

# The Relation Between the Motivation and the Attitude Relating to Maths Lesson of 3<sup>RD</sup>, 4<sup>TH</sup> and 5<sup>TH</sup> Grade Students

By

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## Abstract

*The aim of this study is the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> class primary students to determine the relationship between the attitudes and motivations for mathematics. 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> Class primary students in Selçuk town of İzmir reading in public school have been the universe of study. Sampling rate of the universe of the study was conducted in the cluster. 257 students were enrolled in sample from 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> class students. The data of study was developed by the researchers "Mathematics Motivation Scale" and Geban, Ertepinar and others were developed by the "Mathematics Attitude Scale" is used. Developed by the researchers' math lesson motivation scale "of the Cronbach's Alpha value, 0.82, Geban, Ertepinar and the others were developed by the" Mathematics Attitude Scale "value of the Cronbach's alpha, was 0.78. The level of motivation of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students in mathematics and  $\bar{X} = 2.71$  with 84.1% "agree" shape. 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students 'attitudes towards mathematics and  $\bar{X} = 4.21$  with the level of 59.2% "totally agree" shape. There is no significant relationship between 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students in mathematics motivation and attitude ( $r = 0.010$ ).*

**Keywords:** Mathematic lesson, primary 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students, motivation, attitude, relation

## 1. Introduction

Rapid developments in science and technology in our age offer some innovations in education field as well as they affect many fields. The rapid development of information technology has brought about emerging information communities and it has become a necessity for communities to follow new technological developments, to adapt them to themselves and to have new technology in their educational institutions. Today, the fact that computer, being among the new technological systems from the developments related to the educational technology, and which we can describe as "the most effective communication and individual teaching technology", has been involved in educational system had led fundamental changes in educational systems based on inflexible information transfer that has brought new dimensions to the flow of information, and changes in school programmes (Uşun, 2004).

Mathematics teaching provides a wide information and skill equipment that will help individuals understand social interactions and physical world. Mathematics teaching makes individuals gain systematics and a language with which they will be able to analyze and explain various experiences, guess and solve a problem. Besides, it makes creative thinking easier and provides an aesthetic development. Furthermore, it makes the individual's skill of reasoning develop faster by establishing environments in which various mathematical situations are analyzed (Ministry of National Education, 2006; Vatansever, 2007). Mathematics teaching has become more of an issue in terms of developing thinking skill scientifically which is appropriate for current conditions for a student, and the necessity of practising these skills in life in the consideration of positive thinking throughout their lives (Yıldız & Uyanık, 2004). What is desired to make students gain by teaching mathematics is enabling the development of top-level thinking skills such as analyzing the data, reasoning, solving a problem.

According to the results of Mathematics exams done in international level, successes of Turkish students are not sufficient. One of these exams is TIMSS (Trends in International Mathematics and Science Study)

done in 2007. According to the Mathematics test, Turkey was ranked as the number 30 out of 48 countries. In this exam in which the average mathematics point was 500, Turkey got 432 points. According to the report of TIMSS in 1999, Turkey was ranked as the number 31 out of 38 countries and got 429 points out of 487 that was the international average point (Öksüz, 2010).

### ***The Importance of Mathematics Teaching in 3rd, 4th, 5th Grades in Primary School***

Mathematics teaching includes the activities in learning and teaching process of Mathematics. All the activities in this process are based on having the cognitive and top level thinking skills gained. It can be said that educational systems in our age are aimed at teaching the ways to reach the information rather than giving the students available information (Işık & Albayrak & İpek, 2005). This kind of learning requires comprehension and skills for new situations encountered rather than memorizing the information. While today's Mathematics teaching supports developing the concepts and having the top level skills gained, and students comprehending Mathematics in their own understanding, traditional Mathematics teaching rather supports finding a solution by learning the concepts. The aim of teaching Mathematics is to make the individual gain the Mathematical information and skills that are necessary in daily life, to teach him to solve a problem and to make him gain a way of thinking that deals events in the problem solving approach (Altun, 2002). However, scientific studies carried out about the issue has shown that successes of the students at schools in our country are low and this subject are described as unlovely, hard, abstract and boring by most of the students in spite of the ever increasing importance of Mathematics in community life and other branches of science (Yıldız & Uyanık, 2004; Tanyeri & Odabaşı, 2007).

In understanding of today's education, learning Mathematics by understanding has become more and more important. According to Yenilmez and Teke (2008), this new understanding aims at the student's cognitive improvement rather than his ability to solve Mathematics problems. Therefore, although being able to solve Maths problems improve systematic thinking, it does not make students produce new information and have their own understanding of Maths. It can be said that students' interests and attitudes towards Maths are shaped by the ability of using their knowledge in solving problems they encounter (National Council of Teachers of Mathematics [NCTM], 2000). From childhood to adolescence, people learn abstract Maths relations by interacting concrete objects. Students build Mathematical information by examining a model which is appropriate for this information, in other words, they reconstitute it. They cannot directly comprehend abstract relations. The effectiveness of a model depends on the student's ability to form the expected relation from that model. If the students transform the model into different situations, they can realize different relations and get the chance of perceiving them (Olkun & Toluk, 2003).

### ***The Motivation Relating to Mathematics Lesson***

Although the students in the same classroom are similar to each other in many ways, they can behave in lots of different ways. While some of the students especially do their Maths homework, attend the lesson willingly and get good Marks, some others may not attend the lesson and not get good marks. In this case, it can be said that especially students' motivations are very effective. Jere Brophy describe the motivation like this (cited Dellal & Günak, 2009): "Motivation is a conceptual order including taking an action, direction, power, continuity and especially movements towards the aim (...) Motives are hypothetical orders explaining what people do for what reason. Motives sort aims (direct impartiality of certain reasons of the behaviour) from strategies (the method of reaching the aim, so motives are satisfied)." According to Akbaba (2006), motivation is related to "how individuals are behaved and how individuals feel about the job they do" (Kenan, 1996; Akbaba, 2006). The motivation concept includes various internal and external reasons prompting human organism to behave, defining the rage and energy level of these behaviours, directing these behaviours at a certain point and providing continuance and it includes their working mechanisms.

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Motivation is one of the key concepts of learning and for this reason, it is necessary not to ignore it in learning environments. Besides, motivation represents a multidimensional structure rather than a simple and bare structure. People have not only different quantities of the motivation, but also different kinds (Ryan & Deci, 2000; Dede & Yaman, 2008). Motivation encourages the target behaviour and perpetuates it. This is a cognitive description, because individuals set a target and use cognitive processes (e.g. planning and following) and behaviours (e.g. persistency and struggle) to reach the aim (Schunk, 2002, translated from by Sahin, 2009). According to this, motivation is accepted as an important and effective factor on students' creativeness, their way of learning and their academical successes etc. (Dede & Yaman, 2008).

There are various studies about the importance of the motivation in education. In the study named motivation structures affecting academical success in online education carried out by Ergül (2006), it is seen that self-direction, self-observing and motivating are necessary to be successful in online lessons as well as in face to face lessons. In consideration of this study, it is seen how effective individual's motivation and self-confidence are. Üredi and Üredi (2005) analyzed, using MSLQ, how students' self-regulation strategies and motivational consciences affect the power of predicting Maths success. The results of the study has shown that self-regulation strategies and motivational consciences explain 30 % of the total variance about Maths success and that the most powerful predictor variable is the cognitive strategy use. In addition, in the result of the study, it has been observed that the power of predicting Maths success of self-regulation strategies and motivational consciences in male students is higher than in female students. Other studies carried out (Leung & Chang, 1998; Pintrich & Groot, 1990) has supported this finding and shown that self-sufficiency conscience is higher in male students than in female students. In another study carried out by Yaman & Dede (2007), "differences of 2<sup>nd</sup> part of primary school students' motivations for Maths, and Science and Technology lessons have been analyzed according to the variables of gender, level of grade and favorite lesson". In the result of the study, it has been identified that levels of 2<sup>nd</sup> part of primary school students' motivations differ in a meaningful way according to the gender, level of grade and favorite lesson. Çiltaş & Bektaş (2009) carried out a study among 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> grade students studying in the department of primary school teaching in order to identify whether there is a difference in terms of self-regulation skills and motivation levels for Maths lesson. In the result of the study, a meaningful difference in the sub-dimensions of text anxiety, control of learning consciences, task value, focusing on the aim, learning from a friend and searching for help, organizing time and working environment, metakognition self-regulation and repetition of the scale has been found.

### ***The Attitude Relating to Mathematics Lesson***

One of the most important factors affecting students' success in Maths is emotional factors. Therefore, in increasing the success in Maths, it is effective to include explanatory activities for the importance of Maths, activities to make Maths is loved and to increase the attention (Baykul, 2000; Kılıç, 2003). Developing a positive attitude about Maths is related to love Maths and comprehend the importance of studying Maths. In order to make students have positive attitudes towards Math, the teacher should force the students to think according to their level of development and make them believe that success will come in consequence of struggle. Moreover, he should help their self-confidence and sense of responsibility develop by giving them the right of choice in task sharings (Baykul, 2000; Holmes, 1995; Kılıç, 2003).

Mathematics is abstract due to being a mentally created system by human. It can be said it is this abstractness which is a reason for students to find it difficult. However, this difficulty can be resolved or, at least, decreased by making Maths concepts concrete and using concrete devices (Baykul, 2001). In addition, the process of discovering and concept configuration in Maths is the point to be considered. In every stage of education, developing students' skills of discovering and configuration, activities carried out during lessons in a supportive way for this process should be included among the main aims of Maths lessons (Aksoy, 2007; Aktumen, 2007; Kabaca, 2006; Kutzler, 2000; Majewski, 1999; Putz, 1996;

Tuluk, 2007, Aktumen & Kacar, 2008). In the activities of concept configuration and discovering, students' motivation and attitudes towards the lesson will affect it positively.

Various studies have been carried out about the attitude towards Maths. In the study carried out by Nazlıçiçek & Erkin (2002), because a Maths attitude scale, previously developed (Erol, 1989), for high school students included a lot of dimensions and too many matters and lowered their attentions towards the end, a shortened form of the scale in point was developed. For the shortened form of the scale, 25 matters were produced related to three dimensions which are "the importance of Maths", "perceived success level of Maths" and "the attention to Maths lessons". To test the reliability, the survey was applied to 234 students in 2nd grade of primary school. In the second application, the scale was given to 315 primary school students and psychometric features were analyzed again by internal consistency and factor analysis. As a result of the studies, it was decided that newly formed survey could be used to determine students' attitudes towards Maths lesson. In a study carried out by Tural (2005), effects, different from traditional teaching, of primary school Maths teaching using games and activities on students' targets of the programme and attitudes relating to Maths lesson were analyzed. According to the findings as a result of the study, meaningful differences of the targets of the programme levels and attitudes relating to Maths lesson of the control group in which "Traditional Teaching" was applied and of the experimental group in which "Teaching with Games and Activities" was applied were found on behalf of the experimental group. In a study carried out by Ektem & Sünbül (2005), the effect of managing cognitive strategies, applied in the process of problem solving in Maths lesson in 5th grade of primary school, on students' targets of the programme, their managing cognitive skills and their attitudes were analyzed. At the end of the study, according to the pretest and posttest results of the students in experimental and control group, a meaningful difference on behalf of the experimental group was found. In a study carried out by Pehlivan & Köseoğlu (2011), attitudes relating to Maths lesson and academic self-plans of science high school students were analyzed on the basis of gender, level of grade, success status and the faculty they planned to study. According to the results obtained from the study, differences were found on behalf of the male students in terms of their attitudes relating to Maths lesson and their academic self-plans.

### ***The Aim of the Study***

Mathematics is a system which develops individuals' mental skills and provides to express abstract thinking in a systematic way. This makes Mathematics abstract. We encounter Mathematics as one of the fields which students have difficulties in while making it concrete. For this reason, one of the fields which need to be prepared and programmed in the most careful way is Maths. It is vital, in motivating the students, for the teachers giving especially abstract Maths lesson which seems as if it is difficult to understand to use concrete materials, and to make each student actively take part by joining the activities. Classroom teachers should be more attentive while giving especially Maths lesson because students' motivation and developing positive attitudes relating to Maths depend on it. The aim of this study is to reveal the relation between the motivation and the attitudes relating to Maths lesson of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade primary school students.

### ***The Importance of the Study***

Mathematics, being one of the oldest positive sciences, has always been one of the fields which are hard to learn and teach by its abstract nature. In addition to this, Maths educators have not had as many educational materials as in other fields to be able to transfer information to students, especially to make abstract concepts concrete in their minds. Undoubtedly, one of the reasons for a learner in each level to describe it by adjectives like "difficult to understand", "complicated" and "boring" is these difficulties about teaching Maths which few people really understanding it and concerning about teaching it have (Çiftçi, 2006). Mathematics is one of the most important devices which are known to develop thinking. As it is known, the main feature of human separating him from other living beings is his ability to think, make sense out of events and reorganize conditions appropriate for him. Due to this reason, Maths teaching forms one of the most basic elements, or maybe the most basic element of the basic education (Umay, 2003; Yenilmez & Teke, 2008). In solving various problems that we encounter in our daily life, it

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is a necessity for learning Maths as a field developing attitudes, necessary for everyone, like thinking logically and being able to communicate, knowing relations and being able to generalize, being able to think creatively, being able to develop mental freedom, being able to analyze and being able to reason (Altun, 2005).

Using expressive technique in Maths may not be functional all the time. Expressing does not always mean the same with teaching and they do not give the same results. Teaching happens by getting the subject felt and thought. In our present educational system, students' ability to think is suppressed by direct instruction method. What is worse, it is hardly accepted by teachers that student's ability is blunted by this method. In Maths teaching which is shaped by university entrance exams, rules and practical algorithm are presented to the students just like we teach grammar under the name of Turkish teaching. Today, most teachers see Maths success as being able to use formulas, rules and methods instantly, in an appropriate way and find it enough to be able to perform calculating. On the contrary to this, now Maths has been started to be seen as a thinking method beyond being an abstract studying including a pile of formulas, technical information and theorem proof (Schoenfeld, 1985; cited Özsoy, 2005). In other words, providing the student in a productive way, educating him in a way that he will be successful in his life depend not only on his knowledge of the formulas, making the calculations in the right way, but also on the development of his Mathematical understanding and Mathematical thinking. This becomes possible if student's knowledge of operation and knowledge of concepts are balanced by giving importance to concepts and relations in school Maths rather than operational ways of solving (Baki, 1998). For this reason, the more the teachers heightened awareness is about the Mathematical knowledge that students should have, the more the success in a functional sense in point increases (Baki, 2004). It is vital for teachers to teach students Mathematical thinking, especially in the 1<sup>st</sup> grade of primary school when they first encounter Maths, so that students will become more successful, questioning and producing individuals.

### 2. The Method

The relational screening model has been used in the study. The relational screening model is a search model aiming at defining the existence of changing together between two or more variables and/or the level of it (Karasar, 2007).

#### *Universe and Sample*

Universe study consists of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students studying in state schools in the province of Selcuk, in Izmir. The sample selection from universe study has been done by rational set method. 257 students from 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade have been taken to the sample.

**Table 1: Descriptive statistics relating to variables of gender, grade and Maths lesson success mark**

Variables	Category	N	%
Gender	Female	124	48.2
	Male	133	51.8
Grade	Third grade	106	41.2
	Fourth grade	94	36.6
	Fifth grade	57	22.2
Maths success mark	One	5	2,0
	Two	10	3,9
	Three	50	19,5
	Four	50	19,5
	Five	142	55,3

### ***The Data collection tool and the reliability***

“*Motivation scale of Mathematics lesson*” for the study was developed by the researchers. The scale consists of 15 matters and 3 choices in likert form. The 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have been asked to mark one of the choices “3 = I agree”, “2 = I partly agree” and “1 = I don’t agree” which are opposite each matter. The intervals of agreeing degree have been found by using the Formula of  $(n-1: n)$ . In the calculation, interval width between 1 and 3 has been defined as 0.66. Limits for agreeing level of positive matters in the survey are interpreted as; 1.00 - 1.66 “*I don’t agree*”, 1.67 - 2.33 “*I partly agree*” and 2.34 - 3.00 “*I agree*”. In addition to this, there are 9 positive, 6 negative matters in the scale. The negative matters have been turned down during the assessment and coded.

In the attitude scale, “*Attitude Scale relating to Maths*”, likert type with 5 developed by Geban, Ertepinar and others (1994) has been used. The scale consists of 15 matters and 5 choices in likert form. 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have been asked to mark one of the choices “5 = I totally agree”, “4 = I agree”, “3 = I’m indecisive”, “2 = I don’t agree”, and “1 = I never agree” which are opposite each matter. Intervals of agreeing degree have been found by using the formula of  $(n-1: n)$ . In the calculation, interval width between 1 and 5 has been defined as 0.80. Limits for agreeing level of positive matters in the survey are interpreted as; 1.00 - 1.80 “*I never agree*”, 1.81 - 2.60 “*I don’t agree*”, 2.61 - 3.40 “*I’m indecisive*”, 3.41 - 4.20 “*I agree*”, 4.21 - 5.00 “*I totally agree*”. Besides, there are 10 positive, 5 negative matters in the scale. The negative matters have been turned down during the assessment and coded.

Cronbach Alpha value of “*Maths lesson motivation scale*” developed by researchers has been found as 0.82. Content validity of the scale has been carried out by getting expert opinions. Cronbach Alpha value of “*Attitude scale relating to Maths*” developed by Geban, Ertepinar and others (1994) has been found as 0.78.

### ***Analyzing the Datas***

In analyzing the datas obtained at the end of the scale application, “*descriptive statistics*” techniques (frequency, percentage, arithmetic average) and “*nonparametric statistics*” techniques (Mann Whitney U test, Kruskal Wallis analysis), because distribution of datas are not as in normal distribution, have been used. Kolmogorov Simirnov test with single sample has been done to determine whether dependent variable has a normal distribution or not. According to the results obtained, it has been defined that the dependent variable does not have normal distribution [motivation-z:3.071, p: 0.000; attitude-z: 2.520, p: 0.000]. For this reason, Mann Whitney U test and Kruskal Wallis analysis from the nonparametric tests have been used in order to find the relation between the motivation and the attitude relating to Maths, correlation has been used.

## ***3. Findings***

The motivation level of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths lesson is in the way of % 84,1 and  $\bar{X} = 2.71$ , and “*I agree*”. 15,9 % of the motivation level of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths lesson is in the way of “*I partly agree*”, 84,1 % of it is in the way of “*I agree*”.

**Table 2: Frequency, percentage values and contributory level of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students about the motivation level relating to Maths lesson**

The motivation level of 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> grade students relating to Maths lesson	Frequency	%	Contributory LevelKatılım Düzeyi
1.67-2.33	41	15,9	I partly agree
2.34-3.00	216	84,1	I don’t agree
Total	257	100,0	

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That 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students' opinions in the scale about the motivation level relating Maths lesson are in the way of "*I agree*" can be interpreted as 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students are motivated to the Maths lesson. 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students' opinions in the scale about the motivation level of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths lesson have been shown in Table 3.

**Table 3 : Descriptive findings about 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students' opinions of the motivation level of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths lesson.**

					Meaning
Question Survey Question No		N	$\bar{X}$	Sd.	
q1	I do Maths studies or homework for my own benefit.	256	2,89	0,38	<i>I agree</i>
q2	I attend Maths lessons for my own benefit.	256	2,89	0,37	
q3	I listen to things told in Maths lesson for my own benefit.	256	2,88	0,37	
q10	I become happier when I do the homework given in Maths lesson.	256	2,87	0,37	
q12	I become happier when I listen to Maths lesson.	256	2,83	0,38	
q11	I become happier when I attend the Maths lesson.	256	2,83	0,42	
q14	Things I learn in Maths lesson increases my desire to learn.	256	2,82	0,44	
q15	Things I learn in Maths lesson is boring for me.	256	2,81	0,52	
q13	Things I learn in Maths lesson is exciting for me.	256	2,73	0,55	
q8	I attend the Maths lesson because my teacher and family want me to.	256	2,63	0,72	
q7	I do Maths homework because my teacher and family want so.	256	2,56	0,78	
q9	I listen to things in Maths lesson because my teacher and family want so..	256	2,55	0,77	
q5	I attend the Maths lesson, but I don't know what the benefit of it is for me.	256	2,51	0,74	
q6	I listen to the Maths lesson, but I don't know what the benefit of it is for me.	256	2,48	0,75	
q4	I do homework and responsibilities relating to Maths, but I don't know what the benefit of it is for me.	256	2,41	0,76	

3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have given the highest contributory point about the motivation level relating to Maths lesson to the matter "*I do Maths studies or homework for my own benefit*" ( $\bar{X}$  =2,89) and to the matter "*I attend the Maths lesson for my own benefit*" ( $\bar{X}$  =2,89). 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have given the lowest contributory point about the motivation level relating to Maths lesson to the matter "*I do homework and responsibilities relating to Maths, but I don't know what the benefit of it is for me*" ( $\bar{X}$  =2,41). The attitude level relating to Maths lesson of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students is in the way of 59,2 % and  $\bar{X}$  =4.21, and "*I totally agree*." 2,9 % of the motivation level of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths lesson is in the way "I don't agree", 8,2 % is "I'm indecisive.", 30.7 % is "I agree.", and 59.2 % is in the way of "I totally agree".

**Table 4: Frequency, percentage values and contributory levels of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students about the attitude level relating to Maths lesson**

The attitude level of the 3 <sup>rd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> grade students relating to Maths lesson.	Frequency	%	Contributory level
1.81 – 2.60	6	2,9	I don't agree
2.61 – 3.40	21	8,2	I'm indecisive
3.41 – 4.20	79	30,7	I agree
4.21 – 5.00	151	59,2	I totally agree
Total	257	100,0	

That the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students' opinions in the scale about the attitude level of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths lesson are in the way "*I totally agree*" can be interpreted as 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students' attitudes relating to Maths lesson are positive. 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students' opinions in the scale about the attitude level of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating Maths lesson have been shown in the Table 5.

**Table 5: Descriptive findings about the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students' opinions of the attitude level of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths lesson**

Question No	Survey Question	N	$\bar{x}$	Sd.	Meaning	
q5	I would like to learn more about Maths subjects.	256	4,72	0,73	I totally agree	
q11	Maths education is important for us to develop our thinking system.	256	4,72	0,63		
q1	Maths is a field that I like very much.	256	4,65	0,74	I agree	
q10	I would like to learn more about daily events relating to Maths subjects.	256	4,64	0,78		
q7	I attend Maths lessons with pleasure.	256	4,60	0,80		
q4	I like solving the lesson problems about Maths.	256	4,50	1,01		
q2	I like reading books about Maths.	256	4,48	,87		
q8	I would like to have more Maths lessons.	256	4,30	1,11		
q15	I would like to spend most of my studying time on Maths lesson.	256	4,30	1,14		
q12	Maths is important to understand natural events around us.	256	4,30	1,09		
q6	I have trouble while I attend Maths lesson.	256	4,25	1,43		
q9	I get bored while I study Maths.	256	4,23	1,28		
q13	Among other school subjects, Maths seems unlovely to me.	256	4,20	1,32		
q14	Having discussions about Maths subjects does not attract me.	256	3,60	1,63		
q3	Maths does not have an important place in daily life.	256	1,70	1,26		I never agree



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The 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have given the highest contributory point about the attitude level relating Maths lesson to the matters “*I would like to learn more about Maths subjects*” ( $\bar{X}=4,72$ ) and “*Maths education is important for us to develop our thinking system*” ( $\bar{X}=4,72$ ). 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have given the lowest contributory point about the attitude level relating to Maths to the matter “*Maths does not have an important place in daily life*” ( $\bar{X}=1,70$ ). In order to find out whether the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students’ opinions in the scale about the motivation and attitude level of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths lesson differ by the variable of gender or not, Mann Whitney U test has been done. The results have been shown in the Table 6.

**Table 6: The variation by “gender” of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students’ opinions in the scale about the motivation and attitude level of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths lesson (Mann Whitney U Test)**

Level	gender	N	Rank Average	Rank Total	U	p
Motivation level	Female	123	147,75	18173,50	5,688	0,000
	Male	132	109,59	14466,50		
Attitude Level	Female	123	125,12	15389,50	7,764	0,544
	Male	132	130,69	17250,50		

\*  $p>0,05$

As it is seen in the Table 6, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students’ opinions in the scale about the motivation level of 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> grade students relating to Maths lesson differ by the variable “gender” (U=5,688, p: 0,000), but they do not differ about the attitude level (U=7,764, p: 0,544). 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade female students’ motivation for Maths are higher than male students’. In order to find out whether 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students’ opinions in the scale about the motivation and attitude level of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths lesson differ by the variable “grade” or not, Mann Whitney U test has been done. The results have been shown in the Table 7.

**Table 7: The variation by “grade” of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students’ opinions in the scale about the motivation and attitude level of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths lesson (Kruskal Wallis Analysis)**

Level	Grades	n	Rank Average	sd	Chi-Square	p	Variation	
Motivation Level	Third grade	106	111,49	2	10,103	0,006	3-4 /5	
	Fourth grade	94	138,32					
	Fifth grade	56	144,22					
Attitude Level	Third grade	106	135,84	2	8,510	0,014	3-4	
	Fourth grade	94	111,30					4-5
	Fifth grade	56	143,47					

\*  $p<0,05$

As it is seen in the Table 7, because p value is smaller than 0,05, the variation among averages is meaningful [*motivation level*-Chi-Square=10,103, p: 0,006 attitude level- Chi-Square=8,510, p: 0, 014]. In order to define among which grade this variation is, Mann Whitney U Test has been done. The results obtained at the end of the test are seen in the Table 8 below.

**Table 8: Mann Whitney U Test Data showing the variation among the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade student’s opinions in the scale according to “grade” about the motivation and attitude level of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths**

Level	Grades	N	Rank average	Rank total	U	p
Motivation Level	Third grade	106	90,29	9571,00	3,900	0, 007
	Fourth grade	94	112,01	10529,00		
	Third grade	106	74,69	7917,50	2,246	0,010
	Fifth grade	56	94,38	5285,50		
Attitude Level	Third grade	106	109,86	11645,50	3,990	0,015
	Fourth grade	94	89,94	8454,50		
	Fourth grade	94	68,86	6472,50	2,008	0,015
	Fifth grade	56	86,65	4852,50		

\* p>0,05

According to the results of Mann Whitney U Test, it has been understood that there is a meaningful opinion variation in the motivation and attitude level statistically among grades. According to the results of Mann Whitney U Test in the Table 8, it has been found that there is a meaningful variation in the motivation level, among opinions of; third grades and fourth and fifth grades; in the attitude level, among third grades and fourth grades, and among fourth grades and fifth grades. The higher the grade is, the higher the motivation and positive attitude level relating to Maths is. In order to find whether the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students’ opinions in the scale about the motivation and attitude level of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths differ by the variable of success mark of Maths or not, Mann Whitney U test has been done. The results have been shown in the Table 9.

**Table 9: The variation according to “success mark of Maths” of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students’ opinions in the scale about the motivation and attitude level of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths. (Kruskal Wallis Analysis)**

Level	Success mark of Maths	n	Rank average	sd	Chi-Square	p	Variation
Motivation level	One	4	20,62	4	66,156	0,000	1-3 /4 /5
	Two	10	31,75				2-3 /4 /5
	Three	50	89,22				3-4 /5
	Four	50	112,77				4-5
	Five	142	157,72				
Attitude level	One	4	143,62	4	1,909	0, 753	
	Two	10	146,20				
	Three	50	130,58				
	Four	50	117,73				

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Five 142 129,89

\* p<0,05

As it is seen in the Table 9, as p value is smaller than 0,05, the variation among averages is meaningful. [*motivation level*-Chi-Square=66,156, p: 0,000]. In order to define among which success mark of Maths lesson this variation is, Mann Whitney U Test has been done. The results obtained at the end of the test are seen in the Table 10 below.

**Table 10: Mann Whitney U Test Data showing the variation according to “success mark of Maths lesson” among the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students’ opinions about the motivation level of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths**

Level	Success mark of Maths	N	Rank averages	Rank total	U	p
Motivation level	One	4	11,00	44,00	34,000	0,026
	Two	50	28,82	1441,00		
	One	4	5,25	21,00	11,000	0,001
	Four	50	29,28	1464,00		
	One	4	4,75	19,00	9,000	0,001
	Five	142	75,44	10712,00		
	Two	10	17,40	174,00	119,000	0,009
	Three	50	33,12	1656,00		
	Two	10	11,85	118,50	63,500	0,000
	Four	50	34,23	1711,50		
	Two	10	11,35	113,50	58,500	0,000
	Five	142	81,09	11514,50		
	Three	50	44,64	2232,00	957,000	0,042
	Four	50	56,36	2818,00		
	Three	50	59,14	2957,00	1,682	0,000
Five	142	109,65	15571,00			
Four	50	69,40	3470,00	2,195	0,000	
Five	142	106,04	15058,00			

\* p>0,05

According to the results of Mann Whitney U Test, it is understood that there is a statistically meaningful opinion variation among success marks of Maths lesson in the motivation level. According to the results of Mann Whitney U Test in the Table 10, it has been found that there is a meaningful variation in the motivation level of the opinions among the success mark of Maths lesson “one” and two, three, four, five; among the success mark of Maths lesson “two” and three, four, five; among the success mark of Maths lesson “three” and four, five; among the success mark of Maths lesson “four” and five. The higher the success mark got in Maths lesson is, the more the motivation level relating to Maths increases. The relation between the motivation and the attitude of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths has been shown in the Table 11.

**Table 11: The relation between the motivation and the attitude of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths lesson**

		Motivation	Attitude
Motivation	Pearson Correlation	1	0,010
	Sig. (2-tailed)		,874
	N	256	256
Attitude	Pearson Correlation	0,010	1

Sig. (2-tailed)	0,874	
N	256	256

According to the Table 11, there is not a meaningful relation between the motivation and the attitude of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students relating to Maths lesson ( $r=0.010$ ). This finding can be interpreted as the motivation and the attitude relating to Maths lesson are factors which do not affect each other.

#### 4. Discussions and Sugesstions

The motivation level relating to Maths lesson of 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students is in the way of 84,1 % and  $\bar{x}=2.71$ , and “I agree”. This finding can be interpreted as the motivation relating to Maths of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students is high. The 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have given the highest contributory point about the motivation level relating to Maths to the matters “*I do the homework or studies relating to Maths for my own benefit*” ( $\bar{x}=2,89$ ) and “*I attend Maths lessons for my own benefit*” ( $\bar{x}=2,89$ ). This finding can be interpreted as the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade student’s awarenesses relating to Maths lesson are high. The 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have given the lowest contributory point about the motivation level relating to Maths lesson to the matter “*I do the homework and responsibilities relating to Maths, but I don’t know what the benefit of it is for me*” ( $\bar{x}=2,41$ ). This finding can be interpreted as the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade student’s awarenesses about the contribution to learning of the homework relating to Maths are inadequate and this will make it difficult to consolidate the things learnt.

The attitude level relating to Maths lesson of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students is in the way of 59,2 % and  $\bar{x}=4.21$ , and “I totally agree”. This finding can be interpreted as the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have a positive attitude relating to Maths lesson. The 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have given the highest contributory point about the attitude level relating to Maths lesson to the matter “*I would like to learn more about Maths subjects*” ( $\bar{x}=4,72$ ) and “*Maths education is important for us to develop our thinking system*” ( $\bar{x}=4,72$ ). This finding can be interpreted as the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students are open to learning relating to Maths lesson. The 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have given the lowest contributory point about the attitude level relating to Maths lesson to the matter “*Maths does not have an important place in daily life*” ( $\bar{x}=1,70$ ). This finding can be interpreted as the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have realized the importance of maths lesson in daily life by saying “*I never agree*”.

The motivations relating to Maths of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade female students are higher than the male students’ motivations. In a study carried out by Yaman & Dede (2007), it was identified that the motivation levels relating to Maths and Science and Technology lessons of 2<sup>nd</sup> grade students differed in a meaningful way by gender, level of grade and favorite lessons. This result corresponds to the finding of the study. A meaningful variation in the motivation level among the opinions of third grades and, fourth and fifth grades; in the attitude level among the opinions of the third grades and fourth grades, and fourth grades and fifth grades has been found. The higher the grade is, the more the motivation and the positive attitude levels increase. This finding can be interpreted as the higher the grade is, the more the awareness relating to Maths lesson increases. In the motivation level, a meaningful variation of the opinions among the success mark of Maths lesson one and two, three, four, five; among the success mark of Maths lesson two and three, four, five; among the success mark of Maths lesson three and four, five; among the success mark of Maths lesson four and five. The higher the success mark got in Maths is, the higher the motivation level is. This finding can be interpreted as the high success mark got in Maths lesson affects the motivation relating to Maths lesson in a positive way. There is not a meaningful relation between the motivation and the attitude relating to Maths lesson of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students ( $r=0.010$ ). This finding can be interpreted as the motivation and the attitude relating to Maths lesson are factors which do not affect each other.

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According to the findings of the study, these can be suggested: (1) The 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have given the lowest contributory point about the motivation level relating to Maths lesson to the matter “*I do the homework and responsibilities relating to Maths, but I don't know what the benefit of it is for me*” ( $\bar{X}=2,41$ ). What the benefit of homework relating to Maths lesson is, can be emphasised for the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students. (2) The 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students have given the lowest contributory point about the attitude level relating to Maths lesson to the matter “*Maths does not have an important place in daily life*” ( $\bar{X}=1,70$ ). Some practical examples can be given about the importance of Maths in daily life in Maths lessons for the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students. (3) The 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade female students' motivations relating to Maths are higher than the male students'. The reasons why the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade male students' motivations relating to Maths are lower than the female students' can be researched.

### Note

This study was presented as a verbal statement in the “1<sup>st</sup> International Symposium of Participating Teacher Training and Development” organized in the Faculty of Education in Usak University by the General Management of Teacher Training and Development of Ministry of Education and Usak University between the dates 20<sup>th</sup> - 22<sup>nd</sup> September, in 2012.

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