



Teacher Views on the Effectiveness of the RTI Model Which is Applied for the Detection of Students Who Need Special Education in Mathematics

Yusuf Ölmez¹ and Ziya Argün²

¹Turgut Özal University, Turkey.

²Gazi University, Turkey.

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ABSTRACT

This study will reveal whether the mathematics teachers are aware of the reason why the concerned students have difficulty in learning mathematics and what measures they take if they are aware. In this context, the response to intervention (RTI) model, which is assumed to be effective for the students who need special education to gain and develop basic mathematical thinking skills, was applied and the views of the mathematics teachers on the extent of effect of this model. Student monitoring and structured interview forms constitute the data collection tools of the study. Findings show that the teachers are not aware of the reason why students who need special education have difficulty in learning mathematics. Teachers stated that the interventions under RTI increased the mathematics performances of students and that RTI offered new opportunities to students and was effective in increasing their academic achievement as they cannot show adequate attention to them in crowded classes. A RTI model approach is recommended to mathematics teachers for the students who need special education.

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Introduction

In the past, some students were not expected to be as good as other students in the mathematics subject and this was generally inured by both educators and the society. For example, the students who need special education and female students were this type of students. We still have educators who share this opinion today. Although, all students need to have equal chances to learn the teaching programs in their levels, this is not always possible. In addition, it is clear that having the same teaching for each student doesn't mean that the students have equal chance in education. On the other hand, a strategy applied by teachers for a student with good turnout may be ineffective for another student regardless of having the same special condition [1].

In recent years, it is seen that qualities of students with learning difficulty are notice and there are more works to arrange different environments and different teaching approaches for them [2, 3, 4, 5, 6]. As example, we can give the inclusion practices in separate special education schools and education classes.

Some students cannot obtain the gainings they try to obtain in the learning process at the same speed or cannot find enough time to make it meaningful in their minds. There are students who take the most advantage of the education opportunities that are offered, while there are also students who cannot conform to the normal education programs or who have some obstacles to conform students who need special education. We need special efforts, programs, tools and devices, methods and techniques and specially trained expert teachers for the education of these students [1, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17]. It is observed that the pre-planned different education arrangements to support individual educations other than the traditional education system

emerged to respond to these needs and to offer ideal education opportunities as much as possible.

Topbaş [18] stated that the line between the school failure and learning difficulty cannot be surely drawn and students who don't have learning difficulty can sometimes be defined as having learning difficulty. It is not fully distinguished whether the reason of the low academic achievement of these students is based on the deficiency of mathematics teaching or the learning difficulty. Students who need special education who try to continue their education in normal education institutions without being noticed suffer during their education lives and are somehow pushed to failure. The objectives of this study include the determination of these students beforehand, making the teaching plans in line with the needs of these individuals and contributing so that they can continue their education in normal classes like their peers. The basic findings in the literature emphasize the need to focus on mathematics education at earlier periods [19, 20]. To develop the mathematics competency of students at early ages is necessary for the subsequent learning success. Early mathematics interventions can eliminate and prevent existing and possible shortcomings. To develop the mathematics competency of students at early ages is necessary for the subsequent learning success [13, 19, 20, 21].

Although there are sufficient laws and regulations for equal provision of education to everyone, these legal obligations cannot adequately be included in formal education applications [22]. It is known that teachers take advantage of very different education methods in general education classes. "However, the popular view is that most of teachers prefer traditional approaches. These methods are usually teacher centred, make teaching uniform and have negative impact on the effective realization of education" [23].

Tele:

E-mail address: yusufolmez@gmail.com

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Need for Special Education and RTI

The definition of learning difficulty may vary depending on where we live or what we teach. It is usually defined as the difficulties in gaining and using skills for reading-writing, arithmetics-mathematics, speaking, listening, and reasoning [10, 21, 24, 25, 26]. An individual who need special education is described as the individual that has significant difference from the expected level compared to his peers with respect to the individual qualities and education qualifications due to various reasons [27]. It cannot be said that every student who needs special education has learning difficulty or is dependent of special education. But it is known that every student with learning difficulty needs special education. It is stated in the literature that individual differences vary a lot and taking this variation into consideration by teachers is effective for the learning process of students [4, 12].

It is emphasized that one of the most important reasons behind the school failure today is the environmental factors. It is stated that learning difficulty is caused by the fact that the education environments are not sufficiently convenient and rich [18]. Van de Walle [1] stated that the reason of low academic achievement may be the deficiency of mathematics teaching and that the teachers need to evaluate frequently the methods they use in the process of learning and teaching. In recent years, a teaching approach focusing on the causes the low academic achievements of the students who need special education and recommending interventions in line with the needs of these students was started to be used. This approach is known as response to intervention (RTI) and usually used to developed behavioural skills of students and provide preventive early interventions by determining the students with learning difficulties [21, 26, 28, 29, 30, 31, 32, 33].

Barnett et al. [34] stated that RTI offered a framework for organizing tiered interventions with appropriate density for taking precautions. Johnson [31] also emphasized to five basic components in this process namely skill instruments, calculations, standard word problems, problem solving skills and mathematical verbal vocabulary (concepts, relations and communication). D.P. Bryant, B.R. Bryant, Gestern, Scammacca and Chavez [54] stated that interventions to students with mathematics disabilities developed the mathematics performance of students and that it is essential to focus on numbers, operations and reasoning techniques.

Kroesbergen and Van Luit [35] revealed that students with mathematics disabilities benefitted most from the comprehensible teaching rather than discovery oriented methods. NCLD [25] stated that the teaching design on RTI applications started with the teaching of a series basic skill like counting, calculations, equation solving and crosscheck by using number combinations that can be applied by the student to all program. Interventions on four operations, concepts, smoothness and understanding increase the problem solving, smoothness and comprehension achievements of students [26]. Students with mathematics disabilities are also called as students under risk and they have difficulties of attention, motivation and self-control which may negatively affect their behaviours and learning due to their usually low academic outputs [29].

Teachers should consider the individual differences of students, their preliminary knowledge and skills, attention and interests when they carry out discovery works, balancing between explanations and guidance to teaching [36]. Teacher practices and mathematics teaching strategies are very important for the student achievement during the course of

individual education process [32]. In the literature, the works using the RTI model are usually in the reading area with few examples in the field of mathematics [21, 26, 29, 37]. The impact to success in RTI works in the field of mathematics was based on the comparison of examination scores of student, quantitative works were used and qualitative works were not used. It was found to be worthy to study the country based variety of the RTI model which was accepted in overseas countries as a useful model to reveal and determine the structure of the students and the effect of which was not fully proven. It was attempted to reveal and describe the extent and way of contribution of such a model to the mathematics learning of students who need special education. This study is different from the literature in this aspect. On the other hand, it is a matter of curiosity whether the mathematics teachers are aware of the reasons of mathematics learning difficulty of the students who need special education and if they are aware what measures they take. The reason of low academic achievement may be caused by the teaching methods that are being used. Do teachers take this subject into consideration when describing their students as failed or unsatisfactory in mathematics?

To ensure the development of mathematics competency of students at early ages is necessary for the subsequent learning success. Early mathematics interventions may remove or prevent existing or possible deficiencies [9, 10, 13, 16, 19, 20, 21]. In this context, the study focuses on the level of the 5th grade. The study where the RTI model is applied, the contributions of the concerned model to the mathematics learning of the students who need special education were evaluated from the eyes of teachers and it was attempted to reveal the effectiveness of this model independently from the researcher.

Method

The model of the study

The object of the study is to examine the effectiveness of the RTI model which is applied for determining the students who need special education within the context of teacher views. Therefore, the study was based on qualitative methodology and the study was designed as a descriptive study (This study was generated from the PhD assertion of the first author submitted in the Gazi University Institute of Educational Sciences Department of Secondary Education Science and Mathematics Teaching [38].). Descriptive studies usually aim at a thorough study of a given circumstance and to carry out evaluations by revealing possible relations [39, 40]. This study examined the evaluations by the mathematics teachers of the RTI model which was applied for determining the students who need special education and attempted to define the behaviours of teachers against the students who need special education.

Participants

The participants of the study are three mathematics teachers in the general classes of the students who take RTI support training. These mathematics teachers have sufficient knowledge and experience in the sense of education and teaching (Table 1). The process to determine the students who need special education is also a process of determining the participating teachers; therefore, the explanations for this process are included under the next heading. Teacher and student names are not used when reporting the study. Instead, the participant teachers are referred to as T1, T2 and T3 while the concerned students are referred to as Yeter, Yeşim, İlknur, Yasin, Özkan and Sultan.

Table 1. Information on Participants.

Teacher	Sex	Students	Professional Experience	Graduation
T1	Female	Yeter, Yeşim	5 years	Education faculty
T2	Female	İlknur, Yasin	6 years	Education faculty
T3	Male	Özkan, Sultan	30 years	Education faculty

Research Process and Obtaining the Data

The study was conducted in a public secondary school in a medium socio-economic level in the Yenimahalle district of Ankara. Students with RTI support trainings were determined from the 5th grade students studying in the first semester of the academic year of 2014-2015. To determine these students, first the mathematics achievement tests (MAT) were conducted to all of the 4th and 5th grades throughout the school. Accordingly both the 4th grade students and the 5th grade students took the MAT A test while the MAT B test was applied to only the 5th grade students next day (MAT A was also applied to the 4th grade students in order to compare achievements). The results were shared and evaluated with the specialists lecturer in the field of mathematics education who provided the MATs to the literature. After that, the determined students were evaluated in a meeting attended by mathematics teachers, class teachers of the students in the past years and school guidance teachers. 18 students were evaluated after these evaluations. Among them, 6 randomly selected students were subject to 12-week RTI support trainings. According to the RTI model, the trainings in grade 2 should be given in small groups [7].

The average score of the MAT A test taken by 140 4th grade students was 18,60 and the average score of the MAT A test taken by 117 5th grade students was 23,15 while the average score of the MAT B test taken by 118 5th grade students was 26,44. The MATA average of the students who took RTI support training (Yeşim, Sultan, Yeter, İlknur, Yasin and Özkan) was 9.83 while the MAT B average was 14,33. These students are referred to as pre-orientation students according to the RTI model and they are stage 2 students. These students couldn't achieve the expected achievement level but it wasn't certain that they needed special education services yet. These students should get extra education for the objective [1]. These students also studied the primary schools in the existing schools but their class teachers changed every year. The highest of their scores in mathematics in the 4th year was 3. These students are not gifted or inclusion students, they live serious learning problems in the school with difficulties in obtaining gainings in the mathematics program and development of skills while they have no other certain disabilities (sensual disability, mental disability, social and emotional disability). These students continue their education in 4 different branches. Students are at the age of 11 and they are observed to have a generally calm character. They have general skills in line with their ages and they don't have any physical disability.

In determining the students who are shortly described above, the used MAT tests were not multiple choice tests [41, 42]. The researchers stated that these achievement tests could be used in order to determine the individuals who have mathematics learning disabilities or need special education. "The tests that were developed were based on the gainings in the education program that were conducted in grades 1-4 and therefore they can be used to determine the access levels of the students in the end of the academic year by the teachers of

these grades or the preparedness of them in the beginning of the education year" [41].

The researcher taught for 12 weeks per 2 hours a week the education program he prepared by adapting the gainings within the framework of the teaching program of the primary school 4th grade mathematics subject. During these support educations, both the implementer and the participant worked as observers. The educations were given in the own schools of students for 2 hours a week after the normal school hours. The sub learning fields that are weekly handled are respectively natural numbers, addition, subtraction, multiplication, division, fractions, additions by fractions, subtraction by fractions, decimal representation and time measuring with repetitions in last two weeks. The formative evaluation data that were obtained were shared with the participants while each interview was attended by the school counsellor. No examination was held in any of the evaluation processes of the students participating in the RTI support educations, no scores were given and students were not compared to each other.

Data Collection Instruments

"Mathematics subject student follow-up forms" developed by the Education Research Development Association were used for following up by the teachers the developments of the students who participated in the RTI support educations. These forms intend to reveal the cognitive and psycho-motor skills and social and psychological qualities of students. These follow-up forms were given weekly to the participating teachers. Each week, the follow-up forms filled in by these teachers were taken and an empty new follow-up form was given to them. Thus, 12 follow-up forms were obtained in total for each student. The student follow-up form for the mathematics subject is a 5-point Licert scale consisting of 30 items. This scale consists of 10 items in the sub dimension of cognitive qualities, 3 items in the sub dimension of psychomotor skills, 4 items in the sub dimension of social skills and 13 items in the sub dimension of psychological qualities. These items don't contain positive or negative statements. The responses to items are scored as "never" (0), "rarely" (1), "sometimes" (2), "frequently" (3) and "always" (4). The scores of each items were added to determine a follow-up score for each student. The total scores and general follow-up scores determined for each sub dimension were converted to 4 point grading system. The lowest score from the scale is 0 and the highest score is 4 [43].

Interview is called as data collection from the concerned people within the framework of the questions which the study seek an answer for and it provides in depth information on a certain research subject of a question [39, 44, 45]. In this context, interviews were made to obtain in-depth information on the developments in the concerned students and to determine the effects of the RTI model on students with mathematics disabilities within this framework. After the support trainings are completed, structured interview forms were used in these interviews with the participating teachers. Audio recordings of the interviews were taken as the participants didn't allow video recording.

Data Analysis

The data in this study were subject to descriptive analysis. Descriptive analysis may be used for the analysis of data in qualitative studies. In this case, the data are summarized, interpreted and directly cited according to the previously determined categories [39, 40, 45]. The analysis started with the transcription of the audio records of the interviews with the participants. Then the definitions of the students by the

teachers were included. Data obtained from student follow-up forms and interviews were analysed together. The researcher was in interaction as a participant observer with the students and teachers for 12 weeks. Within this process, it was attempted to ensure the reliability of the study by using data variation methods like the observation notes, interview transcripts and follow-up forms [38]. For the consistence of the study, the formula “Reliability=Agreement/Agreement+Disagreement” was used [46]. The student interview transcripts of two teachers were given to a mathematics education specialist who are away from the research environment and these teachers were asked to code the transcripts. The codings were compared to find that they matched by 90%. Unmatching data were compared, discussed and an agreement was reached.

Findings and Interpretation

Common Discourse of Teachers for Students

Teachers usually evaluate the students who need special education according to their behaviour within the classroom behaviours, lesson participation and correct answering to the questions. It was seen that the teachers frequently shared the conditions of the students who need special education with each other. As a result of this, it is understood that the negative thoughts spread very quickly and other branch teachers had prejudices for these students. Three teachers found to be easily deciding learning difficulty for any student who is academically unsuccessful and has calm character. It is understood that they don't spend sufficient time to these students and even don't control whether they do their homework or not. They stated that these students don't understand what is told, they cannot solve even most simple questions, they have serious deficiencies in basic knowledge and they do to many wrong mathematical operations. On the other hand, they stated that the RTI support trainings contributed to the elimination of the shortcomings of these students. They stated that there some even small movements for other students, requested these works for the other students in similar conditions in the school, that they couldn't pay sufficient attention in crowd classrooms and that new opportunities could be offered to these students with the RTI model support educations. They added that they were supposed to address to the general classroom and couldn't spend sufficient time, that it was not fair for the successful students to spend too much time to ensure that all students have certain gainings and that they couldn't catch up with the curriculum. Teachers stated that they weren't involved in any non-class activity for the students who need special education and that they found the RTI support educations to be necessary as the students were contented with what they learned in the lesson.

Cases Where Teachers Were Different In Their Students

One teacher (T1) said that students don't have mathematics skills while another teacher (T2) said it was not necessary to tell everything to everyone. They stated that the cognitive and psychological qualities and psychomotor and social skills of Yeter, İlknur, Yasin and Özkan rarely took place. They stated that the RTI support trainings didn't cause any increase in the academic achievements of these 4 students. On the other hand, they stated that self-confidence increase was apparent in three students except one (Yeter).

One teacher (T3) stated that the developments in his student were caused by the RTI model support trainings and therefore his student was more active in the lesson, received higher scores and started to do homework more regularly. He

stated that his students frequently raised hand in recent weeks (December), went to the board and was motivated. Teachers stated that two students (Yeşim and Sultan) frequently realized cognitive and psychological qualities as well as psychomotor and social skills and that this condition was a result of RTI support trainings.

Views of T1 on the RTI Model specifically for Yeter and Yeşim

T1 stated that he changed his initially negative views on Yeter with positive views after two weeks of support educations but Yeter had still low achievement. He summarized his views on Yeter as “Yeter is very silent, introvert. She had very low achievement at first. But she did better after you started lesson. But this didn't take long. So she is still ineffective.”

When asked “Does she have the habit of doing homework regularly? Can you follow?”, T1 said “Another student follows up the homework, I don't.” It was understood that he didn't want to speak about the details when he gave the same answer to the question of the researcher which reads “Don't you ever control the homework?” T1 was unhappy that she always fail to solve the questions and described Yeter as “having some learning difficulty. I explain again and again but she doesn't understand and cannot solve even the simplest questions. She cannot do multiplication and division.” He responded to the question about his evaluation about the RTI model support education as follows: “It will definitely help. You offer a chance for the students with poor foundation. I believe that it is very nice for the students that we cannot pay sufficient attention in the crowded classroom.”

To the question “Is Yeter a prospective inclusion student”, T1 took some time of thought and said “A little, I think, she may have poor mathematics skills, I am not sure”. T1 was a little excited from the interview and disturbed by the audio recording. After the audio recording finished, T1 said Yeter actually was supposed to be an inclusion student. When asked “Do you think that Yeter might reach a normal achievement level if attention is paid and these support trainings would continue for a year?”, T1 was contented with saying “maybe” desperately. T1 believes that the RTI model support trainings didn't make a visible effect for the mathematics performance of Yeter.

When we examine the student follow-up form filled in weekly by T1 for Yeter, it was found that Yeter can sometimes use the qualities like using proper and correct Turkish when writing and speaking, being creative, reasoning, using problem solving skills, inquiring the information, conducting internal association, making association between lessons, benefitting from different resources and asking questions that imply good listening to the lesson.

Psychological qualities including like belief in the importance of mathematics, wanting to be successful in mathematics, being honest, fulfilling responsibilities, asking help when needed, being open to criticisms, studying alone, working efficiently, being careful, willing and keen working, dealing with mathematics to enjoy, having self-confidence and not panicking in the mathematics examination rarely took place in the 1st and 7th week of trainings and sometimes in the other weeks.

The psychomotor skills including the criteria of effective use of material and paying attention when using the material of himself and others took place very frequently (3) in the last four weeks of trainings. Social skills including the criteria of group work, listening to the ideas of others, appreciating

others and expressing themselves in the society took place frequently in the 9th, 10th and 12th weeks of trainings.

Looking at the views of T1 on the question "What do you want to say about Yeşim?", T1 stated that there were positive developments, she focused attention, was more active in the lesson and reduced her mistakes. T1 expressed his views on Yeşim like "Yeşim was not so good. She had attention problems, she made many mistakes, but she is better now. She has better participation after your lessons." When the researcher asked "So, did her achievement momentum increase?", T1 said "Yes, it increased. She took a score of around 70 from the written examination while the score of Yeter was 1. There were two poor scores, one is from Yeter". When asked "Do you have extra efforts within or outside the classroom for Yeter and Yeşim?", T1 said "I would love to do it but I must spent too much effort. For example one hour wouldn't be sufficient for success. I need to spare a lot of time. Like you do. I really need to concentrate on this. And the student must be willing, too". It was understood that T1 doesn't have any extracurricular activity for Yeter or Yeşim and was content with what they learned in the lesson. It was also understood that the teacher had no idea about how students do their homework.

The following graphics include the data in the student follow-up form filled in weekly by T1 for Yeşim.

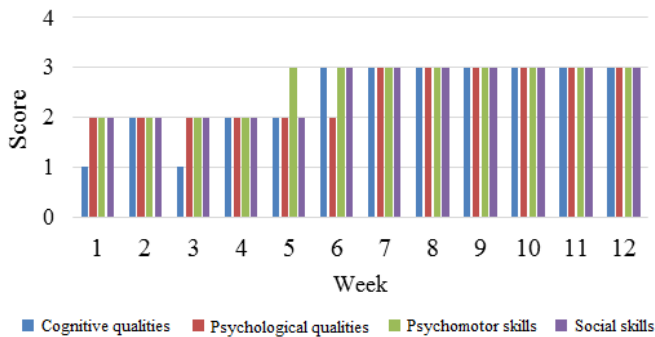


Figure 1. Scores from the student follow-up form for Yeşim.

When Figure 1 is studied, it is seen that the RTI support trainings provided progress in Yeşim as of the 6th week. We observed that the criteria for Yeşim under cognitive qualities took place frequently after the fifth week while the criteria under psychological qualities took place frequently after the sixth week. Similarly, it is also seen that Yeşim is able to use frequently her psychomotor and social skills from the fifth week. T1 believes that the RTI model support trainings created a visible effect in the mathematic performance of Yeşim.

Views of T2 on the RTI Model with respect to İlknur and Yasin

T2 expressed that there were positive developments in İlknur even if not adequate. He expressed his views on İlknur as "İlknur was a little dull in the beginning, she was indifferent to lessons. But she has more meaning in her eyes now. She wants to understand and she has an expression that she is listening to what you explain." When the researcher asked "is it due to the RTI trainings?", he said "Yes. There is a meaning in her expression. An expression that shows that she is interested, you will understand it. But Yasin is that way." After that, the researcher asked "What is the problem of these students, do you think?" and T2 said "I think there is a foundation problem (in mathematics). Because it is not their interest, and they are too much affected by their friends". About their homework habits, T2 said: "Yasin has no habit of

doing homework. İlknur sometimes does sometimes doesn't. She is not consistent". Although T2 was optimist about İlknur, it was seen that he was not sure about these ideas. It was found to be remarkable that T2 made contradictory statements about İlknur.

When asked "Can İlknur and Yasin reach to the level of a normal student if they receive RTI support trainings for a year?", T2 said "Of course, one has to work hard like you". Then, he said that the half of the 6th grades were similar students and that he couldn't spend extra effort for such students. "This is what I cannot decide in my profession. Do I have to address to the general of the classroom? Do I have to strive until everyone gets certain gainings? I have been in two minds about it. It doesn't work when I try to teach something to everyone. Good students are wasted and we cannot catch up with the curriculum. Some students never understand if they don't want to".

When we examine the student follow-up forms filled in weekly by T2 about İlknur, we observe that the criteria for cognitive qualities of İlknur didn't change for 12 weeks and took place sometimes. Psychological qualities rarely took place in the 2nd and 5th weeks and sometimes took place in the other weeks. İlknur's criteria for the psychomotor skills took place sometimes in the first 10 weeks and frequently in the last 2 weeks. The criteria under social skills usually took place frequently. Considering the frequency of occurrence of the cognitive and psychological qualities as well as psychomotor and social skills, it was observed that İlknur had sometimes positive progress but not a consistent one. T2 couldn't clearly express the effects of the RTI model support trainings on the mathematics performance of İlknur.

When we examine the student follow-up forms filled in weekly by T2 about Yasin, we observe that the criteria for cognitive qualities of Yasin took place sometimes in the 1st, 10th and 11th weeks, and rarely in other weeks. The criteria under the psychological qualities took place rarely in the 4th, 5th and 6th weeks and sometimes in the other weeks while the psychomotor skills usually took place sometimes. The criteria under psychological qualities took place rarely in the 4th, 5th and 6th weeks and sometimes rarely in other weeks while the psychomotor skills usually took place rarely. Similarly, it is remarkable that the criteria of Yasin for social skills took place frequently. Although there is consistency in the use of psychomotor and social skills, we observe that there is no progress and criteria cognitive and psychological qualities took place inconsistently.

Views of T3 about the RTI Model with respect to Özkan and Sultan

T3 stated that the basic mathematics knowledge of Özkan and Sultan was poor while more attention was necessary especially for Özkan. He said that he liked the behaviours of Sultan and that he is happy to see her positive progress. T2 said for Sultan "She is really organized, interested in the lesson but she may have poor foundation. But she is increasingly more organized, i.e. her talks, her participation in the lesson and her homework." When the researcher asked "Were the RTI support trainings helpful for these two students? Did you notice that?", he said "Sultan had this moment, she gained it. But I cannot tell the same for Özkan. There is no development in Özkan. He is the same, more introvert. He is weak in lessons, and has poor participation as he doesn't know the subject".

For the question "Does Özkan have the habit of doing homework?", he said "Of course he is doing his best when

asked but you need to monitor closely. Özkan needs more attention, maybe just the one you do.” T3 stated that he doesn’t believe that these two students have learning difficulty and that they have problems due to lack of basic mathematical gainings. T3 stated that he shared the conditions of Özkan and Sultan with their parents and repeated that special attention was required for these students. “They can be successful like normal students if they are supported like you do (RTI). We cannot do it in the classroom environment.”

When we examine the student follow-up forms filled in weekly by T3 about Özkan, we observe that the criteria for cognitive qualities of Özkan took place sometimes in the 6th, 7th and 11th weeks, and sometimes in other weeks. The criteria under the psychological qualities didn’t change for 12 weeks and sometimes took place. Similarly, the use of the psychomotor skills had generally a horizontal progress other than the 6th week and the criteria under this heading took place frequently. The criteria for social skills took place sometimes in the 6th and 8th weeks and frequently in the other weeks. T3 believes that the RTI model support trainings didn’t have a visible effect for the mathematics performance of Özkan.

The following graphics include the data in the student follow-up form filled in weekly by T3 for Sultan.

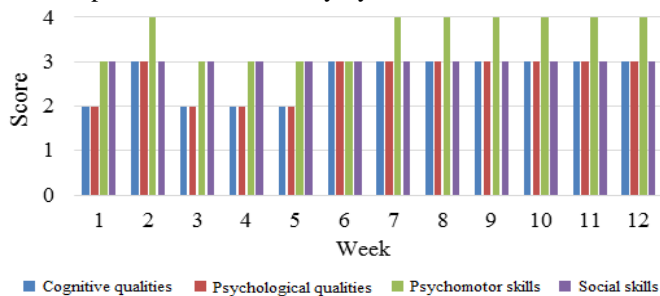


Figure 2. Scores from the student follow-up form for Sultan

When Figure 2 is studied, it is seen that the criteria of Sultan under cognitive qualities was inconsistent for the five weeks and took place frequently as of the 6th week. The criteria under psychological qualities took place frequently as of the 6th week similar to the cognitive qualities. The psychomotor skills usually took place in the first six weeks and always as of the 7th week. The criteria under social skills of Sultan took place frequently in a consistent manner. T3 believes that the RTI model support trainings had a visible effect on the mathematics performance of Sultan.

When we look at the general follow-up scores, we see that the realization frequency of Yeter, İlknur, Yasin and Özkan of the said criteria was 2 (sometimes) which was stabile for 12 weeks. Accordingly, it is seen that the RTI model has no effect, positive or negative, on the realization of the said criteria by Yeter, İlknur, Yasin and Özkan. On the other hand, RTI was found to have significant effects in Yeşim and Sultan. The following graphics include the general follow-up scores of Yeşim and Sultan.

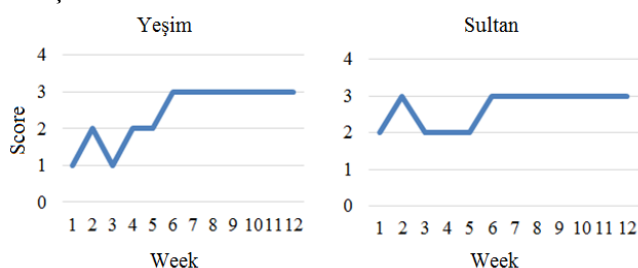


Figure 3. General follow up scores of Yeşim and Sultan

When we look at the graphics, we see that the scores of Yeşim increased as of the 5th week and maintained these scores consistently until the end of these trainings. In addition, it is seen the frequency of realization of criteria including cognitive and psychological qualities and psychomotor and social skills took place frequently (3 points) for 7 weeks, which is different from Yeter, İlknur, Yasin and Özkan. It is observed that the scores of Sultan increased as of the 5th week similar to Yeşim and that she maintained these scores consistently until the end of the trainings. The said criteria took place frequently (3 points) for Sultan for 7 weeks.

Conclusion and Recommendations

The findings obtained from the research reveal that the approaches of mathematics teachers towards the students who need special education were not sufficient and that students were left alone with their problems without any extra work or follow-up. The said students were expected to the deal with the problems of mathematics lesson on their own. However, it is understood that the teachers know the existence of many different factors affecting the mathematics performance of the students with mathematics disabilities in addition to their cognitive qualities [4, 47]. They directly state that the students are unsuccessful or insufficient in mathematics without taking required measures.

The concerned students assume passive roles in general classrooms depending on the failed academic past. It is believed that the constant change of classroom teachers are effective in forming an unsuccessful academic past. Neal [32] stated that the mathematics achievement of the 3rd grade students participating in stage 2 interventions of the RTI model was directly related with the teacher practices. It should not be ignored that the variety of teaching methods depending on teacher difference directly affect learning in early ages and that the teachers may have deficiencies for the subjects or concepts they teach [48]. It is known that the preliminary learning of students is effective with respect to grasping mathematics concepts. The mathematics learning of students taking place in the 4th and 5th grades constitute a base for the mathematics subjects to be learned in the 6th and 7th classes. Students who can receive good foundation will be able to continue their mathematics achievement in higher classes [21, 47, 49, 50, 51, 52].

Teachers stated that these students didn’t understand many subjects before the support trainings couldn’t solve very simple questions and made too many mistakes based on the deficiencies in their basic knowledge. On the other hand, they stated that the RTI process played an important role for eliminating the deficiencies of Yeşim and Sultan. They stated that the RTI model support trainings would offer new opportunities for the students who need special education which they couldn’t pay sufficient attention in crowded classrooms [21, 28]. Van De Walle [1] said that students who need special education have unique strong and weak aspects despite all their characteristics and that there were ways to support these students in all of the stages for planning, teaching and assessing the mathematics subject.

The mathematics learning of the students in the process until the 5th grade is configured by the classroom teachers. When we consider the age levels, it is found that the different teaching methods caused negative effects for the students to learn mathematics concepts which are one of the basic components of the mathematics teaching [53]. It was observed that low academic achievement in students who need special education mainly emerged in the level of this class. This

condition may cause from the higher density of data obtained from the 5th grade level and there is no suggestion on the extent of effect of different class level on the study while it is assumed that a relation can be established. Based on this, researchers and teachers are recommended to implement the RTI model in different class levels. The RTI process showed that the teachers were not aware of the reason why the students who need special education had difficulty in learning mathematics. Teachers are recommended to focus on what students know rather than they don't know and to review the learning and teaching process accordingly. This way it will be possible to determine the students with mathematics disabilities and direct them to relevant institutions for education services.

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