



THE EVALUATION OF SPECIAL EDUCATION COURSES IN TERMS OF EDUCATIONAL ATTAINMENTS OF PRE-SERVICE MATHEMATICS TEACHERS*

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ABSTRACT

The purpose of this research is to define the level of attainments acquired by elementary school pre-service mathematics teachers within the scope of special education lesson which was carried out with these teachers. This study is of importance in terms of informing pre-service teachers about mainstreaming within the scope of special education course carried out with primary mathematics pre-service teachers and determining the reflections of this course on the attitudes of pre-service teachers regarding the subject. Also, It is thought that one of the researchers who participated in this study has a mainstreamed child and at the same time they are working in the Primary Mathematics Teaching Department are important factors in terms of the study. With this, this study is important in terms of seeing the efforts, difficulties and troubles of someone who experienced closely things about mainstreaming subject and especially determining the things that can be done for mainstreamed students in the field of mathematics and it is thought that this study can make great contributions to the literature. The design of 'pretest-posttest with single group' was used among quantitative data collection tools in the present study. This study was carried out with 38 pre-service teachers. Two different data collection instruments were used for the solutions of the problems discussed in this study. These instruments are 'Knowing the Basic Concepts about Mainstreaming Students (Form 1)' and 'Perceiving Mainstreaming Students and their Families and the Ability to Find Solutions' (Form2)' forms. Research applications were carried out during 14 weeks in the fall semester of 2010-2011 academic years within the scope of special education course. This study increased pre-service teachers' abilities of "Knowing basic concepts regarding mainstreaming", "The ability of knowing the legal rights of mainstreaming students and the ability to asking for these rights", "The ability of feeling empathy with the families of mainstreaming students", "The ability of finding solutions to problems as future teacher or school administrator ", "The ability of feeling self-sufficient about special needs education in the field of mathematics" and "Types of perceiving mainstreaming students".

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Key Words: Special education, pre-service mathematics teachers, mainstreaming, educational attainment

ÖZEL EĞİTİM DERSLERİNİN İLKÖĞRETİM MATEMATİK ÖĞRETMEN ADAYLARININ KAZANIMLARI BAKIMINDAN DEĞERLENDİRİLMESİ

ÖZET

Araştırmanın amacı, ilköğretim matematik öğretmen adaylarıyla gerçekleştirilen özel eğitim dersi kapsamında öğretmen adaylarının elde ettiği kazanımları belirlemektir. İlköğretim matematik öğretmen adaylarıyla gerçekleştirilen özel eğitim dersi kapsamında kaynaştırmayla ilgili olarak öğretmen adaylarının bilgilendirilmesi ve bu dersin öğretmen adaylarının konuya ilişkin kazanımlarına yansımalarının belirlenmesi bakımından çalışma önem taşımaktadır. Ayrıca çalışmada rol alan araştırmacılardan birinin kaynaştırma bir çocuğa sahip olması ve aynı zamanda araştırmacıların İlköğretim Anabilim Dalı İlköğretim matematik öğretmenliği Bilim Dalı'nda görev yapıyor olmalarının da çalışma açısından büyük önem taşıdığı düşünülmektedir. Bu sayede kaynaştırma konusunda bunu en yakından tecrübe etmiş bir kişinin yaşadığı sıkıntılar, zorluklar ve edilen mücadelelerin görülmesi ve özellikle de matematik alanında kaynaştırma öğrenciler için neler yapılabileceğinin belirlenmesi bakımından araştırma önemlidir ve alanyazına büyük katkı sağlayacağı düşünülmektedir. Araştırmada nicel veri toplama tekniklerinden “Tek grup öntest-sontest” deseni kullanılmıştır. Araştırma 38 öğretmen adayıyla gerçekleştirilmiştir. Araştırmada ele alınan problemlerin çözümüne yönelik iki farklı veri toplama aracından yararlanılmıştır. Bunlar “Kaynaştırma öğrencileri ile İlgili Temel Kavramları Bilme” (Form 1) formu ve “Kaynaştırma Öğrencileri ve Ailelerini Algılama ve Sorunlara Çözüm Getirebilme” (Form 2) formu’dur. Araştırmada gerçekleştirilen uygulamalar 2010-2011 akademik yılı güz döneminde, Özel Eğitim dersi kapsamında 14 hafta süresince yürütülmüştür. Araştırma kapsamında yapılan çalışma ilköğretim matematik öğretmen adaylarının “Kaynaştırmayla ilgili temel kavramları bilme”, “Kaynaştırma öğrencilerin yasal haklarının neler olduğunu bilme veya takip edebilme” “Kaynaştırma öğrencilerin aileleriyle empati kurma”, “Gelecekte bir öğretmen veya bir okul idarecisi olarak sorunlara çözüm getirebilme”, “Kendisini özel eğitim konusunda matematik alanında yeterli görme” becerilerini ve “Kaynaştırma öğrencileri algılama düzeyleri” ni arttırmıştır.

Anahtar Kelimeler: Özel eğitim, matematik öğretmen adayları, kaynaştırma, eğitimsel kazanım

Introduction

Recently, together with the importance provided for special education, the subject of mainstreaming “children who need special education” together with normally developing children started to gain importance. Formerly, while the idea that children who need special education

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should live in isolation from society and should receive a separate education was advocated, this idea was put aside later on and then the idea of teaching children who need special education to live in the society and to socialize with other children in the society took place instead of that idea. Garrison and Hamill stated in their research which was carried out in 1971 that there was no difference between isolating mentally disabled children from society and teaching them in special education classrooms which were prepared only for those children (Metin 1972).

According to the law no.2916 for Children who need special education, children who need special education are specified as children who cannot benefit of normal education services in the age group between 4-18 because of their extra-ordinary differences in body, mind, sprit, social and health features and statues. The education provided for those children is defined as special education. According to the definition stated in the law, special education is a teaching which is carried out in a suitable environment for the needs and disabilities of children with educational programs that are particularly prepared for those children and with teachers who are particularly trained for the education of children who need special education (URL-2).

In our country, three types of teaching methods are used for children who need special education in primary. They are; mainstreaming, special education schools and special education classrooms (Sanioğlu, Büyükkaragöz, Duman and Sarı 2008). Mainstreaming education is defined as integrating especially appropriate children who need special education with their educationally and socially normal peers under the responsibility of normal and special education personnel within the framework of individual educational programs (Balaban, Yılmaz and Yıldızbaşı 2009).

The main objective of mainstreaming education is to provide social acceptance continually starting from childhood period for children who need special education and reintegrate them to the society (Metin 1997). It is advocated that the friends of children with social disabilities are positive models in mainstreaming environments for those children so children acquire social behaviors and this also increase the probability of their acceptance by their friends (Merrel and Gimpel 1998), in addition to that mainstreaming education help them to acquire many skills on the other fields other than social development (Balaban and others 2009).

The mainstreaming is defined as ‘special education application which is based on educating children with special needs together with their peers who do not have disadvantages in public and private pre-school, primary, secondary schools and non-formal institutions and providing additional support’ in Special Education Services Regulation (2006) (Çelik and Eratay 2007). If the mainstreaming is realized in suitable conditions, it can be thought that children who need special education can easily be located at the same classroom environments and their needs can be met (Öncül and Batu 2005).

The mainstreaming practice was started at every phase of primary education in our country in 1983 in accordance with the 4th article of Children Who Need Special Education Law (Balaban and others 2009). The individuals who need special education are protected with Special Education Law no. 573 in our country. This law regulates the special education services (Cavkaytar 2006) and by the law ‘the education of children who need special education is carried out with their peers according to individual training plans at each phases of all kind schools and institutions by using suitable methods and techniques’ (Article No:12) (URL-1).

Although the basic principles of mainstream practice is stated clearly at the codes, this model still cannot be implemented as it should be in our country; mainstreaming is generally accepted as only “placing those children into the classrooms where their peers exist” and the whole responsibility of the implementation is assigned to only class teachers. Yet, what is meant by

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mainstreaming is not only “placing students into regular classrooms” but also it is a complex and ongoing teaching and learning process with a philosophy behind (Sucuoğlu 2006).

The basic problem for students who need special education is to adopt themselves to the society and being a productive person. However, for achieving this objective, the society should accept children who need special education and they need to show positive reactions towards them (Balaban and others 2009 cited from Kayaoğlu 1999). In this sense, most of the responsibility is on teachers in the education of children who need special education and in their adaptation to the society (Balaban and others 2009 cited from Rizzo 1985). The success of special education and the future practice depends on determining the attitudes of teachers towards mainstreaming education as primary and the most important factor. Because, the thesis of “the success of mainstreaming programs can be in danger with the attitudes of teachers” preserves its validity today (Sargin and Sünbül 2002, cited from Atay 1995).

A successful integration mostly depends on teachers’ positive reactions to their professions and their attitudes towards mainstreamed students (URL-3; Sünbül and Sargin 2002; Parasuram 2006). The attitudes of teachers not only determine the relationship between the teacher and mainstreamed student but also it has an important role in creating an expectancy for the success of mainstreamed students and in the attitudes of other students towards them (Horne 1985). As the development of students with disabilities is getting better, the teaching will be more enjoyable for the teacher who sees the development of his/her student with disabilities better (Çelik and Eratay 2007).

For a mainstreaming environment as well as the physical structure of the classroom and the school, number of students per classroom, curriculum, the skills and capacities of the personnel who will work, equipment and tools, the attitudes of the people who exist in this environment and how much they are ready to implement such a program should also be evaluated. The positive attitudes towards students who need special education is extremely important in adopting the view that the individuals with inabilities should receive education together with their normal peers at the same environment as much as possible and in the success of these kind of programs (Şenel 1996, cited in Johnson and Johnson 1984).

Training pre-service teachers about the teaching of mainstreamed students in regular classrooms takes an important part in teacher training programs. Reynold and Bitch (1977) state that teachers want to take training before they receive mainstreamed students in their classrooms and they also advocate that training pre-service teachers about this subject is a necessity (Hoover and Cessna 1984).

For the reasons stated above, developing positive attitudes towards children who need special education should be an important part of pre-service teachers’ training. The teacher training which realizes insufficiencies and appropriate strategies for students with inabilities has a positive effect on success. It is probable to be unsuccessful for teachers who have negative attitudes towards children who need special education or who did not trained with appropriate strategies (Sze 2009). The studies carried out about this subject within our country and abroad summarized below.

It is concluded that having mainstreaming courses or having mainstreamed students in the classroom cause positive changes and provide more positive point of views on the attitudes of teachers and pre-service teacher regarding mainstreaming (Güven and Çevik 2011; Diken and Sucuoğlu 1999; McLeskey, Waldron So, Swanson ve Loveland 2001; Akman and Okyay 2004; Elhoweris and Alsheikh 2006; Rakap and Kaczmarek 2010; Ünal 2010; Bilen 2007; Sze 2009; Stone and Brown 1986), the pre-service teachers who have mainstreaming courses can perceive better to develop classroom management skills and the skills of children who needs special

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education and in general education concerns and oppositions against mainstreaming is getting decreased (Shippen, Crites, Houchins, Ramsey and Simon 2005).

It was seen that teachers are insufficient to support children who needs special education, they do not agree with the definition of mainstreaming education, they cannot fully use individual training plans, they do not spend enough time for mainstreaming education, they do not have enough experiences for this subject, they have lack of information about mainstreaming and special needs education (Ünal 2010; Altun and Gülben 2009). In order to get rid of the difficulties happening in mainstreaming education, on one side in service teacher training courses should continue and on the other side theoretical and practical courses regarding mainstreaming education and education of children who need special education should be provided to pre-service teachers before they start their careers (Kargın 2004).

When we analyzed the studies conducted on this subject, it was seen that mostly studies were carried out with classroom teachers, pre-school teachers, music teachers, pre-service teachers who are studying in educational faculties and postgraduate pre-service teachers and in these studies generally control group with pre-test and post-test model or relational scanning method were used. It was determined that teachers had lack of information and did not have enough experience about mainstreaming and special needs educations. A study for determining knowledge levels of primary school mathematics teachers has not been seen. Generally, similar studies can be found with departments such as classroom teachers and pre-school teachers but not too much. This study was carried out in order to fulfill such necessity.

The problem sentence of the study was determined as ‘Which education attainments were acquired by primary school pre-service teachers as a result of the informative studies regarding mainstreaming education within the scope of special needs education course?’ by moving from the point of view that it is necessary to train pre-service teachers before teachers to reduce the barriers in front of children who need special education and it necessary to create an awareness in the first place by determining their point of views towards mainstreaming.

Purpose of the Study

The purpose of this research is to define the level of attainments acquired by primary school pre-service mathematics teachers within the scope of special education lesson which was carried out with these teachers.

Depending on that purpose the answers for the following questions have been searched:

1. Was the study carried out within the scope of this research efficient for the pre-service teachers to develop ‘their skills of knowing the basic terms of special education’?
2. Was the study carried out within the scope of this research efficient for the pre-service teacher to develop ‘their skills of feeling empathy with their families’?
3. Was the study carried out within the scope of this research efficient for the pre-service teachers to develop ‘their skills of solving problems as teachers or school administrators in the future’?
4. Was the study carried out within the scope of this research efficient for the pre-service teachers' to develop ‘their skill of self-satisfaction as special educators in maths’?

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5. Was the study carried out within the scope of this research efficient for the pre-service teachers to develop 'their skills of knowing and staying updated on what the legal rights of the special education students are'?

6. Was the study carried out within the scope of this research efficient for the pre-service teachers' to develop 'their level of understanding the special education students'?

The Importance of the Study

The special education course added to curriculum in 2009-2010 academic years for the first time for different departments of educational faculties and this course is being taught to senior students of primary mathematics teaching department. Nowadays, mainstreaming applications in the field of special education is getting much more importance. Many studies were carried out about this subject. However, it is seen that there are not plenty of studies which provide solution strategies about what to do for making mainstreaming studies more effective and successful. This study is important in terms of informing pre-service teachers about mainstreaming within the scope of special education course carried out with primary mathematics pre-service teachers and determining the reflections of this course on the attitudes of pre-service teachers regarding the subject.

It is thought that the study is important since it was carried out with primary mathematics pre-service teachers in relation with special education course which is recently added to curriculum of primary mathematics teaching department and it is expected from the study to offer an insight to pre-service teachers for the future. The study which can be evaluated as an in-service teacher training to pre-service teachers can provide a guidance for preparing them to the future, a resource when they face with mainstreamed students, a change in their point of views by raising awareness, a guidance for them about finding something positive even from negative situations and something which does not let them to be insensitive. Teachers have great roles in successful mainstreaming practices. For this, teachers need to be informed about mainstreaming. Especially, teachers who started their professions with fully equipped about this subject are needed. This can be possible, when you make pre-service teachers ready for their professions by informing them about this subject.

It is thought that one of the researchers who participated in this study has a mainstreamed child and at the same time they are working in the Primary Mathematics Teaching Department are important factors in terms of the study. With this, this study is important in terms of seeing the efforts, difficulties and troubles of someone who experienced closely things about mainstreaming subject and especially determining the things that can be done for mainstreamed students in the field of mathematics and it is thought that this study can make great contributions to the literature.

Method

In this part, the research model of the study is explained, the information about data collection instruments of the study, sample group participated to the study, data analysis techniques and the implementation process is provided.

The Research Model

In this study, it was aimed to analyze the educational attainments acquired by pre-service teachers before and after the informative studies about mainstreaming within the scope of special education courses carried out with primary mathematics pre-service teachers. With this purpose, the design of 'pretest-posttest with single group' was used among quantitative data collection tools. In this design, the effect of experimental procedure is tested with a study on a single group. The

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measurements regarding the dependent variable of experimental subjects are collected by using the same testing instruments and with the same experimental subjects which is called as pre-test before the study and post-test after the study. The figurative notation of the experiment is as in the following. In the design the significance of the difference (O_1-O_2) between pre-test and post-test values which belongs to a single group (G) is tested (Büyüköztürk, Çakmak, Akgün, Karadeniz and Demirel 2011).

Group	Pre-Test	Process	Post-test
G	O_1	X	O_2

The Sample of the Study

This study was carried out with 38 pre-service teachers, 18 (47%) female and 20 (53%) male who are senior students in Marmara University, Educational Faculty, and Teaching Primary School Mathematics Department in 2010-2011 academic years during fall semester.

Data Collection Instruments

Two different data collection instruments were used for the solutions of the problems discussed in this study. These instruments are 'Knowing the Basic Concepts about Mainstreaming Students (Form 1)' and 'Perceiving Mainstreaming Students and their Families and the Ability to Find Solutions' (Form2)' forms.

The form of 'Knowing the Basic Concepts about Mainstreaming Students' consists of 11 questions under 2 categories. The form of 'Perceiving Mainstreaming Students and their Families and the Ability to Find Solutions' consists of 10 questions under 4 categories. The questions in these forms were prepared by the researcher and they were edited according to the opinions of two special education specialist and 2 special education teachers.

Form1 (Appendix 1) was constructed under the basic headings as in the following:

1. The ability of knowing the basic terms of special training

1st, 2nd, 3rd, 4th, 5th, 6th, 7th and 8th questions

(Who are these children who need special education?...)

2. The ability of knowing the legal rights of mainstreaming students and the ability to asking for these rights.

9th, 10th and 11th Questions

(What are the recent legal developments regarding mainstreaming in our country?...)

Form 2 (Appendix 2) was constructed under the basic headings as in the following:

1. The ability of feeling empathy with the families of mainstreaming students

1st, 2nd and 3rd questions

(What would you expect from administrators or teachers of the school if you had a relative who would enter mainstreaming classroom?...)

2. The ability of finding solutions to problems as a teacher or school administrator in the future

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4th 5th 6th and 7th questions

(What do you think about the things that you can do for mainstreaming students?...)

3. The ability of feeling self-sufficient about special education in the field of mathematics

8th question

(Is it necessary to make a separate lesson plan for mainstreaming students? Do you think that you have enough information about this subject? If you do not, what are your deficiencies? Please explain...)

4. Types of perceiving mainstreaming students

9th and 10th questions

(Is there anybody who needs special needs around you? If there is, what are their problems?...)

With the help of these forms (Form1- Form 2), it was aimed to learn the opinions of pre-service teachers about finding solutions and perceiving mainstreaming students and their families and their basic information levels on mainstreaming subject.

The Implementation Process

Research applications were carried out during 14 weeks in the fall semester of 2010-2011 academic years within the scope of special education course. Special education course is being taught theoretically 2 hours in a week. Form 1 and Form 2 were used as pre-test for students and same forms were used for the same students as post-test at the end of the semester. By using the same forms the students' information levels and their abilities of finding solutions and perceiving mainstreaming students and their families were tested before and after implementation process. Within scope of special education course, during the first 3 weeks (6 hours) researchers provided general information as a part of the course and later on students presented the subjects which were assigned to them by forming groups and finally submitted their reports. The students were asked to form groups with their friends as they wish and to name their groups. In this sense, students created 9 groups and the subjects were distributed. While distributing subjects, instead of desires of students, the subjects were distributed by drawing lots and the presentation days were decided according to the weeks.

While students were preparing their reports, they made observations, audio and video recordings, interviews with the institutions that they visited and document analysis about their subjects. It was paid attention for all groups that the content of their presentations were rich in this sense.

Each group was asked to visit schools and special education centers which were matched to their subjects and to express their observations from there. Besides, they were asked to observe disabled individuals according to their subjects, to get information from experts about this subject, to make video recordings, to prepare their presentations by collecting detailed information about their subjects and to submit a report at the end of the semester. Evaluations of the presentations were made depending on a certain criteria set by the researchers by following the presentations prepared by students.

The reason for asking students to search their subjects and to prepare presentations about them is to provide them to receive first hand information and from authorized people about children who have special needs, to observe these kinds of children on site, to breathe the same air by coming together with these children, to think about the education and situation of these children,

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to raise awareness, to be able to put themselves in their places. Besides, with the presentation of each group, it was aimed to get the opportunities such as increasing knowledge about special education, seeing the realities of life, feeling empathy with others, preparing himself or herself to the future as pre-service teacher, thinking about what to do when encountering with these children, thinking about how to give hope to these children and their families, seeing the mistakes and not repeating theme, being able to look at future with hope and seeing the light when there is no hope. In addition to that, one of the researchers shared his/her personal experiences about this subject with the classroom since he/she has a mainstreamed child during this process.

Data Analysis

During the analysis of the data obtained from Form 1 and Form 2, percentages and frequency distributions of the answers were used. The answers given for the questions used in Form 1 were evaluated as ‘he/she can make the definition – he/she cannot make the definition’ and ‘sufficient-insufficient. The answers given for the questions used in Form 2 were evaluated as ‘yes-no’, ‘positive-negative’ and ‘he/she can guess- he/she cannot guess’ and ‘sufficient-insufficient’. The purpose of ‘he/she can make the definition – he/she cannot make the definition’ evaluation is to determine whether students can make asked definitions correctly or not. The students who could make the definitions according to the content of Special Needs Education course were evaluated as ‘he/she can make the definition’ and students who could not make the definitions as ‘he/she cannot make the definition’. The purpose of ‘sufficient-insufficient’ evaluation is to determine whether students can give sufficient answers to the questions with the scope of special needs education course or not. The questions which were expected to be answered as yes or no were evaluated accordingly. The questions were also evaluated as ‘positive and negative’ by considering whether the answers were in favor of mainstreaming students or not. The questions were also evaluated as ‘he/she can guess- he/she cannot guess’ by considering whether questions were guessed correctly or not. These categories were determined by researchers together with two special needs education specialist.

Results

The frequency and percentage distribution of the answers given for questions regarding the basic titles stated in Form 1 displayed in Table 1 and Table 2. The distributions according to pre-test and post-test of the answers given for the questions regarding the ‘The ability of knowing basic principles of basic concepts’ title displayed in Table 1.

Table 1: The distribution of answers given for the questions regarding the ‘ability of knowing basic concepts about mainstreaming’ main title according to pre-test and post-test

Item Number	Pre-test				Post-test			
	He/she can define		He/she cannot define		He/she can define		He/she cannot define	
	f	(%)	f	(%)	f	(%)	f	(%)
1	12	31	26	69	32	84	6	16
2	16	42	22	58	38	100	0	0
3	5	13	33	87	38	100	0	0
4	12	31	26	69	38	100	0	0
5	9	23	29	77	31	81	7	19
6	11	28	27	72	38	100	0	0
7	8	21	30	79	30	78	8	22
8	17	44	21	56	38	100	0	0

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According to Table 1, While 12 students could make the definition asked in the first question ‘Who are these children who need special education? 26 students could not make any definition in the pre-test. However in the post-test, 32 students could make this definition and 6 students could not make any definition. The answers of a pre-service teacher for this question in the pre- test and post- test are stated below

‘Children who need special education are the ones who have disadvantages in one or more fields.’ (Pre-test)

‘They are children who have deficiencies or extra abilities from the time they born and emerged later on. These things can be mental or physical.’ (Post-test).

While 16 students could make the definition asked in the second question ‘What does deficiency mean? 22 students could not make any definition in the pre-test. However in the post-test, all students could make this definition. The answers of a pre-service teacher for this question in the pre- test and post- test are stated below.

‘They are the deficiencies that individuals have from the time they born.’ (Pre-test)

‘I think a deficiency is an act when an individual cannot make complete sentences. It is something that prevents you from following normal daily routine’ (Post-test)

While 5 students could make the definition asked in the third question (What does handicap mean?) 33 students could not make any definition in the pre-test. However in the post-test, all students could make this definition. The answers of a pre-service teacher for this question in the pre- test and post- test are stated below.

It is dysfunction of some parts of the body which are used in daily life.’ (Pre-test)

A handicap is something which restricts people from doing things that they are doing in their daily lives. For example, if you did not have suitable buses for individuals who have walking deficiencies, it would turn into a handicap.’ (Post-test)

While 12 students could make the definition asked in the fourth question (Is having deficiencies a handicap?), 26 students could not make any definition in the pre-test. However in the post-test, all students could make this definition. The answers of a pre-service teacher for this question in the pre- test and post- test are stated below.

If we need to explain this with an example, a deaf people have hearing deficiency.’ (Pre-test)

There is not rule which say a deficiency means handicap. The society creates the handicaps. If the society provides necessary conditions, deficiencies will not turn into handicaps.’ (Post-test)

While 9 students could make the definition asked in the fifth question (What are the sub-groups of children who have special needs?), 29 students could not make any definition in the pre-test. However in the post-test, 31 students could make this definition and 7 of them could not make the definition. The answers of a pre-service teacher for this question in the pre- test and post- test are stated below.

‘The ones who have learning disabilities’ (Pre-test)

‘Mental disabilities, visually impaired individuals, hearing impairment, physically handicapped individuals, gifted individuals, individuals who have behavioural and emotional disorders’ (Post-test)

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While 11 students could make the definition asked in the sixth question (What is special needs education?), 27 students could not make any definition in the pre-test. However in the post-test, all students could make this definition. The answers of a pre-service teacher for this question in the pre- test and post- test are stated below.

'The education for handicapped students' (Pre-test)

It is the type of education which should be provided for handicapped or gifted individuals' (Post-test)

While 8 students could make the definition asked in the seventh question (What makes special education special?), 30 students could not make any definition in the pre-test. However in the post-test, 30 students could make this definition and 8 of them could not make the definition. The answers of a pre-service teacher for this question in the pre- test and post- test are stated below.

'It is learning how to address individuals with special needs' (Pre-test)

'It is providing special education which is specific to that individual' (Post-test)

While 17 students could make the definition asked in the eighth question (What is mainstreaming?), 21 students could not make any definition in the pre-test. However in the post-test, all students could make this definition. The answers of a pre-service teacher for this question in the pre- test and post- test are stated below.

'Having students who have different deficiencies in one classroom' (Pre-test)

'Having students who need special education together with other students to improve the abilities of students who need special education' (Post-test)

As you can see, the number of students who could make the definition is less than students who could not in pre-test. However, the situation is completely opposite in the post test. This shows the fact that studies under the scope of this research increased students' "Abilities of knowing the basic concepts about mainstreaming". It is thought that informative studies carried out within the scope of special needs education course, informing all students with the help of group works for different handicapped groups and one to one observations of pre-service teachers within the scope of this study have an effect on this subject.

In the Table 2, The distribution of answers given for the questions regarding the 'The ability of knowing the legal rights of mainstreaming students and the ability to asking for these rights' main title according to pre-test and post-test are given.

Table 2: The distribution of answers given for the questions regarding the 'The ability of knowing the legal rights of mainstreaming students and the ability to asking for these rights' main title according to pre-test and post-test

Item Number	Pre-test				Post-test			
	Sufficient		Insufficient		Sufficient		Insufficient	
	f	(%)	f	(%)	f	(%)	f	(%)
9	7	18	31	82	32	84	6	16
10	4	10	34	90	29	77	9	23
11	4	10	34	90	38	100	0	0

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According to Table 2, for the ninth question (Is there any ordinance for children who needs special education? If there is any, what do you know about it?) in pre-test the answers of 7 students were accepted as sufficient and 31 answers were accepted as insufficient. However, in post-test 28 of the answers were accepted as sufficient and 10 of them were accepted as insufficient. The answers of a pre-service teacher for this question in the pre- test and post- test are stated below.

'I am not sure but I believe there is. I do not know the content' (Pre-test)

'Yes, there is one. Special needs education ordinance gives us information about mainstreaming students, things to pay attention while teaching with these children and individualized educational programs' (Post-test)

For the tenth question (What are the recent legal developments regarding mainstreaming in our country?) in pre-test the answers of 4 students were accepted as sufficient and 34 answers were accepted as insufficient. However, in post-test 29 of the answers were accepted as sufficient and 9 of them were accepted as insufficient. The answers of a pre-service teacher for this question in the pre- test and post- test are stated below.

"Unfortunately I have no information" (Pre-test)

"After a disabled student went to Guidance and Research Centre and the type of deficiency of that student was determined, trainable students can study in the full time or half time classes. If there is a mainstreaming student in the primary and secondary classrooms, there need to be 35 students in one class but if there are 2 mainstreaming students, class size must be maximum 25 students." (Post test)

"Are there any deficiencies in our country about special needs education? If there are any what are those? Specify them. Among the answers provided for the (11th Question)", 4 of them were accepted as sufficient and 34 of them were accepted as insufficient. But in the post- test, all the answers of this question were accepted as sufficient. In the following, the answers of a pre-service teacher given for this question were stated.

"I have not got enough information about this subject." (Pre-test)

"I have lots of knowledge about that. The simplest example; the elevators which belongs to disabled people has just started to be constructed on the footbridges. Parents of the mentally retarded people must be stopped to spend lots of money for their children. That special education should be supported by the government and the special education department should be generalized in the universities."(Post- test)

As it can be seen, while the answers of the students in the pre-test were not sufficient, in the post- test answers were accepted as sufficient. And this shows the fact that students' "Abilities of knowing what the mainstreaming students' legal rights are and asking for those rights" are increased thanks to the studies carried out within the scope of this research. It is thought that the observations of pre-service teachers during their meetings with institutions where they visited for research and their interviews with teachers and the families have an effect on this subject.

The frequency distributions and percentages of the answers regarding the questions about the main titles in the From 2 are stated in Table 6, Table 7, Table 8 and Table 9.

In the Table 3, The distribution of answers given for the questions regarding the 'students' abilities to empathy with the families of mainstreaming students' main title according to pre-test and post-test are given.

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Table 3: The distribution of answers given for the questions regarding the ‘students’ abilities to empathy with the families of mainstreaming students’ main title according to pre-test and post-test

Item Number	Pre-test				Post-test			
	Yes		No		Yes		No	
	f	(%)	f	(%)	f	(%)	f	(%)
1	14	36	24	64	38	100	0	0

Item Number	Pre-test				Post-test			
	Positive		Negative		Positive		Negative	
	f	(%)	f	(%)	f	(%)	f	(%)
2	15	39	23	61	38	100	0	0
3	15	39	23	61	38	100	0	0

According to Table 3, for the (1st Question) ‘When you become a teacher, do you want to have mainstreaming students in your class?’ 14 students say yes and 24 students say no in the pre-test. But in the post- test all students said yes for that question. The answers of a pre-service teacher for this questions in pre-test and post-test are stated below.

“Actually, I do not want that.” (Pre-test)

“I really want that.” (Post- test)

For the second question ‘How should the families of the mainstreaming students be treated? What do you think to do for that subject?’ 15 students answered positively and 23 students answered negatively in the pre-test. But in the post- test all students gave positive answers. The answers of a pre-service teacher for this question in pre-test and post-test are stated below.

“We ask patience from God for them. We have nothing else to do.” (Pre-test)

“We should talk with the families in private. If they are uniformed, we should tell them how they can behave to their children. We should talk with the family by ensuring them to be in a good mood.” (Post- test)

For the third question ‘If you had a relative who would be in the mainstreaming classroom, what would you expected from teachers and school administrators?’ 15 students answered positively and 23 students answered negatively in the pre-test. But in the post- test all students gave positive answers. The answers of a pre-service teacher for this question in pre-test and post-test are stated below.

“What can I expect?” (Pre-test)

“I want the same whatever I do when I become a teacher from the people whom I face with. I ask them to involve mainstreaming students willingly and fervently (Post-test).

As you can see, the number of ‘yes’ answers is less than ‘no’ answers for the 1st question of pre-test. However, the situation is completely opposite in the post test. Also the number of positive answers is less than negative answers in the 2nd and 3rd questions of the pre-tests. But this case is completely different in the post-test. This shows the fact that studies under the scope of this research increased students’ “Abilities of having empathy with mainstreaming students’ families. It is thought that pre-service teachers’ meeting with handicapped students’ families and sharing these meetings within the scope of special needs lessons have an effect on this subject.

In the Table 4, The distribution of answers given for the question regarding ‘the ability to find solutions of problems as a future teacher or a school administrator’ main title according to pre-test and post-test are given.

Table4: The distribution of answers given for the question regarding the ‘the ability to find solutions of problems as a future teacher or a school administrator’ main title according to pre-test and post-test

Item Number	Pre-test				Post-test			
	Predicted		Not predicted		Predicted		Not predicted	
	f	(%)	f	(%)	f	(%)	f	(%)
4	3	7	35	93	32	84	6	16

Item Number	Pre-test				Post-test			
	Positive		Negative		Positive		Negative	
	f	(%)	f	(%)	f	(%)	f	(%)
5	4	10	34	90	38	100	0	0
6	16	42	22	58	29	77	9	23
7	0	0	38	100	38	100	0	0

According to table 4, 3 students could predict the question regarding ‘How many children are there with special needs? (4th Question) in the pre-test and 35 people could not predict the answer of that question. But in the post- test 32 people could predict this question correctly and 6 people could not predict the answer of this question. The answers of a pre-service teacher for this question in pre-test and post-test are stated below.

“I don’t know it is changing” (Pre-test).

“10 percent of our country” (Post-test)

For the fifth question ‘What do you think about your contributions to mainstreaming students?’ 4 students answered positively and 34 students answered negatively in the pre-test. But in the post- test all students gave positive answers. The answers of a pre-service teacher for this question in pre-test and post-test are stated below.

“I am lack of information. What can I do?” (Pre-test)

“I stress the individualized education. I think that they can continue to their standard education in the class also they can have individualized education to fix their handicaps.” (Post-test)

For the sixth question ‘Do you think mainstreaming students should study with normal students or should they study with other mainstreaming students? Explain your thoughts with reasons?’ 16 students answered positively and 22 students answered negatively in the pre-test. But in the post- test 29 students gave positive answers and 9 students gave negative answers to this question. The answers of a pre-service teacher for this question in pre-test and post-test are stated below.

“I am completely for separate education from the normal students.” (Pre-test)

“They should study in the same class, maybe they can be behind others in cognitive terms, but they can acquire skills for living socially and some other affective abilities” (Post-test)

For the seventh question ‘If you have an authority on this subject, what kind of precautions will you take? Explain your thoughts with reasons?’ all the students answered negatively in the pre-

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test. But in the post- test all the students gave positive answers. As it can be understood, the number of students who cannot predict the answer of the fourth question in the pre-test is more than ones who can. This is completely opposite in the post-test. The answers of a pre-service teacher for this question in pre-test and post-test are stated below.

“I think I can give more correct answer after having this lesson. Because I don’t know what kind of issues we have right now.” (Pre-test)

“I would allocate a share for their employment. I would reduce the barriers that prevent them having a proper education. I would require from each regulation to consider their needs (Post-test).

Also, in the 5th, 6th and 7th questions of the pre- test, the number of positive answers are less than negative answers. But it is completely different in the final test. This shows the fact that studies under the scope of this research increased students’ “Abilities of finding a solution for the problems as a future teacher or a school administrator. It is thought that the observations of pre-service teachers during their visits at the educational institutions depending on the handicapped student groups, their interviews with educators and school administrators and observing educational environments where students with special needs are taught have an effect on this subject.

In the Table 5, The distribution of answers given for the question regarding ‘the ability to accept oneself as sufficient in the field of Mathematics in special needs education’ main title according to pre-test and post-test are given.

Table 5: The distribution of answers given for the question regarding ‘the ability to accept oneself as sufficient in the field of Mathematics in special needs education’ main title according to pre-test and post-test

Item Number	Pre-test				Post-test			
	Sufficient		Insufficient		Sufficient		Insufficient	
	f	(%)	f	(%)	f	(%)	f	(%)
8	0	0	38	100	38	100	0	0

According to table 5, the answers given by students to the eighth question regarding ‘Is it necessary to make a special lesson plan for mainstreaming students? Do you think that you have enough information about this subject? If you think that you are not sufficient enough for this subject, what are your deficiencies? Explain’ were not accepted as sufficient in the pre-test. But in the post- test all the answers of the students were accepted as sufficient. The answers of a pre-service teacher for this question in pre-test and post-test are stated below.

“I do not see myself as sufficient on this subject. But I want to improve myself about how this kind of students can be educated.” (Pre-test)

“In the classroom, we have same lesson plan. But teacher can make a different lesson plan for the students during extracurricular activities. If there is a mental disability situation, it must be different or it should be different. But if there is a physical disability, I think it should be same lesson plan. I think it is not enough but I believe I have constructed a basis with this lesson. I think I can add new information on that basis.” (Post- test)

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As it can be understood, while students' answers were not sufficient in the pre-test, in the post- test their answers were found sufficient. This shows us the fact that studies under the scope of this research increased students' "Abilities of accepting themselves as sufficient in the field of mathematics in special needs education. It is thought that the observations of pre-service teachers during their visits at the educational institutions depending on the handicapped student groups, their interviews with educators and school administrators and having information about the practice for those children with special needs have an effect on this subject.

In the Table 6, The distributions of the answers for the question regarding the "Perception levels of main streaming students" according to pre-test and post- test were stated.

Table 6: The distributions of the answers for the question regarding the "Perception levels of main streaming students" according to pre-test and post- test

Item Number	Pre-test				Post-test			
	Positive		Negative		Positive		Negative	
	f	(%)	f	(%)	f	(%)	f	(%)
9	12	32	26	68	38	100	0	0
10	13	34	25	66	30	78	8	22

According to Table 6, for the 9th question regarding in your opinion can children with special needs display different skills? 12 students gave positive and 26 students gave negative answers in pre-test. But in the post- test all students gave positive answers. The answers of a pre-service teacher for this question in pre-test and post-test are stated below.

"I don't think so." (Pre-test)

"Yes they can display. Having some handicaps is not an obstacle for them to be talented." (Post- test)

For the question "Is there anybody or anyone who has special needs around you? If there is, what are their problems? (10th. Question)" 13 students gave positive answers and 25 students gave negative answers for that question in the pre-test. But in the post- test, 30 students gave positive answers, 8 students gave negative answers for that question. The answers of a pre-service teacher for this question in pre-test and post-test are stated below.

"There is not anybody who has special needs in my environment." (Pre-test)

"They have problems such as not being accepted by the society." (Post-test)

As it can be understood, positive answers are less than negative answers in the pre-test but in the post- test this is completely different. This shows us the fact that studies carried out within the scope of this research increased 'Perception levels of main streaming students'. It is thought that observing students who needs special education one to one and having opportunities for communicating them have an effect on this subject.

Conclusion and Suggestions

The purpose of this research is to analyze pre-service teachers' information levels before and after the informative studies regarding mainstreaming students within the scope of special education carried out with primary mathematics pre-service teachers.

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With this purpose in mind, the study was carried out with the senior students of primary mathematics education department within the scope of special education course. It was planned for pre-service teachers to go and do the necessary research in real environments about the subjects within the scope of the course and therefore to have some information about the education and characteristics of students who needs special education by observing the individuals who are accepted under the category of special needs education. With the help of this it is aimed to give them information about the cases that they can experience in the future and to improve themselves according to these cases and to improve their knowledge and experiences.

Within the scope of this research we obtained the following results:

This study increased pre-service teachers' abilities of "Knowing basic concepts regarding mainstreaming", "The ability of knowing the legal rights of mainstreaming students and the ability to asking for these rights", "The ability of feeling empathy with the families of mainstreaming students", "The ability of finding solutions to problems as future teacher or school administrator", "The ability of feeling self-sufficient about special needs education in the field of mathematics" and "Types of perceiving mainstreaming students". With this aspect of this study is parallel with Stone and Brown (1986), Diken and Sucuoğlu (1999), Mcleskey, Waldron So, Swanson and Loveland (2001), Sargin and Sünbül (2002), Kargin (2004), Akman and Okyay (2004), Shippen, Crites, Houchins, Ramsey and Simon (2005), Elhoweris and Alsheikh (2006), Bilen (2007), Altun and Gülben (2009), Sze (2009), Şahbaz and Kalay (2010), Rakap and Kaczmarek (2010), Ünal (2010) Güven and Çevik (2011).

Also by depending on these results, it is thought that the pre-service informative study was very helpful to students and will be in the future, besides this study will guide them during their teaching careers and have positive effects on their relations with mainstreaming students and increase their awareness on this subject. It is thought that rather than in-service teacher training courses pre-service education will be more beneficial to teachers. In this sense, with the help of special needs education course which was added to curriculum, pre-service teachers will start their careers with necessary information and this situation will be fruitful for both mainstreaming students and their families. The important thing is reducing the problems on this subject to minimum and giving at least a support to those people who are suffering in most of the parts of the society. Teachers who start their careers with information about mainstreaming will be ahead of other teachers in terms of solving problems faster, determining the level of the lesson, knowing the problems of mainstreaming students and producing the solutions of these problems, feeling empathy with the families of these children, planning the things that can be done with these students especially in the field of mathematics, knowing the legal rights of mainstreaming students and helping them in this subject. It is also thought that the fact that one of the researchers has a mainstreaming child and shared her experiences on this subject contributed to the success of this study.

The following suggestions can be offered at the end of the study:

It is thought that carrying out a similar study with other subjects can contribute all graduates' professional life about mainstreaming education.

It is thought that having special education courses in both semesters instead of limiting this course into one term will help pre-service teachers to be more effective about mainstreaming.

It is thought that it is important to have subject teachers in special education courses in universities together with experts on this subject in terms of learning what can be done in mainstreaming education for other subjects.

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It is thought that enriching pre-service trainings with in-service trainings about mainstreaming will be helpful for teachers.

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