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THE EFFECT OF PHİLOSOPHY FOR CHİLDREN'S (P4C) APPROACH ON PRİMARY SCHOOL STUDENTS' ATTİTUDE TOWARDS SCİENCE AND PROBLEM-SOLVİNG SKİLLS[1]

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ABSTRACT

This study investigated the effect of the Philosophy for Children (P4C) Approach, one of the most effective ways to help children who enjoy thinking and questioning from an early age, gain thinking skills, and make sense of what they think, on primary school students' attitudes towards science and problem-solving skills. The Philosophy for Children implementation process was carried out for 7 weeks and 3 hours in each lesson, 21 hours in total, with the experimental and control groups selected from 4th grade students studying in a public school in Haliliye district of Şanlıurfa province. This process was conducted using a mixed-methods research method. This study preferred to use the explanatory sequential mixed research method, as it collected qualitative data after analyzing quantitative data. The study employed a quasi-experimental design in the quantitative dimension, incorporating a pretest-posttest control group. The qualitative dimension of the study employed a case study for in-depth data analysis. The variables related to the effect of the Philosophy for Children approach on primary school students' attitudes towards science and problem-solving skills were carefully examined, and the findings were interpreted. The findings concluded that the Philosophy for Children Approach, positively influenced the 4th grade students' attitudes towards science and problem-solving skills through its activities and practices.

Keywords: Thinking, philosophical thinking, philosophy for children, attitude toward science, problem solving

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ÇOCUKLAR İÇİN FELSEFE (P4C) YAKLAŞIMININ İLKOKUL ÖĞRENCİLERİNİN FENE YÖNELİK TUTUM VE PROBLEM ÇÖZME BECERİSİNE ETKİSİ

ÖZET

Bu çalışmada küçük yaşlardan itibaren düşünmek ve sorgulamaktan zevk alan çocuklara düşünme becerisi kazandırma, düşündüklerini anlamlandırmalarını sağlayan en etkili yollardan biri olan Çocuklar İçin Felsefe (P4C) Yaklaşımının ilkokul öğrencilerinin fene yönelik tutum ve problem çözme becerisine etkisi araştırılmıştır. Çocuklar için Felsefe uygulama süreci, 7 hafta ve her derste 3 saat olmak üzere toplamda 21 saat şeklinde, Şanlıurfa ili Haliliye ilçesinde bir devlet okulunda öğrenim görmekte olan 4. sınıf öğrencilerinden seçilen deney ve kontrol grubu ile gerçekleştirilmiştir. Bu süreç karma araştırma yöntemi kullanılarak yürütülmüştür. Bu araştırmada nicel veriler toplanıp analiz edildikten sonra nitel veriler toplandığı için açıklayıcı sıralı karma araştırma yönteminin kullanılması tercih edilmiştir. Araştırmanın nicel boyutunda, ön test-son test kontrol gruplu yarı deneysel desen kullanılmıştır. Araştırmanın nitel boyutunda, verilerin derinlemesine analizi yapılacağı için durum çalışması kullanılmıştır. Çocuklar için Felsefe yaklaşımının ilkokul öğrencilerinin fene yönelik tutum ve problem çözme becerisine etkisine ilişkin değişkenler özenle incelenmiş ve bulgular yorumlanmıştır. Elde edilen bulgular sonucunda Çocuklar için Felsefe Yaklaşımının öngördüğü etkinlikler ve uygulamalar kullanılarak yürütülen öğretimin, 4.sınıf öğrencilerinin fene yönelik tutum ve problem çözme becerisini olumlu yönde etkilediği sonucuna ulaşılmıştır.

Anahtar Kelimeler: Düşünme, felsefi düşünme, çocuklar için felsefe, fene yönelik tutum, problem çözme

1. INTRODUCTION

Philosophical thinking and philosophical perspective play an important role in people's relationships with the external environment and making sense of life. In a period when philosophical thinking is so important, we need to start to gain a philosophical perspective in childhood, when our imagination is most effective (Öğüt, 2019). It is an inevitable fact that philosophical school education should start at an early age (Çayır, 2015; Direk, 2008; Öğüt, 2019). Karl Jaspers first emphasized the idea of philosophy for children in 1953. "Philosophy for Children" is the English term for the concept, known as "Kinderphilosophie" or "Philosophie für Kinder" in German. Philosophy for Children". Turkish translators translated this concept as "children's philosophy" or "philosophy for children" (Karakaya, 2006). Matthew Lipman laid the foundation of philosophy for children in the USA in 1960 (Soysal & Pullu, 2020). Lipman found it appropriate to name it "Philosophy for Children-P4C." Those who say that philosophy can be done more with children have used the concept of "Philosophy with Children" (Mutlu, 2010). Philosophies for kids aim to help them think independently (Lipman, Sharp, & Oscanyan, 1980). The goal of Lipman, the founder of the Philosophy for Children approach, was not to turn children into philosophers or philosophy learners, but rather to make children think more, criticize more, and reflect what they think (Karakaya, 2006). Philosophy for Children Studies, which are one of the most effective ways of teaching children thinking skills, are of great importance (Direk, 2008). Matthew Lipman and Ann Sharp introduced the Philosophy for Children approach in the 1970s, and it evolved into an educational program under this name in the following years. There are many

studies on philosophy for children's education in Turkey and around the world (Çayır & Akkoyunlu, 2016; Direk, 2008; Petek-Boyacı, Karadağ, & Gülenç, 2018). Öğüt (2019) emphasized that many philosophers, such as Catherine McCall, Gareth Matthews, and Ekke Martens, have made significant contributions to this field by applying their own methods. The Philosophical Society of Turkey produced the first important work in the field of philosophy for children's education in Turkey came from the Philosophical Society of Turkey. In 1993, the Philosophical Society of Turkey established a philosophy unit for children. In the following years, it was argued in a symposium that a "Philosophy for Children" course should be given in primary schools (Öğüt, 2019).

Philosophy for Children is an approach that positively develops children's thinking skills and contributes to how they learn rather than what they learn. This approach, which adopts the principle of learning to think, aims for students to learn by discussing, questioning, and making observations in groups (Fisher, 2008). Children's philosophy education develops their problem-solving skills, critical thinking skills, ability to establish cause-and-effect relationships, and sense of discovery. In this way, children will be able to look at things from a different perspective and think more effectively.

With the implementation of student-based approaches in education, students' mental activities have come to the forefront in the education and training process (Tuncer & Kaysi, 2013). The Philosophy for Children approach, which focuses on critical thinking and reasoning skills, emerged in the 1960s, based on Matthew Lipman's view of teaching children to think (Brandt, 1988). The Philosophy for Children approach focuses on the idea that children can develop thinking and critical thinking skills from an early age. This approach, which directs children to think and develops their reasoning skills, has been implemented in many countries (Petek-Boyacı, Karadağ, & Gülenç, 2018). The first study in the field of philosophy for children in Turkey was conducted by Nuran Direk, who tried to develop philosophy programs for primary school students. The books Filozof Çocuk and Küçük Prens Üzerine Düşünmek were written by Nuran Direk (Direk, 2008). Philosophy skills that should be acquired by primary school students are essential for individuals throughout their lives (Fisher, 2008). To help them acquire this skill, appropriate training should be provided in early childhood. It is important for children in this age group to solve philosophical problems well in order to be able to solve social and personal problems that they may encounter at later ages (Erdaş, Aksüt, & Aydın, 2015).

The science curriculum identifies engineering skills, life skills, and science process skills as specific goals that individuals should have (Aslan, Ertaş-Kılıç, & Kılıç, 2016). The science curriculum lists life skills as analytical thinking, reflective thinking, teamwork, creative thinking, entrepreneurship, and communication (MoNE, 2018). In the science curriculum, scientific process skills include prediction, classification, experimentation, reaching conclusions, induction, and deduction. By working like a scientist, the student questions and investigates scientific knowledge and makes sense of the results by structuring them (Aslan, Ertaş-Kılıç, & Kılıç, 2016).The goals that the science curriculum wants to achieve and the goals provided by philosophy for children's education are compatible with each other.

When some studies on philosophy for children are examined, Şahin (2023), in his study titled "Investigation of the Effect of Philosophy for Children Pedagogy on Fourth Grade Students' Critical Thinking and Problem-Solving Skills, " concluded that philosophy for children pedagogy improved students' critical thinking and problem-solving skills. Similarly, Alabaz (2022), in his study titled "On philosophy education for children, "examined the studies aiming to raise children who have acquired creative thinking skills, thinking, and questioning by providing children with philosophical thinking. The study emphasized the importance of introducing the Philosophy for Children approach at an early age. Akan (2022) concluded that the Philosophy for Children Approach activities in the life science course had a significant impact on the experimental group students' creative thinking skills. In his study, Acar (2022) worked with gifted students. As a result of the study, he concluded that the Philosophy for Children Approach significantly impacted the critical thinking skills of gifted students; however, it did not make a numerically significant difference on English speaking skills. Kayaalp (2021) conducted an investigation into the implementation of philosophy for children practices in a second grade Turkish lesson in primary school. At the end of the research, it was concluded that children had some problems while doing philosophical inquiry practices in the Turkish lesson, but since the lesson was differentiated, the students listened carefully to the lesson. Turhan (2021) examined the effect of philosophy education for children on primary school 3rd grade students. As a result of the research, he emphasized that students who received philosophy education for children showed positive development in their questioning skills, critical thinking skills, and creative thinking skills. Upon reviewing the research, we found no previous studies that investigated the impact of the philosophy for children approach on the attitudes and problem-solving abilities of 4th grade science students. This study will contribute to the field by explaining how Philosophy for Children activities influence 4th grade students' attitudes towards science and problem-solving skills.

2. METHOD

2.1. Research Design

This study was conducted to determine the effect of the Philosophy for Children (P4C) approach on elementary school students' attitudes towards science and problem-solving skills by using an explanatory sequential design within the scope of the mixed method. The mixed method involves collecting qualitative and quantitative data and combining both designs (Creswell, 2008; Johnson & Christensen, 2004). The mixed method, which combines quantitative and qualitative data, provides a clearer understanding of the research problem than either design alone (Creswell, 2008). In the explanatory sequential mixed research method, the collection of qualitative data occurs after the analysis of quantitative data. The discussion section combines and interprets the separately analyzed quantitative and qualitative data (Creswell, 2008). The study employed a quasi-experimental design in the quantitative dimension, incorporating a pretest-posttest control group. The most commonly used design in educational research is the quasi-experimental design, mainly when all variables are difficult

to control. In a quasi-experimental design, control and experimental groups are formed through random assignment (Balcı, 2001; Büyüköztürk, 2007). The pre-tests aid in understanding the similarities between the experimental and control groups prior to the application, and they also aid in interpreting the results of the post-test administered at the conclusion of the application. Then, the activities whose effectiveness is to be measured are applied to the experimental group. Traditional methods are applied to the control group (Özmen & Karamustafaoğlu, 2019). The study's control group implemented the 4th grade science curriculum's prescribed activities using the constructivist approach. The experimental group implemented teaching methods and activities that measured the effectiveness of the Philosophy for Children (P4C) Approach. In the qualitative dimension of the study, a case study was preferred since the data obtained will be examined in depth and analyzed in detail. In-depth analysis of one or more situations is the most important and effective feature of a case study (Stake, 1995; Yin, 2014). A case study collects multiple datasets, enabling in-depth research examination and more systematic data collection (Chmiliar, 2010). The primary benefit of a case study is the collection of data using various methods, which yields comprehensive and detailed information. A case study provides the researcher with the opportunity to use data collection tools such as observation, interview, and document analysis effectively (Yıldırım & Şimşek, 2016). In this study, the researcher's and the students' diaries about the lesson served as documents after the interviews with the students.

2.2. Study Group

In order to form the study group, the Problem Solving Scale and Attitude towards Science Scale were applied to five 4th grade classes in a public school located in Haliliye central district of Şanlıurfa province in the 2022-2023 academic year before the application started. The pre-test results identified the 4/B and 4/E classes as the study groups due to their similar characteristics. The control and experimental groups were determined by lottery, with 4/B class as the control group and 4/E class as the experimental group. The constructivist approach guided the implementation of the 4th grade science curriculum's prescribed activities in the control group. In the experimental group, The experimental group implemented teaching methods and activities based on the Philosophy for Table 1 provides numerical information about the control and experimental groups in the study.

Table 1. Frequency and percentage distributions of experimental and control groups

Group	f	%
Experimental group	22	48
Control group	24	52
Total	46	100

2.3. Data collection tools

The study employed mixed research methods, utilizing different data collection tools for the quantitative and qualitative sections. The quantitative part of the study collected data using attitude towards science scales and problem-solving inventories. Zcan and Koca (2020) prepared the Science Attitude Scale, which consists of 36 items organized as a 5-point Likert scale. (Cronbach Alpha)

reliability coefficient was calculated to generate data for the reliability test of the 36 items in the scale. We determined the Cronbach alpha reliability coefficient to be.93 for all 36 items on the scale. There are four different sub-factors in the scale. We found the reliability coefficients of these factors to be.91 for the liking factor,.74 for the trust factor,.76 for the utility factor, and.72 for the interest factor. The problem-solving inventory used in the study was prepared by Serin, Serin-Bulut, and Saygılı (2010) and consists of 24 items and is organized on a 5-point Likert scale. In the 24-item scale, there are three factors, namely "trust" (12 items), "self-control" (7 items), and "avoidance" (5 items). The Cronbach alpha reliability coefficient of the whole scale was calculated at 0.80. The study employed observation, document analysis, and interview techniques as data collection tools in its qualitative dimension. According to Creswell (2008), qualitative researchers utilize interviews, documents, observations, and audio-visual information sources instead of collecting data from a single source. Merriam (2013) stated that data collected using two or more data collection methods (interview, document, and observation) by the triangulation method is effective in achieving more reliable and accurate results.

2.4 Research Process

The research was planned for 7 weeks in the 2022–2023 academic year in accordance with the curriculum within the scope of the "Our Food" unit of the 4th grade science course in primary school. The first week involved applying problem-solving inventory and attitude towards science scales to both the control and experimental groups. The control group applied the 4th grade science curriculum's prescribed activities in accordance with the constructivist approach for five weeks. The experimental group prepared philosophy activities and daily plans for the acquisitions in the "Our Food" unit of the 4th grade science course. Children's philosophy activities complemented the lessons conducted throughout the research. While determining the philosophical stories, stories that encourage children to question in cooperation were used. In the last week, post-tests were administered and the 7-week process was completed. Table 2 shows the stories used and concepts addressed.

Table2. Stories and Concepts Used

Story	Concept
Frog and Toad	Our nutrients
Rainbow Foods of the Sea	Water and Minerals
Carrot Brotherhood	Healthy Nutrition
The Error of the Meow	Balanced Nutrition
Green Health with Life	Healthy Nutrition
Chocolate Cake	Rules

2.5. Data Analysis

In the first stage of the study, in order to form the control and experimental groups, the attitude towards science scale and problem-solving inventory were applied to all classes one week before the application. According to the pre-test results, the 4/B and 4/E classes were determined to be the study groups since they showed similar characteristics. One week after the application, post-tests were applied to the control and experimental group students. The SPSS 22.0 package program was used to determine

whether there was a significant difference in attitude towards science and problem-solving skills between the control and experimental groups.

The researcher used the content analysis method in the qualitative part of the study to analyze data from observation results, student application diaries, and semi-structured interviews. The content analysis approach creates codes by interpreting the sentences used by the researcher and students. The codes are brought together using an inductive approach, and themes are reached (Yıldırım & Şimşek, 2016). In this study, expert opinions were taken regarding the content of the interview conducted in order to reach clear results. To prevent data loss, we recorded all interviews using a voice recorder. The data obtained as a result of the interviews was directly quoted and included in the qualitative findings section.

3. FINDINGS

3.1. Findings Related to the Quantitative Dimension

The findings relate to the PSTS of both the Control and Experimental Group students. Before the planned applications were carried out, the scale of attitude towards science was applied to the students in the control and experimental groups. An independent sample t-test was applied to determine the statistical significance between the mean scores of the study groups.

Table 3. Independent Groups T-Test Results of Control and Experimental Group Students' PSTS Pre-Test Scores

Groups	N	x	S	df	t	p
Experiment	22	92.09	7.45	44	1.963	0.162
Control	24	86.75	10.57			

The independent sample t-test results from Table 3 show that the students in the control group, who followed the science curriculum's prescribed activities, had an arithmetic mean of 86.75 for their pretest scores. The experimental group, which applied the activities prescribed by the Philosophy for Children Approach, had arithmetic mean pretest scores of 92.09. The findings indicate that there is no significant difference between the mean pretest scores of the students in the control and experimental groups ($t = 1.963$, $p > 0.05$). Analysis of the PSTS pre-test scores before the application revealed that the study groups were on par with each other. Before and after the applications, the attitude scale towards science was applied to the control group students. To determine whether there was a significant difference between the pre-test and post-test scores of the students in the control group, dependent sample t test results were examined.

Table 4. Dependent Groups T-Test Results of Control Group Students' FYTÖ Pre-Test and Post-Test Scores

Groups	N	x	S	df	t	p
Experiment	24	130.66	14.49	23	4.651	.00
Control	24	142.25	21.08			

According to the dependent samples t-test results obtained from Table 4, when the pre-test and post-test scores of the study group students in the control group are examined, it is seen that the arithmetic mean of the PSTL pre-test scores of the students in the control group, in which the activities stipulated by the Science curriculum were applied, is 130.66 and the arithmetic mean of the post-test scores is 142.25. According to the findings, it can be said that there is statistical significance between the pre-test and post-test mean scores of the students in the control group in favor of the post-test ($t = 4.651$, $p<0.05$). Based on this finding, it can be said that the activities foreseen by the science curriculum in the control group positively affected attitudes towards science.

Attitudes towards the science scale were applied to the experimental group students before and after the applications. In order to determine whether there was statistical significance between the pre-test and post-test scores of the students in the experimental group, the results of the dependent sample t test were examined. Table 5 presents the findings from the data.

Table 5. Dependent Groups T-Test Results of Experimental Group Students' FYTÖ Pre-Test and Post-Test Scores

Groups	N	x	S	df	t	p
Experiment	22	137.81	10.90	21	6.007	.00
Control	22	160.13	14.61			

According to the data obtained from the dependent samples t-test results obtained from Table 5, when the pre-test and post-test scores of the study group students in the experimental group are examined, it is seen that the arithmetic mean of the PSTL pre-test scores of the experimental group students, to whom the activities envisaged by the Philosophy for Children Approach were applied, is 137.81 and the arithmetic mean of the post-test scores is 160.13. According to the findings, there is statistical significance between the pre-test and post-test mean scores of the students in the experimental group in favor of the post-test ($t = 6.007$, $p<0.05$). Based on this finding, it can be said that the activities envisaged by the Philosophy for Children Approach in the experimental group had a positive effect on their attitudes towards science.

After the application, the attitude towards science scale was applied to the experimental group and control group students. In order to determine whether there was statistical significance between the pre-test and post-test difference scores of the students in the experimental group and the control group, independent sample t test results were examined. Table 6 presents the findings from the data.

Table 6. Independent Groups T-Test Results of Experimental Group and Control Group Students' PSTS Pre-Test-Post-Test Difference Scores

Groups	N	x	S	df	t	p
Experiment	22	23.00	16.18	44	2.649	0.011
Control	24	12.08	11.56			

Examining Table 6, we find that the control group's PIT Pre-test-Post-test Difference Scores have an arithmetic mean of 12.08, whereas the experimental group's PIT Pre-test-Post-test Difference Scores have an arithmetic mean of 23.00. The results showed that there was statistical significance in

favor of the experimental group between the difference scores of the experimental group on the pretest and posttest and the difference scores of the control group on the pretest and posttest ($t = 2.649$, $p<0.05$). This discovery revealed that the Philosophy for Children Approach's activities and practices, when used in teaching, influenced students' attitudes towards science differently than the activities mandated by the 4th grade science curriculum. It can be said that the instruction carried out using the activities and practices stipulated by the Philosophy for Children Approach, which had a more significant effect on the PSTQ scores than before the implementation, was effective in developing positive attitudes towards science. In addition, the result of the independent sample t-test analysis provides information about whether there is statistical significance between the pre-test and post-test scores but does not provide information about the degree of significant difference. Therefore, the effect size was calculated separately. The effect size is obtained by dividing the difference between the means of the control and experimental groups by the combined standard deviation (Green & Salkind, 2005). The test result led to the calculation of the effect size at 0.78. Green & Salkind (2005) define an effect size value above 1 as quite large, 0.8 as a large effect, and 0.5 as a medium effect. The fact that the obtained value is close to 0.8 indicates that the difference between the groups is significant.

3.2. Findings Related to PCE of Control and Experimental Group Students

Before the application, the Problem Solving Inventory was applied to the students in the control and experimental groups. Independent samples t-test was applied to the students in order to determine the statistical significance between the mean PSI scores of the groups. The findings are presented in Table 7.

Table 7. Independent Groups T-Test Results of PCI Pre-Test Scores of Control and Experimental Group Students

Groups	N	x	S	df	t	p
Experiment	22	92.09	7.45	44	1.963	0.56
Control	24	86.75	10.57			

The independent sample t-test results from Table 7 show that the arithmetic mean of the PCI pre-test scores was 86.75 for the students in the control group, who followed the science curriculum's prescribed activities, and 92.09 for the students in the experimental group, who followed the philosophy for children approach's prescribed activities. The findings indicate that there is no statistical significance between the PCI pre-test mean scores of the students in the control and experimental groups ($t = 1.963$, $p > 0.05$).

Analysis of the PSI pre-test scores before the application revealed similarity between the groups. The Problem-Solving Inventory was administered to the control group students before and after the intervention. In order to determine whether there was statistical significance between the pre-test and post-test scores of the students in the control group, the results of the dependent sample t test were examined. Table 8 presents the findings from the data.

Table 8. Dependent Groups T-Test Results of Control Group Students' PCI Pre-Test and Post-Test Scores

Groups	N	x	S	df	t	p
Experiment	24	86.75	10.57	23	5.318	.00
Control	24	95.00	14.84			

According to the results of the dependent samples t test obtained from Table 8, when the pre-test and post-test scores of the students in the control group are examined, it is seen that the arithmetic mean of the PCI pre-test scores of the students in the control group, in which the activities stipulated by the Science curriculum were applied, is 86.75, and the arithmetic mean of the post-test scores is 95.00. According to the findings, there is a statistical significance between the mean scores of the PCI pre-test and post-test of the students in the control group in favor of the post-test ($t = 5.318$, $p<0.05$). Based on this finding, it can be said that the activities prescribed by the science curriculum in the control group positively affected the problem-solving skills.

The Problem-Solving Inventory was administered to the students in the experimental group before and after the implementation. In order to determine whether there was statistical significance between the pre-test and post-test scores of the students in the experimental group, the results of the dependent sample t test were examined. Table 9 presents the findings from the data.

Table 9. Independent Groups T-Test Results of PSI Pre-Test-Post-Test Difference Scores of Experimental Group and Control Group Students

Groups	N	x	S	df	t	p
Experiment	22	15.31	9.33	44	2.827	0.007
Control	24	8.25	7.60			

When Table 9 is examined, it is seen that the arithmetic mean of the control group's PSE Pre-test-Post-test Difference Scores is 8.25, while the arithmetic mean of the experimental group's PSE Pre-test-Post-test Difference Scores is 15.31. The results showed that there was statistical significance in favor of the experimental group between the experimental group's PSE pre-test and post-test difference scores and the control group's PSE pre-test and post-test difference scores ($t = 2.827$, $p<0.05$). This finding showed that the Philosophy for Children Approach's prescribed activities and practices had different effects on students' problem-solving skills compared to the 4th grade science curriculum's prescribed activities. It can be said that the instruction carried out using the activities and practices prescribed by the Philosophy for Children Approach, which had a greater effect on increasing PSI scores compared to the pre-implementation, was effective in developing problem-solving skills positively. In addition, the result of the independent sample t-test analysis provides information about whether there is statistical significance between the pre-test and post-test scores but does not provide information about the degree of significant difference. Therefore, the effect size was calculated separately. The effect size is obtained by dividing the difference between the means of the control and experimental groups by the combined standard deviation (Green & Salkind, 2005). The test result led to the calculation of the effect size at 0.83. Green & Salkind (2005) define an effect size value above 1 as very

large, 0.8 as a large effect, and 0.5 as a medium effect. The fact that the value obtained is greater than 0.8 indicates that the difference between the groups is large.

3.3. Findings Related to the Qualitative Dimension

In this part of the study, the data obtained at the end of the semi-structured interviews with the students were subjected to content analysis; themes, categories, and codes were determined. Based on the answers given by the students to the interview questions, the answers were analyzed and described. The data obtained from the student diaries kept by the students regularly during every lesson and the lesson observation forms noted by the teacher were used to support the findings of the interviews. The research bases its findings on student confidentiality, so it withholds the names of the participating students, identifying them as T1, T2. The findings were obtained based on the answers to the question, "What are the opinions of the students about the philosophy for children approach in the science course?". Table 10 categorizes the findings.

Table 10. What are the opinions of the students about the Philosophy for Children approach in Science course?

Theme	**Category**	Codes	Frequency
Views on Philosophy Approach for Children.	**Positive Opinion**	Taking responsibility	5
		It's fun	8
		Delightful finding	7
		Immersive	4
		Improving thinking	4
		Reaching different ideas	6
		Comment	3
		Learning to debate	4
		Establishing communication	2
	Negative Opinion	Finding Boring	1
		Contempt	2
		Time consuming	3

When asked about the Philosophy for Children approach in the Science course, students said it was effective, useful, enjoyable, and different from other courses. Some of the participating students expressed the following views on this subject:

"It was the first time we taught science in such a way. I had a lot of fun, and I discussed it with my friends by thinking all the time" (T 1).

"It was very nice to act out the heroes in the stories, to think like them, to learn by having fun" (T 4).

"In our discussions, my friends listened to me and sometimes agreed with what I said. I felt special in this way" (T 2).

"Learning by playing games was very impressive, I wish we could teach all lessons in this way. It was the most beautiful and enjoyable science lesson of my life... " (T 10).

"We were always talking with my friends and teacher, even if we had different ideas, we would make our friends happy by clapping. This practice should always be in science lessons" (T 12).

In Table 10, what are the opinions of the students about the Philosophy for Children approach in the Science course? Based on the question, codes were created under the categories of "positive opinion" and "negative opinion". In the "positive opinion" category, the participant students mentioned positive experiences in terms of having fun (f=7), being enjoyable (f=5), reaching different ideas (f=6); in the "negative opinion" category, they mentioned experiences of being time-consuming (f=3), being dismissive (f=2), and finding it boring (f=1).

The diaries kept by the students after the implementation of the Philosophy for Children approach in the Science course support the above findings. In this regard, some of the participant students included their opinions on the subject in their diaries as follows:

"Our dear daily science lesson has never been so fun and beautiful. I liked the discussions and activities we did very much... It was very nice to know how to do philosophy, it was very interesting to hear different ideas" (T 20).

"I started to like philosophy more and more each time. Even though my friends in my group did not agree with my ideas, it was still nice to do philosophy " (T 16).

"The heroes in the stories have different stories and it was very enjoyable to live like them" (T 13).

"Today, I came home and told my parents that we did philosophy in the science lesson; we did the lesson by discussing and asking questions. They were very surprised" (T 10).

Findings were obtained based on the answers to the question "What are the opinions of the students about the effect of the Philosophy for Children approach on students' attitudes towards science?". The findings obtained are categorized in Table 11.

Table 11. What are the student views on the effect of the Philosophy for Children approach on students' attitudes towards science?

Theme	**Category**	Codes	Frequency
Attitudes Towards Science	**Positive Opinion**	I liked science more	8
		Efficiency	5
		Delightful finding	7
		Immersive	4
		I am happy	4
		It should be like this in other lessons	6
		Comment	3
		Learning to debate	4
		Establishing communication	2
	Negative Opinion	Finding it boring	1
		No change	2
		My homework has increased	3

What are the student views on the effect of Philosophy for Children practices on students' attitudes towards science? Based on the question, responses were received that the students found the sessions effective, that they enjoyed the process, and that the lessons were held quite differently from other lessons. Some of the participant students expressed the following opinions on this subject:

"We had never taught science in this way before, time passed very fast in the lessons. I never wanted the science lesson to end" (T 1).

"The activities and games we did made the lesson more enjoyable" (T 4).

"I understood the subject better thanks to the applications we made in the lessons, I wish the science lesson would always be like this" (T 2).

In Table 11, what are the students' opinions about the effect of Philosophy for Children practices on students' attitudes towards science? Based on the question, codes were created under the categories of "positive opinion" and "negative opinion". In the "positive opinion" category, participant students mentioned positive experiences such as I liked Science Lesson More (f=8), Finding it enjoyable (f=7), It should be like this in other lessons (f=6); in the "negative opinion" category, they mentioned experiences such as My homework increased (f=3), There was no change (f=2), Finding it boring (f=1).

Regarding the opinions of the students about the effect of Philosophy for Children practices on students' attitudes towards science, the diaries kept by the students after the practice support the above findings. In this regard, some of the participant students included their opinions on the subject in their diaries as follows:

" ... The science lesson was so good today that I cannot explain it. The activities we did in the groups we formed with my friends were very enjoyable" (T 3).

"The point I was most happy about was that I understood the science lesson better" (T 5).

"We did philosophy in the science lesson today, the lesson ended very quickly... I liked the lesson very much and I was very happy" (T 6).

The findings were obtained based on the answers to the question "What are the students' opinions about the effect of Philosophy for Children approach on the 4th grade students' problem-solving skills?". The findings obtained are categorized in Table 12.

Table 12. What are the student views on the effect of the Philosophy for Children approach on 4th grade students' problem-solving skills?

Theme	**Category**	Codes	Frequency
Problem Solving Skills	**Positive Opinion**	Recognizing the problem	5
		Finding solutions	6
		Being decisive in the face of problems	7
		To be able to create cause and effect relationship	3
		Creating different solutions	4
		Reaching different ideas	6
		Analysis	2
		Planning for Solutions	3
		Relationship building	1
	Negative Opinion	Failure to produce solutions	3
		Not Recognizing the Problem	1
		Don't be discouraged	2
			1

What are the student views on the effect of the Philosophy for Children approach on 4th grade students' problem-solving skills? Based on the question, responses were received that the students were able to express the problems clearly in the sessions, create solutions to the problems they encountered, and establish relationships between the problems. Some of the participant students expressed their opinions on this issue as follows:

" ... We think by discussing, and as we think, we tell our ideas and solutions to our friends" (T 4).

"I can solve the problems I encounter in daily life like the heroes in the stories we listen to while philosophizing" (T 10).

"At first, it was difficult to find solutions to the problems we faced after the discussions. As time progressed, it became easier to find solutions" (T 12).

"We were able to find different solutions by making plans with my friends in the group" (T 5).

In Table 12, what are the students' opinions on the effect of Philosophy for Children approach on 4th grade students' problem-solving skills? Based on the question, codes were created under the categories of "positive opinion" and "negative opinion". In the "positive opinion" category, our participant students. In the "positive opinion" category, our participant students mentioned positive experiences in terms of Being Determined in the Face of Problems (f=7), Finding Solutions (f=6), Reaching Different Ideas (f=6), Realizing the Problem (f=6); in the "negative opinion" category, they mentioned experiences of Not Producing Solutions (f=3), Being Discouraged (f=2), Not Realizing the Problem (f=1), Not Making Connections (f=1).

The diaries kept by the students after the application regarding the effect of the Philosophy for Children approach on the 4th grade students' problem-solving skills in the Science course support the

above findings. In this regard, some of the participant students included their opinions on the subject in their diaries as follows:

"Dear diary, today, like Frog and Murbaga, I solved my small problems alone... Solving small problems is not a problem for me anymore" (T 4).

" In the activities we did, we tried to find solutions to the problems they experienced by putting ourselves in the shoes of the story heroes, we always respected different solutions, I always answered the questions without any shame " (T 6).

" ... I have no problems in solving the problems I encounter " (T 9).

" ... I can solve my small problems without getting help from anyone " (T 13).

As a result of the interviews with the students and the diaries kept by the students after each session, it is seen that the Philosophy for Children Approach is an effective, beautiful, exciting practice. It was a process in which the stories used in the application could easily lead students to the discussion process and students could deepen the stories. The children tried to produce different solutions and make sense of the process based on the experiences they had in their own world with philosophical questions. Since it was an environment where they could think freely, they participated in the activities without getting bored or tired. Positive changes were observed in both students' attitudes towards science and their problem-solving skills during the sessions.

4. CONCLUSION and DISCUSSION

The aim of the study was to determine the effect of the Philosophy for Children (P4C) approach on primary school students' attitudes towards science and problem-solving skills. For this purpose, philosophy for children applications were prepared and used in the 4th grade science course "Our Food" unit. The variables related to the effect of the philosophy for children approach on primary school students' attitudes towards science and problem-solving skills were examined meticulously, and the findings obtained were discussed with the results of similar studies in the literature.

The study concluded that the Philosophy for Children Approach's prescribed activities and practices, rather than those mandated by the 4th grade science course curriculum, significantly enhanced the students' attitude towards science. In his or her attitude towards science, the individual emphasizes his or her characteristics such as thinking, questioning, criticizing, and curiosity (Munby, 1983). Factors such as teacher characteristics, classroom environment, motivation for success, and method used are all effective in developing students' attitudes towards science (Osborne, 2010). The method used should attract students' attention and encourage them to question and think (Wolfinger, 2000). Nhase (2019) examined similar studies and concluded that practices based on inquiry and philosophical methods increased students' interest in science teaching. In addition, Ventsta (2019) concluded that the Philosophy for Children Approach improved cognitive skills and positively increased students' interest in and attitudes towards the course. It is clear that there was a noticeable change in children's attitudes towards science, especially in the last sessions of the implementation. It was observed that the students

invited the teacher and their friends to the discussions, presented examples contrary to each other's ideas, and made efforts to continue questioning and criticizing. Jones (2016) also produced results that corroborate our findings. In his research on the science and technology course, he found that the philosophy for children approach influenced students' cognitive and social development, heightened their interest in the course, and motivated them to participate more actively. Teachers should develop and implement new techniques to foster positive attitudes among students towards science (Hasan, 1985). In his study on philosophy for children, Kaya (2020) also concluded that students found the course interesting, wanted to participate more, and developed positive attitudes towards the course. The study demonstrated the effectiveness of the Philosophy for Children Approach, a new practice in our country, in enhancing students' attitudes towards science.

The study concluded that using the activities and practices prescribed by the Philosophy for Children Approach was more effective in increasing problem-solving skills than using the activities prescribed by the 4th grade science curriculum. It is very important for children to acquire problem-solving skills in preschool and primary school. Education aimed at developing problem-solving skills will also improve students' mental skills (Kesicioğlu, 2015). In the process of gaining problem-solving skills, the student is in a position of active thinking, questioning, and criticizing (Özyürek, Çetin, Şahin, Yıldırım, & Evirgen, 2018). Therefore, the finding that the Philosophy for Children Approach positively influences problem-solving skills is significant. Upon examination of the literature supporting our findings, Tok and Sevinç (2010) concluded that their thinking skills training program significantly enhanced the problem-solving skills of prospective preschool teachers. Gillies, Nichols, and Burgh (2011) concluded that the collaborative philosophy for children approach improved reasoning and problem-solving skills. In addition, Seifi, Shaghagni, and Kalantari (2011) concluded that the Philosophy for Children Approach affected students' self-esteem and problem-solving skills in their study with middle school students. Erfani, Karimi, Shobeiri, and Atar (2014) conducted an experimental study at the middle school level and concluded that the Philosophy for Children Approach significantly influenced students' problem-solving skills and creativity. Gur and Kocak (2018) applied the thinking education program they prepared to children in the 5–6 age group. ThThe results of their thinking training program for children showed a positive impact on students' social problem-solving skills, which aligns with our own findings. addition, Erkol, Saralar-Aras, and Akan (2022) found that the Philosophy for Children Approach had positive results on students' problem-solving skills. According to Çoban (2014), problem-solving skill is the ability to produce solutions to problems encountered by the individual based on past experiences. Genç (2012), Özsoy and Kuruyer (2012), and Yeşilova (2013) described the problem-solving process as the individual's realization of the problem, entering the discussion process to determine the solutions, and determining the most appropriate solution. These conditions required for problem-solving skills are also among the achievements and objectives of the Philosophy for Children Approach (Lipman, 1988; Matthews, 2000). Examining the science curriculum reveals that students use their experiences to produce solutions to the problems they encounter. "They

apply the most appropriate solution by comparing the solutions" (M.E.B., 2018). Here, practices that will enable children to acquire the process of solving the problems they encounter in their daily lives and in their relationships with their friends are aimed at. In addition, science, questioning, reasoning, and logic, which are the basic functions of the science course, are also included in the subjects of philosophy (Çayır, 2021). The Philosophy for Children Approach achieves these outcomes by encouraging correct thinking, capturing differences in problem-solving, reasoning, and making generalizations (Lipman, Sharp, & Oscanyan, 1980).

The primary goal of using the Philosophy for Children Approach in education is to capture certain inferences by identifying similarities and commonalities with actions such as reading, understanding, questioning, and discussion (Direk, 2008). The philosophical education to develop thinking skills includes correct thinking, logical reasoning, generalizations, and communicating (Lipman, 1988). The child who discovers the ability to communicate will gradually increase his or her self-confidence and begin to overcome problems on his or her own (Bingham, 2004). When an individual begins to solve problems, he or she may seek specific guidance and environments where he or she can cooperate while implementing the solution process he or she has designed in his or her mind (Britz, 1993). The Philosophy for Children Approach also includes group activities that students need while using their reasoning skills, a free environment where they can have discussions, and most importantly, practices that keep their sense of curiosity alive (Cevizci, 2012). As a result of Philosophy for Children education, students have realized that thinking is not a difficult process, that it is different from scientific inquiry, that there is no single answer, that everyone can philosophize freely, and that they can find answers to all their questions without any coercion. In addition to all of these, Philosophy for Children education also contributes significantly to the development of students' higher-order thinking skills and their ability to think abstractly (Worley, 2019). It can be said that the Philosophy for Children approach, in which applied activities are carried out, is effective in developing students' problem-solving skills as well as other higher-order thinking skills. As a matter of fact, it can be said that Philosophy for Children practices are effective in developing students' characteristics such as asking questions and curiosity, thinking by making connections, questioning, result-oriented thinking, and developing higher-order thinking skills (Acar, 2022; Akıncı-Demirbaş, 2022; Akan, 2022; Gürdal, 2022; Taş, 2017; Mıllet & Tapper, 2012; Taş, 2017).

4.1. Recommendations

- The study concluded that the philosophy for children approach had a positive impact on students' attitudes towards science. Therefore, further studies can be conducted to examine its effect on student attitudes in different courses.
- The study concluded that the philosophy for children approach significantly enhanced students' problem-solving abilities. In order to generalize this result, studies can be conducted in different courses and at different grade levels.

- The study confines itself to the "Our Food" unit within the science course. However, when the results of the PBTS, PSI, and qualitative analysis are examined, it can be suggested to apply the philosophy for children approach in different units of the science course.
- Examining the literature reveals a scarcity of mixed studies comparable to this one. The number of mixed studies to be conducted for the presence of the philosophy for children approach in the education process should be increased.
- The study examines the effect of the Philosophy for Children (P4C) approach on primary school students' attitudes towards science and problem-solving skills. The study examines the impact of the Philosophy for Children approach on language and communication skills in Turkish lessons, responsibility and equality in life science lessons, and the concepts of rights and law in social studies lessons.
- Applications such as creating concept maps, story completion, thought experiments, and evaluation with facial expressions can be beneficial for researchers. Let's engage in these activities and evaluate their effectiveness.
- The philosophy for children approach can be combined with the curricula of various courses, or it can be implemented as a single course.
- The philosophy for children approach can be used to develop problem-solving skills in primary schools.

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GENİŞLETİLMİŞ TÜRKÇE ÖZET

ÇOCUKLAR İÇİN FELSEFE (P4C) YAKLAŞIMININ İLKOKUL ÖĞRENCİLERİNİN FENE YÖNELİK TUTUM VE PROBLEM ÇÖZME BECERİSİNE ETKİSİ

GİRİŞ

Kişilerin dış çevreyle olan ilişkilerinde, yaşamı anlamlandırmalarında felsefi düşünme ve felsefi bakış açısına ulaşma önemli bir yere sahiptir. Felsefi düşünmenin bu denli önemli olduğu bir dönemde, felsefi bakış açısı kazandırmaya hayal gücümüzün en etkili olduğu dönem olan çocukluk döneminde başlamamız gerekmektedir (Sormaz-Öğüt, 2019). Felsefi okul eğitiminin küçük yaşlarda başlaması gerektiği kaçınılmaz bir gerçektir (Akkocaoğlu-Çayır, 2015; Direk, 2008; Sormaz-Öğüt, 2019). Çocuklar için Felsefe düşüncesi ilk kez 1953 senesinde Karl Jaspers tarafından vurgulanmıştır. Alman dilinde ‘’Kinderphilosophie’’ veya ‘’Philosophie für Kinder’’ olarak kullanılan kavram İngilizcede ‘’ Philosphy for Childer’’ olarak söylenmiştir. Bu kavram Türkçeye ise; ‘’çocuk felsefesi ‘’ ya da ‘’Çocuklar için Felsefe ‘’ olarak aktarılmıştır (Karakaya, 2006). Çocuklar için felsefenin temeli ise 1960’ da ABD de Matthew Lipman tarafından atılmıştır (Soysal ve Pullu, 2020). Lipman “Philosophy For Children-P4C” olarak isimlendirmeyi uygun görmüştür. Felsefenin daha çok çocuklarla yapılabileceğini söyleyenler ise “Philosophy With Children-PwC”(Çocuklar ile Felsefe) kavramını kullanmışlardır (Mutlu, 2010). Çocuklara tek başlarına nasıl düşünebileceklerini öğretmek ve bu konuda onlara yardımcı olmak, çocuklar için felsefenin ana amaçları arasında yer alır (Lipman, Sharp, ve Oscanyan, 1980).Çocuklar için Felsefe yaklaşımının kurucusu Lipman’ın hedefi çocukları birer filozof ya da felsefe öğrenen bireylere dönüştürmekten ziyade; çocukları daha çok düşünen, daha çok eleştiren ve düşündüklerini yansıtabilen bireyler haline getirmektir (Karakaya, 2006).Çocuklara düşünme becerisi kazandırmanın en etkili yollarından biri olan Çocuklar için Felsefe çalışmaları büyük öneme sahiptir (Direk, 2008).

Fen bilimleri öğretim programı mühendislik becerileri, yaşam becerileri ve bilimsel süreç becerilerini kişinin özelde sahip olması gereken özel hedefler olarak belirler (Aslan, Ertaş-Kılıç, ve Kılıç, 2016). Yaşam becerileri fen bilimleri eğitim programında; analitik düşünme, yansıtıcı düşünme, takım çalışması, yaratıcı düşünme,girişimcilik ve iletişim olarak sıralanmıştır (MEB, 2018). Bilimsel süreç becerileri ise fen bilimleri öğretim programında; tahmin, sınıflama, deney yapma, sonuçlara ulaşma, tümevarım ve tümdengelimdir. Öğrenci bir bilim adamı gibi çalışarak bilimsel bilgiyi sorgular, araştırır ve ulaştığı sonuçları yapılandırarak anlamlandırır (Aslan, Ertaş-Kılıç, ve Kılıç, 2016).Fen bilimleri öğretim programının ulaşmak istediği amaçlarla Çocuklar için Felsefe eğitiminin sağladığı amaçlar birbiriyle uyuşmaktadır.

Yapılan araştırmalar incelendiğinde 4. sınıf fen bilimleri dersinde Çocuklar için Felsefe yaklaşımının tutuma ve problem çözme becerisine etkisini inceleyen çalışmalara rastlanmamıştır. Bu araştırma Çocuklar için Felsefe etkinliklerinin 4.sınıf öğrencilerinin fene yönelik tutum ve problem çözme becerisine etkisini açıklayarak alana katkı sağlayacaktır.

YÖNTEM

Bu araştırma Çocuklar için Felsefe (P4C) Yaklaşımının ilkokul öğrencilerinin fene yönelik tutum ve problem çözme becerisine etkisini belirlemek amacıyla karma yöntem kapsamında olan açıklayıcı sıralı desen kullanılarak yürütülmüştür. Karma yöntem; nitel ve nicel verilerin toplanarak her iki desenin birlikte kullanılmasıdır (Creswell, 2008; Johnson ve Christensen, 2004). Araştırmanın nicel boyutunda; ön test-son test kontrol gruplu yarı deneysel desen kullanılmıştır. Araştırmanın nitel boyutunda; ulaşılan verilerin derinlemesine incelenmesi ve detaylı bir şekilde analizi yapılacağı için durum çalışması kullanılması tercih edilmiştir. Çalışmada karma araştırma yöntemi kullanıldığından nicel ve nitel bölümlerde farklı veri toplama araçları kullanılmıştır. Çalışmanın nicel kısmında veri toplamak amacıyla fene yönelik tutum ölçeği ve problem çözme envanteri kullanılmıştır. Araştırmanın nitel boyutunda veri toplama araçları olarak gözlem, doküman incelemesi ve görüşme teknikleri kullanılmıştır. Creswell (2008)'e göre nitel araştırma yapanlar, kullanacağı verileri tek bir kaynaktan toplamak yerine mülakat, doküman, gözlem ve sesli-görsel bilgi kaynaklarından yararlanırlar. Merriam (2013) ise güvenirliği sağlamada; üçgenleme yöntemi yapılarak iki ya da daha fazla veri toplama yöntemi kullanılarak toplanan verilerin (görüşme-doküman-gözlem), daha güvenilir ve daha kesin sonuçlara ulaşabilmede etkili olduğunu belirtmiştir. Araştırma 2022-2023 eğitim-öğretim yılı içinde ilkokul 4. Sınıf Fen Bilimleri dersi "Besinlerimiz" ünitesi kapsamında öğretim programına uygun olarak 7 hafta olarak planlanmıştır. İlk hafta kontrol ile deney gruplarına; problem çözme envanteri ve fene yönelik tutum ölçekleri uygulanmıştır. Beş hafta boyunca ise; kontrol grubunda 4. Sınıf Fen Bilimleri dersi öğretim programının ön gördüğü etkinlikler yapılandırmacı yaklaşıma uygun olacak şekilde uygulanmıştır. Kontrol ve deney grupları arasında fene yönelik tutum ve problem çözme becerileri arasında anlamlı bir fark olup olmadığını belirleyebilmek amacıyla SPSS 22.0 paket programı kullanılmıştır.

Araştırmanın nitel bölümünde araştırmacının gözlem sonuçlarından, öğrencilerin tutacağı uygulama günlüklerinden, öğrencilerle yapılacak olan yarı yapılandırılmış görüşmelerden elde edilecek olan verilerin analiz edilmesinde içerik analizi yöntemi kullanılmıştır.

SONUÇ ve ÖNERİLER

Araştırmada Çocuklar için Felsefe (P4C) Yaklaşımının ilkokul öğrencilerinin fene yönelik tutum ve problem çözme becerisine etkisinin belirlenmesi amaçlanmıştır. Bu amaç doğrultusunda çocuklar için felsefe uygulamaları hazırlanmış ve 4. sınıf fen bilimleri dersi "Besinlerimiz" ünitesinde kullanılmıştır. Çocuklar için felsefe yaklaşımının ilkokul öğrencilerinin fene yönelik tutum ve problem çözme

becerisine etkisine ilişkin değişkenler titizlikle incelenmiş ve elde edilen bulgular alan yazında yer alan benzer araştırma sonuçları ile tartışılmıştır.

Araştırmada Çocuklar için Felsefe Yaklaşımının öngördüğü etkinlikler ve uygulamalar kullanılarak yürütülen öğretimin, 4. Sınıf fen bilimleri dersi müfredatının istediği etkinlikler ile yapılan öğretime göre fene yönelik tutumu pozitif yönde arttırmada daha çok etki yarattığı sonucuna ulaşılmıştır. Benzer çalışmalar incelendiğinde; Nhase (2019) yaptığı çalışmasında sorgulamaya ve felsefi yöntemlere dayalı uygulamaların fen öğretimine yönelik öğrencilerin ilgilerinin arttığı sonucuna ulaşmıştır. Ayrıca Ventısta (2019) bilim dersinde uyguladığı çalışmasında Çocuklar için Felsefe Yaklaşımının bilişsel becerileri geliştirdiği ve öğrencilerin derse yönelik ilgi ve tutumlarını olumlu yönde arttırdığı sonucuna ulaşmıştır. Özellikle yapılan uygulamanın son oturumlarında çocukların fene yönelik tutumlarında fark edilebilir bir değişimin olduğu açıktır. Öğrencilerin, öğretmeni ve arkadaşlarını da tartışmalara davet etmeleri, birbirlerinin fikirlerine zıt örnekler sunmaları, sorgulamaya ve eleştirmeye devam etme çabaları gözlenmiştir. Jones (2016) da ulaştığımız sonuçları destekler nitelikte sonuçlara ulaşmıştır.

Araştırmada Çocuklar için Felsefe Yaklaşımının öngördüğü etkinlikler ve uygulamalar kullanılarak yürütülen öğretimin, 4. Sınıf fen bilimleri dersi öğretim programının ön gördüğü etkinlikler ile yürütülen öğretime göre problem çözme becerilerini arttırmada daha çok etkili olduğu sonucuna ulaşılmıştır. Ulaştığımız sonuçları destekler nitelikte literatürde yapılan çalışmalar da incelendiğinde; Tok ve Sevinç (2010) okul öncesi eğitimde yer alan aday öğretmenlerle yaptıkları araştırmada yaptıkları düşünme becerileri eğitim programının problem çözme becerilerini anlamlı olarak arttırdığı sonucunu elde etmişlerdir. Gillies, Nichols ve Burgh (2011) ise yaptıkları çalışmada işbirliğine dayalı Çocuklar için Felsefe Yaklaşımının akıl yürütme ve problem çözme becerilerini geliştirdiği sonucuna ulaşmışlardır. Ayrıca Seifi, Shaghagni ve Kalantari (2011) ortaokul öğrencileriyle yaptıkları çalışmada Çocuklar için Felsefe Yaklaşımının öğrencilerin özsaygı ve problem çözme becerilerini etkilediği sonucuna ulaşmışlardır. Erfani, Karimi, Shobeiri ve Atar (2014) ortaokul düzeyinde yaptıkları deneysel çalışmada Çocuklar için Felsefe Yaklaşımının öğrencilerin problem çözme becerileri ve yaratıcılıkları üzerinde anlamlı bir etki yaptığı sonucuna ulaşmışlardır.

Öneriler

1. Araştırmadan ulaşılan sonuçlar neticesinde çocuklar için felsefe yaklaşımının öğrencilerin fene yönelik tutumlarını olumlu yönde arttırdığı sonucuna ulaşılmıştır. Bundan dolayı farklı derslerde de öğrenci tutumlarına yönelik etkisini incelemek için başka çalışmalar yapılabilir.
2. Yapılan çalışmada çocuklar için felsefe yaklaşımının öğrencilerin problem çözme becerilerini olumlu yönde arttırdığı sonucuna ulaşılmıştır. Bu sonucun genele yayılabilmesi için farklı derslerde ve farklı sınıf seviyelerinde de çalışmalar yapılabilir.
3. Araştırma fen bilimleri dersinin "Besinlerimiz" ünitesi ile sınırlıdır. Ancak FYTÖ, PÇE ve nitel analiz sonuçları incelendiğinde çocuklar için felsefe yaklaşımının fen bilimleri dersinin farklı ünitelerinde de uygulanması önerilebilir.

4. Literatür incelendiğinde yapılan araştırmaya benzer karma araştırmaların az olduğu görülmektedir. Çocuklar için felsefe yaklaşımının eğitim öğretim sürecinde bulunmasına yönelik yapılacak karma araştırmaların sayısı arttırılmalıdır.