and reliability of assessors or the use of multiple observations). Provide information on instruments used, including their psychometric and biometric properties and evidence of cultural validity.

2.3.3 Research Design

Specify the research design in the Method section. Were subjects placed into conditions that were manipulated, or were they observed naturalistically? If multiple conditions were created, how were participants assigned to conditions, through random assignment or some other selection mechanism? Was the study conducted as a between-subjects or a within-subject design?

2.3.4 Experimental Manipulations or Interventions

If interventions or experimental manipulations were used in the study, describe their specific content. Include the details of the interventions or manipulations intended for each study condition, including control groups (if any), and describe how and when interventions (experimental manipulations) were actually administered.

The text size of formula should be similar with normal text size. The formula should be placed in the middle and serial number on the right. For example:

$$a^2+b^2=c^2 \quad (1)$$

3. Results

3.1 Findings Regarding Secondary School Students' Perceptions about Constructivist Learning Environments

Table 1. Descriptive data on the constructivist learning environment scale sub-dimensions

Factor	$\bar{X}$	Ss
Learning the world	3.23	4.49
Learning science	3.43	4.67
Learning to express thoughts	2.94	4.00
Learning to learn	2.70	6.42
Learning to communicate	3.38	4.98
Total	3.13	16.84

In Table 1, considering the arithmetic mean scores of the responds given by secondary school students to the "Constructivist Learning Environment Scale" in terms of the sub-dimensions of the scale, it is revealed that students learn science, communication, the world, expressing their thoughts and learning in sequence. Based on the data, it can be stated that students predominantly learn science, communication, the world and expressing thoughts in constructivist learning environments while they learn to express thoughts and learn to learn at a lower rate.

3.2 Findings Related to the Gender

The research aims to determine secondary school students' level of perception about constructivist learning environments in terms of gender. Accordingly, a t-test was used for independent groups to determine whether the participants' mean scores for the constructivist learning environment scale differed in terms of their genders and the results are given in Table 2.

Table 2. T-Test results and the secondary school students' mean scores for constructivist learning environment scale in terms of gender

Factors	Gender	n	$\bar{X}$	Ss	t	p
Learning the world	Female	116	16.02	4.71	.398	.691
	Male	89	16.27	4.21		
Learning science	Female	116	17.21	4.76	.194	.846
	Male	89	17.08	4.57		
Learning to express thoughts	Female	116	11.69	4.13	.271	.787
	Male	89	11.84	3.85		
Learning to learn	Female	116	16.09	6.98	.289	.773
	Male	89	16.35	5.65		
Learning to communicate	Female	116	17.48	4.84	1.868	.063
	Male	89	16.18	5.09		
Total	Female	116	78.48	18.11	.321	.748
	Male	89	77.72	15.12		

When Table 2 is analysed, it is seen that there is no statistically significant difference between the genders of the secondary school students and their means scores from constructivist learning environment scale not only in the overall scale (t (203) = .321; p> .05) but also in learning the world (t (203) = .398; p>. 05), learning science (t (203) = .194; p> .05), learning to express thoughts (t (203) = .271; p> .05), learning to learn (t (203) = .289; p> .05) and

learning to communicate (t (203) = 1.868; p> .05) factors of the scale.

3.3 Findings Related to Students' Access to a Suitable Place to Study

Another research question examined by the study is "What is the secondary school students' level of perception about constructivist learning environments in terms of access to a suitable place to study?" For this purpose, a t-test was used for independent groups to determine whether there is a difference between secondary school students' mean scores taken from the constructivist learning environment scale and access to a suitable place to study. The results of the analysis are given in Table 3.

Table 3. T-Test results and the secondary school students' mean scores for constructivist learning environment scale in terms of access to a suitable place to study

Factors	A Place to Study	n	$\bar{X}$	Ss	t	p
Learning the world	Yes	176	16.23	4.55	.788	.431
	No	29	15.52	4.13		
Learning science	Yes	176	17.38	4.73	1.742	.083
	No	29	15.76	4.12		
Learning to express thoughts	Yes	176	11.85	3.97	.797	.426
	No	29	11.21	4.19		
Learning to learn	Yes	176	16.31	6.37	.617	.538
	No	29	15.52	6.78		
Learning to communicate	Yes	176	17.09	4.99	1.233	.219
	No	29	15.86	4.88		
Total	Yes	176	78.86	16.85	1.485	.139
	No	29	73.86	16.43		

The data in Table 3 reveal that there is no statistically significant difference between the variable whether students have access to a suitable place to study and their means scores from constructivist learning environment scale in the overall scale (t (203) = .1485; p> .05) and in the factors of the scale such as learning the world (t (203) = .788; p>. 05), learning science (t (203) = .1742; p> .05), learning to express thoughts (t (203) = .797; p> .05), learning to learn (t (203) = .617; p> .05) and learning to communicate (t (203) = 1.233; p> .05).

3.4 Findings Related to Grade Level

The research also investigates secondary school students' level of perception about constructivist learning environments in terms of grade level. In this sense, One-Way Anova test was used to reveal whether there is a difference between the grade levels of the secondary school students and their mean scores from the constructivist learning environment score. The results of the One-Way Anova are given in Table 4.

Table 4. Secondary school students' mean scores for constructivist learning environment scale in terms of grade level and one-way Anova test results

Factor	Grade	n	$\bar{X}$	Ss	VK	KT	sd	KO	F	p	Source of Difference (LSD)
Learning the World	6th Grade	138	16.02	4.50	Inter-groups	13.484	2	6.742	.332	.718	
	7th Grade	38	16.03	4.39	Within Groups	4099.219	202	20.293			
	8th Grade	29	16.76	4.68	Total	4112.702	204				
	Total	205	16.13	4.49							
ng Scienc	6th Grade	138	16.66	4.74	Inter-groups	205.522	2	102.761	4.892	.008*	6-8
	7th Grade	38	17.08	4.68	Within Groups	4242.790	202	21.004			7-8

	8th Grade	29	19.59	3.58	Total	4448.312	204				
	Total	205	17.15	4.67							
Learning to Express Thoughts	6th Grade	138	11.33	3.81	Inter-groups	104.416	2	52.208	3.338	.037*	6-8
	7th Grade	38	12.05	4.38	Within Groups	3159.389	202	15.641			
	8th Grade	29	13.38	4.07	Total	3263.805	204				
	Total	205	11.76	4.00							
Learning to Learn	6th Grade	138	15.75	6.40	Inter-groups	129.986	2	64.993	1.586	.207	
	7th Grade	38	17.84	6.90	Within Groups	8278.814	202	40.984			
	8th Grade	29	16.17	5.71	Total	8408.800	204				
	Total	205	16.20	6.42							
Learning to Communicate	6th Grade	138	16.59	4.91	Inter-groups	115.008	2	57.504	2.349	.098	
	7th Grade	38	16.71	5.00	Within Groups	4944.583	202	24.478			
	8th Grade	29	18.76	5.08	Total	5059.590	204				
	Total	205	16.92	4.98							
Total	6th Grade	138	76.36	17.07	Inter-groups	1764.343	2	882.172	3.178	.044*	6-8
	7th Grade	38	79.71	16.46	Within Groups	56079.969	202	277.624			
	8th Grade	29	84.65	14.79	Total	57844.312	204				
	Total	205	78.15	16.84							

*p<.05.

According to the data in Table 4, it can be stated that there is a statistically significant difference between the secondary school students' grade levels and their mean scores for the constructivist learning environment in the overall scale (F (2-202) = 3.178, p<.05), learning science factor (F (2-202) = 4.892, p<.05) and learning to express thoughts factor (F (2-202) = 3.338, p<.05). Considering the results of multiple comparison test for the overall scale, the difference is found in favour of the students at the 8th grade when compared to those at the 6th grade. As for the learning science dimension, it is seen that the difference is in favour of the students at the 8th grade in comparison with the ones studying at the 6th and 7th grades. In terms of learning to express thoughts factor, the data shows that there is a significant difference between the 6th grade and 8th grade students, and the difference is in favour of the secondary school students studying at the 8th grade. On the other hand, no statistically significant difference is found in the factors of learning the world (F (2-202) =. 332, p>.05), learning to learn (F (2-202) = 1.586, p> .05) and learning to communicate (F (2-202) = 2.349, p>.05).

3.5 Findings Related to the Mother's Educational Attainment Level

The research also seeks for an answer to the research question "What is the perception level of secondary school students on constructivist learning environments in terms of mothers' educational attainment level?" For this purpose, One-Way Anova test was conducted to find out whether there is a difference between the educational attainment levels of the secondary school students' mothers and the students' mean scores from the constructivist learning environment scale. The results of the analysis are given in Table 5.

Table 5. Secondary school students' mean scores for constructivist learning environment scale in terms of mother's educational attainment level and one-way Anova test results

Factor	Mother's Educational Attainment Level	n	$\bar{X}$	Ss	VK	KT	sd	KO	F	p	Source of Difference (LSD)
Learning the World	Primary	37	14.92	5.31	Inter-groups	200.602	4	50.150	2.564	.040*	Primary-University Secondary-University
	Secondary	43	15.53	4.78	Within Groups	3912.100	200	19.561			
	Lycee	52	16.00	4.38	Total	4112.702	204				
	University	63	17.51	3.76							
	Other	10	15.10	3.00							
	Total	205	16.13	4.49							

Learning Science	Primary	37	16.00	4.67	Inter-groups	237.797	4	59.449	2.824	.026*	Primary-University Secondary-University
	Secondary	43	16.60	4.28	Within Groups	4210.515	200	21.053			
	Lycee	52	17.38	4.78	Total	4448.312	204				
	University	63	18.43	4.79							
	Primary	10	14.50	2.76							
	Total	205	17.15	4.67							
Learning to Express Thoughts	Primary	37	11.92	3.76	Inter-groups	133.106	4	33.276	2.126	.079	
	Secondary	43	10.33	3.75	Within Groups	3130.699	200	15.653			
	Lycee	52	11.77	4.00	Total	3263.805	204				
	University	63	12.59	3.99							
	Primary	10	12.00	5.03							
	Total	205	11.76	4.00							
Learning to Learn	Primary	37	16.32	6.03	Inter-groups	123.139	4	30.785	.743	.564	
	Secondary	43	14.77	6.58	Within Groups	8285.661	200	41.428			
	Lycee	52	16.96	6.44	Total	8408.800	204				
	University	63	16.44	6.77							
	Primary	10	16.40	4.79							
	Total	205	16.20	6.42							
Learning to Communicate	Primary	37	17.08	4.85	Inter-groups	209.600	4	52.400	2.161	.075	
	Secondary	43	15.93	5.50	Within Groups	4849.990	200	24.250			
	Lycee	52	16.21	4.54	Total	5059.590	204				
	University	63	18.30	4.68							
	Primary	10	15.50	5.95							
	Total	205	16.92	4.98							
Total	Primary	37	76.24	18.21	Inter-groups	3073.286	4	768.321	2.806	.027*	Primary-University Secondary-University
	Secondary	43	73.16	18.41	Within Groups	54771.026	200	273.855			
	Lycee	52	78.33	15.98	Total	57844.312	204				
	University	63	83.27	15.01							
	Primary	10	73.50	13.40							
	Total	205	78.15	16.84							

When Table 5 is examined, it is seen that there is no statistically significant difference between the students' mean scores of the constructivist learning environment scale in terms of their mothers' educational attainment levels in the factors of learning the world (F (4-200) =. 332, p> .05), learning to learn (F (4-200) = 1.586, p> .05) and learning to communicate (F (4-200) = 2.349, p> .05). However, a statistically significant difference is found in the overall scale (F (4-200) = 3.178, p <.05) and the factors of learning science (F (4-200) = 4.892, p <.05) and learning to express thoughts (F (4-200) = 3.338, p <.05) between the students' mean scores of the constructivist learning environment scale in terms of the mothers' educational attainment level. It is revealed that there is a statistically significant difference between the "Constructivist Learning Environment Scale" between the secondary school students studying in the 6th grade and the secondary school students studying in the 8th grade in favour of the secondary school students studying in the 8th grade. According to the results of multiple comparison test, a result

was obtained in favour of secondary school students studying in the 8th grade between the secondary school students studying in the 6th grade and 7th grade in the science learning dimension. In terms of learning to express thoughts, a result has been reached in favour of secondary school students studying in the 8th grade between secondary school students studying in the 6th grade and secondary school students studying in the 8th grade.

3.6 Findings Related to the Father's Educational Attainment Level

The last research question of this research is "What is the perception level of secondary school students on constructivist learning environments in terms of fathers' educational attainment level?" In line with this research question, One-Way Anova test was conducted to determine if there is a difference between the educational attainment levels of the secondary school students' fathers and the students' mean scores from the constructivist learning environment scale. The results of the analysis are given in Table 6.

Table 6. Secondary school students' mean scores for constructivist learning environment scale in terms of father's educational attainment level and one-way Anova test results

Factor	Mother's Educational Attainment Level	n	$\overline{X}$	Ss	VK	KT	sd	KO	F	P	Source of Difference (LSD)
Learning the World	Primary	23	16.00	5.25	Inter-groups	55.131	4	13.783	.679	.607	
	Secondary	27	14.96	5.41	Within Groups	4057.571	200	20.288			
	Lycee	65	16.52	4.58	Total	4112.702	204				
	University	84	16.30	3.98							
	Primary	6	15.17	2.64							
	Total	205	16.13	4.49							
Learning Science	Primary	23	16.13	4.17	Inter-groups	232.986	4	58.247	2.764	.029	Secondary-Lycee Secondary-University
	Secondary	27	15.26	4.88	Within Groups	4215.326	200	21.077			
	Lycee	65	17.49	4.66	Total	4448.312	204				
	University	84	17.98	4.65							
	Primary	6	14.33	2.42							
	Total	205	17.15	4.67							
Learning to Express Thoughts	Primary	23	12.26	3.37	Inter-groups	101.355	4	25.339	1.602	.175	
	Secondary	27	11.00	4.22	Within Groups	3162.450	200	15.812			
	Lycee	65	11.12	4.30	Total	3263.805	204				
	University	84	12.17	3.74							
	Primary	6	14.33	4.59							
	Total	205	11.76	4.00							
Learning to Learn	Primary	23	16.83	5.39	Inter-groups	90.101	4	22.525	.542	.705	
	Secondary	27	17.26	6.56	Within Groups	8318.699	200	41.593			
	Lycee	65	15.37	6.58	Total	8408.800	204				
	University	84	16.26	6.67							
	Primary	6	17.17	4.45							
	Total	205	16.20	6.42							

Learning to Communicate	Primary	23	16.74	4.84	Inter-groups	147.518	4	36.880	1.502	.203
	Secondary	27	16.63	5.25	Within Groups	4912.072	200	24.560		
	Lycee	65	16.37	4.70	Total	5059.590	204			
	University	84	17.73	4.93						
	Primary	6	13.50	7.04						
	Total	205	16.92	4.98						
Total	Primary	23	77.96	14.33	Inter-groups	871.602	4	217.901	.765	.549
	Secondary	27	75.11	20.38	Within Groups	56972.710	200	284.864		
	Lycee	65	76.88	17.36	Total	57844.312	204			
	University	84	80.43	15.98						
	Primary	6	74.50	15.41						
	Total	205	78.15	16.84						

When Table 6 is examined, between the father's education levels of the secondary school students and the level of asking for help in the learning process, the overall scale (F (4-238) = .522, p> .05) and the avoidance of asking for help, which forms the sub-dimensions of the scale (F (4-238) = .437, p> .05), asking for help (F (4-238) = .1330, p> .05) and asking for superficial help (F (4-238) = .523, p> .05). It was observed that there was no significant difference in terms of. This finding can be interpreted as the effect of father's education levels on secondary school students' levels of seeking help in the learning process.

4. Discussion

Considering the responds of the secondary school students to the constructivist learning environment scale and the personal information form, it is concluded that secondary school students have a moderate level of constructivist learning environment perception. In this context, it can be stated that constructivist learning environments cannot be created in the classroom at the desired level. This result is similar to the findings of the research carried out by Baş (2012). However, the results of this study contradicts with the results of the studies conducted by Pınar-Bal and Doğanay (2009), Belge-Can (2012), Mengi and Schreglman (2013) which indicate that students have a high level of constructivist learning environment perception. These findings are considered important in that they show that teachers are effective in creating constructivist learning environments and that they do not have sufficient knowledge and skills about constructivist learning environments. Because, teachers have important roles in the transition from traditional teaching methods to constructivist teaching environments, the most important of which is the creation of constructivist learning environments (Akar & Yıldırım, 2004; Yalın-Uçar, 2008). While some teachers have a positive attitude towards constructivist approach (Çınar, Teyfur, & Teyfur, 2006; Evrekli, İnel, Balım, & Kesercioğlu, 2009; January, 2012), some others (Gömleksiz & Bulut, 2007; Yapıcı & Leblebicier, 2007; Karadağ, Deniz, Korkmaz, & Deniz, 2008; Acat & Uzunkol, 2010; Eren, 2010; Ünsal, 2013) remain undecided about the implementation of the constructivist approach. In the constructivist learning environments, the social interaction of teachers with students is very important and teachers play an important role in ensuring this interaction. Teachers guide students in organizing the learning environment, selecting appropriate problems to different solutions and communicating these problems to students. They ask questions, presents new information and creates contradictions so that students can form the concepts. They also help students find new learning areas by enabling them to face alternative situations and encourage them to do research. In addition, they enable students to take more responsibility and be effective in the classroom (Brooks & Brooks, 1993; Şimşek, 2004; Hayes, 2005; Şentürk, 2010). However, in the light of the findings of this study, it can be claimed that teachers continue education and training with a traditional approach.

The science learning dimension, which is one of the sub-dimensions of the scale applied in the research, is the dimension with the highest mean score. Unlike traditional methods, the constructivist approach has attracted attention with its emphasis on the subjectivity of information (Demirkaya & Tokcan, 2012). Scientific thinking, which has an important place in today's education system, refers to the individuals' creating hypotheses for the problems they encounter and collecting the information about these hypotheses and putting their minds in a

planned effort to obtain objectively reasonable results (Dökme, 2005). In constructivist learning environments, students should be taught the process of obtaining information, establishing a connection between the information and interpreting this connection rather than transferring the information to individuals.

Learning to express thoughts and learning to learn subscales are the ones with the lowest mean scores. This finding coincides with the results of the studies by Arısoy (2007), Özkal, Tekkaya, and Çakıroğlu (2009) and Atila, Yaşar, Yıldırım, and Sözbilir (2015). The main objective for teaching the lessons given in the education process in the school and in the classroom is to develop the thinking power of individuals (Arslan & Tertemiz, 2004). In constructivist learning environments, students should be able to capture different perspectives and view the world differently. Instead of transferring theoretical information to students, more scientific research should be included in the education process. Students' problem solving skills should be improved and students should be able to express their findings. The frequent renewal of the curriculum, intense curriculum, crowded classroom sizes, lack of awareness of learning to learn, teachers' entering courses in different classes, and the differences in regional, economic and cultural structure can be counted as the reasons for these sub-dimensions to have low mean scores.

The results of the research show that there is no statistically significant difference between gender and the constructivist learning environment mean scores in the overall scale and the factors of learning the world, learning science, learning to express thoughts, learning to learn and learning to communicate. This finding is in line with the results of the studies by Yılmaz (2006), Demirtaş, Oğuz, Üredi, and Akbaşlı (2015) and Aygören and Saracaloğlu (2015). In this sense, it can be stated that there is no relationship between the constructivist learning environment and gender. Similarly, no statistically significant difference is found between students' constructivist learning environment mean scores and their access to a suitable place to study in terms of the overall scale and all the factors of the study, which may be associated with the opinion that students study in similar places.

It is revealed in the research that there is a statistically significant difference between secondary school students' mean scores about constructivist learning environment and their grade levels in the overall scale, learning science factor and expressing thoughts factor, which is in favour of the students at the 8th grade. It can be stated that the difference in favour of the students at the 8th grade results from their preparation for lycee at this grade and their readiness to do further research, questioning and investigating. On the other hand, it is determined that there is no significant difference in the sub-dimensions of learning the world, learning to learn and learning to communicate.

No statistically significant difference is found between secondary school students' mean scores about constructivist learning environment and their parents' educational attainment levels both in the overall scale and all the factors of the scale. In this context, it can be interpreted that there is no relationship between the constructivist learning environment and the educational attainment levels of both parents. In the light of the evaluations, it can be recommended that the number of activities based on constructivist approach should be increased so that the quality of constructivist learning environments can be improved. Also; a similar study may be carried out in different regions, provinces or districts to compare the results

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