Kastamonu Education Journal, 2021, Vol. 29, No:1, 186-200
doi: 10.24106/kefdergi.684819

|Research Article / Araştırma Makalesi |

Primary School Teachers' Views on the Implementation of the 4th Class Science Course Curriculum

4. Sınıf Fen Bilimleri Dersi Öğretim Programının Uygulanmasına Yönelik Sınıf Öğretmenlerinin Görüşleri

Sinan Tartar[1]

Keywords

1. fourth class
2. science
3. curriculum
4. primary school teachers

Anahtar Kelimeler

1. dördüncü sınıf
2. fen bilimleri
3. öğretim programı
4. sınıf öğretmenleri

Received/Başvuru Tarihi
05.02.2020

Accepted / Kabul Tarihi
15.07.2020

Abstract

When it is considered that the basis of the science course is taken in elementary school, the primary school teachers who are also the practitioners of the science curriculum in this level have great responsibilities in the acquisition of science consciousness. It is thought that updating the science curriculum will cause some changes in practice. Therefore, the opinions of the primary school teachers about the implementation of the new program are important. This study was carried out in order to investigate the opinions of the 4th class primary school teachers about the objectives, content, educational status and evaluation items of the 4th class science curriculum in primary school which was updated in 2018 and implemented as of the 2018-2019 academic year. The study group consisted of 5 primary school teachers in the central district of a province in the Western Black Sea Region, selected from the same primary school according to the criteria sampling. The data were collected through the semi-structured interview form. There were 10 open-ended questions in the interview form. The data were analyzed by using a descriptive analysis method. The primary school teachers who participated in the research indicated that the science curriculum should be suitable for the level of the students, their simplicity, attractiveness of the subjects, interest and attention, the content in terms of being appropriate for the characteristics of the students and the beginning of this course from the third grade of primary school; on the other hand, they stated that the coursebook was not prepared in self-sufficient way, there were too many concepts in the program and too many details were included, the number of experiments were low, there was difficulty in providing material for some subjects and there was no laboratory environment. Meeting the equipment needs in schools can increase the effectiveness of the program in practice. Another variable that increases the effectiveness of the program in practice is the inclusion of out-of school activities by primary school teachers in science classes.

Öz

Fen bilimleri dersinin temelinin ilkokulda atıldığı düşünüldüğünde, bu kademede öğrencilere fen bilincinin kazandırılmasında fen bilimleri dersi öğretim programının uygulayıcısı olan sınıf öğretmenlerine büyük sorumluluklar düşmektedir. Fen bilimleri dersi öğretim programının güncellenmesinin uygulamada da bir takım değişikliklere neden olacağı düşünülmektedir. Dolayısıyla sınıf öğretmenlerinin yeni programın uygulanmasına yönelik görüşleri önem arz etmektedir. Bu çalışma 2018 yılında güncellenen ve 2018-2019 eğitim öğretim yılı itibariyle uygulamaya konulan ilkokul 4. sınıf fen bilimleri dersi öğretim programının hedef, içerik, eğitim durumları ve değerlendirme öğelerine ilişkin, ilkokul 4. sınıf öğretmenlerinin görüşlerini belirlemek amacıyla yapılmıştır. Araştırmanın çalışma grubunu, Batı Karadeniz Bölgesindeki bir ilin merkez ilçesinde bulunan, aynı ilkokuldan ölçüt örneklemesine göre seçilen 5 sınıf öğretmeni oluşturmaktadır. Araştırma verileri yarı yapılandırılmış görüşme formu ile toplanmıştır. Görüşme formunda 10 açık uçlu soru yer almaktadır. Araştırmada görüşme yapılarak elde edilen veriler betimsel analiz yöntemi kullanılarak analiz edilmiştir. Araştırmaya katılan sınıf öğretmenleri, fen bilimleri dersi öğretim programının, öğrencilerin seviyesine uygunluğu, sadeliği, konuların cazipliği, ilgi ve dikkat çekiciliği, içeriğin öğrencilerin özelliklerine uygun olması ve ilkokul 3. sınıftan itibaren bu dersin verilmeye başlanması konusunda olumlu görüş belirtirken; kitabın farklı kaynaklara ihtiyaç bırakmayacak şekilde hazırlanmaması, programda çok fazla kavrama yer verilmesi ve detaya girilmesi, deney sayısının az olması, bazı konular için materyal temininde güçlük yaşanması ve laboratuvar ortamının olmasının ise olumsuz olarak ifade etmişlerdir. Özellikle okulların araç gereç ve donanım ihtiyaçlarının karşılanmasının yanı sıra sınıf öğretmenlerince fen bilimleri derslerinde okul dışı etkinliklere de yer verilmesi öğretim programının uygulamadaki etkililiğini artırabilir.

[1] Ministry of National Education, Canip Baysal Primary School, Bolu, TURKEY; https://orcid.org/0000-0001-6942-2891

INTRODUCTION

Fierce competition between countries, rapid changes in science, technology, economy and social life will continue to be effective in shaping our life for the future, as they have shaped our lives from past to present. It seems possible to keep up with these rapid changes in the world with well-trained science literate individuals and effective science lessons. Science literate individuals have problem-solving skills, high self-confidence, high-level thinking skills, instead of accepting the information they have acquired as it is, search and question information in their daily lives and can make effective decisions. Also, they are aware of the importance of science in overcoming social problems (Ministry of National Education [MoNE], 2005, 2013, 2018).

Science literacy is also one of the core areas of the International Student Assessment Program (PISA), financed by the Organization for Economic Cooperation and Development (OECD). In PISA, students not only know what they know in science, but also what they can do with this knowledge, and how they can transfer this knowledge to their real lives. Considering the PISA science literacy mean scores according to Turkey, it is seen it ranks 47th in 2006, when 57 countries participated in the application. Also, it is seen it ranks 42th and 43th in 2009 and 2012, as 65 countries participated in the application. Moreover, it is seen it ranks 54th in 2015, when 72 countries participated in the application. Likewise evaluating student achievement at the world's largest and most comprehensive Trends in International Mathematics and Science Study (TIMSS) of the points, the results show that not at the desired level for Turkey. The TIMSS science in Turkey's evaluation shows that the average achievement remained below average (MoNE, 2015, 2016).

It is possible to train qualified people who can adapt to the changes in science and technology and take the responsibility of these changes with an effective science education (Lederman, 1992). Considering the importance of gaining the qualifications in the science course to the students at an early age, it is extremely important to prepare an effective science curriculum for the individuals to gain these qualifications. In this perspective, the science curriculum was developed by reviewing international evaluations, changing needs of the society and the individual and new approaches in program development (MoNE, 2018).

The implementation and evaluation of this program is as important as the development of the science course curriculum (Oz, 2007). No matter how much the curriculum is developed, it has no meaning unless it is transferred to educational environments by teachers. Teachers have great responsibilities in the implementation of the curriculum. In order for teachers to apply the curriculum of the science course more effectively, it is important that they examine the program, comprehend the philosophy of the program, assimilate the learning, teaching and evaluation process, the place of the curriculum and the organization of the units, accept the program, and be willing to implement the program at the same time (Tekbiyik & Akdeniz, 2008).

In the study conducted by Karacaoğlu and Acar (2010), it was stated that a curriculum that is not fully understood or implemented by teachers, although it is prepared by considering the individual and society needs, will not be effective and will remain in theory. For a curriculum to be successful, it is important for teachers to adopt the program and to implement the program in line with the specified objectives (Gomleksiz, 2007). The people whose opinions are sought in the implementation of the curriculum should be teachers who are the implementers of the program. In addition to being responsible for the implementation of the program, teachers are also effective in providing a favorable environment for the effective implementation of the program. For this reason, it is important to determine how the science course curriculum is implemented by the teachers who are its practitioners (Karacaoglu & Acar, 2010).

Being an indispensable part of our daily life, the science course is important for any individual. Considering the intensity of children's curiosity and discovery characteristics at the age of 6-14, the subjects of the science course that support children's curiosity and asking questions and the teaching programs of this course gain more importance in these periods (Gurdal, 1992). And also, the science course is important not only for today's individuals but also for future individuals. By this aspect, the importance of teaching this course will be better understood (Genc, Denis & Demirkaya, 2010). The inability to teach the science course effectively and the desired success from this course have caused the science course curriculum to be updated frequently. However, the success of a curriculum does not depend solely on the development of the curriculum. Teachers, who have great responsibility in the implementation of the curriculum, also contribute greatly. Posner (1995) states that the characteristics of each teacher may differ from each other, so there may be differences in the implementation of the official program. No matter how good a curriculum is, it may not be able to provide the desired benefit when it is not implemented effectively. Or, on the contrary, an ineffective curriculum can come to life in the hands of a good practitioner. Considering that the foundation of the science course is laid in primary school, at this stage, classroom teachers, who are the implementers of the curriculum, have great responsibilities in providing students with science awareness. It is thought that updating the science curriculum will cause some changes in practice. Therefore, the opinions of classroom teachers about the implementation of the new curriculum are considered important.

When the literature on the subject is examined, it is seen that the opinions of classroom teachers are frequently consulted in the process of evaluating the science course curriculum at primary school level from the past to the present (Aslan & Cokuk, 2018; Bekmezci & Ates, 2018; Can, 2020; Duban, 2016; Gomleksiz, 2007; Gomleksiz & Bulut , 2007; Koder, 2019; Ozkan, 2019; Sarac & Yildirim, 2019; Tekbiyik & Akdeniz, 2008; Unisen & Kaya, 2015; Yildirim & Gungor-Akgun, 2015). In addition, although there are limited studies in which the opinions of classroom teachers regarding the implementation of the 2018 science course curriculum

are limited, it is encountered in the relevant literature (Koder, 2019; Ozkan, 2019; Sarac & Yildirim, 2019). However, in the studies examined, it is seen that the opinions of classroom teachers and science teachers on the implementation of the curriculum were included together or studies were generally discussed at the primary school level (3rd and 4th grade) and the study groups were selected from different schools (such as the center, suburb, village). In addition, in the studies conducted, the 2013 and 2018 science course curriculums were compared in terms of special purposes, skills, achievements, content, educational status and testing status (Koder, 2019), and it was observed that classroom teachers related to science, engineering and entrepreneurship practices added to the 2018 science course curriculum it seems that their views were consulted (Ozkan, 2019; Sarac & Yildirim, 2019). In other words, there is no study that includes the opinions of classroom teachers about the implementation of the science course curriculum at the 4th grade level in particular, and especially in the four basic elements of curriculum development, namely, objectives, content, educational situations and evaluation dimensions. Therefore, this study is handled at a more specific level. Therefore, the 4th grade level, which is thought to have a critical importance in the transition to secondary school, was selected and the study focused on the opinions of classroom teachers, especially on the four basic elements of curriculum development. In addition, in this study, participants working in the same school were chosen to reduce the effect of other factors (socioeconomic status, environment, center or village school, etc.), which are thought to have a positive or negative effect on the implementation of the science course curriculum. Particularly, in order to obtain more comprehensive information about the implementation of the science course curriculum, it was taken as a criterion that all of the participants had their 3rd grade education in the previous year. In other words, the opinions of the participants about the implementation of the science course curriculum were tried to be determined in the same environment and conditions. It is predicted that the study will make significant contributions to the development of the science course curriculum, which will be updated in the following processes, and in identifying the problems experienced during the implementation of the science course curriculum.

Purpose of the Research

The general aim of this study is to determine the opinions of classroom teachers about the objective, content, educational situation and evaluation items for the implementation of the 4th grade science lesson curriculum. In line with this general purpose, answers to the following questions were sought:

1. What are the opinions of 4th grade teachers about the objective in the implementation of the science course curriculum?

2. What are the opinions of 4th grade teachers about the content element in the implementation of the science course curriculum?

3. What are the opinions of 4th grade teachers about the educational status in the implementation of science course curriculum?

4. What are the opinions of 4th grade teachers about the evaluation in the implementation of the science course curriculum?

METHOD

Research Model

In this study, the primary school 4th grade science course curriculum, which was updated in 2018 and put into practice as of the 2018-2019 academic year, was explained in line with the opinions of primary school 4th grade teachers. In this descriptive study, case study design was preferred among qualitative research designs. The most basic feature of qualitative case research is that it is investigated in depth by considering one or more cases (Yildirim & Simsek, 2006). In this study, 4th grade teachers' opinions about the implementation of the science course curriculum were tried to be examined in depth.

Study Group of the Present Study

The study group of the study was selected according to criterion sampling, which is one of the purposeful sampling methods in qualitative research. The basic understanding in this sampling method is that selected individuals meet a predetermined set of criteria (Yildirim & Simsek, 2006). Accordingly, the interviews were conducted with 5 classroom teachers who voluntarily participated in the research from the 4th grade of primary school, who are the implementers of the new science course curriculum. It was taken as a criterion for the selected teachers to teach the 3rd grade in the previous year. Participating teachers were selected from the same primary school in the central district of a province in the Western Black Sea Region. The reason teachers are selected from the same primary school is to better see the differences in the implementation of the official program. Due to the research ethics, the names of the participant teachers were not included. Participating teachers were coded as T1F, T2M, T3M, T4M, T5M and named. The characteristics of participating teachers are given in Table 1.

Table 1. Characteristics of the participants

	Gender	Age	Professional seniority	Field	Education status for updated curricula
T1	Female	42	19	Biology	Yes (While taking formation)
T2	Male	32	11	Classroom teaching	No

T3	Male	33	12	Classroom teaching	No
T4	Male	48	25	Classroom teaching	No
T5	Male	50	31	Classroom teaching	No

In Table 1, it can be seen that four of the study group is male and one is female. Among the participants whose ages are between thirty-two and fifty, the minimum professional seniority is eleven years, while the highest professional seniority is thirty-one years. It is observed that the female participant graduated from the biology department, while the male participants graduated from the classroom teaching department. The majority of the participants stated that they did not receive any training for the implementation of the science course curriculum of 2018, which was recently updated in addition to the science course curriculum updated from the past to the present. The female participant in the field of biology stated that she only received training for the implementation of the science course curriculum while receiving training, and that she did not receive any other education. It is striking that the teachers did not receive any training for the implementation of the updated science course curricula.

Data Collection Tool

A semi-structured interview form was used to collect research data. Semi-structured interviews have positive features such as being easy to analyze, providing the interviewee the opportunity to express themselves and obtaining detailed information when necessary (Buyukozturk, Kilic, Akgun, Karadeniz & Demirel, 2017). Before preparing the interview form, related publications and science course curriculums were examined. In order to determine the content and validity of the form, 15 open-ended question samples were shown to 1 science education specialist, 1 curriculum developer and 2 science teachers. The number of questions has been reduced to 10 in line with the recommendations made. The interview form used in the study consists of two parts. In the first part, there are questions about the gender, age, professional seniority, graduation area and education status of classroom teachers regarding the implementation of the curriculum. In the second part, a total of 10 open-ended questions prepared to reveal the opinions of 4th grade teachers regarding the implementation of the science course curriculum objective (1 question), content (2 questions), educational status (5 questions) and evaluation (2 questions) is located. The interview form was applied to two fourth grade teachers who did not participate in the study and were asked if there were places they could not understand. The questions were prepared in a clear and understandable manner, avoiding expressions that would direct the respondent. The interview was conducted by the researcher himself. Before the interview, an appointment was made with the teachers. Before the interview, teachers were informed about the interview process and assured that the results of the interview would not be shared with anyone. Permission has been requested regarding whether the voice recorder can be used or not. Teachers gave permission regarding the usability of the tape recorder and the interviews that lasted approximately 20-25 minutes were recorded by means of a voice recorder. The recorded data were converted into text by the researcher and a faculty member. The reliability of the data compared with the descriptive analysis method was calculated with the formula Percent of Agreement = (Agreement / Agreement + Disagreement)*100 (Gay, 1987; Miles and Huberman, as cited in 1994; Gulteke, 2012). Analysis reliability was calculated as 94% according to the Miles and Huberman formula.

Analysing of Data

The data obtained through interviews in the research were analyzed using descriptive analysis methods. The data obtained according to this approach are summarized and interpreted according to previously determined themes. In descriptive analysis, direct quotations can be frequently included in order to effectively reflect the views of the individuals interviewed. It is aimed to present the findings obtained in this type of analysis to the reader in an organized and interpreted form (Yildirim & Simsek, 2006). The answers of the teachers who participated in the study were given in the form of direct quotations. While making direct quotations, codes such as "T1F", "T2M", "T3M", "T4M", "T5M" were given for each teacher. For example, while "T1K" refers to the number 1 female teacher, "T2M" refers to the number 2 male teacher.

FINDINGS

The opinions of primary school 4th grade teachers about the implementation of the science course curriculum were categorized according to the objective, content, educational status and evaluation elements, and the data obtained from the analysis of each item were presented to the reader in tables.

Findings Regarding the First Question of the Study

The first question of the research is “What are the opinions of 4th grade teachers about the objective in the implementation of the science course curriculum?” It was determined as. In this context, a question was asked to the teachers as stated in the data collection tool. The opinions of classroom teachers participating in the study about the objective item are given in Table 2 in line with the data obtained, and the opinions of classroom teachers about the objective item are directly quoted.

Question 1: What do you think about the clarity and comprehensibility of the science course curriculum in terms of objectives and its suitability for the development level of the students?

Table 2. Classroom teachers' views on the objectives item

	Objectives		Level of the students	
	Clear / understandable	Unclear	Appropriate	Not Appropriate
T1F	✓		✓	
T2M	✓		✓	
T3M	✓		✓	
T4M		✓		✓
T5M		✓		✓

When Table 2 is examined, among the teachers participating in the study, T1F, T2M and T3M express that the objectives are clear, understandable and suitable for students' developmental characteristics. On the other hand, T4M and T5M stated that the objectives were not clear and understandable, and at the same time, the objectives were not appropriate for the developmental characteristics of the students and remained abstract.

T1F: "I see it is sufficient now, sometimes even less in some cases. More so, let me tell you that according to the curriculum, we can complete the gains in a short time. So, I think the gains are clear and understandable. At the same time, it was expressed concretely, in accordance with the developmental characteristics of the students."

T2M: "I think the achievements are clear and understandable. In my opinion, the achievements are even simple compared to the 4th grade level. Because our children are already at a level that can do this. You know, we're studying magnets right now. There are no students left who could not learn about magnets. The acquisitions were prepared in accordance with the developmental characteristics of the students. At a level that they can understand. "

T3M: "I think the achievements are appropriate for the students' level. When we look at the book and its contents, I think it is written in a simplicity that students can understand. The gains are suitable for the level of the students. It is prepared at a simple level. I can say that the program is clear and understandable enough."

T4M: "There are definitely unclear parts of the achievements. So many of them are abstract concepts. Children are also interested in science. Let me say that too."

T5M: "The achievements are a bit far from understandable. So, it seems to me not quite clear. It's not clear."

Findings Regarding the Second Question of the Study

The second question of the research was determined as: "What are the opinions of 4th grade teachers about the content element in the implementation of the science course curriculum?" In this context, two questions were asked to the teachers as stated in the data collection tool. The opinions of the classroom teachers participating in the study on the content element are given in Table 3 and Table 4 in line with the data obtained, and the opinions of the classroom teachers regarding the content element are directly quoted.

Question 1: What do you think about the relevance of the content element of the science course curriculum to the developmental characteristics of the students?

Table 3. Classroom teachers' opinions on the suitability of the content item

Themes	Comments	Teachers
Suitable for student level	Subjects are fun, not boring students	T1F
	Subjects are understandable and at a level that students can understand	T2M
	The subjects are almost appropriate to the characteristics of the students	T4M, T5M
	Subjects are suitable for students' characteristics, simple and understandable	T3M
Not suitable for student level	Content should be diversified	T2M, T4M
	New topics can be added	
	Subjects are abstract	T5M

When Table 3 is examined, it can be seen as classroom teachers who participated in the study stated that the content was generally simple, fun, understandable and suitable for the level of the students. Among the teachers participating in the study, T2M and T4M stated that the topics in the content should be more diversified, while T5M stated that some subjects remained abstract.

T1F: "Yes, I see it appropriate. Subjects do not bore students. Usually it is fun. I can say they don't get bored in science class."

T2M: "The content is not above and below the level of the students. It was prepared in accordance with their developmental characteristics. At a level that they can understand. Yet, I believe it should be a little more diversified. For example, magnets took a long time. I think it's a simple matter. A similar subject could have been added instead."

T3M: "The content was prepared in accordance with the developmental characteristics of the students. It is a comfortable program, the curriculum, which is adjusted to bring children to a disaster. We do not have any difficulties in science classes. We did not experience any difficulties in terms of time, especially in explaining the subjects to children and receiving feedback from children."

T4M: "I think it is almost appropriate. Because children are curious about those kinds of subjects. They generally love science lessons. However, new topics can be added to the topics. Topics seem insufficient."

T5M: "It looks more or less appropriate. However, I think that some subjects are not suitable for the developmental characteristics of the students and remain abstract."

Question 2: How do you create the content element of the science course curriculum?

Table 4. Classroom teachers' views on the creation of the content item

Themes created from views	Teachers
Eligibility for the objectives	T1F, T3M, T4M,T5M
Textbooks	T2M, T3M, T4M, T5M
Suitability for student level	T1F, T2M
Different sources	T4M, T5M
Current issues	T1F
Environment	T2M

In Table 4, it is seen that classroom teachers generally take into account the achievements of the science course and the textbooks while creating the content element. In addition, teachers T4M and T5M stated that they benefited from different sources, T1F and T2M considered suitability to the level of the student, T1F tried to create content by taking into account the current issues and the environment where the T2M student was present.

T1F: "I am trying to determine it according to the outcomes. Again, I determine according to current issues, the levels and interests of the children."

T2M: "First of all, we waited for our book to arrive. For example, we first waited for our book to come to prepare our plans. We did something according to our book. What are our topics, how many weeks we have to devote them, first we arranged them according to the working day calendar. Here I adapt the content to the individual differences of the students, their economic level or the region where I work."

T3M: "I try to determine the content in line with the outcomes, according to the textbook. I only use textbooks."

T4M: "As we can create different content ourselves, we also benefit from books. I am trying to create content suitable for the objectives. There are many chapters where the book is insufficient. We are trying to complete this from different sources."

T5M: "I am trying to determine a content suitable for the objectives in the curriculum. I act according to what is in the program. Since the textbook is not enough, I try to create content from different sources."

Findings Regarding the Third Question of the Study

The third question of the research is determined as: "What are the opinions of 4th grade classroom teachers about the element of educational status in the implementation of the science course curriculum?" In this context, five questions were asked to teachers as stated in the data collection tool. The opinions of the classroom teachers participating in the study on the educational status item are given in Table 5, 6, 7, 8, 9 and 10, and the opinions of the classroom teachers about the educational status item are directly quoted.

Question 1: What kind of activities do you prepare in accordance with the curriculum in the science course?

Table 5. The opinions of classroom teachers on the creation of activities for the educational status item

Themes created from views	Teachers
Experiment	T1F, T2M, T3M, T4M
EBA	T5M
Drama	T2M
Smart board	T1F
Case study	T2M
Research examine	T2M
Video and images	T1F
Educational sites on the Internet	T5M

According to Table 5, it is seen that classroom teachers mostly include practice-based experimental activities while preparing their activities. At the same time, it is seen that classroom teachers make use of smart boards, video and visuals, EBA, case study, drama, research and analysis and online education sites for activity preparation.

T1F: "The activities we will do, if there are experimental things to do as I said, ie I try to make students do simple experiments that we can do in the classroom. Apart from that, we can also benefit from this thing. Smart boards work very well in existing classrooms. In other words, we can provide a more permanent learning experience when we watch the materials or images or videos that we cannot reach."

T2M: "Since we are located in the same building with secondary schools, it is easier for us to access activities and experiment sets related to science lessons. Since there is a science laboratory in secondary school, we can find all kinds of equipment and conduct experiments and activities. We have research activities. I can call the case study, analysis, dramatization, research, experiment suitable for the program."

T3M: "We have experiments in the classroom in accordance with the science lesson. The book already has directions about it. So let's do an experiment, there are directions for whatever subject we are dealing with, for example, which experiment we should do with the magnet. Accordingly, we try to do the experiments on time in accordance with the content of the book. Of course, we can sometimes have difficulties with the material, but in general, we do our preparations and carry out the experiments because there are not such high-level experiments in the experiments."

T4M: "I concentrate on practical activities. For example, we have dealt with the magnet issue last, so I am giving the magnet example. The children brought magnets. I brought magnets myself. The subject was better understood when we did the push and pull in a practical way. For example, the areas where magnets are used today showed the high-speed train. Nobody has heard of it. The children were shocked that the magnet was used in the high speed train. They say it can't be my teacher. Very interesting. Even if they couldn't fully grasp it, they realized that the magnet was used to that field."

T5M: "I generally use ready-made things (Educational Sites on the Internet). Visually, the activities on these sites attract more students' attention. I use EBA. Other than that, I do not include any other activities."

Question 2: How do you take into account individual differences in science class?

Table 6. Classroom teachers' views on considering individual differences

Themes created from views	Teachers
Spending more time	T1F, T3M, T5M
Attention by individually	T1F, T2M, T5M
Simple to complex	T1F, T2M
Adding more to the activities	T1F
Finding the middle way	T4M
Repeating	T4M

It is seen that classroom teachers generally try to take into account individual differences by allocating more time to students and dealing with them individually in the classroom according to Table 6. The class teachers T1F and T2M stated that they simplified the activities for students with low levels and made it difficult for students with high levels. T1F stated that he tried to

include all students in the activities more, while T4M stated that he tried to find the middle way by repeating in places that are not generally understood.

T1F: "Now, starting from the simplest, I start explaining from the simplest. To that extent, I make sure that certain students already have the ability to learn to a certain extent, and those who have problems in understanding, participate in more activities by doing the procedures together. So I take the time to explain a little more with the students who stayed behind."

T2M: "Primary and secondary school teachers are generally different from each other. Since the primary school teacher knows each student better, we are already together with the student in our 4th year, so after understanding which student has difficulties in which subject, we simplify the activity according to his / her level, if necessary, or make the activity difficult according to his / her level."

T3M: "I do not have such a high level individual student in the classroom. Because I am a little lucky as a class. I don't have mainstreaming students. But of course, there may be differences between children in terms of education level and academic success. Here, we try to cover the deficiencies of their friends by giving more opportunities to children, that is, by giving more opportunities to students with low academic success, by keeping them more involved."

T4M: "Frankly speaking, we are trying to find the middle of individual differences. You know, of course, students have individual differences. The levels of difference are also extreme. We usually go back on things they don't understand."

T5M: "Of course, I try to focus more on the weak students. I'm trying to take care of it individually. Others are learning and learning is normal anyway. I spend more time with the weak ones."

Question 3: Which teaching methods and techniques do you use while applying the science curriculum?

Table 7. Opinions of classroom teachers on teaching methods and techniques used

Themes created from views	Teachers
Learning by doing and experiencing	T1F, T2M, T3M, T5M
Demonstration	T1F, T2M, T3M, T4M
Experiment	T1F, T2M, T4M, T5M
Expression	T2M, T5M, T4M
Question-answer	T1F, T4M, T5M
Collaboration	T3M, T4M, T5M
Research	T2M, T3M, T4M
Invention	T3M
Presentation	T3M
Drama	T4M
Case Study	T4M
Problem solving	T1F
Observation	T4M
Brainstorming	T4M
Active learning	T4M

It can be seen classroom teachers mainly use the methods of learning by doing, research, demonstration, cooperation, experimentation, expression and question-answer methods in the science course according to Table 7. Besides these methods, it is seen that classroom teachers also use problem solving, invention, presentation, drama, case study, observation, active learning and brainstorming techniques.

T1F: "I use them more by doing, living, experimenting, showing and doing, problem solving, question and answer. In other words, the method of expression is of course an indispensable method. There is more effective learning in expressions based on visuals, or more effective learning happens when we do it, show it and get it done."

T2M: "One of the most preferred ones is teacher expression. After that, I have an application. For example, if I am going to have an experiment, I explain the experiment first, I show it, then I make sure that each student does it himself. In short, I help them learn by doing, living, researching."

T3M: "Our group work is continuous. We also have to learn by doing and living. Here experimentation, observation, it happens all the time. Teaching by research, examination, invention, presentation. Here, we do our experiments abundantly because it will be suitable for the scientific content of science. After showing and having it done, we can analyze the thoughts of children on a subject again in group work in the form of questions and answers. In other words, we try to evaluate what we can do beforehand in accordance with the current situation and transfer it to the class. You know, we do not like that we use it for this gain that goes directly with the acquisition or we use it constantly, but we try to transfer that technique to whatever achievement we have."

T4M: "Visuality is generally in the foreground and we try to make the subject as concrete as possible. Let me say more by doing and living. We focus more on applications. It's experimental. You know, children cannot understand soft information directly. In other words, it is more like group work, active learning, drama, case study, demonstration, question and answer, examination, observation, brainstorming, method of expression. So we can use many methods at work like this."

T5M: "I generally use the method of lecture, question and answer. It is the best learning by doing and experiencing, but we rarely practice it. Sometimes we also experiment. He does the experiments himself. Then learning becomes permanent. Sometimes they also work in cooperation."

Question 4: What kind of tools and materials do you use while applying the science curriculum? How do you get these tools?

Table 8. The opinions of classroom teachers regarding the tools and materials used

Themes created from views	Teachers
Materials suitable for the subject	T1F, T3M, T4M, T5M
Materials prepared by students	T2M
Smart board	T2M
Visuals	T2M
Video	T2M

In Table 8, it can be seen that classroom teachers prefer materials that are suitable for the subject to be covered while they prefer tools and materials. For example, when dealing with magnet, iron powder; soccer ball processing the solar system; while dealing with the subject of the world, it is like the world model.

Table 9. The opinions of classroom teachers about providing the tools and materials used

Themes created from views	Teachers
By our own means	T1F, T2M, T3M, T4M, T5M
School materials	T3M, T4M, T5M
Materials from secondary school laboratory	T1F, T2M
Materials brought by students	T2M, T3M

It can be understood the classroom teachers mostly meet the necessary tools and materials by their own means or from the materials available at the school according to Table 9. The fact that the middle school and primary school are in the same building shows that the teachers also benefit from the secondary school science laboratory. Classroom teachers also state that the materials that are easy to obtain are brought by the students.

T1F: "For science, for example, I choose materials according to the subject. For example, in the case of a magnet, it is magnet, iron powder, etc. Whatever the subject is, we choose it accordingly. School normally has equipment but not too many things but lacks. In other words, since it is not very difficult to reach them, we can at least provide them with our own means, like magnets. As science, we make more use of secondary school materials. In other words, if the departments were created, it is simple in primary schools, that is, because there are not such in-depth things in science, that is, if a sufficient area is created in the 4th grade, especially in the science lesson, these materials will actually make our work much easier even in a small area."

T2M: "First of all, I use the smart board in lecture. I use visual materials related to science from the various visually prepared videos there. Then, if it's not going to be too costly, I want the students to bring their own materials. For example, when I describe the solar system, it is the soccer ball or tangerine that almost all of the children have at their home, and I have them bring their own examples and tell them. I use the school's science laboratory or try to provide it myself if necessary."

T3M: "If we are going to do an activity related to the world, we are bringing the Earth model. We do animation in the classroom. In the form of small dramas. While dealing with the magnet issue, we also brought our magnets. The children saw these push and pull concepts directly on the vehicles. In other words, I do not know if we can fully meet the means we have in accordance with the subject which is suitable for the subject. But, I mean, we keep our materials in the classroom, even if the children can at least

understand the logic of that job. We try to provide tools with our own means. In our school, there are opportunities for some and not for some. We create what we cannot find with our own means. It is brought from our students. For example, we tell the students before that we have an experiment with a magnet. Children can bring magnets if they can. We have a world model in our school, for example, we can take them from our school and use them. Or, if we cannot reach at all, we can prepare the material directly and bring it to the classroom. In general, we are trying to use the materials."

T4M: "We bring materials related to the subject, whatever the subject is. We try to provide materials with our own means. There is no laboratory in our school. The materials in the school are used again. But usually it is not enough. We try to reach it with our own means, whether from home or from friends. The laboratory was closed due to lack of building. We don't have a lab right now. I think it's a big problem. We could benefit before. I cannot say that I am benefiting now."

T5M: "We are trying to bring whatever is necessary for the subject. We try to find materials from the school as much as we can or ourselves or we tell the students they bring it. We use smart boards."

Question 5: What do you think about the suitability of physical conditions in the implementation of the science course curriculum?

Table 10. Classroom teachers' views on the suitability of physical conditions

Themes created from views	Teachers
Tools and materials shortage	T1F, T2M, T3M, T4M
Lack of laboratories	T1F, T2M, T5M

When Table 10 is examined, it can be seen that the classroom teachers stated that the laboratory, equipment and materials are not sufficient regarding the suitability of physical conditions.

T1F: "It would be nice to have a laboratory for natural sciences. So, there is a lack of it and there are some difficulties in the supply of materials."

T2M: "I believe that there should be a science laboratory even in primary schools. So for now, our biggest disadvantage is that there are no science laboratories in primary schools. The material we have is limited. Only the advantage of our school is that we are together with secondary schools, so we can find materials there. But most of these materials are not available in our primary school department."

T3M: "Generally speaking, I divide these physical conditions into two: lack of possibility and possibilities being not created although there is a possibility. Sometimes there are no possibilities, sometimes there are possibilities, but for example, we have difficulties in finding where the material is. Or we cannot access the material. Here the materials come, but they are not regulated in a certain way. We sometimes experience difficulties in that respect."

T4M: "It is not possible to access all kinds of vehicles in our school, but since there are simple experiments since we are in the 4th grade, these tools are not tools that will not be found. More precisely, we cannot say that we need the laboratory too much. So it's processed that way."

T5M: "If we had a laboratory, I think that if we could do these activities there, learning would be more effective. But we have to work in the classroom. It doesn't work as we would like."

Findings Regarding the Fourth Question of the Study

The fourth question of the research is "What are the opinions of 4th grade teachers about the evaluation in the implementation of the science course curriculum?" determined as. In this context, two questions were asked to the teachers as stated in the data collection tool. The opinions of the classroom teachers participating in the study on the evaluation element are given in Table 11 and 12 in line with the data obtained. The opinions of the classroom teachers on the assessment item were presented by directly quoting.

Question 1: How do you evaluate student achievements while applying the science course curriculum? What kind of measurement tools do you use in the evaluation?

Question Table 11. Opinions of classroom teachers on measurement tools used in evaluating student achievement

Themes created from views	Teachers
Written tests	T1F, T2M, T3M, T4M, T5M
Individual evaluation	T1F, T2M, T3M
In-class participation	T1F, T2M, T4M
Oral examination	T1F, T3M

Achieving the objectives	T1F, T3M
Evaluation at the end of unit	T4M, T5M
Peer assessment	T2M

As Table 11 is examined, it can be seen classroom teachers generally apply for written exams while evaluating student achievement in science lessons. End-of-unit assessment, oral assessment, peer assessment are other measurement tools used. In addition, it is seen that classroom teachers take into account the students' level of achievement, in-class participation and individual performance.

T1F: "First, I evaluate the students on their own. You know, I consider his own development as a criterion first. Then I look at how much of the achievements he has achieved in terms of class in general. We do it with my oral evaluations in the classroom or already written evaluations. But for some, for example, written evaluation remains, I cannot get very good results. That's why I measure it directly in the form of verbal evaluation. In general, besides the written and verbal evaluation, I already observe their performance in class while doing the activities. But I do not use too much of a criterion or scale."

T2M: "As you know, there are exams in the classes. In other words, when it comes to student success, the score of the exams is entered into the e-school as a priority. Here, there are right, wrong, short answers, multiple choice tests, open-ended questions in the exams. After that, we have in-class participation scales. We evaluate those scales. We evaluate each student individually in line with their own criteria. Such as performance evaluation, peer evaluation."

T3M: "First we have individual observation forms, we apply them to students. They do their own self-assessment. Plus, we have our own acquisition evaluation scales. We apply them. We also have instant questions and answers in the classroom. It is about whether the subject is understood. And of course we also have written. Here are two written exams that are planned close to the end of the units and units. We do our written exams. In this way, we make our evaluations."

T4M: "There is an exam. What they did in the exam is important. Written exams can include short-answer, matching, true-false, multiple-choice tests, gap-filling, and open-ended questions. Besides, in-class performance, class participation, unit end evaluation, we continue like this."

T5M: "There are evaluation departments related to the subject. We do them. After that, we already have regular written exams. There are different types of questions in written exams. Like multiple choice, short answer, open ended. So it is. We generally focus on questions."

Question 2: What are the positive and negative aspects of the science course curriculum?

Table 12. Opinions of classroom teachers about the positive and negative aspects of the science course curriculum

	Themes created from views	Teachers
Positive	Starting to give this lesson from the 3rd grade	T1F, T2M
	The new program is suitable for the level of the students	T3M
	The subjects are very attractive and attract the attention of the students	T4M
	Content being suitable for the characteristics of the students	T3M
	Simple preparation of the new program	T3M
Negative	Book is not clear enough that it does not require different resources	T4M
	Problems in obtaining materials for some subjects	T1F
	Including too many concepts	T5M
	Lack of a laboratory environment	T1F
	Low number of experiments	T2M
	Getting into detail	T5M

It can be seen that the classroom teachers have welcomed the science course curriculum, the suitability of the students' level, its simplicity, the attractiveness and attractiveness of the subjects, the suitability of the content to the characteristics of the students, and the starting of this course from the 3rd grade of primary school. The fact that the book is not prepared in a way that does not require different resources, too many concepts are included and detailed, there is difficulty in obtaining materials for some subjects, and there is no laboratory environment are negative statements by classroom teachers.

T1F: "In fact, all of them start with life knowledge in primary school. He started leaving in the 3rd grade. Science has existed since the 3rd grade. Of course, I think the differentiation of this is good. You know, it enables children to make this distinction at an early age. I find it positive that such a distinction is made in this way compared to the previous one. Previously, there were science and social sciences in the 4th grade. I think the sooner it is started, the better. When applying, for example, it shows you what it does, you know that not everyone has the opportunity to experiment. For example, we can do certain things. You know, when we come to these gains, it can be a bit of trouble. As I said, when the current environment, laboratory environment and insufficient materials are not available, we can make those achievements only with visuals, videos or telling them. That can cause that acquisition not to be fully settled."

T2M: "I find it positive that the science course is down to 3rd grade. Because when we say science, they don't necessarily have to be abstract concepts. While we are describing a solar system, we can concretize it and let children understand it. That's why I think science should be reduced to 1st grade if necessary. I believe that there should be more experiments on the negative side. In other words, experiment because it is the cornerstone of science."

T3M: "Now the program is one click above the 3rd grade level. It is not prepared for him in a way that can tire too many children. So I think it actually suits the level. We did not have much trouble in science. As I said, we do not have any problems in terms of teaching the lessons, in terms of the implementation and training of the gains, in terms of getting their feedback from the children and their time. I look positively on the state of the program. Again, the contents of our books prepared in accordance with the program are not very intense. Again, it was prepared simply. There is no problem in that respect, so there is no lesson for us."

T4M: "The subjects are attractive to children. I have never seen children get bored in science class right now. Interesting. The book could be clearer. I don't know, a more detailed book could have been prepared so that we would not need different sources."

T5M: "The program seems to me to be very detailed. So there are too many details. It feels like it would be better if it was simpler. Because the children are floundering. So there are many concepts. What they will learn is diverse. It would be better if it was a little plain. I can't say much positive. "

RESULTS AND DISCUSSION

This study was conducted to determine the opinions of classroom teachers about the implementation of the primary school 4th grade science course curriculum. Findings obtained from this study were discussed under the themes of objective, content, educational situations and evaluation.

It is seen that most of the classroom teachers participating in the study expressed a positive opinion about the objective dimension in accordance with the research findings. While most of the classroom teachers stated that the objectives were prepared in a clear, understandable way and in accordance with the developmental characteristics of the students, some of them stated that the objectives were not suitable for the developmental characteristics of the students and remained abstract. It is seen that most of the classroom teachers also expressed a positive opinion about the content dimension. Classroom teachers stated that the content was generally simple, entertaining, understandable and suitable for the student level. Some teachers stated that the content remained abstract and should be diversified. It is seen that classroom teachers generally take into account the achievements of the science course and the science textbook while creating the content element. In addition, classroom teachers stated that while creating the content of the science course, they also consider the level of students, current issues and the environment they are in. Guven (2016), in the study in which he determined the views of teachers about the 3rd grade science course curriculum, concluded that the program's objectives and content are appropriate to the student level, effective in creating environmental awareness, and are aimed at raising science literate individuals. It is seen that the compliance of the objectives and content dimensions of the 2013 science course curriculum to the level of the students generally continues in the 2018 science course curriculum.

It can be seen classroom teachers mostly include practice-based experimental activities while preparing their activities according to the opinions of the classroom teachers participating in the study on the item of educational status. At the same time, it is seen that classroom teachers make use of smart boards, video and visuals, EBA, case study, drama, research and analysis and online education sites for activity preparation. It is observed that classroom teachers generally try to take into account individual differences by devoting more time to students and dealing with them individually in the classroom. Some of the teachers state that they simplify the activities for students with low levels and make it difficult for students with high levels. One teacher states that he tries to involve all the students in the activities more, while another teacher tries to find the middle way by repeating in places that are not generally understood. Considering the findings of the study, it can be said that classroom teachers try to take into account individual differences in classroom activities. It is seen that classroom teachers mainly use the methods of learning by doing, research, demonstration, cooperation, experimentation, expression and question-answer methods in science lessons. In addition to these methods, it is seen that classroom teachers also use methods and techniques of problem solving, invention, presentation, drama, case study, observation, active learning and brainstorming. In their study, Apaydin and Kandemir (2018) concluded that in addition to the direct instruction method, classroom teachers also use the student-centered methods and techniques suggested by the constructivist learning theory in science lessons. It is observed that while classroom teachers prefer

tools and materials, they prefer materials suitable for the subject to be covered. The classroom teachers stated that they provided the necessary tools and materials mostly by their own means or from the materials available at the school, and that the materials that were easy to obtain were also brought by the students. At the same time, the classroom teachers stated that they sometimes benefit from the secondary school science laboratory because the secondary school and primary school are in the same building. Classroom teachers stated that they do not have a science laboratory of their own at the school, and that they sometimes have difficulties in obtaining tools and materials. Ural Keles (2018) stated in her study that all teachers participating in the study consider it very important to eliminate the material deficiencies in schools in order to provide effective science education, and stated that teachers frequently emphasize that the lack of infrastructure in schools will prevent the effective implementation of the program. Fidan (2008) stated that teachers experienced difficulties in procuring equipment and complained that they did not have many tools they wanted to use in lessons, depending on the socioeconomic status of the school and the environment where they work. Likewise, Senturk (2017) evaluated the primary school 3rd grade science course curriculum in line with the teachers' opinions and stated that the teachers expressed the low number of experiments and the inadequacy of the physical conditions of the school to apply these experiments. He stated that the teachers stated that it is difficult to obtain the necessary materials in order to carry out the experiments in the program, so it is necessary to use easily available materials. When the related studies are also examined, it is seen that the problems experienced in the teaching and learning process in the previous science course curriculums are still continuing in the last curriculum.

It is concluded the teachers generally apply for written exams while evaluating student achievements in accordance with the opinions of the classroom teachers participating in the study about the assessment element of the science course. It is seen that they include multiple choice, short answer, matching, gap-filling, true-false and open-ended questions along with the written exam questions. They also use measurement tools such as end-of-unit assessment, oral assessment, and peer assessment, classroom teachers stated that they also consider students' level of achievement, in-class participation and individual performance during the assessment process. Although the classroom teachers stated that they made a product and process-based evaluation, they stated that the written exam scores were more important in the evaluation of student success. In their study, Apaydin and Kandemir (2018) concluded that traditional assessment and evaluation tools are used more by classroom teachers than alternative assessment and evaluation tools. Duban and Kucukyilmaz (2008) state that there are still some problems in classroom teachers' use of alternative assessment-evaluation, methods and techniques. In this study, it is seen that classroom teachers take written exams more while evaluating student achievements. This situation shows that alternative assessment and evaluation tools in science curricula updated from the past to the present are not preferred by classroom teachers.

To sum up, it is seen that the classroom teachers participating in the study have both positive and negative views about the implementation of the science course curriculum. While the classroom teachers expressed a positive opinion about the suitability of the science course curriculum to the students' level, its simplicity, the attractiveness of the subjects, its interest and attractiveness, the content suited to the characteristics of the students, and the starting of this course from the 3rd grade of primary school; They stated negatively that the book was not prepared in a way that does not require different resources, there were too many concepts in the program and it was detailed, the number of experiments was low, there were difficulties in obtaining materials for some subjects and there was no laboratory environment. This finding of the study parallels the findings of the study conducted by Ural Keles (2018) with 11 teachers who attended the 5th grade science course. Ural Keles (2018) stated that the teachers had both positive and negative views about the 2017 science course curriculum in the study where she received the “Opinions of fifth grade science teachers about the 2017 science curriculum”. In the study in which Ozcan and Duzgunoglu (2017) determined the teachers' views on the science course 2017 draft curriculum, it was stated that the teachers had negative opinions as well as their positive views about the draft curriculum. At the same time, Guven (2016) stated that in the study in which the teachers' views on the 3rd grade science course curriculum were determined, the teachers found it positive to apply the science course from the 3rd grade. In addition, in the studies conducted by Can (2020), Koder (2019), Sarac and Yildirim (2019), it was stated that teachers mostly stated positive opinions about the 2018 primary school science course curriculum, but also included negative views that they had some difficulties in practice. Considering the results of the science curriculum applied in the previous years in general, it is seen that the basic problems still continue today.

SUGGESTIONS

Considering the general findings of the study as a whole, although the teachers participating in the study were selected from the same school and the same grade level, their views on the implementation of the program may differ from each other. Some of the teachers stated positive opinions about the program, while others stated negative opinions. No matter how effective a program is prepared, it cannot be expected to be applied by all teachers with the same competence. The important thing is to train teachers about the implementation of the programs and to improve the teachers' competence to implement the program. Looking at the demographic characteristics of the study group, it is seen that classroom teachers stated that they did not receive any training for the updated 2018 science course curriculum. The fact that classroom teachers do not mention the values, competencies, field-specific skills, science, engineering and entrepreneurship practices in the 2018 science course curriculum supports that they do not have sufficient knowledge about the curriculum and they have not received any training in this field.

Therefore, before the programs are started to be implemented, teachers' competencies in the implementation of the programs can be increased, especially during the beginning of the year, or with practice-oriented in-service training to be given to teachers.

It can be expressed positively that the classroom teachers mostly express their opinions that the objective and content element is appropriate for the level of the students. However, considering that some teachers express their opinions that the content should be diversified, some studies can be carried out to add different subjects to the science course curriculum.

It is observed that classroom teachers generally limit their activities to in-school environments in the learning and teaching process, and do not make use of out-of-school environments (school gardens, science centers, museums, planetariums, zoos, botanical gardens, natural environments, etc.). It can be investigated why classroom teachers do not include out-of-school activities in the learning and teaching process.

It is concluded classroom teachers try to do more experimental activities in the learning and teaching process, and they have difficulties in providing tools and laboratories while doing these activities. Meeting the laboratory and equipment needs of schools may contribute to classroom teachers to be more effective in the implementation of the science course curriculum.

It is seen that classroom teachers mostly use traditional assessment tools (written, oral exams, etc.) in the assessment process, and they rarely include multiple (alternative) assessment tools (projects, performance assignments, etc.), which include process and product-oriented assessment together. It is estimated that this situation arises from the fact that classroom teachers are not fully competent in multiple assessment and evaluation applications. Therefore, various training sessions can be organized for classroom teachers to use multiple assessment and evaluation tools more effectively.

Ethics Committee Approval Information

The data of this research were collected from teachers who voluntarily participated in the study before 2020. The teachers who participated in the study were informed about the subject, purpose and compliance of the research with confidentiality principles.

REFERENCES

Apaydin, Z., & Kandemir, M. A. (2018). Primary teacher opinions about teaching methods and techniques and evaluation tools and techniques used in science course. *Dicle University Journal of Ziya Gokalp Faculty of Education, 33,* 70-78.

Aslan, M., & Cokuk, K. (2018). The unit based evaluation of the 2013 4th grade science curriculum. *Amasya Education Journal, 7*(1), 156-192.

Bekmezci̇, S. M., & Ates, O. (2018). Teachers' views on the science course curriculum updated in 2013. *Manisa Celal Bayar University Journal of Social Sciences, 16* (3) , 57-76.

Buyukozturk, S., Kilic, E., Akgun, O., Karadeniz, S., & Demirel, F. (2017). *Scientific research methods* (23. Edition). Ankara: Pegem Academy Publications.

Can, K. (2020). *Evaluation of primary school science curriculum, textbook and student attainments in terms of scientific process skills* (Unpublished master's thesis). Amasya University Institute of Social Sciences, Amasya.

Duban, N. (2016). Primary school (classroom) teachers' views of primary school science curriculum. *Turkish Studies- International Periodical for the Languages, Literature and History of Turkish or Turkic, 11*(3), 981-994. http://dx.doi.org/10.7827/TurkishStudies.9291

Duban, N., & Kucukyilmaz, E. A. (2008). Primary education pre-service teachers' opinions regarding the use of alternative measurement-evaluation methods and techniques in practice school*. Elementary Education Online, 7*(3), 769-784.

Fidan, N. K. (2008). Teachers' views with regard to the use of tools and materials in the primary level. *Afyon Kocatepe University Journal of Theoretical Educational Science, 1*(1), 48-61.

Genc, H., & Denis, H., & Demirkaya, H. (2010). Investigating prospective primary school teachers' attitudes towards science teaching lesson according to different variables. *The Journal of Graduate School of Natural and Applied Sciences of Mehmet Akif Ersoy University, 1*(2), 133-149.

Gomleksiz, M. N. (2007). An evaluation of teachers perceptions of the new primary school curriculum in terms of some variables. *Eurasian Journal of Educational Research, 27,* 69–82.

Gomleksi̇z, M., & Bulut, İ. (2007). An assessment of the implementation of new science and technology curriculum. *Hacettepe University Journal of Education, 32* (32) , 76-88.

Gulteke, M. (2012). *The analysis of elementary teachers views related to mathematics special content competencies* (Unpublished master's thesis). Mehmet Akif Ersoy University Institute of Social Sciences, Burdur.

Gurdal, A. (1992). The importance of science in elementary schools. *Hacettepe University Journal of Education, 8,* 185-188.

Guven, G. (2016). *The opinions of teachers about the 3th class science curriculum* (Unpublished master's thesis). Mustafa Kemal University Institute of Social Sciences, Hatay.

Karacaoglu, O. C. ve Acar, E. (2010). The issues that teachers encounter during application of new curricula. *Yuzuncu Yil University Journal of Education, 7*(1), 45-58.

Koder, M. (2019). *Of the curriculum evaluation according to the opinions of the class teachers and 2018 innovation introduced by the curriculum of primary school science course* (Unpublished master's thesis). Necmettin Erbakan University Institute of Education Sciences, Konya.

Lederman, N. G. (1992). Students' and teachers' conceptions of the nature of science: A review of the research. *Journal of Research in Science Teaching, 29*(4), 331-359.

MoNE. (2005). *Primary education science and technology course (4-5. grades) curriculum.* Board of Education and Discipline. Ankara.

MoNE. (2013). *Primary education institutions (primary schools and secondary schools) science course curriculum (3rd, 4th, 5th, 6th, 7th and 8th grades).* Board of Education and Discipline. Ankara.

MoNE. (2015). *Programme for international student assessment PISA 2015 national report.* Directorate General for Measurement, Assessment and Examination Services. Ankara.

MoNE. (2016). *Trends in international mathematics and science study TIMSS 2015 national mathematics and science preliminary report 4th and 8th grades.* Directorate General for Measurement, Assessment and Examination Services. Ankara.

MoNE. (2018). *Primary education institutions (primary schools and secondary schools) science course curriculum (3rd, 4th, 5th, 6th, 7th and 8th grades).* Board of Education and Discipline. Ankara.

Oz, B. (2007). *The views of teachers relation to the primary science curriculum in 2001 and 2005* (Unpublished master's thesis). Cukurova University Institute of Social Sciences, Adana.

Ozcan, H., & Duzgunoglu, H. (2017). Teachers' views on science draft curriculum 2017. *International Journal of Active Learning (IJAL), 2*(2), 28-47.

Ozkan, R. (2019). *Investigation of class teachers' views on science, engineering and entrepreneurship applications added to science course* (Unpublished master's thesis). Ağrı İbrahim Çeçen University Institute of Social Sciences, Ağrı.

Posner, G. J. (1995). *Analyzing the curriculum.* New York: McGraw-Hill.

Sarac, E., & Yildirim, M. S. (2019). Teachers' views on science course curriculum of the year 2018. *Academy Journal of Educational Sciences, 3* (2) , 138-151. DOI: 10.31805/acjes.641002

Senturk, O. (2017). *An evaluation of the third grade sciences curriculum in elementary school* (Unpublished master's thesis). Marmara University Institute of Education Sciences, İstanbul.

Tekbiyik, A., & Akdeniz, A. R. (2008). Teachers' views about adoption and application of primary science and technology curriculum. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education, 2*(2), 23-37.

Unisen, A., & Kaya, E. (2015). An investigation into teachers' views on placement of science education in primary 3rd grade. *Adiyaman University Journal of Social Sciences, 8*(20), 546-571.

Ural Keles, P. (2018). Opinions of fifth grade science teachers about the 2017 science curriculum. *Journal of Qualitative Research in Education, 6* (3), 121-142. DOI:10.14689/issn.2148-2624.1.6c3s6m

Yildirim, A., & Simsek, H. (2006). *Qualitative research methods in social sciences* (6. Edition). Ankara: Seckin Publications.

Yildirim, N., & Gungor-Akgun, O. (2015). Opinions of the third grade classroom teachers about the altered science course. *Ahi Evran University Journal of Kırşehir Education Faculty (JKEF), 16*(2), 199-218.