A CASE STUDY OF ELEMENTARY MATHEMATICS TEACHERS' VIEWS OF THEIR AND STUDENTS' TEXTBOOK USAGE AND OF MATHEMATICS TEXTBOOKS' CHARACTERISTICS

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Approval of the Graduate School of Social Sciences

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ABSTRACT

A CASE STUDY OF ELEMENTARY MATHEMATICS TEACHERS' VIEWS OF THEIR AND STUDENTS' TEXTBOOK USAGE AND OF MATHEMATICS TEXTBOOKS' CHARACTERISTICS

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The purpose of this study was to investigate teachers' ways of using mathematics textbooks while planning the lesson and during the lesson, to document teachers' views about elementary students' usage of mathematics textbook during the classroom time and for their homework and teachers' views about mathematics textbooks' characteristics. A case study was conducted in a private elementary school with more class hours for mathematics and six mathematics teachers teaching 4^{th}, 5^{th}, 6^{th}, and 7^{th} grade mathematics in this school participated. Data were collected in the spring semester of 2010-2011 academic year through an interview protocol with 16 main questions addressing teachers' mathematics textbook usage and students' mathematics textbook usage developed for this study by the researcher through the findings and discussions in the

literature. Data analysis was conducted through qualitative methods.

The findings of this study showed that participant teachers expressed both positive and negative views about characteristics of textbook and usage of textbook. All of them stated that the textbook was their main tool for lesson preparations and teaching. They followed the curriculum from textbook and decided what to do, how to do, and when to do. Participants underlined that textbook was an effective helper but it needed improvement in many aspects. The findings also showed that teachers viewed that students did not use their textbook efficiently. All of the teachers expressed that students did not prefer to study from textbook if there were not any assignment or homework. Teachers specified that students could improve studying habits from textbook if teachers could direct them efficiently.

The findings of this study might be useful to prepare more effective lessons for teachers, to give ideas to teachers for guiding their students for effective textbook usage, and to increase the quality of textbooks.

Keywords: Mathematics Textbook, Teachers' Textbook Usage, Students' Textbook Usage, Mathematics Textbook Characteristics.

ÖZ

İLKÖĞRETİM ÖĞRETMENLERİNİN MATEMATİK DERS KİTAPLARINI KULLANMA YOLLARI VE ONLARIN ÖĞRENCİLERİN MATEMATİK DERS KİTAPLARINI KULLANMA YOLLARI VE MATEMATİK DERS KİTABI ÖZELLİKLERİ HAKKINDAKİ GÖRÜŞLERİ

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Bu çalışmanın amacı, matematik öğretmenlerinin ders hazırlığı yaparken ve ders esnasında matematik ders kitaplarını nasıl kullandıklarını araştırmak, öğretmenlerin ilköğretim öğrencilerinin matematik ders kitaplarını sınıf içerisinde ve ödev yaparken nasıl kullandıkları hakkındaki görüşlerini ve matematik ders kitaplarının özellikleri hakkındaki görüşlerini incelemektir. Ankara'da matematik için daha fazla ders saati bulunan bir özel ilköğretim okulunda çalışan ve 4., 5., 6. ve 7. sınıf matematik derslerini öğreten altı öğretmen durum çalışması ile düzenlenen bu çalışmaya katılmıştır. Çalışmanın verileri araştırmacı tarafından konu ile ilgili literatürde bulunan bulgu ve tartışmalara göre geliştirilen 16 ana

sorudan oluşan bir görüşme protokolü ile 2010–2011 bahar döneminde toplanmıştır. Veriler nitel yöntemlere göre analiz edilmiştir.

Araştırmanın bulguları katılımcıların ders kitabı özellikleri ve kitap kullanımı hakkında hem pozitif hem de negatif görüşleri olduğunu göstermiştir. Katılımcıların tamamı ders kitabının ders hazırlığı ve öğretim için ana araç olduğunu belirtmişlerdir. Bulgulara göre katılımcılar müfredatı ders kitabından takip edip neyi, nasıl ve ne zaman yapacaklarına karar verdiklerini ifade etmişlerdir. Katılımcılar ders kitaplarının etkili yardımcılar olduğunun altını çizerken birçok açıdan gelişmeye ihtiyacı olduğunu söylemişlerdir. Bulgular aynı zamanda öğrencilerin ders kitaplarını etkili şekilde kullanamadıklarını göstermiştir. Tüm katılımcılar eğer ders kitabından bir görev ya da ödev verilmemişse öğrencilerin ders kitabından çalışmayı tercih etmediklerini ifade etmişlerdir. Öğretmenler öğrencilerin ders kitabından çalışma alışkanlıklarını öğretmenler etkili yönlendirme yaparlarsa geliştirebileceklerini belirtmişlerdir.

Bu çalışmanın bulguları öğretmenlerin daha etkili dersler hazırlaması, etkili ders kitabı kullanımına öğrencileri yönlendirmeleri için öğretmenlere fikir vermesi ve ders kitaplarının kalitesini artırması için faydalı olabilir.

Anahtar Kelimeler: Matematik Ders Kitabı, Öğretmenlerin Ders Kitabı Kullanımı, Öğrencilerin Ders Kitabı Kullanımı, Matematik Ders Kitaplarının Özellikleri.

To my father
Ahmet Zafer BAŞER

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LIST OF ABBREVIATIONS

ABBREVIATIONS

MONE Ministry of National Education (Milli Eğitim Bakanlığı)

SBS Students' Level Examination (Seviye Belirleme Sınavı)

CHAPTER 1

INTRODUCTION

Textbooks are one of the most used resources by teachers in classrooms (Stodolsky, 1989). They are a vital part of classroom life in all grades of schools. They provide a framework for teachers and students about what will be taught and what will be learned. The intended and enacted curriculum in many classrooms and schools are often defined by grade-specific textbooks. Teachers spend a great deal of their preparation with textbooks and students spend classroom and homework time working with textbook materials (Apple, 1992; Ben-Peretz, 1990). Textbooks support teachers in order to convey the knowledge, organizing the classrooms and materials; moreover, they are the source of activities and drills (Santos, Cruz, & Macias, 2006). In order to shape mathematics instruction, curriculum materials or textbooks have been accepted as the key points of the lesson (Son, 2008).

Textbook could be considered as "a comprehensive learning resource that is in print or electronic form, or that consists of any combination of print, electronic, and non-print materials collectively designed to support a substantial portion of the school curriculum for a specific grade and subject" (OME, 2006, p.6). Maxwell (1985) defines textbooks' role as the organizing centers of the instructional program and the most important part of the classrooms after teachers, students and physical space; because, with the help of textbooks teachers decide what is taught, when it is

taught, and how it is taught. He addresses that textbooks determine the order and the teaching of the content. In other words, textbooks are concrete materials that guide teachers and students about what to do in the lesson (Son, 2008). Thus, textbooks are frequently used in order to organize students' learning (Bruner, 1960; Dow, 1991). In addition, Schmidt, McKnight, and Raizen (1997) describe the role of textbook as the bridge between teachers' plans and intentions and the classroom activities which are also largely determined by teachers' plans. Textbooks bring together a variety of resources and save teachers' time (Sosniak & Stodolsky, 1993).

In Turkish elementary and secondary schools, lessons are prepared according to the curriculum developed by the Ministry of National Education (MONE) (Güleryüz, 1998). However, a well-prepared mathematics program needs qualified teachers, textbooks, and classrooms with technologic equipment to be successful in teaching mathematics to students. Teacher is generally considered as the most important guide for the students in the classroom; however, textbooks serve as the major tools of delivering the content in the class (Lebrun, Lenoir, Laforest, Larose, Roy, Spallanzani & Pearson, 2002). They provide students with a wide range of new and interesting knowledge and experience (Chambliss & Calfee, 1998). They are the source of activities and drills for teachers and students (Amit & Freid, 2002). These show that students are likely to spend too much time with textbooks during the instructional activities and homework. Therefore, mathematics textbooks can be considered as an integrated part in a students' education life before the lesson, during the lesson, and after the lesson.

A number of studies have investigated students' textbook usage strategies. Many studies have concluded that most of the students do not consider the textbook as a critical component of the learning process (Berry et. all, 2010). Philips and Philips (2007) have found that academically successful students consider the assigned homework of the textbook as a primary goal. However, they found that the weaker students postpone the studying and stop studying the textbook homework if the homework becomes more difficult. Teachers seem to be the key in guiding students to study the textbook content as Brown (1973) have addressed that teachers' request of studying from textbook has an important effect on students to direct them to study from the textbooks. Yet, it has also been observed that students cannot benefit from their textbooks sufficiently (Çetin & Mahir, 2005).

Because of the importance of textbooks on learning, researchers have since examined teachers' textbook usage (Remillard, 1999). Studies have addressed that many teachers use the textbooks according to their own preference and understanding. They do not have a certain and common style. Shulman (1987) stated that teachers transform curricular contents of the textbook according to their own understanding. This transformation is based on teachers' expectations, but not the educational authorities' expectations. For example, Freeman and Porter (1989) observed that teachers prefer to use the parts offering students exercises more than teachers' directives, review sections, and additional parts. Teachers generally tend to focus on topics of the textbooks; they skip teaching suggestions parts which are not found on students' textbooks (Stodolsky, 1989). They use the textbook as a guideline to organize the classroom, not a center of teaching (Ball & Feiman-

Nemser, 1988).

In conclusion, textbooks have a great importance in the pre-college education. They provide a considerable amount of content knowledge for the students and are used in students' classroom time and homework time to a great extent (Raymond, 1980). It is important to know how teachers use their textbooks in order to improve the quality of the textbooks and thus to provide a better support for teachers in their mathematics teaching and students in their mathematics learning. Therefore, the purpose of this study is to investigate teachers' ways of using mathematics textbooks for their teaching and their views about elementary students' usage of mathematics textbook during the classroom time and for their homework and their views about mathematics textbooks' characteristics. A case study was conducted in a private school with six elementary mathematics teachers in order to investigate teachers' views about using the textbook.

1.1 The Research Questions of the Study

The current study investigated the following research questions:

1. How do elementary mathematics teachers use mathematics textbook?
2. What are teachers' views about elementary students' usage of mathematics textbook during the classroom time and for their homework?
3. What are teachers' views about mathematics textbooks' characteristics?

1.2 Significance of the Study

Textbooks provide learning opportunities to teachers and support teachers'

instructional practice (Son, 2008). Robitaille and Travers (1992) explained that teachers use textbook in order to decide the content, teaching approach, and the assignments. Teachers follow topics from textbooks and they make the topics concrete for students by using problems, questions and activities from the textbook (Ball & Cohen, 1996). Textbooks are important, especially for beginning teachers, in order to provide detailed information which makes teaching process easier (Kauffman, 2005). Because of the importance of textbook, it is needed to search textbook usage style of teachers (Son, 2008) and students' performance while using textbook (Usiskin, 1998).

This study documents teachers' ways of using mathematics textbooks while planning the lesson and during the lesson. It also investigates teachers' views about elementary students' usage of mathematics textbook during the classroom time and for their homework. Investigating teachers' ways of using mathematics textbooks and their views of students' usage might be useful to prepare more effective lessons. In addition, the findings of this study might be useful to increase the quality of textbooks. More qualified textbooks might be facilitating teachers' teaching and students' learning.

Most of the studies about mathematics textbooks in literature are about textbook analysis in terms of visuality and shape. Although there has been an increase in the research on the usage of textbooks (Altbach & Kelly, 1988; Baller, 1989; Dökme, 2005; Fan & Kaeley, 2000; Genç, 2002), there is a need to learn more about how mathematics textbooks are used (Freeman & Porter, 1989).

1.3 Definition of the Important Terms

The following terms need to be defined for this study:

Mathematics textbook: A textbook is a material which has the subjects of curriculum in a structured and planned way. It is a guide for students as the knowledge source and directs the students with the purpose of the lesson (Güneş & Ünsal, 2003). The textbooks referred in this study are the 4^{th}, 5^{th}, 6^{th} and 7^{th} grades mathematics textbooks which are prepared by the Ministry of National Education (MONE) for the new elementary mathematics curriculum. The new curriculum aimed to prepare the students with critical and analytic thinking. As a result of this, the MONE prepared new textbooks which addressed the purpose of the new elementary mathematics curriculum.

Teachers' textbook use: It refers to using the textbook in order to follow the requirements of the curriculum, to plan, and to prepare the lessons; to gain ideas to prepare examination questions; and to assign homework for students.

Students' textbook use: It refers to following the lesson and the content from the textbook with the direction of the teacher; studying to discover the details of the subject, and doing homework by using the textbook as a source after the school.

Classroom time: The period which students attend a lesson.

Homework: The assignment which is given by teacher to students to be completed at home.

Textbooks' characteristics: It refers to features of textbooks in terms of shape, content, and visuality in this study.

CHAPTER II

LITERATURE REVIEW

This chapter synthesizes the findings from the existing literature about teachers' textbook usage and students' textbook usage. There are many studies about mathematics textbooks in the literature; however many of them analyze textbooks in terms of shape, content, and visuality. In addition to textbook analysis studies, there are also studies about how teachers use textbooks while preparing the lesson or during the lesson. The purpose of this study is examining teachers' textbook usage and teachers' view about students' textbook usage and textbooks' characteristics. Although there are some studies related to textbooks analysis and teachers' textbooks use, only a few studies related to students' ways of textbook use were accessed. Studies on teachers' use of mathematics textbook, studies on students' use of mathematics textbook, and studies on mathematics textbooks' characteristics will be examined in three sections in this chapter.

2.1 Research on Teachers' Use of Textbooks

Textbooks are one of the most important parts of classroom life in elementary and secondary schools. Textbooks provide teachers with a framework for what to teach and how to teach it (Nicol & Crespo, 2006). Textbooks have been the key to mathematics instruction in schools that are parallel to the reform movements as they provide concrete teaching content for teachers and students

(Son, 2008).

Some studies have been conducted in order to investigate teachers' way of using textbook in the mathematics classroom (Stodolsky, 1989). However, these studies are rare comparing the importance of textbook in teaching. In the literature, little attention has been given to textbooks although textbooks have an important role in teachers' lesson preparation and teachers development, (Nicol & Crespo, 2006). In spite of the fact that teachers make a great use of textbooks, the research on textbooks are decreasing and the existed studies are not improved (Sturino, 2002). While some of the research studies are about describing the content of textbooks (Schmidt et al., 1987), some of them are about analyzing the textbooks in terms of shape and visual aspects (Sturino, 2002). However, the issue of textbook use has started to be an important topic to study because of its importance in teaching (Apple, 1992; Ball & Cohen, 1996; Ma, 1999; Remillard, 2000).

These studies have shown that teachers have different tendencies in using the textbooks. Their usage seemed to be influenced by their mathematics knowledge, their classroom preferences, and experience in teaching (Chavez-Lopez, 2003). In addition, most of the textbook use studies stated that teachers modify the textbooks for their classrooms (Freeman & Porter, 1989; Stodolsky, 1989; Schwille et al., 1983; Schmidt et al., 1987). Even if textbooks include all details of teaching, teachers do not teach everything in the textbook and they generally prefer to prepare lesson by modify their textbooks (Stodolsky, 1989).

While some studies explore the textbook usage styles of teachers (Freeman

& Porter, 1989; Stodolsky, 1989); some studies identify the differences between the teachers who use textbooks frequently and who use less than fifty percent of lesson time (Rackley, 1994); some studies search whether teachers meet the expectations of authorities about textbook usage or not (Santos, Cruz & Macias, 2006); and some studies investigate the effect of textbook use on the cognitive demand of mathematical problems and teachers problem (Son, 2008). These studies are summarized below.

One of the first studies about teachers' textbook usage was made by Freeman and Porter (1989). They identified three styles of textbook use during their investigation of how teachers' instruction matched with mathematics textbooks. Researchers observed four elementary teachers during a year and then they categorized teachers' style of textbook use as textbook bound, focused on the basics, and focused on district objectives. In detail, teachers who follow the textbook page by page belong to group of textbook bound; teachers who just teach the basic mathematics concepts and skills belong to group of focused on the basics; teachers who follow closely the recommendations of topics in textbook during teaching belong to group of focused district objectives. The findings also indicated that the elementary school teachers' content decisions and textbook content were not always parallel. Teachers who do not use the textbook frequently focus on more drill and practice computational skills while teachers who follow the textbook give importance to applications and computational understanding.

Teachers are likely to adopt a wide range of ways for textbook usage as Stodolsky (1989) addressed. He observed six teachers who had been teaching from

six to thirty six years in order to report their ways of using mathematics and social studies textbooks. The observations revealed that each teacher had its own style in textbook usage. Generally teachers followed the textbook topics for curriculum during instruction but they did not apply the every activity of the textbook in teaching. Teachers sometimes might skip the textbook sections and even whole chapters, never use the textbooks and prefer worksheets instead, or change the order of the subjects and chapters. Most of the teachers in Stodolsky's study did not use and ignored the motivational activities in the teacher guides. According to the researcher, teachers' textbook usage might have variations because of teachers' own convictions and preferences; the characteristics of textbook they use; the school context; or the behaviors and levels of students.

The study conducted by Chavez-Lopez (2003) revealed teachers' use of mathematics curriculum materials and other curricular resources and how this usage was affected and how it affected teachers' knowledge. Survey, textbook diaries, and classroom observation data were collected from 53 middle school mathematics teachers and three teachers were selected for a case study in order to have a deeper investigation of teachers' textbook usage style. These teachers were observed and interviewed. The study showed that teachers used textbooks extensively and textbooks had a considerable influence on the content of their mathematics lesson. While teachers' ideas about mathematics, mathematics curriculum, and mathematics teaching were shaped by the textbooks, teachers' mathematics content knowledge and their experiences in mathematics teaching shaped their views of using the textbooks.

Teachers' textbook use and its influence on the relationship between the cognitive demand of mathematical problems and teachers' questions were investigated through a mixed study conducted by Son (2008). A survey was implemented to 169 elementary teachers and 8 elementary teachers were observed and interviewed for deeper analysis. The researcher explored the textbook use patterns by examining the relationship between mathematical questions used by teachers in classroom and question in textbook. Three important findings were reached at the end of the study. The major finding of the study was that there was a relationship between textbook problems and problems which were used in the classroom by teachers during teaching. This meant that teachers at least took idea from the textbook while asking questions to students in teaching. Another finding showed that teachers decreased the level of questions which were given as teacher questions in textbook while teaching. Finally, the study documented that teachers' questions in teaching were influenced by factors such as teacher knowledge, type of textbook, and teachers' perceptions about student's achievement. In brief, teachers seemed to benefit from the textbook questions or ideas of the textbooks' problems while asking problems in the classroom. However, teachers generally used the questions by decreasing the level of textbook questions.

Some teachers may approach to using textbooks different than their usage of other curriculum materials. Sturino (2002) studied the mathematics textbook usage ways of two secondary mathematics teachers for planning the lesson and during the lesson to examine the teachers' ways of textbook usage in the classroom compared to other curriculum materials. Observations of teachers in the classroom during a

three month period and a total of seven hours of interviews with them showed that both teachers used the textbook in a similar way and textbook had a great influence on their lesson planning. Although they were not obliged to follow textbook when planning lessons, the study revealed that teachers continued to use the textbooks because teachers stated that textbook had teaching strategies and this facilitated the teaching process.

In her study, Rackley (1994) described the differences between the teachers who used mathematics textbooks more than fifty per cent of the classroom time and teachers who used mathematics textbooks less than fifty per cent of the classroom time. She interviewed four teachers who used the textbook more than fifty per cent of the time and two teachers who used the textbook less, and observed them in the classroom. The findings revealed that the two groups of teachers were different in terms of beliefs, attitudes, and professional development. Teachers who used the textbook less than fifty per cent of the time had more positive attitudes toward mathematics and they gave importance to professional development opportunities. Their interest in professional development was revealed as they read more mathematical journals and magazines, discussed mathematical concepts with colleagues, and attended to the mathematical workshops and different professional courses. The observations showed that they encouraged students towards doing mathematics in the classroom and they taught through problem solving and paired or group activities. On the contrary, teachers who used the textbook more than fifty per cent of the time generally spent time on drill and practices. Teachers in this group believed that manipulative usage was very important in the mathematics

learning; however, they used manipulative rarely as shown by the observations. Teachers in this group did not have positive feelings towards mathematics compared to teachers who used the textbook less. The researcher addressed the importance of the teacher education based on the findings that well educated teachers were less dependent to textbook because they only considered the ideas in the textbook while the other teachers were dependent to the textbook because they did not produce other materials.

Santos, Cruz and Macias (2006) searched whether elementary and middle school mathematics teachers have met the expectations of authorities while using mathematics textbooks or not. The researchers observed and interviewed 12 elementary mathematics teacher and they conducted survey with 400 elementary teachers. Observation and interview findings showed that 10 of the 12 teachers used the textbooks at least three times in a week while giving answers to the activities without any analysis and discussion. They completed the textbook tasks only in order to meet the demands of authorities and they did not work on many activities in the textbooks because they did not understand. Only two of the teachers did not use the textbooks more than three times in a week. They used it as a source for conducting activities and as a guide for following the order of the content. These teachers encouraged the students to discuss the subjects, analyze the process instead of the answer, and helped students through activities during construction of their own mathematical content knowledge. Survey results showed that most of the elementary mathematics teachers did not use the textbook effectively because they could not understand the problems and activities. The study showed that teachers

should know the mathematical content they would teach and how students learn this content.

Elementary teachers' views about elementary textbooks for different contents were investigated through observing and interviewing four grade 4 teachers by Sosniak and Stodolsky (1993). Observations revealed that the teachers made at least some use of textbooks for each subjects; however, their usage of the textbook materials differed. The time teachers spent with materials, the types of the materials they used with the textbook, and their usage of the materials were different in the classroom for each teacher. The researchers highlighted that teachers were not fully dependent on the textbook and they used the textbooks and related materials whenever they considered them as necessary for the lesson.

Turkish studies investigating teachers' usage of textbooks or their views about the usage of textbooks are rare. For example, Işık (2008) explored the factors which affected the textbook usage of elementary mathematics teachers and teachers' expectations from textbooks. The usage level and the usage frequency of the mathematics textbooks were investigated through a questionnaire implemented to 93 elementary mathematics teachers. The results of the study showed that the usage time of textbook was low in classroom and additional sources took place of mathematics textbook because of the student selection examination. Teachers claimed that problems and exercises of the textbooks were inadequate and were not consistent with questions of the Student Selection and Placement Examination for Secondary Education Institutions (OKS). Therefore, it appeared that teachers generally used textbooks only to assign homework. In brief, the researcher

concluded that factors such as the national examination were negatively affecting teachers' textbook usage. In addition, the researcher stated that teachers motive and guide students to use textbook but they do not use the textbooks frequently during teaching. Because of this students' textbook usage motivation was decreasing. In the study, it was underlined that teachers' attitude towards textbook is extremely important for improving students' textbook usage habits.

High school teachers' textbook usage style and the usage frequency of the mathematics textbooks were investigated by Altun , Arslan, & Yazgan (2004). The researcher examined the textbooks with the light of teachers' opinions in the study. The data was collected by a questionnaire and interviews about textbook use. Fifteen teachers participated to the study from three high schools. In addition to questionnaire and interview, the teachers in the sample were observed during one semester. According to the results of the study, the usage frequency of the textbooks during the lesson decreased from the beginning of the semester to the end of the semester. The teachers preferred to use other materials while preparing lessons. Moreover, according to the interview results textbooks did not contain enough activities and examples about the curriculum subjects and the concepts in textbook were difficult to understand easily for students.

2.2 Research on Students' Use of Textbooks

Although textbooks are the integral part of the classrooms, the role of textbooks in students' learning is less clear (Berry et al., 2011). There are few studies in the literature on how students interact with their mathematics textbooks

(Philips & Philips, 2007) and on students' mathematics textbook usage and content area reading strategies (Takami, 2009). Textbooks are very important because they influence the structure of a lesson (Issitt, 2004). However, most studies related to students' textbook usage reported that vast majority of students did not think that textbooks were the critical component of learning (Berry et al., 2011). In addition, studies showed that students needed teacher guidance in order to use their textbook (Kuehl, 2001). Some of these studies are summarized below.

One of the important studies was made by Brown (1973). The purpose of the study was to investigate the mathematics textbook use of elementary students and elementary teachers. An observation outline form, a four part teacher interview and a student questionnaire were used in the study. Each of the instruments used in the study was designed by researcher. The study had three main parts: observations of classroom activities, interviews with the teachers, and the questionnaires completed by students. The results of the study showed that there was a positive correlation between teacher requests and student reading frequencies. It was concluded that students need teacher guide to use their mathematics textbooks.

Another study was conducted by Kuehl (2001) in order to investigate how students use mathematics textbook. The study aimed to analyze the students' style of using mathematics textbooks in order to help students to improve their understanding about theorems and definitions in the mathematics textbooks and to teach efficient textbook reading strategies in order to make them more independent while studying alone. During the study, lesson plans were prepared in order to improve students' mathematical thinking and reinforce mathematical learning from

their mathematics textbooks. The findings showed that students improved their independent learning skills with the help of these lessons. The researcher commented that if students were guided by teachers to use their textbook, they could improve their textbook use habits.

Çetin and Mahir (2005) investigated the thoughts of the 8th grade students on their usage and understanding of mathematics textbooks. The purpose of the study was to investigate the thoughts and styles of the 8th grade students while using and understanding their mathematics textbooks. In the study, the 15% of the elementary schools of the Eskişehir were randomly selected and a questionnaire was implemented to 831 students who were in the 8th grade from 21 randomly sampled schools. The results of the study showed that most of the students did not use their mathematics textbooks frequently and efficiently; even some of them never used the mathematics textbooks. In addition to these, it was found that most of the students liked subjects which were given with graphs in their mathematics textbooks.

2.3 Research on Mathematics Textbooks' Characteristics

Textbooks are the sources which affect both teaching and learning process in an important way (Tertemiz, Ercan, & Kuyubaşı, 2004). Textbooks must include qualified form and content in order to fulfill their important functions in education (Çakır, 2009). Because of the importance of qualified textbooks, there are many studies in the literature which analyze the textbooks' characteristics. In this study, the focus was on the usage of 4th, 5th, 6th, and 7th mathematics textbooks prepared by Ministry of Education (MONE). Therefore, the studies which analyzed these

textbooks were examined in order to have detailed ideas. Some of the studies are summarized below.

Karakelleoğlu (2007) investigated the opinions of teachers, students, and specialist about 4th grade mathematics textbook prepared by MONE. Sampling group of the study is consisted of 46 mathematics teachers teaching at the primary schools and 310 students from different primary schools in Tekirdağ. In addition, 10 specialists who worked in the departments of Ministiry of National Education in Tekirdağ participated in the study. The researcher developed a 61-items questionnaire for students and 199-items questionnaire for teachers. For the specialist, an interview protocol was prepared. The results showed that students complained about the page design of textbook that it did not have enough empty space for problem solving. Students also stated that textbook did not relate their daily life with mathematics. Majority of teachers had positive comments about textbook but they believed that the content should be improved according to the students' grade level. Specialist stated that teachers should apply the activities of textbook because these activities were designed to help students for effective learning.

Çakır (2009) investigated the thoughts of 5th grade teachers and students about mathematics textbook which were prepared by Ministry of National Education (MONE). The study employed a survey design. The researcher developed teacher and students questionnaire forms and implemented to 135 teachers and 560 students in Adana. Textbooks were investigated with the features of content, language, physical appearance, and evaluations. Data were analyzed with quantitative methods and the results were commented by using frequency,

mean, and percentage of participants' answers. Results showed that teachers and students thought that the mathematics textbook was insufficient for many aspects. They wished to have more quality printing and enjoyable textbook. Teachers expressed that the content of textbook needed improvement. They thought that connections between chapters and topics should be better organized and mistakes in content should be corrected. In addition, in the study students stated that the textbook should include more examples and practices which help them in individual study.

Another study conducted by Mutu (2008) analyzed 6th and 7th grade mathematics textbooks which were prepared by Ministry of National Education (MONE). Sixty mathematics teachers who worked in Bursa participated in the study in 2007-2008 academic year. The researcher prepared a questionnaire for data collection and analyzed data by using t-test, descriptives, and One-Way ANOVA. According to the results of the study, teachers thought that 6th and 7th grade textbooks included insufficient content and very easy questions. They commented that textbooks did not correspond to multiple choice questions style. Teachers considered the visual and figural features of the textbook as sufficient; however, they thought that exercises and evaluation parts were not sufficient. In addition, teachers stated that the lesson hours were insufficient for the mathematics lesson.

In another study, Arslan and Özpınar (2009) also investigated the characteristics of 6th grade mathematics textbooks. The researchers analyzed textbooks and conducted interviews with 13 mathematics teachers in Trabzon in 2006-2007 academic year. The results showed that the textbook included real life

situation to make students build bridges between real life and mathematics. It also underlined that the textbook included activities which were suitable for the purpose of the new curriculum. It was concluded that the content of textbook was sufficient. However, researchers emphasized that there were not enough connection between chapters and topics. In addition, in many activities, students' prerequisite knowledge about subjects was not considered. Activities did not require new technological devices in order to gain students' attention except calculator. Teachers also complained about the level of the textbook. They believed that the sometimes the level of the textbook was higher than students' level while sometimes it was lower.

2.4 Summary

To summarize, the studies in Turkey and the other countries about mathematics textbooks have indicated that textbooks were in the heart of mathematics classrooms in order to direct teachers while preparing and teaching a lesson. Most of the studies stated that textbooks were the core part of teaching and learning; however, it was underlined that teachers and students did not use their textbooks effectively. The studies showed that teachers had different tendencies while using their textbooks during lesson preparation and classroom time. While some of the teachers modified the textbook content, some of them used the same drills and study questions. The studies also revealed that students did not prefer to study from textbook if there was not a direction to use it from teachers. Students did not realize the importance of textbook for their learning and they needed teachers'

guidance to use their mathematics textbook.

In addition, previous studies have addressed that most of the mathematics textbooks were insufficient to attract students and teachers, to improve students' knowledge, to cover the content, and to prepare the students for the national examinations. Therefore, they needed to be improved. It seemed that in order to improve textbooks and textbooks usage, the problems about textbook use should be identified first.

CHAPTER III

METHODOLOGY

In this study, six inservice private school elementary mathematics teachers' views about teachers' and elementary grades students' use of mathematics textbooks and views about mathematics textbooks' characteristics were investigated. Data were gathered through the interviews conducted by the participants.

The methodology of the study is explained in this chapter in seven main parts. First, the research design is explained. Second, the participant characteristics are presented. Then, the research context is explained followed by a detailed explanation of the data collection instruments and data collection procedure. Next, data analysis process is given. Then, the procedures enhancing the quality of the study are described. At the end of the chapter, limitations of the study are explained.

3.1 Design of the Study

Qualitative research methodology was used in this study because it would help researchers to reach a detailed understanding of the issue (Creswell, 2007). Qualitative approaches allow researchers to investigate the issues in their normal settings and researchers ascribe meaning to the results in order to interpret them (Denzin & Lincoln, 2005).

The case study research was chosen for the design of this study. Creswell (2007) defined case study as "the study of an issue explored through one or more cases within a bounded system (i.e., a setting, a context)" (p.73). The present study investigated teachers' views of teachers' and students' use of mathematics textbooks in elementary grades in a private school. The particular private school, which included considerably more class hours for mathematics than suggested by the curriculum, constituted the bounded system for the study where teachers' and students' use of textbook within this particular school was considered as the case. In a case study, researchers study a case or multiple cases in time and collect data with different types of data collection methods like observations, interviews, audiovisual materials, documents, and reports (Creswell, 2007). In this study, the researcher interviewed the elementary mathematics teachers regarding their views of teachers' and students' use of mathematics textbooks. The researcher used interview as the data collection method in order to investigate teachers' views in a detailed way. Responses to interview questions would be considered as a significant data source for case studies as they could have the potential to provide meaningful insights for the case (Yin, 2003)

3.2 The Participants

A total of six mathematics teachers from a private school located in Gölbaşı district of Ankara participated in the study. Two of them were teachers of 4^{th} and 5^{th} grades and four of them were teachers of 6^{th} and 7^{th} grades. The participating teachers were chosen from this school conveniently as the researcher was a teacher

in this school. Table 3.2 shows participants' teaching experiences and experience in this private school in detail.

Table 3.1: Participants' Teaching Experiences

Teacher	Gender	Teaching Experience	Teaching Grades	Experience in This School
Şeref	Male	3 years	6^{th}, 7^{th}, 8^{th}	1 year
Fırat	Male	11 years	6^{th}, 7^{th}, 8^{th}	1 year
Önder	Male	12 years	6^{th}, 7^{th}, 8^{th}	1 year
Pelin	Female	13 years	6^{th}, 7^{th}, 8^{th}	3 years
Damla	Female	3 years	4^{th} - 5^{th}	2 years
Zehra	Female	6 years	4^{th} - 5^{th}	3 years

As Table 3.1 shows, the range of teaching experiences of participants changed between 3 and 13 years. They were teaching mathematics from 4^{th} grade to 8^{th} grade classes. The range of their experiences in this private school ranged from 1 to 3 years.

Participating teachers were given pseudonym names in the study in order to ensure confidentiality. The teachers participated in the study voluntarily.

3.3 Research Context

There were 720 students in this private school at the time of the study where 324 of these students were in 6^{th}, 7^{th}, and 8^{th} grades and 396 of them were in grades

1 to 5. The school had 40 classrooms with 18 students in each classroom. There were a science and technology laboratory, a mathematics laboratory, and a computer laboratory in the school. In each classroom, there were a computer and a projector. The mathematics lesson hours of the school for all grades were more than public schools. In public schools, there are generally four hours of mathematics in 4^{th} and 5^{th} grades and five hours in 6^{th}, 7^{th}, and 8^{th} grades. In this private school, however, there were five hours of mathematics lesson in 4^{th} and 5^{th} grades, eight hours in 6^{th} grades, nine hours in 7^{th} grades, and ten hours in 8^{th} grades. In the 4^{th}, 5^{th}, 6^{th}, and 7^{th} grades, the mathematics textbooks which were prepared by the Ministry of National Education (MONE) were used; however, a different mathematics textbook prepared by school's own publishing house was used in the 8^{th} grade classrooms. Therefore, in this study teachers answered the interview questions for the textbook usage in the 4^{th}, 5^{th}, 6^{th}, and 7^{th} grades as MONE books were used in these grades. Teachers were not obligated to use additional mathematics textbook together with the textbook of MONE in grades 4 to 7, but they benefited from other sources which prepared by school's own publishing house especially for the preparation for Students' Level Examination (SBS) in the 8^{th} grade.

3.4 Instrument and Data Collection

The data for this study were collected through an interview protocol. The protocol and the interview process are explained here in detail.

3.4.1 Interview Protocol

An interview protocol was developed for this study by the researcher and a researcher in mathematics education field through the findings and discussions in the literature about teachers' textbook usage. The interview protocol consisted of 16 main questions in two main parts: teachers' mathematics textbook usage and students' mathematics textbook usage. The first part consisted of six main questions about teachers' mathematics textbook usage. The second part consisted of seven main questions about teachers' opinion on students' textbook usage. The interview started with questions about teachers' ideas related to examples, questions, and activities in the mathematics textbooks, then continued with questions about sufficiency of mathematics textbooks, teachers' purpose of teaching mathematics, planning the lesson with mathematics textbook, using the mathematics textbook during the classroom time, and how the textbook facilitated the examination questions. Additionally, the researcher asked teachers their views about the language of the textbook, benefits of the textbook, students' style of textbook usage, and their expectations from students' use of textbook. Finally, teachers were asked to imagine writing a new mathematics textbook and what they would like to add to these books. The interview protocol was shared by three mathematics education researchers and revised based on their suggestions in terms of coverage and language. This revised protocol was piloted with an elementary mathematics teacher who was working at another private school and using MONE textbooks for teaching 5^{th} and 6^{th} grades, and was finalized based on her responses to the questions and comments on the language and coverage of the interview questions.

The finalized version of the interview protocol was used for collecting data. The final version of the interview protocol is given in Appendix A.

3.4.2 Data Collection Procedure

Before starting the data collection, the required permissions were taken from Research Center for Applied Ethics of Middle East Technical University. This permission is given in Appendix B. After obtaining necessary permission from the university, the school administrations were informed about the study. The purpose of the study was explained to the administrations and their oral approval was taken for the data collection. Then, the teachers were informed about the study and asked if they would volunteer for the interviews. The data of the study were collected by conducting one-to-one interviews with the volunteer teachers. All of the participants were interviewed in a two week period. The interviews were conducted in a silent room in the school. There was nobody else in the room except the participant and the researcher. The researcher prepared the setting carefully in order to conduct the interviews without interruption.

Each interview was initiated in the same way and all interview questions were asked in the same order to each participant. The researcher asked the permission of participants in order to audio-record their responses in the beginning of the interviews and the Voluntary Participation Form was signed by each participant. Then, the interviews started. Teachers were encouraged to express their views about the textbook usage by reminding that their identities would be maintained confidential. The researcher asked sub-questions in order to help

participants organize their ideas and to take detailed answers when the teachers had difficulties to think about responses for the questions. At the end of the interviews, teachers were asked to add their additional comments and views about the textbook usage if they had more. All interviews were audio-recorded and were completed in approximately 30 minutes.

3.5 Data Analysis

The core elements of qualitative data analysis consist of preparing and organizing the data for analysis in qualitative research, reducing data into themes through a process of coding, and finally displaying the coded data in figures, tables, or a discussion (Creswell, 2007). Data analysis in this study was conducted by following the mentioned steps.

After completing all the interviews, audio-recorded interview data were transcribed verbatim and these verbatim transcriptions constituted the data of this study. Transcriptions were revised twice by listening to the records in order to ensure the clarity. Then, the data analysis started.

The transcriptions of each interview were read three times in order to have a general idea about participants' views about textbook usage. This process was followed by writing an overall summary for each question for all participants in order to document the commonalities in responses. After summarizing, each transcription was read again and recurring statements were determined. Then, a table was constructed in order to show the frequencies of common responses. The codes for the data analysis were composed of the most common responses.

Creswell addressed (2007) data coding as breaking the all data into meaningful parts, dropping the unrelated parts, and giving the names to each meaningful part as the codes. It is important that data are grouped into wider categories and themes and arranged and interpreted in the data graphs, tables, and charts (Creswell, 2007). After the codes were determined, the whole data were coded once more by considering Creswell's coding suggestions.

The researcher grouped the data into four themes after the coding process as teachers' textbook usage, students' textbook usage, mathematics textbooks' characteristics, and school context. The first theme was teachers' textbook usage and it included benefiting from the mathematics textbook, ways of using the mathematics textbook, teachers' guidance for textbook usage, and usage of other textbooks as subthemes. The second theme was students' textbook usage. The third theme was teachers' views on mathematics textbooks' characteristics and it included subthemes of the content of the mathematics textbook, impact of mathematics textbooks on teaching and learning process, and improvement of the textbook. Final theme was the school context. The whole data analysis process was monitored by a mathematics education researcher. The findings of the study were documented based on the mentioned subthemes for each theme.

3.6 The Quality of the Research

In this part, the measures taken to increase the quality of the research are explained.

The literature was searched deeply before preparing the interview protocol and

many interview questions were written with the light of the literature as a draft. Then, the interview protocol was prepared from this draft with the suggestions of a researcher in the mathematics education field, who held a doctoral degree and had experiences in qualitative methodologies. This mathematics education researcher controlled all the study through the interview protocol preparation, data collection, data analysis, coding, and writing themes. Therefore, a peer review process as suggested by Creswell (2007) was conducted during the study as a validation strategy.

During the data collection, the researcher prepared the interview setting carefully in order to conduct the interviews without interruption. The researcher was a colleague of the participants. This situation might have impacted participants' responses both positively and negatively. Participants might have given answers only to impress the researcher and not to show their possible lack of effective use of mathematics textbooks and knowledge of students' textbook usage. However, all participants knew that the researcher would not work in the school the next semester and this might have increased their confidence in the researcher. The researcher encouraged the participants to provide honest answers and express their real views about the textbooks and textbook usage by asking sub-questions in order to help participants organize their ideas, and to take detailed answers when the teachers had difficulties to think about responses for the questions. Moreover, the researcher asked the same question if the responses of the participants were not related to the asked question. At the end of the each interview, the researcher reviewed the collected data for whether each response was clear and related. If there were missing parts, the researcher asked again the same questions to take deep responses.

The researcher described the participants and settings under study in detail to help the readers in making decisions about transferability of the findings (Creswell, 2007). Her relationship to the participants was also described in detail to provide the readers with the information about the study context. Since she was a teacher in the research context, she had spent a considerable time in this school and this helped her in formulating the interview questions about the usage of the textbooks in this school context. The researcher's prolonged engagement in the research context, another validation strategy suggested by Creswell (2007), enabled her to prepare the data collection tool in the most meaningful way for the participants and to reach the most complete account of participants' views.

In addition to the importance of the validation of the study, the researcher paid careful attention to the reliability of the study. The most important aim of the reliability of a study is reducing the mistakes and biases in a best way (Yin, 2003). Because of this, the researcher used an audio-recorder through each interview for increasing the reliability of the study and audio-recorded interview data were transcribed verbatim. In order to ensure the clarity, the records were listened two times and transcriptions were revised, as suggested by Creswell (2007). The data set was coded only by researcher. However, all the coding procedure was progressed under the control of a researcher in the mathematics education field. Mathematics education researcher checked the consistency between the codes and categories of codes during the coding process. After the researcher organized data in categories, she took help from mathematics education researcher in order to decide the upper themes and sub-themes of the study.

3.7 Limitations of the Study

Six mathematics teachers working in a private elementary school participated in this study. Because of this limited number of participants, the findings could not be generalized to a larger group of teachers. However, this was a case study and the generalizations of case studies are based on analytical generalizations. In the analytical generalization, the researcher interprets the data for the special cases he or she investigates and generalizes the findings for the specific research settings (Yin, 2003). The findings of this study could not be generalizable to mathematics teachers' views in other private schools or to other school settings. However, it provides a set of views that mathematics teachers are likely to develop in a similar school setting.

In the study, data were collected with interview questions. Thus, the responses of the participants were limited to the interview questions. In addition, the researcher was a teacher in this private school and all of the participants were colleagues of the researcher. This situation could affect the responses of the participant. The participants could give responses different from their views in order to not to show their weaknesses or to help the researcher since they thought the researcher was looking for a specific response. The researcher informed the participants that she was interested in their views and there were no correct response for the questions in the interview protocol. All the participants knew that the researcher will not continue to work in this school the next year, which would make them feel more comfortable to give honest responses. In order to decrease the limitations about data collection with interview questions, classroom observations

could have been conducted by researcher. In this way, researcher could have the chance to compare teachers' textbook usage style with their answers to the interview questions.

CHAPTER IV

FINDINGS

This chapter presents the main findings of the study. The findings were given under four main themes: (i) teachers' textbook usage, (ii) teachers' views about students' textbook usage, (iii) teachers' views about mathematics textbooks' characteristics, and (iv) teachers' views about the school context. Table 4.1 shows the organization of the main themes and subthemes of the study.

Table 4.1: Themes and Subthemes of the Findings of the Study

Themes	Subthemes
Teachers' Textbook Usage	Benefiting from the mathematics textbook Ways of using the mathematics textbook Teachers' Guidance for Textbook Usage Usage of other sources
Students' Textbook Usage	
Mathematics Textbooks' Characteristics	Content of the mathematics textbooks Impact of mathematics textbooks on teaching and learning process Improvement of the textbooks
School Context	

In the first theme, the teachers' textbook usage were clustered as benefiting from the mathematics textbook, style of using the mathematics textbook, teachers' guidance for textbook usage, and usage of other sources. In the second theme, teachers' views about students' textbook usage were presented. In the third theme, teachers' views about mathematics textbooks' characteristics were clustered as content of the mathematics textbooks, impact of mathematics textbooks on teaching and learning process, and improvement of the textbooks. Finally, in the fourth theme, teachers' views about the effect of school context on textbook usage were presented.

A total of six mathematics teachers' views were explored in this study. Two of them were teachers of 4^{th} and 5^{th} grades and four of them were teachers of 6^{th} and 7^{th} grades. Three of the participants were male and three of them were female. Two of the teachers were novice teachers who had teaching experiences between one to three years, whereas four of them were expert teachers with experience of at least four years.

Pseudonyms were used instead of the real names of the participants in the study.

4.1 Organization of the Findings Chapter

In this chapter, the findings of the study were presented by using paraphrased claims or direct quotes of the participants. Certain phrases and corrections were added to the transcripts during in order to increase the readability and to reduce the meaning loss due to translation. Table 4.2 shows the examples of

additions to participants' quotes and their usage utilized in the way Haser (2006) employed.

Table 4.2: Examples of Specific Additions to Participants' Quotes as Modified from Haser (2006).

Addition	Usage
I am using the activities and introduction [of the mathematics textbook] during the lesson.	Completing the meaning of the quote Increasing readability
[T]extbooks are important to follow the curriculum.	Sentence adjustment
There are good [qualified] textbooks.	Adding a similar meaning that would clarify the quote
[...]	Claims between two statements which are not included in the quote
...	Pause during the interview

4.2 Teachers' Textbook Usage

Most of the teachers stated that the aim of the mathematics teaching is making connection with real life and mathematics. They believed that textbooks had a great importance to connect real life with mathematics. While some of the teachers stated that the textbook of the Ministry of National Education (MONE) was suitable for their aim in teaching mathematics, the other teachers claimed that the textbook was not suitable for their aims.

"...the main aim [of the mathematics teaching] is taking the

mathematics out of the textbook and connecting it with real life. According to the constructivist approach, students can connect the mathematics and real life by conducting lessons through activities and drama. The new textbook was written with this approach [constructivist], thus it is parallel to my teaching aim." (Önder)

"My main purpose of teaching is making students construct meaningful learning instead of memorizing. All activities [of the mathematics textbook] are directed to students' understanding deeply, questioning, interpreting, and analyzing the reasons and results. Therefore, it [the textbook] is in the same way with my [teaching] aim." (Şeref)

"The most important aim of the mathematics teaching is making connection with the real life. We should give concrete information and examples while teaching. I don't think that the mathematics textbook is sufficient for my aim but it has been improving compared to the past years." (Pelin)

Teachers' expressions showed that their general views about the textbooks were shaped by their aims in teaching mathematics. They specified that their main aim in mathematics teaching was connecting the real life situations to mathematics for a meaningful learning.

4.2.1 Benefiting from the Mathematics Textbooks

All of the teachers stated that they always examined the textbooks in differing intensities. They specified that mathematics textbooks helped them to follow the curriculum, activities, content, and examples of the subjects. How they made use of the textbook was illustrated in the following quotes:

"I follow the textbook generally for the curriculum. I learn from the textbook how much part of a subject should be taught, how to teach a subject, how to use activities of the textbook." (Fırat)

"You determine from the textbook how many hours are enough for a subject and which examples of the textbook are beneficial for learning. We use [the mathematics textbook] at least in order to solve good and different types of examples." (Şeref)

"We analyzed the textbook in an extensive way at the university years as a lesson. We were discussing the positive and negative sides of the textbook during lectures at the university. Now, I use these experiences and I generally implement activities and exercises of the textbook." (Damla)

Most of the teachers stated that they used the textbooks for conducting the activities in the classroom:

"I benefit from activities and introduction parts of subjects [in the mathematics textbook]. In order to make an effective introduction to the lesson, I analyze warm up activities [of the mathematics textbook]. I sometimes take activities exactly from the textbook and sometimes I change some parts of them." (Zehra)

"I generally use the activities. We specify the activities before the lesson and I inform the students that we will conduct that activity next lesson. If there are necessary materials, I ask students bring those materials or I prepare before the lesson. Then, during the lesson I let them follow steps of the activity from the mathematics textbook. After completing the activity, we analyze good examples and solve questions [of the textbook]." (Pelin)

Most of the teachers claimed that they conducted the activities suggested in the textbooks. Although some of them considered the activities as effective, they complained about the time and material limitations:

"The activities are sufficient but sometimes duration of a class is not enough to make an activity and sometimes there are not enough materials to use for the activity. Because of this reason I do not think that [the activities of the textbook] are applicable for all schools. Even though we are private school teachers, we have this problem. In addition to these problems, there is also SBS (Seviye Belirleme Sınavı - Students' Level Examination) and we have to prepare the students for this examination. Making an activity is like a game for students, families, and school administrations, but not a learning process. Therefore, in order to implement these activities effectively, it is necessary to focus on learning, not to focus on examination." (Şeref)

In brief, all of the teachers stated that they analyzed the mathematics textbook either in depth or in a superficial way. They said they used the mathematics textbook in order to follow the curriculum, activities, and the content. They specified that they benefited from the activities for more effective lessons but some of them complained about the time and material limitations for implementing the activities. In addition, they stated that families and school administrations generally did not support conducting activities because they did not consider it as a way in the learning process; they believed that activities were time losing. This seemed to have some influence on their use of textbook.

4.2.2 Ways of Using the Mathematics Textbooks

All of the teachers stated that they used the mathematics textbook while planning the lesson and some of them were taking notes on their textbook during the lesson or before the lesson. Most of the teachers benefited from the textbook while preparing the examination questions.

> *"I take notes on teacher's book in order to see which questions to use and which parts to emphasize. Then, I emphasize that part in the classroom." (Şeref)*
>
> *"I don't take notes [from the textbook] but I definitely determine to implement a certain activity in a particular class. I absolutely use the mathematics textbook and workbook for planning. I definitely use it [the mathematics textbook] while teaching a subject, making activities, and giving homework." (Pelin)*
>
> *"If there are contradictions in examples, I take notes and correct it on my textbook. In addition, I mark the section [on textbook] I finished in the lesson and the study questions to give as homework [from the textbook]. I was writing my comments [on textbook] about questions and activities when we started to implement the new curriculum." (Önder)*
>
> *"I benefit from the textbook also while I am preparing the*

examination questions. I write questions similar to examples and exercises which are discussed in the classroom and also similar to homework questions. I advice students to study from the textbook for the examination; thus, I prepare the questions parallel to it [the textbook].” (Zehra)

“[The textbook] is really beneficial to analyze focus points and construct questions for examinations. However, we [mathematics teachers of the school] don’t prefer to use same questions from textbook for the examinations because students also have it [the textbook]. Yet, we follow examples of the mathematics textbook in order to see how to assess the objectives of the content.” (Şeref)

In conclusion, the teachers stated that they benefitted from the textbook for taking notes about subjects and they used the textbook for the preparation of examination questions. They did not prefer to take questions for the examinations directly from the textbook in general, but they prepared the questions parallel to the objectives and the study questions of the textbook. They tried to guide students to study textbook examples for examinations.

4.2.3 Teachers’ Guidance for Textbook Usage

Teachers expressed that teachers’ guidance would be very important for improving students’ studying habit from their mathematics textbook. They believed that if students did not have positive feelings to use their textbook, then teachers had great responsibility on this. The following excerpts exemplified these views:

“Students don’t have positive attitudes towards the textbook; I think it is our [the teachers’] fault.” (Fırat)

“I believe that they [students] understand what they study [from the textbook] but they don’t make an effective textbook-working. I think we don’t guide them [students] enough to use the textbook effectively.” (Fırat)

“It depends on teacher whether students understand what they read or not [from the textbook]. If you [the teachers] are at the beginning

of a subject and you want students study at home [from the textbook], generally they will not understand the subject very well. Even if they will not understand, teachers should motivate students to study from their textbook at home. In time they will be good readers of the textbook and they will stop complaining about studying from the textbook. Teachers' effective guidance on students' textbook usage is really important." (Önder)

Teachers stated that they motivated students to use their mathematics textbook while studying by giving homework and asking questions parallel to the textbook questions in examinations. Teachers also believed that students could be motivated to study from the textbook if teachers used the textbook regularly during the lesson as Fırat stated: "*...using mathematics textbook during the lessons regularly is really important to improve students' studying habit [from the textbook]."* Their views about motivating students to use textbook were given in the following quotes:

"...giving daily homework, project and performance homework from the textbook can motivate student' usage of the mathematics textbook. Asking questions similar to the textbook questions for quizzes and examinations can also direct students towards studying rom the textbook." (Şeref)

"I think that we [teachers] are insufficient to motivate students [to study from the textbook]. It is necessary to use the textbook during the lesson together with students in order to motivate them. We should teach the subjects efficiently, apply activities regularly, help students to discover [mathematical concepts] by using the mathematics textbook. In this way, they [students] can study in a motivated way." (Fırat)

"...firstly, textbooks should be prepared more efficiently. It should be [prepared] for students. Studying from the textbook is a behavior that students should gain in the beginning of the semester. Teachers may acknowledge students who study from the textbook in the classroom and praise his/her work [in order to motivate other students]." (Damla)

"...by using the textbook continuously, teachers get students to

comprehend that using the textbook is a norm. I think teachers should motivate students by making them realize that using the textbook is not unnecessary." (Pelin)

In brief, teachers expressed that teachers' guidance had a great importance on improving students' habits of studying the textbook. They stated that teachers should motivate students in order to make them use mathematics textbooks. They said that they used questions parallel to the textbook's questions in examinations with the aim of making students use their textbook regularly for studying. Teachers believed that if they used the textbook in the classroom frequently and regularly, it was easier to make students gain textbook studying habits.

4.2.4 Usage of Other Textbooks

Teachers stated that they used additional sources like students' workbook, teachers' guide book, and other materials while constructing their lesson plans and teaching in the class. Their views about using additional sources during the lesson and for lesson preparations were illustrated by the following quotes:

"We use students' workbook sometimes during the lesson in order to solve questions or sometimes for the homework in addition to the mathematics textbook." (Pelin)

"We follow the teachers' guide book in order to see how many hours to plan to teach a subject, which questions to solve, and to see different types of examples." (Şeref)

"…I use other sources. Our school prioritizes SBS thus we have to solve several questions. For this reason, while I follow activities from the mathematics textbook, I use other books for solving the questions." (Zehra)

"…I definitely use other sources. In our school, mathematics lesson hours are more than other schools; therefore, using only textbook is not enough. Because of this, after finishing the textbook and the workbook I use other books for extra questions." (Pelin)

"...in fact the mathematics textbook is the main book for me. I also use teachers' guide book and if I need extra multiple choice questions, I benefit from other sources." (Önder)

All of the teachers stated that they used additional sources in addition to the mathematics textbook. Especially, they expressed the school's effect on using additional sources. They stated that the lesson hours devoted for mathematics in the school was more than other schools; thus, they needed additional sources for the preparation of extra lesson hours. In addition, they emphasized that the school prioritized SBS achievement; therefore, they used additional books for solving multiple choice questions suitable to SBS question type.

4.3 Teachers' Views about Students' Textbook Usage

Most of the teachers stated that students understood what they read from the mathematics textbook but they did not analyze the textbook effectively: *"...I believe that they [students] understand what they read however they don't make effective textbook working" (Fırat)*. Teachers also commented that students did not read books and repeat what they had learned. Teachers' views about students' textbook usage were given in following quotes:

"Students read their textbook but they have difficulties to understand questions [of the textbook]. In fact, this is not just a problem of the textbook; it is a general problem which depends on students' poor reading habit. The language of the textbook is heavy in some parts and this also increases students' lack of understanding." (Pelin)

"*Most of [the students] don't read [the textbook]. For example, if the question asks them to perform a set of multiplication they would not do it. Because, there are symbols and numbers below [the question] and they add or multiply without even noticing. They don't have the consciousness of reading and understanding." (Damla)*

"I don't think that they [students] go through [the book] once more. In fact, I don't direct them [the students] to [studying the textbook] once more. I think it [students' usage of mathematics textbook] is also related to teachers' guidance." (Fırat)

Teachers expressed that students did not study from their textbook unless there was an assignment and they did not do the homework from the textbook efficiently:

"...maybe a small number of students can study [from the textbook] [when they are not assigned] homework but I believe that most of them don't even have a look at the textbook if I don't ask them to do and give an assignment." (Zehra)

"...I don't believe that our students benefit from their textbook 100 per cent. They just study if there is homework or if their teacher asks them. Therefore, I don't think they use [the textbook] efficiently and effectively. They mostly prefer books for multiple choice questions instead of mathematics textbook because they believe that these books [for multiple choice questions] are more effective for the SBS preparation." (Şeref)

"I don't believe that they [the students] study [from the mathematics textbook] without homework. They even don't take their textbook to the school if we don't assign homework [from the textbook]. They don't write operations or explanation under questions of the textbook when I assign homework. They always have excuse that they solve the questions on an extra paper and just write the answer on textbook." (Önder)

"I think that students never study [from the textbook] if I don't assign homework. When I assign research homework they never benefit and prepare it by using their textbook." (Pelin)

"I don't think that students study from the textbook in order to prepare for the lesson. I don't think they will use the book for studying and repeating content or searching an issue unless I tell them to do so." (Fırat)

In conclusion, teachers expressed that students understood the content and questions from the textbook if they studied but they believed that students did not use their textbook efficiently for the preparations. Also teachers stated that students

did not do homework of the textbook efficiently and they generally needed teachers' guidance to study from mathematics textbook. Teachers underlined that if they did not direct the students to study from the textbook, then students did not prefer to study from it.

4.4 Teachers' Views about Mathematics Textbooks' Characteristics

Teachers were asked also about the content of the mathematics textbook and its impact on the teaching and learning process. All of the teachers stated that the mathematics textbook was the main source for lessons and lesson preparations: *"…because of taking the textbook as the main source, we follow it [the textbook] step by step for the preparations and taking the important points" (Damla).* Teachers' views about accepting textbook as the main source were given in the following quotes:

> *"…The education system changes frequently and the importance of the textbook usage takes different place in each system. The textbooks are changed with the new curriculum and all have become student-centered books now. Therefore, teachers and students need the textbook in order to follow activities and implementations. I think the textbook is the only source which satisfies the expectations of the curriculum." (Şeref)*
>
> *"In addition to [following the] order of the content and the activities, we [teachers] have to use visual materials such as presentations during the lessons. We consider the textbook as the main source even for these materials. […] The textbook of the Ministry of National Education is our main source and every detail like objectives, notes, and warnings are clear in it [the textbook]." (Önder)*
>
> *"Not all additional resource in the market as helper for the lessons are suitable for the curriculum of Ministry of National Education. […] At this point, we tell students that the textbook and the workbook are the main sources. We tell them that they can get help from other resources. Yet, they know that they should follow the*

textbook as the main one." (Pelin)

In brief, teachers expressed that they followed the textbook as the main source during the lessons and they made their students realize that the textbook was important for their education. In addition, teachers believed that not every additional resource in the market could be totally suitable for the purposes of the new mathematics curriculum. Therefore, they stated that teachers' guidance was important for students to understand the significance of the mathematics textbook.

4.4.1 Content of the Mathematics Textbooks

Teachers also expressed their ideas about the content of the textbook. Some of the teachers thought that the content of the textbook was sufficient for teaching and learning; however, most of them thought it needed improvement:

> *"…just using the textbook of the Ministry of National Education as teaching material can be inadequate. It [the textbook] is not sufficient." (Damla)*
>
> *"When we analyze the content of the textbook we realize that while it is sufficient in some points, sometimes it is insufficient in terms of the content. More examples, activities, and questions should be added. Now, we need to prepare extra worksheets in addition to the textbook. The content is not deeply explained. The parts should be improved." (Önder)*
>
> *"I think the content of the textbook is sufficient. The writers of the textbook are experienced people in this field. The biggest problem is not being able to implement the activities because of the time limit." (Şeref)*

In addition to the content, some of the teachers stated that the level of the textbook was not appropriate for the grade levels while the other teachers expressed the level were appropriate. Their views were as follows:

"I analyzed the textbook but I prefer to take help from other sources. The level of the questions is not appropriate sometimes; they are very easy. The warm up activities are sometimes too long and this decreases students' attention." (Zehra)

"The steps which should start from easiest to most difficult ones are skipped. It is possible to find questions from every level in the same activity or in the workbook. The examples could be from more specific to more general to make students understand steps of the content." (Önder)

"I think the level of the textbook is totally suitable for the grade level. But the examples and activities can be organized in a better way because sometimes the difficult and easy questions are mixed and students have difficulty to solve difficult questions if they haven't learnt yet. Therefore, the organization should be from easier to more difficult." (Fatih)

Teachers also specified their ideas whether the textbook was prepared suitable to the objectives:

"I think the textbook totally overlaps with the objectives. The objectives are prepared according to grades and the textbook serve these [objectives]." (Zehra)

"The textbook is a good match with the objectives but the connections between the objectives are not effective. There should be exercises addressing connections to the previous and further topics after teaching through an objective. I cannot see them in the MONE book. Therefore, I copy tests from other resources or I prepare [questions]. I don't think that [the textbook] is a resource in which connections with the previous and further topics are presented for critical thinking. For example, there are few examples for multiplication but I can't find the examples of multiplication in connection to addition." (Damla)

In brief, some of the teachers stated that the content of the textbook was sufficient for learning while some of them stated it needed improvement. However; all of the teachers expressed that the content of the textbook, activities and the questions should be organized better from the easiest to more difficult in order to

facilitate students' learning. They also stated that the textbook was prepared suitable to the objectives, yet the level of the questions should be arranged better.

4.4.2 Impact of Mathematics Textbooks on Teaching and Learning Process

Teachers criticized the quality of the textbooks. They expressed that the quality of questions was sometimes not good, the numeric operations of the mathematics textbook were sometimes beyond the level of students and there were many mistakes in examples and questions in the textbook. Their views were as follows:

> *"The questions sometimes require heavy numeric operations which can make students tired. We [the teachers] try to compensate this deficiency and try to correct during the lesson. […] This situation affects our lesson negatively from time to time." (Pelin)*
>
> *"Some questions are loaded and they take too much of students' time to solve. It is better not to use more than two objectives in a question. […] The curriculum is organized according to this. […] But sometimes the textbook questions have [more than two objectives] and I don't really like the selection of numbers [in the questions]." (Önder)*
>
> *"There are many mistakes in the textbook. When we analyzed the textbook in the undergraduate program, we found many mistakes and the mistakes have not changed since. I have to solve the questions before assigning homework. If we only use the MONE textbook, it will be [not] sufficient." (Damla)*
>
> *"One of the great problems of the textbook is that there are many same-type questions. It is boring for students to solve similar types of questions repeatedly." (Fırat)*

Some of teachers stated that the language of the textbook was not suitable for the grades in some points and this bored students. This was illustrated in the following excerpts:

"Some questions and sentences are difficult to understand [for students]. Students don't understand what to do in some parts. The logic of the questions is good; however, because of unclear explanations, we had several problems." (Damla)

"…It [the content of the textbook] is boring for students sometimes. Contents could be arranged for students' age. It should be easier to do and understand. In addition to the content, while the language of the textbook is sometimes suitable for students' level, sometimes it is definitely not suitable. Students sometimes can have difficulties in understanding problems, activities, and the content [of the textbook]."(Pelin)

"I think the content is suitable [for students' level]. However, I observe that students get bored from the textbook. Same type of questions and examples make the textbook boring for students. I think this is a great disadvantage for students' studying [textbook habit]." (Fırat)

To sum up, teachers stated that the questions' level in the textbook was not suitable for the grade level of students and the content could be boring at some points. They expressed that the content, problems, and activities should be improved. In addition, teachers specified that the language of the textbook could be easier to understand for students because students have difficulties in understanding the content of the textbook.

4.4.3 Improvement of the Textbook

All of the teachers expressed that there was a progress in the quality of the textbook compared to the previous textbooks but it still needed to be revised and improved. The following quotes of teachers illustrated advices of teachers for the improvement of textbooks:

"Textbook is very enjoyable compared to the old one, but it still needs to be more enjoyable because the enjoyable parts gain student attention to the textbook. For example, there can be puzzles, games,

and interesting information about mathematicians. In this way, while they [students] can see different aspects of the textbook, they will also enjoy more and learn." (Zehra)

"The textbook is not totally suitable for my mathematics teaching aim but it is in progress with respect to the past years. We [teachers] could use [the textbook] seldom during my first years of teaching, but it became more usable in time. I hope it will be better near future. The language of the textbook should be in the level of students' [language level]." (Pelin)

"The questions could be more understandable and stories which students enjoy could be added to the questions. Activities could be improved. They [the activities] could be clearer. The page design could be arranged better and more colorful." (Pelin)

"In some activities, even we, as teachers, have confusions. We have problems in understanding the aim and the application of the [activity] from time to time. […] Teachers even have difficulty about how to teach some activities [of the textbook]. Therefore, some activities should be changed for facilitating students' understanding. In addition, instead of using the same kind of questions frequently, more effective questions should be added to textbook. Also, while sometimes the important subjects are passed briefly, the less important subjects are underlined in detail. These should definitely be changed." (Fırat)

"In some activities, there is an issue of cultural differences. […] The lives of students in the east and west of Turkey are very different; therefore, not all questions or explanations are suitable for all students from different [regional] cultures." (Şeref)

To sum up, although teachers specified that the mathematics textbooks were in improvement compared to the past years, they still needed to be revised and improved. They stated that activities, examples, questions, contents, and page designs should be rearranged according to grade levels and culture of students. They believed that in order to gain students' attention it was important to add more enjoyable parts to the textbook like some puzzles, games, and stories.

4.5 Teachers' Views about the Effect of School Context on Textbook Usage

Teachers expressed that school context also had effect on textbook usage. They stated that the school had achievement concerns in SBS and this affected the textbook usage. Their views were as follows:

> *"We should make students discover the subject by doing activities. However, we [teachers] don't allow this with the idea that the time is limited and we should prepare students to SBS effectively. The school gives a great importance to the SBS and many times this negatively affects our textbook usage. Since SBS is an examination of multiple choice questions, textbook does not serve this. The examination is prepared by the Ministry of National Education like the textbook, but still we need to use additional sources for the preparation [for the examination]. In fact, I prefer to follow the lesson from textbook instead of additional sources, but the school priority forces me to [use additional resources]." (Fırat)*
>
> *"[In order to make an effective textbook work,] the SBS anxiety of the students should be removed. When there is this anxiety, teachers feel helpless and use additional sources instead of only using the textbook. [Now that there is no SBS] in the 6th grades, it is more relaxed; thus, we don't need additional sources too much in this grade and we feel more free [to use the textbook]." (Önder)*
>
> *"Students have a lot of homework from additional sources. They spend considerable time to finish their homework. Because of this, when we assign textbook homework, they don't want to do it and they do it inefficiently. If we assign homework only from the textbook and workbook instead of those additional sources, students could be [more motivated to use the textbook]." (Şeref)*

Teachers also expressed that family help was very effective for improving students' habit of textbook usage. This is illustrated in the following excerpts:

> *"I think that assigning homework and checking that homework is the most important method to improve students' habit of textbook usage. But I also think that students gain the habit of studying regularly more with family help. If the family doesn't emphasize the importance of the textbook, it is very difficult for teachers to motivate students to use the textbook." (Zehra)*

"Especially this year parents complain about our usage of textbooks. They want their children to be successful in SBS and they believe the textbook is ineffective for SBS preparation. They insist that we [teachers] use [SBS preparation] books." (Pelin)

In brief, teachers expressed that the school context was important for the textbook usage. Teachers stated school administrators' and families' support was vital for students to motivate and improve their textbook usage habit. Teachers underlined that families and school administrator had high achievement expectations for SBS examination and they thought textbooks did not facilitate students' preparation for SBS effectively.

4.6 Summary of the Chapter

In this study, teachers expressed their views about textbook usage, students' textbook usage, mathematics textbooks characteristics, and school context on textbook usage.

First of all, teachers explained their aims in teaching mathematics. Most of them stated that the purpose of mathematics teaching was making connection between the real life and mathematics. According to the teachers, textbooks had a great importance in connecting the real life with mathematics. They stated that making connection between daily life and mathematics was very important for an effective learning process. Some of the teachers stated that the textbook of the Ministry of National Education was suitable for their aims in teaching mathematics while other teachers claimed that it was not suitable for their teaching aims. They believed that textbook should be prepared by considering building bridges between

real life situations and mathematics.

All of the teachers expressed that they analyzed the textbook in some depth. They expressed how they used the textbook with the light of these analyses. They specified that mathematics textbooks helped them to follow the curriculum, content, and examples of concepts.

Most of the teachers stated that they used the textbook for conducting the activities in the classroom which were suggested in the textbook. Although some of them considered the activities as effective, they complained about the time and material limitations for implementing them. Moreover, teachers expressed that families and school administrations did not believe the effectiveness of conducting activities because they thought that activities were not a part of learning process and basically were lose of time.

All of the teachers expressed that they generally used the mathematics textbook for the lesson preparation and planning. Some of the teacher were taking some notes or writing some explanations on their textbook during the lesson or before the lesson for important points. In addition, most of them expressed that they benefited from the textbook while preparing examination questions. In these preparations of examinations, teachers underlined that they generally did not copy questions directly from the textbook. Teachers preferred to take ideas from the questions of the textbook for the examination questions and they prepared questions parallel to the objectives and style of these study questions of the textbook.

Teachers also explained their views about using additional sources in

addition to the textbook. They stated that they used additional sources like students' workbook, teachers' guide book, and other materials while constructing their lesson plans and teaching in the class. They emphasized the school's effect on using additional sources. Teachers expressed that mathematics lesson hours of the school were more than other schools; therefore, additional sources were needed in order to prepare extra lesson hours. Moreover, teachers specified that high SBS achievement was the priority of the school; therefore, they needed books for multiple choice questions for solving questions suitable to SBS question type.

In addition to these, teachers explained their views about students' ways of textbook usage. They stated that if there was not an assignment or homework from textbook, and then students did not prefer to study mathematics from their textbook. Most of the teachers expressed that students were capable of understanding what they study in the mathematics textbook, but they did not analyze the textbook effectively. They also commented that students did not study once more what they had learned in the classroom by using the textbook.

Teachers specified that students did not like to study from the textbook. However, they believed that teachers had a considerable responsibility on students' negative attitude for studying their textbook. They expressed that in order to improve habits of studying from the textbook; teachers' guidance was crucial. They said they assigned homework, projects, performance work, and asked questions in examinations similar to study questions of the textbook in order to motivate students to use their mathematics textbook while studying. Teachers also specified that if teachers used the textbook regularly during the lesson it was easier to

motivate student to study from the textbook.

The findings of the study also revealed teachers' views about the characteristics of the mathematics textbook. They expressed their views about the content of the textbook and its impact on the teaching and learning process. All of the teachers emphasized that the main tool of the mathematics lessons was the textbook not only during the lessons but also for lesson preparations. However, even if teachers believed that textbooks were in progress of improvement, they specified that textbooks still needed be improved more. For example, they thought the content of the textbook, activities, and questions should be reorganized from the easiest to more difficult to facilitate learning process of students. Teachers underlined that the textbook was prepared suitable for objectives of the new mathematics curriculum; however, the level of the questions should be rearranged according to the grade level of students because teachers stated that students had some difficulty.

In addition to the content, teachers complained of the quality of questions in textbook. They said that the heavy numeric operations of the textbook required more than the level of students' understanding. In addition, there were many mistakes in the examples and questions in the textbook, and the language of the activities and questions was not suitable for students' grade.

Teachers also mentioned about the positive features of the textbooks. They all expressed that the textbook was improved compared to the previous textbooks. However, they emphasized that it still needed to be revised and improved. They

stated that all the content and page design of the textbook should be changed and arranged for more effective lessons. In order to gain students' attention to the lesson, teachers believed that more enjoyable parts could be added to each chapter.

Teachers also expressed that the school context influenced textbook usage process. They stated that the school and families prioritized high achievement in SBS and teachers' textbook usage was affected from this pressure. Teachers believed that in order to motivate students and improve their textbook usage habit, the support of school administration and families were very important.

There were four mathematics teachers teaching 6^{th} and 7^{th} grade and two mathematics teachers teaching 4^{th} and 5^{th} grades participated in this study. At the beginning of the study it was expected to find differences between teachers of 6^{th}-7^{th} and 4^{th}-5^{th} grade levels in terms of textbook usage and their views about students' textbook usage, and mathematics textbooks' characteristics. However, data analysis revealed that no differences among grade levels in terms of teachers' views of textbook usage, views of students' textbook usage, and views of textbooks' characteristics were detected.

CHAPTER V

DISCUSSION AND RECOMENDATIONS

The main purpose of this study was to investigate teachers' ways of using mathematics textbooks for their teaching and their views about elementary students' usage of mathematics textbooks during the classroom time and for their homework and their views about the characteristics of mathematics textbooks. A case study was conducted in a private elementary school with six elementary mathematics teachers in order to investigate teachers' views about using the textbook. Data were collected from teachers with an interview protocol which was developed by the researcher through the findings from the literature. In this chapter, the major findings of the study will be discussed. Then, some recommendations will be given for further studies.

5.1 Teachers' General Views about Textbook Usage

Textbooks draw a framework for teachers to understand what to teach and how to teach (Nicol & Crespo, 2006). The findings of the study illustrated that all of the teachers used the mathematics textbook in order to plan and prepare lessons. They specified that they followed the curriculum content from the textbook. They benefited from the activities, study questions, problems, and examples of the subject in the textbook.

Most of the teachers thought that conducting activities of the textbook was very effective for easy and meaningful learning of students. Although the participant teachers of this study wished to conduct the activities in the textbook frequently, they complained about lack of time and materials, which was also previously reported for upper elementary mathematics teachers in public schools (Erbaş & Ulusoy, 2008; Keleş, 2009). In addition to time and material limitations, teachers specified that parents and school administrators had negative views toward activity implementation since they thought that activities were waste of time and ineffective for students' learning mathematics. They underlined that SBS achievement was very important for most of the parents and parents believed that these activities were not effective for SBS preparation; therefore, teachers had difficulty to get parents' support. Lack of parent support and the SBS concerns of teachers and parents have influenced the implementation of the new curriculum negatively in public schools (Erbaş & Ulubay, 2008; Keleş, 2009).The present study confirmed that these concerns also existed in the private school settings.

Teachers also pointed out that they prepared examinations' questions by taking the textbook into consideration. They analyzed the study questions and examples of textbook and then prepared the examination questions parallel to the objectives and style of the study questions of the textbook. Teachers expressed that they used this method in order to influence and motivate students to study their textbook regularly.

The school in this study had extra hours for mathematics and teachers in this study stated that they needed to use additional books in addition to the Ministry of

National Education (MONE) books for the preparation of the lesson and during the lesson. This was an expected finding especially when it has been reported that teachers needed extra sources for implementing the program even in public school settings (Altun et. all, 2004; Keleş, 2009) where there were not extra hours for mathematics. However, the number of weekly hours for mathematics was not the only reason for teachers' usage of additional resources. Teachers specified that they preferred to use multiple choice question books because they wanted to prepare their students for SBS effectively. Teachers pointed that the questions in the textbook were not sufficient for SBS preparation. These findings have been supported by the findings of the study of Mutu (2008) in which teachers thought the question style of mathematics textbook was not suitable for SBS. Teachers in the present study might have preferred to use additional books in order to increase SBS achievement because the school and parents prioritized SBS achievement and had high expectations from teachers to make students successful in SBS.

5.2 Teachers' General Views about Students' Textbook Usage and Teachers' Guidance

Participants expressed negative views about students' ways of textbook usage that students did not use their textbook efficiently. Teachers pointed out that students understood the contents, examples, and questions of the textbook; however, they did not analyze the textbook efficiently. Çetin and Mahir (2005) have found that most of the students did not use their mathematics textbooks frequently and efficiently; even some of them never used the mathematics textbooks. It seems

that what teachers have observed and what students have reported in the Turkish case were parallel. Participants of the present study also stated that if there was not an assignment or homework from textbook, students did not prefer to study mathematics from their textbook in order to make preparation for the lesson. Teachers also commented that students even did not re-study what they had learned in the classroom by using the textbook. It might be the case that students were affected by the school policy and parents' emphasis on the SBS achievement and did not consider their textbook useful for SBS achievement.

All of the teachers emphasized that the main source of the mathematics lesson was the mathematics textbook. Textbooks have been accepted as the key points of the lesson in order to shape mathematics instruction (Son, 2008). Therefore, teachers expressed that they made their students realize the importance of the textbook for the instruction. They believed that in order to make students understand the significance of the textbook, teachers should guide the students. The participants underlined that students needed teachers' directions and guidance to study and use their mathematics textbook. These findings were also supported with other studies. For example, in the study of Brown (1973), teachers were interviewed and students took a questionnaire about mathematics textbook usage. The findings showed that there was a positive correlation between teachers' request and students' reading frequency of their textbook. It was concluded that students strongly needed teachers' guidance to use their mathematics textbooks. Kuehl (2001) prepared lesson plans in order to improve students' mathematical thinking and motivate them to study from their mathematics textbook and students improved their independent

learning skills from the textbook with the help of these lesson plans. Therefore, the researcher underlined that if teachers guided students efficiently, students could improve textbook usage habits. It might be the case that teachers in the present study were aware of the importance of the guidance they could provide for students to use their notebooks more efficiently, however, they could not utilize effective guidance for students.

The participants of our study criticized their behaviors that they had a considerable responsibility on students' negative feelings towards studying the textbook. They commented that because of not using the textbook frequently during the lesson, students could not realize the significance of textbook and improve their usage habit. Teachers believed that using the textbook frequently could increase students' motivation of textbook usage. They specified that they assigned homework, projects, and performance work from the textbook in order to direct students to study from the textbook. In addition, teachers prepared examination questions similar to examples and study questions of the textbook in order to positively influence students' habits of studying the textbook.

5.3 Teachers' General Views about Textbooks' Characteristics

The findings showed that teachers had positive and negative views about characteristics of the mathematics textbooks. Teachers expressed that the content of the textbook matched their mathematics teaching purpose from time to time. Most of the teachers stated that their main aim of teaching mathematics was making connections between real life and mathematics. They believed that without

connecting students' daily life with mathematics, the subjects were very abstract to learn. In order to facilitate effective learning, they underlined the positive effect of building bridges between real life situations and mathematics. This purpose was also stated by the new curriculum (MONE, 2006). Therefore, mathematics textbook, as an important part of the new curriculum, was expected to help teachers to reach their purpose. However, while some of the participant teachers expressed that the textbook of the Ministry of National Education (MONE) was suitable for their aims in teaching mathematics, some of them believed that it needed improvement and a strong link should be constructed between mathematical concepts and daily life concepts throughout the textbook. Therefore, teachers' criticisms of insufficient real life connections in the mathematics textbooks should be considered carefully by the textbook writers.

Participants of the present study stated that the objectives of the new curriculum mostly well matched with the style of the textbook, which was reported as a very important issue (Eğitim Reformu Girişimi, 2005). Participants believed that the structure, philosophy, and objectives of the textbook were coherent with the new curriculum. However, all of the teachers expressed that in order to facilitate students' learning the content, activities, examples, and questions of the textbook should be rearranged from the easiest tasks to more difficult ones. In addition, teachers specified that they generally did not think that the textbook content was sufficient for effective learning, confirming previous studies with previous curricula (Şimşek, 2001; Toprak, 1993) and the present curriculum (Işık, 2008).

The findings of the study also showed that teachers complained about the

quality of questions in the textbook. They said most activities, examples, and questions required several numeric operations and this made students miss the main purpose of tasks because students focused only on performing operations and they got bored by the operations.

Although teachers have raised several criticisms of the textbook, they pointed out that the textbook was still the main resource while preparing a lesson and conducting it, confirming the role of textbooks as the organizing centers of the instructions as they help teachers to decide what to teach, when to teach, and how to teach (Maxwell, 1985).

5.4 Teachers' Suggestions

All of the participants stated that they used the textbook with different styles and for several reasons. They all expressed that mathematics textbook was more improved compared to the previous textbooks, but it still needed to be revised and improved continuously. They especially criticized the activities, examples, questions, and page designs of the textbook. They believed that all of these features should be rearranged according to the grade levels and expectations of the new elementary mathematics curriculum. Some of the teachers commented that if more enjoyable parts like puzzles and stories were added in the chapters, the students could be motivated more to use and study from their textbook.

Teachers also suggested that the quality of questions in the textbook should be increased. They specified that most of the questions included several multistep numeric operations and this forced students to solve them instead of focusing on the

mathematics behind. In addition, teachers recommended that the questions and examples of textbook should be rearranged from easier to more difficult tasks.

5.5 Conclusion

The study showed that the textbook was the main resource for the mathematics teachers even when the school had more hours for mathematics in the elementary grades. While teachers could compensate the extra hours by other resources such as examination preparation textbooks, teachers still had time management concerns while conducting the activities suggested by the textbook. This contrasting usage of textbooks seemed to be the consequence of school policy which prioritized the SBS achievement. The school case in this study exemplified how school policy and even parents' pressure affected teachers' textbook usage such that teachers could not conducting the activities even when they had extra hours for mathematics classes. In the broadest sense, this study showed that the national examination policy influenced teachers' use of MONE textbooks mostly in an undesired way. Therefore, the study addressed that examination policy and textbooks should be consistent for a successful implementation of curriculum.

The importance of teacher guidance for students' effective use of textbooks seemed to be another important issue raised by the study. Considering that in-service training seminars might not be effective in reaching teachers (Kartallıoğlu, 2005), a detailed section for guiding both teachers and students for an effective usage of mathematics textbooks seemed to be essential for a more effective mathematics instruction.

Students' effective usage of textbooks seemed also to be related to the content of the textbook for participating teachers. The study showed that the textbook content should be meaningful for the students and also should provide them with opportunities to learn mathematics so that students would be more willing to use the textbook as a learning source. Reviews of textbooks should focus on representation of mathematics which would be more meaningful for students.

5.6 My Learning as a Researcher and a Teacher

In the undergraduate program, we had courses about textbooks. In these courses, we were analyzing the mathematics textbooks of MONE from several aspects. We were examining objectives, concept, visuality, and page design of the textbooks. We were discussing whether the activities and examples matched with the expectations of the new curriculum. In addition to these discussions, we were also discussing how we will use the textbook for teaching purposes, how we will plan our lesson according to the activities of textbook, and how we will improve the activities, examples, and study questions of textbook.

When I started to teach after graduation, those textbook lectures helped me to design my lesson with the textbook. Especially at the beginning of my teaching life, I prepared my lesson with the light of the advices of my instructors. I also think like the participants of this study that the textbook is the main source of lesson. It helps to follow the curriculum easily. However, as the participants stated that textbook need improvement for many aspects. While I am preparing my lessons now, I use my three years experiences and I design the lesson changing some part in

textbook which I find ineffective.

As the participants stated, my students also have the similar ideas towards textbooks that they do not want to study it. I frequently assign homework and generally control them in the classroom. Thus, students solve homework questions but they always complain about textbook that it is not enjoyable to study. They ask me if they can study from additional books instead of the textbook. I try to guide students but as participants underlined that I am many times ineffective to motivate them. Maybe, students feel my negatives feelings toward textbook that it has deficiencies for many aspects. After this study, I realized that I should control myself in order to not reveal my negative thoughts about textbook. In addition, I should guide and motivate my students to study and use their textbook in a better way.

I was working in the school of the participant teachers while I was collecting data of this study. This year, I work at another private school in another city. Although I changed the school, I still have similar problems that parents and school administration do not support conducting activities in the mathematics class. They totally focus on the achievement in SBS. My new students also complain about their mathematics textbook and they feel very unhappy when I assign homework from the textbook. My experience and the views of participants about students' feelings toward textbooks are very parallel although students are from different schools of different cities. Therefore, the findings of this study supported my thoughts about textbook that it needs improvements to gain students' attention.

The most effective finding of this study for my teaching career is realizing the importance of teachers' guidance to direct students to use mathematics textbook. As the study showed, textbook is the main source of mathematics teaching and teachers have the responsibility to make student to develop effective textbook usage habits.

5.7 Recommendations for Further Researchers

The findings of the study have offered some recommendations for further researchers. In this section, these recommendations were presented.

The present study was a case study; thus data was collected only from a small numbers of teachers. The study might be expanded to more than one school in order to make the study results more generalizable.

Interviews were conducted with participating teachers in order to collect data for this study. However, collecting data only through interviews with teachers is not sufficient to reach deeper findings. In addition to interviews, classroom observations can also be conducted in order to realize teachers' ways of textbook usage and students' attitudes towards using textbook. Students can be also interviewed for their usage of mathematics textbooks. Therefore, another study can be conducted by both teacher and students through interviews and classroom observations.

The current study was conducted for the 4^{th}, 5^{th}, 6^{th}, and 7^{th} grade mathematics textbook usage. A similar study also can be conducted for 8^{th} grade mathematics textbook. SBS is at the end of the 8^{th} grade thus teachers' textbook

usage style can be different in the 8th grade compared to the other grades.

The findings of this study might lead researchers to develop instruments such as surveys which could be implemented to a large sample of Turkish elementary school students and mathematics teachers in order to investigate the usage of elementary mathematics textbook in a broad perspective.

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APPENDIX A

ÖĞRETMEN GÖRÜŞME PROTOKOLÜ

Değerli Meslektaşım,

Ben Nadiye Başer, Orta Doğu Teknik Üniversitesi (ODTÜ) Eğitim Fakültesi İlköğretim Bölümü'nde yüksek lisans öğrencisiyim. Yüksek lisans tezim kapsamında Y.Doç.Dr. Çiğdem Haser danışmanlığında *matematik öğretmenlerinin ilköğretim öğrencilerinin ve matematik öğretmenlerinin, matematik ders kitaplarını nasıl kullandıkları hakkındaki görüşlerini* araştırıyorum. Yapacağımız bu görüşme bu çalışma kapsamında gerçekleştirilmektedir. Çalışma için gönüllü olduğunuz halde şu anda görüşmeyi yapmak istemiyorsanız lütfen belirtiniz. Gönüllü olmanız görüşmeyi mutlaka tamamlamanız gerektiği anlamına gelmez, istediğiniz zaman görüşmeyi bitirebilirsiniz. Görüşme sırasında cevaplandırmak istemediğiniz bir soru olursa lütfen belirtiniz. Kimliğiniz ve bu görüşme sırasında sağladığınız analiz edilmemiş bilgi okul yönetimi, öğrencileriniz veya veliler ile ya da diğer kuruluşlarla paylaşılmayacaktır. Bize sağladığınız bilgilere sadece araştırma ekibinin erişimi olacaktır. Bu araştırma ile ilgili herhangi bir yayında kimliğinizi ortaya çıkaracak hiçbir bilgi verilmeyecektir.

Bu görüşmede 16 ana soru vardır ve bu soruların doğru ya da yanlış olarak nitelendirilebilen bir cevabı yoktur. Eğer izin verirseniz bu görüşmenin ses kaydını almak istiyorum. Görüşmenin ses kaydının alınmasını istemiyorsanız ya da belli bir kısmının ses kaydının alınmasını istiyorsanız lütfen çekinmeden belirtiniz. Bu

görüşmenin yaklaşık olarak 40 dakika süreceğini düşünüyorum.

Teşekkürler.

Nadiye BAŞER

İlköğretim Fen ve Matematik Eğitimi

Yüksek Lisans Öğrencisi

GÖRÜŞME SORULARI

I. Öğretmenlerin Ders Kitabı Kullanımı:

1. Kaç yıldır matematik öğretmenliği yapıyorsunuz?
2. Kaç yıldır şu anda çalıştığınız okulda matematik öğretmeni olarak çalışıyorsunuz?
3. Milli Eğitim Bakanlığı'nın hazırladığı ve derslerde kullandığınız matematik ders kitabını ne ölçüde tanıyorsunuz?
    a. Ders kitabınızda bulunan konu anlatımını, örnekleri, etkinlikleri ve uygulama sorularını incelediniz mi?
    b. Bu örneklerin, etkinliklerin ve uygulamaların matematik dersinin amaçları açısından yeterliliğini değerlendirir misiniz? Örnek verebilir misiniz?
    c. Peki sizin matematik dersiniz için öngördüğünüz amaçlar nelerdir? Bu açıdan matematik kitabınızın yeterliliğini değerlendirir misiniz?

4. Dersinizi planlarken matematik ders kitabından faydalanıyor musunuz? Nasıl?
    a. Ders kitabından notlar çıkarıyor musunuz?
    b. Başka kitaplardan da faydalanıyor musunuz? Nasıl?
    c. Daha önceki deneyimlerinizden yararlanıyor musunuz? Nasıl?
    d. Kullandığınız ders kitabının eksik gördüğünüz yanları nelerdir? Bu durum kitap kullanımınızı nasıl etkiliyor?
5. Ders esnasında matematik ders kitabını ne şekilde kullanıyorsunuz? (Soru sorarken, konu ile ilgili açıklama yaparken ve örnekler verirken)
6. Sınav sorularınızı hazırlarken ders kitabını nasıl kullanıyorsunuz?
    a. Kitabınızdaki uygulama sorularının sınav sorularınıza etkisi oluyor mu? Nasıl?

II. Öğrencilerin Ders Kitabı Kullanımı:

7. Matematik ders kitabının dilini öğrenci seviyesine uygun buluyor musunuz? Bu cevabınızla ilgili bir örnek verebilir misiniz?
8. Ders kitaplarının öğrencilerin konuları kavramasına yararı olduğunu düşüyor musunuz?
    a. Evet ise, nasıl bir yarar? Tarif edebilir misiniz?
    b. Hayır ise, neden bir yararı olmadığını düşünüyorsunuz?
9. Öğrencilerinizden matematik ders kitabı kullanımı ile ilgili beklentileriniz nelerdir?

10. Öğrencileriniz matematik ders kitabından sizce nasıl yararlanıyorlar?
    a. Ders kitaplarından okuduklarını anladıklarını düşünüyor musunuz?
    b. Matematik ders kitaplarındaki etkinlik ve uygulama sorularını sizce ne kadar dikkatle yapıyorlar?
    c. Ders kitabından verdiğiniz ödevlerinizi sizce ne kadar verimli bir şekilde yapıyorlar?
11. Ödev vermediğiniz günlerde öğrencilerinizin ders kitaplarından derse hazırlık amacıyla çalıştıklarını düşünüyor musunuz? Bunu nasıl anlıyorsunuz?
12. Bir konuyu derste işledikten sonra, öğrencilerinizin ders kitabından konuyu tekrar gözden geçirdiğini düşünüyor musunuz? Bunun için bir yönlendirme yapıyor musunuz? Nasıl?
13. Öğrencilerinizi ders kitaplarını kullanmaları için nasıl motive ediyorsunuz?
14. Öğrencilerin matematik ders kitaplarını verimli kullanma alışkanlığı kazanması için öğretmenler neler yapabilir?
15. Bir ders kitabı yazacak olsanız şu an kullandığınız matematik ders kitabında hangi noktaları değiştirmek ve kitabınıza yeni olarak neler eklemek istersiniz?
    a. Öğretmen kullanımı için neler eklenebilir?
    b. Öğrenci kullanımı için neler eklenebilir?
16. Ders kitaplarının öğretmen ve öğrenciler tarafından kullanımı ile ilgili sormadığım ama sormamı istediğiniz bir soru var mı? Şimdi sorsam cevaplar mısınız?

APPENDIX B

THE PERMISSION GOT FROM RESEARCH CENTER FOR APPLIED ETHICS

1956

Orta Doğu Teknik Üniversitesi
Middle East Technical University
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Sayı: B.30.2.ODT.0.AH.00.00/126/94 -810

16 Haziran 2011

Gönderilen: Yrd. Doç. Dr. Çiğdem Haser
İlköğretim Bölümü

Gönderen : Prof. Dr. Canan Özgen
IAK Başkan Yardımcısı

İlgi : Etik Onayı

" Matematik Öğretmenlerinin İlköğretim Matematik Eğitiminde Öğrencilerin ve Matematik Öğretmenlerinin Matematik Ders Kitapları Kullanımları Hakkındaki Görüşlerinin İncelenmesi " isimli araştırmanız "İnsan Araştırmaları Komitesi" tarafından uygun görülerek gerekli onay verilmiştir.

Bilgilerinize saygılarımla sunarım.

Etik Komite Onayı

Uygundur

16/06/2011

Prof.Dr. Canan ÖZGEN
Uygulamalı Etik Araştırma Merkezi
(UEAM) Başkanı
ODTÜ 06531 ANKARA

APPENDIX C

TEZ FOTOKOPİSİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü ☐

Sosyal Bilimler Enstitüsü ☐

Uygulamalı Matematik Enstitüsü ☐

Enformatik Enstitüsü ☐

Deniz Bilimleri Enstitüsü ☐

YAZARIN

Soyadı :……

Ad :……

Bölümü : ……

TEZİN ADI (İngilizce) :……

……

……

TEZİN TÜRÜ : Yüksek Lisans ☐ Doktora ☐

1. Tezimin tamamı dünya çapında erişime açılsın ve kaynak gösterilmek şartıyla tezimin bir kısmı veya tamamının fotokopisi alınsın. ☐
2. Tezimin tamamı yalnızca Orta Doğu Teknik Üniversitesi kullanıcılarının erişimine açılsın. (Bu seçenekle tezinizin fotokopisi ya da elektronik kopyası Kütüphane aracılığı ile ODTÜ dışına dağıtılmayacaktır.) ☐
3. Tezim bir (1) yıl süreyle erişime kapalı olsun. (Bu seçenekle tezinizin fotokopisi ya da elektronik kopyası Kütüphane aracılığı ile ODTÜ dışına dağıtılmayacaktır.) ☐

Yazarın imzası ..... Tarih .....