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Views of Middle School Students on Homework Assignments in Science Courses

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ABSTRACT: The purpose of the present study was to investigate the views of the students on homework assignments for science courses. Survey method was adopted for this study. The sample for the study was composed of 1584 seventh and eighth grade students from middle schools. The views of the students regarding homework assignments for science and technology courses were collected through a "Student Homework Scale" developed by Deveci and Önder (2013a). The instrument includes three subscales: function, attitude and behaviour. Total scores on the scale were analysed using three subscales. T-test and ANOVA test were used for data analysis. According to the analysis results, it was observed that function scores of female students were higher than for male students when the scores for function, attitude and behaviour subscales were investigated according to gender. Moreover, students who allocated more time for reading, doing homework and research got higher scores in each subscale compared with students who allocated less time. Students who allocated time for private teaching institutions, private courses, TV and PC games had lower behaviour scores than the students who allocated less time for such activities.

KEY WORDS: Homework, science education, views of students.

INTRODUCTION

Homework assignments are required for most middle school children (Pendergast, Watkins & Canivez, 2014). Homework assignments have an important positive effect on education of the students. Many educators believe that homework assignments are supplementary to activities taking place intramurally (Dodson, 2014; Henderson, 1996). Also it has been stated that homework assignments are common and well-known education activities that are used in various courses, cultures and for all abilities (Warton, 2001).

Homework assignments provide opportunities for students to gain thinking skills, researching abilities, communication skills and evaluation proficiencies through organising the results of their research (Çepni & Çil, 2011). Moreover, homework has been seen to be effective in developing student reading skills (Xu, Benson, Mudrey-Camino & Steiner, 2010),

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enhancing learning (Ramdass & Zimmerman, 2011), strengthening the communication between teacher, student and parent (Olympia, Sheridan, Jenson & Andrews, 1994; Van Voorhis, 2004), providing students with good study habits and skills (National Parents Day Coalition, 1998; Cooper, 2001b), informing families about children's education and school (Dinçer & Ulutaş, 2005; Paulu, Lehr & Walne, 2005), providing opportunities for students to be prepared before coming to courses, and reinforcing what is learnt during the course (Cooper, 2001a; Keith & Keith, 2006). It has also been stated that homework assignments are beneficial in producing well-educated students (Cooper, Robinson & Patall, 2006). However, aimlessly and excessively given homework assignments may lead to negative effects (Bennett & Kalish, 2006). Kralovec and Buell (2001) claim that large numbers of homework assignments can negatively affect students' psychological and social development. In addition, homework assignments should be used in both formal and informal evaluation strategies by middle school teachers (White, Ross, Miller, Dever & Jones, 2013).

In Turkey, teaching activities have been designed in a homework assignment format, which can be started at school and continued at home. It is seen that the homework assignments can be organised as performance or project tasks. Performance tasks are studies that require students to use their cognitive, affective and psychomotor abilities and require them to use thinking, problem solving and creativity skills in order to make projections (Mamaç, Ünsal & Yavuz, 2006). Projects are studies that have been organised individually or in groups. Projects can also be conducted in accordance with scientific research steps which aim to solve problems that students encounter in their real lives (Çepni, Ayas, Jhonson & Turgut, 1997). During the education period, regardless of the type of assigned homework assignments (project tasks, performance tasks or other activities) it can be said that the prime aim of educators is to enhance the success of their students.

Studies in the literature claim that science success is related to students' required homework assignments (Büyüktokatlı, 2009; Cooper, Robinson & Patall, 2006; Hizmetçi, 2007; Jones, 2007; Kaplan, 2006; Kumandaş & Kutlu, 2010; Özben, 2006; Sabah & Hammouri, 2007). According to the International TIMSS 1999 and 2007 results, students in Turkey spend more time on homework assignments than students of the most successful countries (Taiwan, Hungary, Japan and South Korea); however, the academic science success of Turkish students was low (Uzun, Bütüner & Yiğit, 2010). It has been stated that there is a positive relationship between the time allocated for the homework and academic success (Gage & Berliner, 1984). Getting low scores in international exams in Turkey indicates that the assigned homework did not provide enough of the expected benefit. This situation could be related to the negative views of students on the assigned homework in science courses. Since exam-based

education was adopted in our country, students may think that the homework assignments are not functional or beneficial for them. Thus, the views of the students on assigned homework in science courses can be seen as important.

It is stated that the attitudes of students and behaviors towards the homework assignments affect their perception (Schunk, 2001; Zimmerman, 2000). Dennis (2007) stated that many teachers think homework is functional. Also, Deveci and Önder (2014) argued that science teachers hold positive opinions on homework assignments. On the other hand, Kukliansky, Shosberger and Eshach (2014) found that a wide range of science teachers held differing beliefs, attitudes and behaviors simultaneously, including both positive and negative views. Thus, it can be highlighted that opinions of science teachers are generally positive regarding homework assignments. At this point the investigation of students' opinions about science homework assignments was becoming more important. In this sense, it is believed that better results will be achieved from the homework assignments by identifying cognitive, affective and psychomotor characteristics of students related to the homework assignments. The aim of this study is to examine the views of the students on the homework assignments in science courses, in terms of gender, grade level and the time spent on different activities (TV, PC games, reading, researching, taking private lessons) during the week.

METHODOLOGY

Design of the Study

Social science methodology relies greatly on survey methods in its research, as surveys have the benefit of gleaning a great deal of knowledge from a broad population (Mathiyazhagan & Nandan, 2010). Survey method is used for describing the situation or quality of a group, case or problems which are to be researched (Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel, 2009; Çepni, 2010; Fraenkel & Wallen, 2005; Karasar, 2009).

Sample

The population of the research was composed of seventh and eighth grade middle school students in Osmaniye city centre. The research was conducted during the 2010 - 2011 academic year. The sample included 1584 students from the central middle schools. The scope of education performed in the schools was uniform and the content provided by the Ministry of National Education. In this study a typical case sampling method among the purposive sampling methods was adopted for the sample selection. The typical case sampling method requires a determination of a typical case among a large number of cases in the population, and these

cases concern the research problem (Büyüköztürk et al., 2009; Yıldırım & Şimşek, 2008).

Data Collection Tool

In the research, a "Student Homework Scale" was used in order to get the views of students about the homework assignments given in science courses. The Student Homework Scale was developed by Deveci and Önder (2013a). The items on the scale were formed from the literature and the views of three science educators and assessment and evaluation specialist academics. The Student Homework Scale consists of three subscales: function subscale, attitude subscale and behavior subscale. Variance ratios were 42 % for function subscale, 40 % for attitude subscale and 40 % for behavior subscale in The Student Homework Scale. The Cronbach's alpha coefficients were 0.87 for function subscale (12 items), 0.75 for attitude subscale (7 items) and 0.79 for behavior subscale (8 items). Also, the Spearman Brown coefficients were 0.81 for function subscale, 0.65 for attitude subscale and 0.80 for behavior subscale. While the lowest point was 12, the highest point was 60 for function subscale, which consisted of 12 items; while the lowest point was 7, the highest point was 35 for attitude subscale which consisted of 7 items. Finally, while the lowest point was 8, the highest point was 40 for behavior subscale which consisted of 8 items. The final version consisted of 27 items in total. Scale items were 5 point Likert-type. (1= "strongly disagree", 2= "disagree", 3= "neutral", 4= "agree", 5= "strongly agree"). The positive items were scored by beginning from the "strongly agree" item and then continuously as 5, 4, 3, 2, 1. In negative items, this scoring was reversed.

Analysis

First of all, the Kolmogorov-Smirnov Z test was conducted to reveal whether or not the data was distributed normally. The result of this test revealed that there was no significant difference ($p > .05$), showing that the data was distributed normally. Therefore, in the study, parametric statistical methods were used for data analysis (Büyüköztürk, 2009; Baştürk, 2010; Çepni, 2010; Özdamar, 2011).

FINDINGS

In this part of the research, the demographic features of students were introduced, and statistical findings related to student views on assigned homework in science courses were presented in terms of significance of gender and grade level. Also, statistical findings on the views of the students on homework were placed according to non-educational media and

games (TV watching and computer games), research for homework, reading activities, private courses and time allocated to complete the homework.

Descriptive Statistics

822 female students and 762 male students participated in the study, as demonstrated in Table 1. The number of 7th graders was 807 and the number of 8th graders was 777.

Table 1 Distribution of the students into categories

Variable	Category	Frequency (f)
Gender	Female	822
	Male	762
Total		1584
Grade Level	Seventh	807
	Eighth	777
Total		1584

Table 2 Distribution of the students according to the time they spent on different activities in non-school times during a week

Activities / Frequency	Watching TV, Videos, Computer Games	Reading newspaper, magazine, book	Doing Homework	Taking private lessons or going to a private teaching institution	Researching for the HA*
	Frequency (f)	Frequency (f)	Frequency (f)	Frequency (f)	Frequency (f)
Never	58	82	23	710	81
Less than an hour	464	702	333	29	739
Between 1-3 hours	748	605	840	130	583
Between 3-5 hours	210	142	289	289	144
More than 5 hours	104	53	99	426	37
Total	1584	1584	1584	1584	1584

***** The research is to complete the assignments (Internet, library, interviews, visits, literature).

From Table 2, we can see that during one week, 58 students did not spend time on TV, video or PC games, 464 students spent less than an hour, 748 students spent 1-3 hours, 210 students spent 3-5 hours and 104 students spent more than 5 hours. In addition, it was seen that 82 students did not spend time on reading newspapers, magazines or books during one week, 702 students spent less than an hour, 605 students spent 1-3 hours, 142 students spent 3-5 hours and 53 students spent more than 5 hours. Moreover, it was seen that 23 students did not spend time on doing assignments in science education during one week, 33 students spent less than an hour, 840 students spent 1-3 hours, 289 students spent 3-5 hours, and 99 students spent more than 5 hours. Also, it was seen that during one week, 710 students did not spend time on taking private lessons or going to a private teaching institute, 29 students spent less than an hour, 130 students spent 1-3 hours, 289 students spent 3-5 hours and 426 students spent more than 5 hours. Finally, it was seen that during one week, 81 students did not spend time on researching for science education, 739 students spent less than an hour, 583 students spent 1-3 hours, 144 students spent 3-5 hours and 37 students spent more than 5 hours.

Interpretive Statistics

Table 3 shows that girls' function subscale scores are higher than those of boys [t (1582) = 2.873, p=.00]. In terms of the gender category, there was no statistically significant difference in students' attitude subscale scores [t (1582) = .870, p=.38], and behaviour subscale [t (1582) = 1.330, p=.18] scores for the homework assignment given in science education.

Table 3 T-Test results according to the category of gender

Subscales	Gender	N	M	t	df	p
Function	Girl	822	48.86	2.873	1582	.00**
	Boy	762	47.73			
Attitude	Girl	822	28.41	.870	1582	.38
	Boy	762	28.19			
Behavior	Girl	822	29.05	1.330	1582	.18
	Boy	762	28.66			

**p<.01

The findings in Table 4 reveal that seventh grade students' function subscale scores were higher than those of eighth grade students [t (1582) = 4.023, p=.00], seventh grade students' attitude subscale scores were higher than those of eighth grade students [t(1582) = 3.547, p=.00] and seventh grade students' behaviour subscale scores were higher than those of eighth grade students [t(1582) = 5.556, p=.00].

Table 4 T-Test results according to the category of grade

Subscales	Grade	N	M	t	df	p
Function	Seventh	807	49.0950	4.023	1582	.00**
	eighth	777	47.5089			
Attitude	Seventh	807	28.7550	3.547	1582	.00**
	eighth	777	27.8410			
Behavior	Seventh	807	29.6471	5.556	1582	.00**
	eighth	777	28.0495			

**p<.01

As noted in Table 5, the students who spent no time watching TV, videos or playing computer games during the week got higher function [F (4,1579) =2.665, *p*=.03] and attitude subscale [F (4,1579) =2.339, *p*=.05] scores than the students who spent more than 5 hours on these activities. Furthermore, the students who did not spend time watching TV, videos or playing computer games during the week got higher behaviour subscale scores than the students who spent more than 5 hours on them [F (4,1579) =15.090, *p*=.00].

Table 5 ANOVA results according to the category of time spent on watching TV, videos or playing computer games

Subscales	Category	N	M	df	F	p
Function	Never	58	47.0417	4	2.665	.03* (1>5)
	Less than an hour	464	48.8605			
	Between 1-3 hours	748	48.4282			
	Between 3-5 hours	210	48.0473			
	More than 5 hours	104	46.3471			
Attitude	Never	58	27.7326	4	2.339	.05*** (1>5)
	Less than an hour	464	28.5498			
	Between 1-3 hours	748	28.3566			
	Between 3-5 hours	210	28.4285			
	More than 5 hours	104	26.9362			
Behavior	Never	58	29.1972	4	15.090	.00** (1>5)(2>3) (2>4)(2>5) (3>4)(3>5)
	Less than an hour	464	30.1629			
	Between 1-3 hours	748	28.8126			
	Between 3-5 hours	210	27.3225			
	More than 5 hours	104	26.3569			

*p<.05, **p<.01, ***p=.05

Moreover, it can be said that the students who spent less than an hour watching TV, videos or playing computer games got higher behaviour subscale scores than the students who spent 1-3, 3-5 or more than 5 hours on these activities [F (4,1579) =15.090, *p*=.00]. It was also seen that the students who spent 1-3 hours watching TV, videos or playing computer games during the week got higher behaviour subscale scores than the

students who spent 3-5 or more than 5 hours doing so [F (4,1579) =15.090, *p*=.00].

Table 6 gives values regarding the time spent on reading activities. It was seen that the students who spent time on reading activities for 3-5 hours during a week got higher function subscale scores than the students who spent no time or less than an hour on reading [F (4,1579) =7.913, *p*=.00]. Also, the students who spent 1-3 hours on reading activities got higher function subscale scores that the students who spent no time or less than an hour doing so [F (4,1579) =7.913, *p*=.00]. In addition, the students who spent 3-5 hours on reading activities got higher attitude subscale scores than the students who spent no time reading [F (4,1579) =3.182, *p*=.01]. Furthermore, the students who spent 1-3 hours on reading activities got higher behaviour subscale scores than the students who spent no time or less than an hour reading [F (4,1579) =5.804, *p*=.00]. Finally, the students who spent 3-5 hours for reading activities got higher behaviour subscale scores than the students who spent no time reading [F (4,1579) =5.804, *p*=.00].

Table 6 ANOVA results according to the category of the time spent on reading activities

Subscales	Category	N	M	df	F	p
Function	Never	82	45.2885	4	7.913	.00** (3>1) (3>2) (4>1) (4>2)
	Less than an hour	702	47.6048			
	Between 1-3 hours	605	49.1973			
	Between 3-5 hours	142	49.8960			
	More than 5 hours	53	48.1542			
Attitude	Never	82	27.0316	4	3.182	.01* (4>1)
	Less than an hour	702	28.0168			
	Between 1-3 hours	605	28.5945			
	Between 3-5 hours	142	29.0322			
	More than 5 hours	53	28.8887			
Behavior	Never	82	27.4411	4	5.804	.00** (3>1) (3>2) (4>1)
	Less than an hour	702	28.2813			
	Between 1-3 hours	605	29.5469			
	Between 3-5 hours	142	29.6032			
	More than 5 hours	53	28.9921			

*p<.05, **p<.01

Table 7 shows that the students who spent more than 5 hours, between 3-5 hours, between 1-3 hours or less than one hour doing homework during a week got higher function subscale scores than the students who spent no time on homework [F (4,1579) =9.880, *p*=.00]. It was also seen that the students who spent more than 5 hours, between 3-5 hours and between 1-3 hours doing homework during the week got higher function subscale scores than the students who spent between 1-3 hours on homework [F (4,1579) =9.880, *p*=.00].

Table 7 ANOVA results according to the category of the time spent on doing assignments

Subscales	Category	N	M	df	F	p
Function	Never	23	41.5678	4	9.880	.00** (2>1) (3>1) (4>1) (5>1) (3>2) (4>2) (5>2)
	Less than an hour	333	46.8091			
	Between 1-3 hours	840	48.5499			
	Between 3-5 hours	289	49.4727			
	More than 5 hours	99	49.6060			
Attitude	Never	23	24.1930	4	5.724	.00** (2>1) (3>1) (4>1) (5>1)
	Less than an hour	333	27.6887			
	Between 1-3 hours	840	28.5398			
	Between 3-5 hours	289	28.4875			
	More than 5 hours	99	28.8338			
Behavior	Never	23	25.0048	4	7.854	.00** (3>1) (4>1) (5>1) (3>2) (4>2)
	Less than an hour	333	27.8408			
	Between 1-3 hours	840	28.9716			
	Between 3-5 hours	289	29.9092			
	More than 5 hours	99	29.2299			

**p<.01

The students who spent more than 5 hours, between 3-5 hours, between 1-3 hours and less than one hour doing homework during the week got higher attitude subscale scores than the students who spent no time on homework [F (4,1579) =5.724, *p*=.00]. The students who spent more than 5 hours, between 3-5 hours and between 1-3 hours for doing assignments during the week got higher behaviour subscale scores than the students who spent no time on homework [F (4,1579) =7.854, *p*=.00]. Finally, the students who spent more than 3-5 hours and between 1-3 hours on doing homework during the week got higher behaviour subscale scores than the students who spent less than one hour on homework [F (4,1579) =7.854, *p*=.00].

As seen in Table 8, the students who spent no time on taking private lessons or going to a private teaching institute got higher behaviour subscale scores than the students who spent more than 5 hours doing so [F (4,1579) =4.747, *p*=.00].

As shown in Table 9, the students who spent more than 5 hours, between 3-5 hours, between 1-3 hours and less than one hour on researching for the assignment during the week got higher function subscale scores than the students who spent no time on research [F(4,1579)=15.371, *p*=.00]. It was also seen that the students who spent more than 3-5 hours and between 1-3 hours on researching for the assignment during the week got higher function subscale scores than the students who spent less than an hour on research [F(4,1579)=15.371, *p*=.00].

Table 8 ANOVA results According to the category of the time spent for taking private lessons

Subscales	Category	N	M	df	F	p
Function	Never	710	48.0019	4	.959	.43
	Less than an hour	29	49.6617			
	Between 1-3 hours	130	48.1314			
	Between 3-5 hours	289	48.9301			
	More than 5 hours	426	48.3910			
Attitude	Never	710	28.4763	4	.536	.71
	Less than an hour	29	27.8772			
	Between 1-3 hours	130	28.0831			
	Between 3-5 hours	289	28.3764			
	More than 5 hours	426	28.0738			
Behavior	Never	710	29.3840	4	4.747	.00* (1>5)
	Less than an hour	29	30.4628			
	Between 1-3 hours	130	29.0878			
	Between 3-5 hours	289	28.6398			
	More than 5 hours	426	27.9704			

*p<.05

Table 9 ANOVA results according to the category of the time spent on researching for the assignment

Subscales	Category	N	M	df	F	p
Function	Never	81	42.9488	4	15.371	.00* (2>1) (3>1) (4>1) (5>1) (3>2) (4>2)
	Less than an hour	739	47.7511			
	Between 1-3 hours	583	49.3551			
	Between 3-5 hours	144	49.2288			
	More than 5 hours	37	51.4635			
Attitude	Never	81	25.4785	4	10.931	.00* (2>1) (3>1) (4>1) (5>1) (3>2)
	Less than an hour	739	27.9084			
	Between 1-3 hours	583	29.0273			
	Between 3-5 hours	144	28.9363			
	More than 5 hours	37	28.6457			
Behavior	Never	81	25.7031	4	13.228	.00* (2>1) (3>1) (4>1) (5>1) (3>2) (5>2)
	Less than an hour	739	28.3127			
	Between 1-3 hours	583	29.5337			
	Between 3-5 hours	144	30.2676			
	More than 5 hours	37	30.7584			

*p<.05

The students who spent more than 5 hours, between 3-5 hours, between 1-3 hours and less than one hour on researching for the assignment during the week got higher attitude subscale scores than the students who spent no time doing research [F (4,1579) =10.931, *p*=.00]. Furthermore, the students who spent between 1-3 hours on researching for the assignment during the week got higher attitude subscale scores than the students who spent less than an hour on research [F (4,1579) =10.931, p=.00]. The students who

spent more than 5 hours, between 3-5 hours, between 1-3 hours and less than one hour on researching for the assignment during the week got higher behaviour subscale scores than the students who spent no time on research [F (4,1579) =13.228, *p*=.00]. Finally, the students who spent more than 5 hours and 1-3 hours on researching for the homework during the week got higher behaviour subscale scores than the students who spent less than an hour on research [F (4,1579) =13.228, *p*=.00].

DISCUSSION AND CONCLUSION

When the views of students on the functionality of homework assignments given in science education in terms of gender category was examined, it was seen that the views of female students about the functionality of assignments were more positive. However, attitudes of students towards the homework assignments and behaviours in homework practices given in science education indicated similarity in terms of gender. Most of the studies found that the female students' attitudes towards homework assignments were more positive than those of male students (Barnes, 2001; Benli & Sarıkaya, 2013; Yeşilyurt, 2006). Öztürk (2010) stated that female students were more successful and had more positive views with regard to Turkish lessons. Similarly, Çavaş (2011) found that female students are more motivated in learning science than male students in middle schools 6-8th grades. In research conducted in the USA (Hines, 2007) it was stated that female students were more positive about homework assignments and willing to undertake more homework assignments than their male counterparts at 6th - 7th grade middle school level. Based on the results of current research, it can be said that female students take non-school activities more seriously and perform them more t5rgfvcarefully than do male students. In the most of the conducted research in Turkey, it is clear that the completion rate of homework on the part of female students is greater than that of male students, and female students' attitude towards homework is more positive than that of male students (Benli & Sarıkaya, 2013; Yeşilyurt, 2006).

Looking at the results in terms of grade level, seventh grade students' views about the functionality of homework assignments, attitudes towards the homework assignments and behaviours for homework practices are more positive than those of eighth grade students. Akdağ (2009) found that sixth grade students have more positive views about homework assignments than seventh grade students. In contrast, Cooper (1989; 2006) emphasized that levels for high grade students are better than for low grade students. The researches indicated that a possible reason for having more negative thoughts towards homework assignments in higher grades than in lower ones can be associated with non-school activities which are not related to their exams. When students pass from middle school to high

school in Turkey, they encounter high school exams. Therefore, middle school students have just begun to take exams into account. This situation could give rise to the fact that eight grade students see homework assignments as being unnecessary.

One of the research results showed that the students who spent less time watching TV, videos or playing computer games during a week had a more positive behaviour and attitude towards homework practices than those who spent more time on these out-of-school activities. In their studies, Searls, Mead and Ward (1985) concluded that students who watch TV for some time do not do their homework assignments. Anderson (1986) also found similar results. The reasons for the difference in the behaviour dimension findings can be that the students who spend time watching TV and playing computer games cannot use their psychomotor skills enough during the homework period. This situation both could be a hindrance to students in terms of fulfilling a duty and could be the reason students postpone homework assignments. In this sense, it could be said that students who spend more time watching TV and playing computer games feel continuously unprepared for operating a regular work schedule. Thus, Erboy and Vural (2010) have specified that computer games bring about changes in the school life of students, and make them feel alienated towards school life over time.

In this research, the another result showed that the students who spent more time on reading activities have more positive thoughts about the functionality of the homework assignments and behaviour for homework practices than the ones who spent less time reading. In their study Kumandaş and Kutlu (2010) found that students who had more books at home raised their attitude scores for performance tasks. Moreover, Searls, Mead and Ward (1985) found that the students who read fewer books did not do their homework. This situation could be attributed to the fact that reading activities are required for homework assignments in terms of science courses. So, it could be said that all kinds of reading activities are developing students in a positive way. When looked at the situation in terms of Turkey, for example, Şahbaz (2012) stated that middle school students went to the library specially to carry out their homework assignments. This can be interpreted to mean that through undertaking homework assignments, students get into the habit of reading, and students who see the purpose of homework assignments are the ones who are satisfied with doing research related to homework assignments.

Looking at another result, the students who spent more time on homework practices had more positive thoughts about the functionality of homework assignments, attitudes towards the homework assignments and behaviours for homework practices than those who spent less time. This situation can be interpreted to mean that students who spent more time on homework assignments found the homework assignments useful.

Otherwise, it could be expected that as the time spent on homework increased, the views of students would be negative. In the study conducted by O'Rourke- Ferrara (1998) it was shown that 78% of middle school students liked doing their homework assignments. The reason for the students who spent more time on the homework assignments not feeling bored could be connected with reading and writing based homework assignments as in other courses. Against this, it could be said that experimental types of homework assignments could be perceived as being more entertaining and instructive and as such, could activate the psychomotor skills of the students. Thus, in Turkey it was reported that, according to both teachers' and students' views, students preferred experimental homework assignments in science courses (Deveci & Önder, 2013b; 2014). Similarly, it was seen that students preferred project homework that enabled them to use their creativity, and experimental homework assignment activities such as hands-on activities (Storz & Hoffman, 2012). When viewed from this angle, Knezek, Christensen, Tyler-Wood and Periathiruvadi (2013) stated that rigorously planned project based activities could be beneficial for middle school students in terms of inquiry-based learning. Therefore, it can be concluded that some of the students enjoy spending time on these kinds of homework in science courses.

One of the research results showed students who spent more time taking private lessons or going to a private teaching institute had more negative behaviours than the ones who spent less time. Batan (2007) found that students who spent no time on taking private lessons or going to a private teaching institute had more positive views than the ones who spent more time on these activities. It could be said that the students who spent more time taking private lessons or going to a private teaching institute may not have had enough time to do their homework assignments and had trouble for this reason. Given that the education system in Turkey is exam-centred, it is well-known that most of the students who are enrolled in all levels of education are supported by private lessons, extra lessons and private teaching institutions. In this regard, students cannot find the extra time needed for homework assignments because of educational experiences outside of school time, which is filled with such training. This situation reflects badly on students' homework assignments in terms of behaviour, and hence negatively affect students' opinions of homework assignments. Aypay and Sever (2015) showed that students who undergo private tutoring feel more burnout in terms of doing homework assignments. When looking at other results with regard to the functionality of homework, students who spend more time researching homework assignments have more positive thoughts about the functionality of homework assignments, and more positive attitudes towards homework assignments and improved behaviour in terms of homework practices than those who spent less time on research.

Spending more time on researching homework assignments might have helped students to realise that they understand the work better.

As a result, it was seen that female students at seventh grade level had more positive views about the homework assignments given in science education. Furthermore, in terms of the time spent on the activities during one week, students who spent less time on activities such as watching TV, videos and or playing PC games, students who spent more time on reading activities, students who spent more time on doing assignments, students who spent less time on taking private lessons or going to a private teaching institute and students who spent more time on researching for the assignments had more positive views about the functionality of assignments, better attitudes towards the assignments and behaviours for homework practices.

Finally, it could be said that opinions of students about the functionality of assignments, attitudes towards the assignments, and behaviours for homework practices become different according to their demographics and various activities allocated to time. When designing homework assignments in science courses, it could be useful to take into consideration variables like gender, grade level, and time allocated to various activities.

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