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# Philosophical Inquiry, Critical Thinking and 21st Century Skill Self-Efficacy: A Study with Preservice Teachers

# Felsefi Sorgulama, Eleştirel Düşünme ve 21. Yüzyıl Becerileri Öz Yeterliliği: Öğretmen Adayları ile Bir Çalışma

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***Abstract:*** This research aims to examine the effects of philosophical inquiry sessions on self-efficacy perception and critical thinking skills of the 21st century and to determine the opinions of the participants about the sessions. The research was designed according to Single Group Pre-Test - Post-Test" experimental model. "21st Century Skills Efficacy Perceptions Scale" and "Ennis-Weir Written Test of Critical Thinking" were used as quantitative data collection tools, and semi-structured interview form was used as a qualitative data collection tool. It was determined that philosophical inquiry sessions positively affected both 21st-century learning and renewal skills and critical thinking skills. It was determined that it had a positive effect on the critical thinking skills and renewal and learning skills of pre-service teachers. The results of the interviews revealed that philosophical inquiry sessions drew attention to skills such as asking questions, developing different perspectives.

**Keywords:** Philosophical inquiry, philosophical inquiry session, critical thinking, 21st-century skills, participant views

***Öz:*** Bu araştırma, felsefi sorgulama oturumlarının 21. yüzyıl öz yeterlik algısı ve eleştirel düşünme becerileri üzerindeki etkilerini incelemeyi ve katılımcıların oturumlara ilişkin görüşlerini belirlemeyi amaçlamaktadır. Araştırma deneysel modellerden biri olan "Tek Grup Ön Test - Son Test" modelinde tasarlanmıştır. Nicel veri toplama aracı olarak "21. Yüzyıl Becerileri Yeterlik Algıları Ölçeği" ve "Ennis-Weir Yazılı Eleştirel Düşünme Testi", nitel veri olarak ise yarı yapılandırılmış görüşme formu kullanılmıştır. Felsefi sorgulama oturumlarının hem 21. yüzyıl öğrenme ve yenilenme becerilerini hem de eleştirel düşünme becerilerini olumlu yönde etkilediği tespit edilmiştir. Öğretmen adaylarının eleştirel düşünme becerileri ile yenilenme ve öğrenme becerileri üzerinde olumlu bir etkiye sahip olduğu belirlenmiştir. Görüşme sonuçlarında felsefi sorgulama oturumlarının soru sorma, farklı bakış açıları geliştirme gibi becerilere dikkat çektiği katılımcılar tarafından ifade edilmiştir.

**Anahtar Kelimeler:** Felsefi sorgulama, felsefi sorgulama oturumu, eleştirel düşünme, 21. yüzyıl becerileri, katılımcı görüşleri

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## Introduction

Learning and teaching processes change according to the period in which they live and the foreseen for the future. The trends that emerged toward the end of the 20th century also expect the individuals of the future to have different competencies. In order for existing education systems to meet this need, studies have focused on determining the skills expected from individuals in the 21st century and gaining these skills. 21st century skills classified differently by many institutions and organizations. In P21 (Partnership for 21st Century Skills, 2009) learning and innovative skills (creative thinking, innovation, critical thinking, problem solving, communication, collaboration, learning to learn), information, media and technology skills (information literacy, media literacy, information and communication technology literacy), life and career skills (flexibility, adaptability, entrepreneurship, social and cultural skills, productivity, responsibility, leadership) are classified as three different themes. OECD (2005) defines it as interaction with heterogeneous groups and use of technology tools. In NETS/ISTE (2007), it is defined as creativity and innovation, critical thinking, problem solving and decision making, communication and cooperation, digital citizenship, technological applications and concepts, research and knowledge fluency (Belet -Boyacı and Güner-Özer, 2019). According to Wagner (2008, cited in Eğmir & Erdem, 2021), 21st-century skills are critical thinking and problem-solving skills, which are defined as survival skills, cooperation, leadership, taking responsibility, entrepreneurship, effective communication, curiosity, and imagination. Kennedy et al. (2016) define 21st-century skills under four headings. These are ways of thinking (creativity, critical thinking, problem-solving, decision-making, learning), ways of working (communication and collaboration), tools necessary for work (information and communication technology, information literacy), and skills for social life (citizenship, life, and career, personal and social responsibility).

## Conceptual Framework

When 21st century skills are considered in terms of basic and literacy skills, critical thinking is among these basic skills (Cansoy, 2018). This can be considered to mean that the importance of critical thinking will continue in the future (Çalışkan, 2019). Critical thinking skills is a way of thinking that is logical, reflective and oriented toward deciding what to do and what to believe (Ennis, 1985). Skilles such as questioning life, distinguishing between right and wrong, criticizing the increasingly polluted information, claims, and propositions; being honest in their judgment, support their views on sound grounds, enables students to eliminate the dependency on authority by thinking critically (Alkın-Şahin & Tunca, 2015). For this reason, the implementation of 21st-century skills in schools and gaining them for students is an inevitable necessity (Soland et al., 2013). Students can acquire 21st-century skills with teachers who have these skills (Harris

et al., 2009). Raising individuals with critical thinking knowledge, skills, and attitudes is possible with teachers who care about their students gaining critical thinking skills and can apply appropriate methods and techniques in the classroom (Önal & Erişen, 2019). This draws attention to the methods and techniques that can be used to gain both 21st-century skills and critical thinking skills. Starting from the pre-service period, pre-service teachers should gain knowledge, skills, and experience regarding appropriate methods and techniques. Philosophical inquiry is also a method that can be used in the acquisition of these skills. According to Lipman (1995), critical thinking develops conceptualization, reasoning, generalization, and research skills. He also argued that developing critical thinking through interaction with peers is much easier than teaching it technically. Philosophical inquiry is an approach that meets all these criteria. Philosophical inquiry sessions, which first started as "Philosophy with Children", were later named inquiry society and collaborative questioning society and were held with participants from different age groups (Kennedy 1998; Kennedy, 2018; Kennedy & Kennedy, 2011; Lipman, 1995; Sarp, 1987). Philosophical inquiry sessions consisted of ten stages. Relaxation exercises, determining the session rules, presenting the stimulus (story, object, picture, etc.), thinking about the stimulus, asking questions, connecting the questions, choosing the question to be asked for philosophical inquiry, developing thoughts about the question, following each other's thoughts, and encouraging questioning. It can be said that all these stages directly affect thinking and questioning skills (Trickey & Topping, 2004).

Philosophical thinking is a critical/questioning way of thinking. The rules and methods of philosophical studies and the theoretical concerns of philosophy (clarity, systematicity, etc.) are in line with the principles of critical thinking. In other words, the structural features of philosophical thought point to critical thinking tendencies and skills. The fact that doing philosophy requires critical thinking and thinking is a philosophical activity shows that philosophical attitude and critical thinking tendency are coordinated. The fact that individuals characterized as “wise” and “critical thinkers” have the same characteristics is evidence that there is a strong relationship between philosophy and critical thinking (Alkın-Şahin & Tunca, 2015). Philosophical inquiry sessions, which include philosophy and critical thinking, can also be defined as a learning environment that can be carried out with large or small groups. Philosophical inquiry sessions are a learning environment that dates back to Socrates in the context of the philosophy program for children, and Lipman finalized it (Çakır-Kaytancı & Dombaycı, 2020). According to Kennedy and Kennedy (2011), a philosophical inquiry session is comparative as it is an intentional conversational community of a group of people who participate consistently and regularly. According to Lipman (2003, as cited in Striano, 2011), the philosophical inquiry community is a social community. The new cognitive relations are established from the existing cognitive framework through social relations.

While the discussions about whether a philosophical inquiry is a method or not (Kohan & Carvalho, 2019), the philosophical inquiry community also provides the opportunity to raise individuals with basic 21st-century skills in increasingly crowded educational environments (Çakır-Kaytancı & Dombaycı, 2020). Therefore, it is thought that philosophical inquiry practices will provide a learning environment that allows pre-service teachers to develop both their 21st-century skills and their critical thinking skills. There have been many studies on the 21st-century skills of teacher candidates, their perceptions of these skills (Akbay et al., 2020; Erten, 2020; Orhan Göksün & Kurt, 2017; Özdemir Özden et al., 2018; Varki 2020; Vebrianto et al., 2020) and critical thinking skills (Çolak et al., 2019; Akkaya et al., 2018; Aybek & Aslan, 2017; Deringöl, 2017), and their critical thinking skills (Çolak et al., 2019; Akkaya, Worker, & Susar Kırmızı, 2018; Aybek & Aslan, 2017; Deringöl, 2017). However, research on philosophical inquiry is mostly conducted in preschool and young children (Gasparatou & Kampeza, 2012; Güven, 2019; Işıklar, 2019; Karadağ & Yıldız Demirtaş, 2018; Yıldız-Demirtaş et al., 2018).

However, there is no study on the contributions of philosophical inquiry sessions that include both 21st-century skills and critical thinking skills to pre-service teachers. It is thought that philosophical inquiry practices will provide a learning environment that allows pre-service teachers to develop both 21st-century skills and critical thinking skills and is expected to contribute to the field. This contribution is important because 21st-century learner and teacher skills, as explained above, include skills such as critical analytical thinking, lifelong learning, and being open to innovations. It is important for pre-service teachers to have these skills due to their roles as learners and teachers. Therefore, the main purpose of this study is to examine the effects of philosophical inquiry sessions on 21st-century skills efficacy perceptions and critical thinking skills in the context of pre-service teachers' views. In line with this main purpose, answers to the following questions will be sought.

In the context of philosophical inquiry sessions;

1. Is there a statistically significant difference between pretest and posttest scores of prospective teachers regarding their 21st-century skills proficiency perceptions?
2. Is there a statistically significant difference between the Ennis-Weir Critical Thinking Test pretest and posttest scores of prospective teachers?
3. What are the views of prospective teachers on philosophical inquiry and the philosophical inquiry sessions?

## Method

### Research Model

In this study, the effects of philosophical inquiry sessions on pre-service teachers' 21st-century skills proficiency perceptions, and critical thinking skills were examined. The research was designed in the "Single Group Pre-Test - Post-Test" model, which is one of the experimental models. This model does not include a control group, and the data collection tools are applied only to the experimental group before and after the experimental procedure (Cohen & Manion, 1998). At the end of the experimental process, pre-service teachers were asked to evaluate the philosophical inquiry sessions. The pretest and posttest scores of the qualitative and quantitative data collection tools were analyzed, and a focus group interview was conducted to those who had the lowest and highest average score and showed the highest score increase/decrease. Thus, research includes qualitative data collection and analysis steps with a quantitative priority. In this context, the research model can also be defined as a mixed method. The mixed method is a research design in which

quantitative and qualitative data collection and data analysis methods are used together (Creswell, 2003).

### Study Group

The main study group of the research consists of 17 teacher candidates (13F, 4M) studying at an education faculty in Central Anatolia in the spring term of the 2020-2021 academic year. To determine the working group, announcements were first made via WhatsApp and e-mail. The purpose of the research, the steps of the procedure, the anticipated duration, and the expectations from the participants were announced in all detail. In line with the feedback, an online introductory meeting was held with the interested parties. Upon informing participants, consent was obtained from the volunteers who wanted to take part in the study. Although they attended the introductory meeting and completed the pre-tests of the quantitative data collection tools, six pre-service teachers who did not attend enough sessions in the process were excluded from the study group. Information on the study group is given in Table 1.

**Table 1.** Information on the study group

| Demographic Characteristics | | f |
|---|---|---|
| Grade Level | Second Grade | 9 |
| | Third Grade | 8 |
| Programs | Turkish Language Teaching | 4 |
| | Primary School Mathematics Teaching | 5 |
| | Psychological Counseling and Guidance | 8 |

The age range of the participants is 18-21 (X=18.9). Participants study in the second grade (n=9) and third grade (n=8) in Turkish language teaching (4), primary school mathematics teaching (5), and psychological counseling and guidance (8) programs.

In the study, after the post-tests of the quantitative data collection tools were applied, participants were determined for focus group interviews to obtain their views on the sessions through outlier sampling. To determine the participants, the pretest-posttest mean scores were examined. A focus group discussion was conducted with nine pre-service teachers (5F, 4M) who had the lowest, highest and most increasing or decreasing mean scores on philosophical inquiry sessions.

### Data Collection Tools

Quantitative and qualitative data collection tools were used together in the research. "21st-century Skills Efficacy Perceptions Scale for Pre-service Teachers" and "Ennis-Weir Written Test of Critical Thinking (E-WCTET)" were used as quantitative data collection tools, and semi-structured interview form was used as a qualitative data collection. 21st-century Skills Proficiency Perceptions Scale for Teacher Candidates developed by Anagün et al., (2016) consists of 42 items and three sub-dimensions (Learning and Renewal Skills, Life and Career Skills, Knowledge, Media, and Technology). In the scale prepared according to the 5 - point Likert type scale model, the degree of agreement for each statement was determined as "never", "rarely", "sometimes", "often" and "always". Because of the reliability analyses performed, the Cronbach alpha value of the whole scale was .889, and the Cronbach alpha coefficients on the basis of the factors were 0.845 for factor 1, 0.826 for Factor 2, and 0.810 for Factor 3 (Anagün et al., 2016). In this study, the internal consistency coefficients for the sum of the scale and its sub dimensions varied between .85 and .88.

The Ennis-Weir Critical Thinking Written Test (E-WCTET), which was developed by Ennis and Weir (1985) and measures the level of critical thinking (skill), is the evaluation of an argument put forward by a person, in other words, criticizing that argument in various dimensions. The adaptation study of the 9-paragraph measurement tool, which is used to criticize an 8-paragraph text and write a new text, was conducted by Aybek (2006). The highest score that can be obtained from E-WCTET is 29. In the pilot study with 57 students, the "Pearson Product Moment Correlation" coefficient between the scores of the participants was found to be .95.

In this study, the Pearson Product Moment Correlation coefficient between the scores made separately by two researchers was calculated as .72.

Semi-Structured Interview Form was prepared by the researchers to determine the opinions of the participants about the philosophical inquiry sessions. While preparing the interview, attention was paid to the fact that the questions were easy to understand, focused questions were included, open-ended questions were included to avoid redirection. There was no more than one question in a question, and alternative and probe questions were available. The questions were arranged logically. The draft interview form was finalized by taking into account the opinions of two lecturers who are experts in their fields and the pilot interviews with two teacher candidates who participated in the sessions. The interview form, consisting of seven basic and five probe questions. It was applied to the participants as a focus group interview (online) after the philosophical inquiry sessions ended. The opinions of the participants who had connection problems from time to time during the interview were consulted again afterward.

### Data Collection Process

The philosophical inquiry sessions implemented within the scope of the research were carried out for a total of 12 weeks, starting from the spring semester of the 2020-2021 academic year. The days and hours of the sessions held between 16.05.2021 and 01.08.2021 were determined according to the convenience of the majority of the participants. However, the number of participants in the sessions varied because the sessions were held online, which brought about connection problems. Before starting the philosophical inquiry sessions, an introductory meeting was held on 08.05.2021, and information was given about the process. On 12.05.2021, a pilot philosophical inquiry session was held and then pre-tests were applied. Afterward, 12 philosophical questioning sessions were held through stimuli consisting of nine reading passages and three videos, starting with the actual practices. The stimuli are given in Table 2.

Sessions were recorded with the permission and knowledge of the participants. After the sessions were completed, posttests were administered. According to the results of the analysis, the day and time of the focus group meeting were determined and carried out by contacting the participants who will be in the second study group. Qualitative data were collected through the interview, which lasted for a total of 127 minutes.

**Table 2.** List of stimuli used in sessions

| Session Date | The stimulus used |
|---|---|
| 16.05.2021 | The ark of Theseus, *Worley, P. (2019). Philosophy Machine A Roadmap: How to Make Philosophy for Children (P4C)?, Parachute Book* . |
| 19.05.2021 | The Little Mouse and the Red Wall, *Teckentrup, B. (2020). Little Mouse and the Red Wall, Beta Kids.* |
| 22.05.2021 | Stranger Things Shop, *Worley, P. (2019). Philosophy Machine A Roadmap: How to Make Philosophy for Kids (P4C)?, Parachute Book* |
| 29.05.2021 | Bandit, *https://www.youtube.com/watch?v=j4Iqz6dEZbk* |
| 06.06.2021 | Cardboard Box, *https://www.youtube.com/watch?v=duRnRIqZnDA* |
| 08.06.2021 | Happy Prisoner, *Worley, P. (2019). Philosophy Machine A Roadmap: How to Make Philosophy for Kids (P4C)?, Parachute Book* |
| 07.07.2021 | Socrates' Defense, *Plato (2016), Socrates' Defense, İşbank Culture Publications - Hasan Ali Yücel Classics Series* |
| 11.07.2021 | Being and Man, *Montaigne, M. (2019). Essays, Türkiye İş Bankası Cultural Publications.* |
| 13.07.2021 | Frederick, *Lionni, L. (2019), Apple Book.* |
| 18.07.2021 | Scorpion and Frog, *Worley, P. (2019). Philosophy Machine A Roadmap: How to Make Philosophy for Kids (P4C)?, Parachute Book* |
| 29.07.2021 | Balance, *https://www.youtube.com/watch?v=PADVHR-_wOs* |
| 01.08.2021 | Utopia, *More, T. (2014). Ütopia, İşbank Cultural Publications - Hasan Ali Yücel Classics Series (2014).* |

**Analysis of Data**

**Analysis of Quantitative Data**

First, the Single Sample Kolmogorov-Smirnov (KS) Test was used to test whether the quantitative data fits a certain distribution, and it was determined that the data showed normal distribution (KS(Z) pretest =0.749 $p$>0.05; KS(Z) posttest =1.116; $p$>0.05). Descriptive statistical methods and Paired Sample t- Test were used in the analysis of the data. The level of significance was accepted as .05 in the analysis made.

**Analysis of Qualitative Data**

Content analysis was used in the analysis of interview data. The online meeting recordings were transcribed and a total of 32 pages of raw data were obtained. The expressions in the raw data set were combined under codes and themes and explained, and common meanings or relationships were sought (Yıldırım & Şimşek, 2018). Codes and themes were determined separately by both researchers, and the coefficient of the agreement was calculated as .85, which is considered as an acceptable value (Miles & Huberman (1994). The generated codes and themes were presented by quoting directly from the statements of the participants.

**Validity and Reliability of the Research**

To ensure external validity in the research, the research model, data collection tools, data collection process, data analysis and interpretation, and arrangement of the findings were attempted defined in detail. In the reporting phase of the research, direct quotations were frequently made from the views of the participants. To ensure internal validity in the research, data diversity was made. In this context, quantitative data collection tools and qualitative data collection tools were used together for data diversity. A data collection tool in open-ended question form was used for critical thinking skills, and a quantitative measurement tool was used for competencies related to 21st-century skills. Data on philosophy inquiry sessions were collected qualitatively by conducting focus group interviews. In the analysis of the data, qualitative and quantitative analysis methods were used together. Again, to ensure internal validity, the research process, the findings, and the findings of the literature were frequently compared and the consistency of the research was examined.

To ensure the internal reliability of the research, all the sessions and the focus group discussion were recorded with the knowledge and consent of the participants. Records were coded and compared by both researchers at different time. Partners and non-partners were examined one by one, and a consensus was reached. Similarly, critical thinking skills written test texts were coded by the researcher and a different researcher who is an expert in the field. Reliability was attempted be ensured by calculating the coefficient of agreement on a randomly selected form. Finally, the raw data collected within the scope of the research were stored as it is for possible examination.

The research was approved by the ethical principles of a state University Social and Human Sciences Scientific Research and Publication Ethics Committee with the decision dated 02.06.2021 and numbered 68282350 /G10.

**Findings**

**Findings Related to First Research Problem**

Table 3 shows the results of the Paired Samples t-Test, which was applied to test whether there is a significant difference in the self-efficacy perceptions of teacher candidates regarding 21st-century skills before and after the philosophical inquiry sessions.

When the analysis results are examined, the pretest and posttest scores of the participants obtained from the overall scale ($t_{15}$ =1.99, $p$>.05), the pretest and posttest scores obtained from the Life and Career Skills subscale ($t_{15}$ =0.41, $p$>. 05), and the pretest and posttest scores ($t_{15}$ =1.63, $p$>.05) obtained from the Information, Media and Technology Skills subscale, it is seen that there is no significant difference. It was determined that the posttest scores obtained from the Learning and Renewal Skills subscale differed significantly from the pretest scores ($t_{15}$ =2.32, $p$<.05). Accordingly, the subscale score, which was X=59.69 before the experimental procedure, increased to X=64.44 after the sessions.

**Table 3.** Paired Samples t-Test results regarding the 21st-century skills proficiency perceptions of teacher candidates

| Variable | Category | x | N | ss | sd | t | *p* |
|---|---|---|---|---|---|---|---|
| 21st-Century Skills proficiency Scale (Total) | Pretest | 168.25 | 16 | 19.97 | 15 | 1.99 | .064 |
| | posttest | 175.25 | 16 | 15.32 | | | |
| Learning and Renewal Skills Sub-Scale (16 items) | Pretest | 59.69 | 16 | 9.31 | 15 | 2.32 | .035* |
| | posttest | 64.44 | 16 | 7.11 | | | |
| Life and Career Skills Sub-Scale (18 items) | Pretest | 75.38 | 16 | 8.70 | 15 | 0.41 | .688 |
| | posttest | 75.94 | 16 | 7.46 | | | |
| Information, Media, and Communication Skills Sub-Scale (8 items) | Pretest | 33.19 | 16 | 4.59 | 15 | 1.63 | .124 |
| | posttest | 34.89 | 16 | 3.89 | | | |

* $p<.05$

**Table 4.** Paired Samples t-Test results on the critical-thinking skills of pre-service teachers

| Ennis-Weir Critical Thinking Written Test | N | x | ss | sd | t | *p* |
|---|---|---|---|---|---|---|
| Pretest | 16 | 7.65 | 5.29 | 15 | 2.18 | .046* |
| posttest | 16 | 9.84 | 5.88 | | | |

* $p<.05$

**Findings Related to Second Research Problem**

The results of the Paired Samples t-Test, which was applied to test whether the critical thinking skills of pre-service teachers differed significantly before and after the philosophical inquiry sessions, are given in Table 4.

It is seen that there is a significant difference (p> 0.05) between the pretest and posttest scores of the pre-service teachers from the Ennis-Weir Critical Thinking Written Test ($t_{15}$ =2.18, $p<.05$). When the pre-service teachers' averages before and after the experimental procedure are examined, it is seen that the critical thinking skill scores of X=7.65 increased to X=9.84 after the philosophical inquiry sessions.

**Findings Related to Third Research Problem**

Within the scope of the third sub-problem of the research, the participants were asked to evaluate the philosophical inquiry sessions. The results obtained from the interviews conducted for this purpose, focusing on the opinions of the participants on the philosophical inquiry sessions, philosophical inquiry, expectations from the sessions, session evaluation, and suggestions about the session.

**Findings on Philosophical Inquiry**

As a result of the analysis of the interview data, the theme of philosophical inquiry was divided into three sub-themes: definition, asking questions, and philosophical questions. The codes determined for these sub-themes are given in Table 5.

**Table 5.** Sub-theme and code table for the theme of philosophical inquiry

| Theme | Sub-Theme | Code |
|---|---|---|
| Philosophical Inquiry | Definition | Argument |
| | | Thinking |
| | | Deep inquiry |
| | | non-judgmental / unprejudiced environment |
| | Asking question | Freedom |
| | | Development |
| | | Interpretation |
| | Philosophical question | No only one correct answer / with multiple correct answers |
| | | Deriving a question from a question |

When Table 5 is examined, it is seen that the definitions of philosophical inquiry of the participants' views are combined in the codes of discussion, thinking, deep inquiry, and non-judgmental environment. Participants tried defining the concept of philosophical inquiry based on their experiences and during these definitions the ability to ask questions and the distinction between questions and philosophical questions emerged. In general, the participants defined philosophical inquiry as thinking deeply, trying to understand, examining, and analyzing. Trying to understand without judging, and questioning thoughts without looking for right or wrong are the other expressions used by the participants when describing the philosophical inquiry process. Examples of participant views are as follows:

*"Even though philosophical questioning may seem like a big thing when we look at it, I think it is something everyone should do. Because most of the time we live life very straight and sometimes we live like robots without thinking about anything. That's why I think philosophical inquiry has an important place in our lives. (P2)"*

*"I can actually explain it as a way of thinking. Thinking more about a certain topic than ever before. Learning to think. Philosophically, I define it as questioning, being able to explain an event from different perspectives and looking at it from a different perspective. (P6)"*

*"I think the philosophical inquiry is a deeper inquiry. Because in these sessions, we could move toward different branches than anything else. Because of this aspect, I think it has a deeper meaning and a deep way of thinking. I think there is no such definitive answer in philosophical inquiry, so there is a deeper style of inquiry. (P15)"*

*"I think it is something that every person should do for their life, and as our friend said here, it is important to question each other's mistakes or in themselves to see their shortcomings. That's why I think the philosophical inquiry is important. That is to say, I think the philosophical inquiry is something that every person should do, not only for us but also to realize a mistake, deficiency, or a situation in any field in life or elsewhere (P17)*

*"It is a beautiful thing that there is no right or wrong, yes or no, in philosophical inquiry, in philosophy. Because there are many people whose lives are only black or only white and who have certain judgments. But I also think that nothing is certain. Philosophical inquiry is good in that sense. Even people who have not acquired it can acquire this skill through philosophical inquiry. It can be*

*understood and understood in the process that there can be no definite right or wrong. And in the same way, in an environment where no one judges anyone, because of their opinion "oh what a stupid idea" or "what a great idea", " oh yes definitely like that or not", the absence of these, knowing that they will not be judged by other good things. One of its aspects is philosophical inquiry. I think it is beautiful because it is far from judgments and definite lines. I think it adds something to everyone. (P10)"*

*"Philosophical questioning…we are not looking for the (correct) answer, nor are we looking for the right or wrong. This is what I learned the most. There is no right or wrong in philosophy. Everyone has their own opinion. Everyone is right in their way. (P1)"*

Philosophical inquiry sessions proceed in the axis of a discussion question determined by the group based on the stimulus presented. In this context, the participants also made explanations on questions and asked questions while interpreting philosophical inquiry. Based on their experiences during the session, they expressed whether they could ask questions and their perspectives on asking questions. When the expressions were examined, it was observed that the sub-theme of asking questions consisted of the codes of freedom, development, and meaning. Direct quotations from the participants' views on these codes are given below.

*"Asking questions reminds me of progress. Because the thing called development occurs when something is questioned, something creates a question mark in the mind. So this is the story of most inventions that exist now, there is questioning, asking, and wondering. That's why asking questions reminds me of progress. So I think there is a compelling connection between them. (P17)"*

*"I think asking questions helps discover and understand things. And sometimes it expresses my meaning. Making sense of some things in my mind by asking questions. The question I ask allows me to make sense of it both with the answers I gave in my own mind and the answers I received from the other party. (P2)"*

*"... this is how I look at an event, he looks at it from a completely different place, I think he was asking such a question, he had the thought. Others were asking irrelevant questions. I did not understand the questions and I could not make sense of them. But it may seem irrelevant to me. It made me think, I am looking from here, but it means how are others looking at it, it made me think that they are asking such a question. There is no judgment, I was just trying to reconcile the thought I had with the thought that my friends asked. I was trying to find its relevance to the topic, which got me thinking. (P5)"*

P10 said, "Asking questions means freedom for me first. It means to be able to think, to show what one thinks, and to show that not everything will be accepted unconditionally. Apart from these, I do not remember which of our friends gave examples, but in any system, we are in about interrogation; (this may be a small class, or it may extend to the country we live in) asking questions tells me being able to see the faults in every system, and to express that he/she sees this. I am here and I do not unconditionally accept everything you do as it is, I can ask, why did this happen?". When the views of the participants are examined in general, it can be said that there is a general awareness about asking questions and that the participants have a positive attitude toward asking questions.

It was also examined by the participants whether there was a difference between the philosophical question and other types of questions. Nearly all the participants defined the philosophical question as "a question that does not have a single correct answer and that has justifications to defend according to different points of view". In this context, in the sub-theme of the philosophical question, the views of the participants were united in the codes that did not have a definite correct answer and that derived a question from the question. Examples of participant views on the codes are as follows:

*"I think of it as something that does not have a definite result, has no end, can be thought from every aspect and can show all kinds of differences. In other words, it is not a normal questioning, but a much deeper, much more meaningful one. (P15)"*

*"The philosophical question, I think, is philosophy itself; an act of thinking and questioning. Therefore, any question that can make us question an event, a fact, or a situation is a philosophical question in my opinion. The existence of the event, the situation, the fact, the reason for its occurrence, the reason for its existence, why it is there or why it is like this? I think every question that can be asked through an inquiry is a philosophical question. (P17)"*

*"I think the questions that have endless answers or no answers, that the question we ask is more important than the answer, are philosophical questions. (P5)"*

*"to investigate an event in depth.. We can also create new questions in philosophical questions or find different answers. (P2)"*

*"I think philosophical questions can be more meaningful questions about life. If will to distinguish between the two. It sounds like a more inquiring, more concise, more self-encompassing question style. (P6)"*

When the views of the participants are examined in general, it can be said that the distinction between factual questions / philosophical questions can be made, but philosophical questions are stereotyped with endless loop / questions with no definite answer. The fact that philosophy is generally defined as "to be on the road, to be in an endless search" can be thought to cause this perspective.

**Findings Related to The Expectations from Sessions**

Participants were asked what their expectations were from the philosophy inquiry sessions and whether these expectations were met. Participant views were gathered under the sub-themes of opinions on the session process, the need for socialization due to the pandemic, and the need for personal development. The codes associated with these sub-themes are given in Table 6 below.

**Table 6.** Sub-Theme and Code Table for the Theme "Expectations from Sessions"

| Theme | Sub-Theme | Code |
|---|---|---|
| Expectations from Sessions | Session Process | Discussion environment |
| | | Different perceptions |
| | | Interest in philosophy |
| | Socialization | Need to speak |
| | | Good time |
| | Self-improvement | Overcome the excitement |
| | | Thinking skill |

When Table 6 is examined, it is seen that the reasons for participating in the session process are being interested in philosophy, wondering about different perspectives, and wanting to experience the discussion environment. Examples of participant opinions that created the aforementioned codes are given below.

*"..as different perspectives, I got involved in order to notice them. (P15)"*

*"Sometimes, there were parts that I found really irrelevant. Because sometimes we went too far. I never thought about it, for example, while watching that video. But later on, when I looked at them, it seemed as if they actually had consent. Sometimes, there were very nice multi-point shooting questions. But sometimes the questions that I liked very much did not work out, I said we can discuss this too. It was enjoyable overall. I think we suggested different good things. (P6)"*

*"..we thought it could add a function to us. I wanted to participate because we think that we can look at things from other dimensions in a philosophical sense and that this application can give us this. (P17)"*

*"My friends said that we were arguing among ourselves. I was already good with philosophy, and I was a person who liked this kind of talk. After that, I said I'll come too then. That's how it evolved. That's how I got involved. (P5)"*

The sub-theme of the need for socialization was also formed under the theme of the expectations of the participants from the philosophy questioning sessions. The sessions held online during the full closure periods experienced during the pandemic process created an opportunity for the participants to be included in a group that came together for a common purpose. When examined in this context, the participants evaluated the sessions as a means of having a pleasant time and speaking / being together with peers. Examples of expressions related to the codes obtained are as follows:

*"There was not much opportunity to socialize in the distance education process anyway. Like everyone else, I was bored too.. I did not come thinking that I would learn any knowledge. So I just came to enjoy. (P10)"*

*"I was alone at home so much that I needed to talk. I did not miss this opportunity either. It was better that way. Something different happened when we closed in that house, at least for me. It was something to pass the time. My time passed, it was better, and it was more enjoyable and productive. (P13)"*

Participants also consider philosophical inquiry sessions as a means of personal development. It has been seen that they aim to gain benefits such as expressing their thoughts properly in front of people they have just met, and organizing their feelings and thoughts, with sessions to be conducted on different topics. Examples of direct quotations regarding the codes of overcoming excitement and thinking skills arising from the aforementioned expressions are given below.

*"Frankly, I'm a very excited person and I'm the type who can get very excited when I talk like that. That's why I said that I would have broken a little bit and - I'm having a little trouble thinking about things in all their dimensions - maybe I would have broken that too. (P2)"*

*"Before I started these sessions, I was gaining academic knowledge on the development of thinking skills. So, I was interested in it. Afterwards, our teacher recommended us to attend this session. Despite my willingness to do so, I thought that we could only do these thinking skills through such mutual sessions and discussions. I thought it could happen like this. (P4)"*

**Findings Regarding the Session Evaluation**

While the philosophical inquiry sessions were held, the session was evaluated in general after each completed session. Additionally, in the interviews held after the completion of the experimental process of the research (12-session process), the participants were again asked to make evaluations about the sessions. While evaluating the process, the participants first emphasized their thoughts on the process and then the benefits they gained in the process. Finally, they presented their criticisms of the sessions by thinking about how it could be better. The themes, sub-themes, and codes that emerged after the analysis of participant opinions are given in Table 7.

**Table 7.** Sub-Theme and Code Table for the Session Evaluation Theme

| Theme | Sub-Theme | Code |
|---|---|---|
| Session Evaluation | Process | Feeling |
| | | Working |
| | | Questions |
| | Contribution | Different perspective |
| | | Daily life |
| | | Development |
| | Criticism | Criticism of the sessions |
| | | Criticism of the participants |
| | | Personal criticism |

Under the sub-theme of the evaluation of the session process, the participants' feelings during the sessions, their views on the way the sessions were conducted, and the question codes created in the sessions were revealed. Participants preferred to convey their experiences starting from the emotion they felt. Examples of these views are as follows:

*"I actually enjoyed it overall. Generally, I can say that it is pleasure based on the basis of emotion. It was a pleasant conversation. I mean, it was very enjoyable for me to come together with different mindsets at the point of analyzing people and to create such a philosophical environment for questioning. (P5)"*

*"It was a productive time for me and it made me feel productive. That's why it was good. I want to participate again. It is nice to learn about different views on a subject, as the reason is also different, it is nice to listen to people and understand their points of view. (P15)"*

*"At the end of the sessions, the general evaluation, re-speaking and reviewing of our shortcomings or the right things we have done was also good, in summary form. And it felt good. I enjoyed it, and I felt that I was productive. I'm not here to learn anything. But I went to learn something. So, I want to join again. For example, we all think of philosophy very abstractly, but even when talking about these abstract issues, we always gave examples to support our views. I think it was good in terms of explaining abstract things by concretizing. Supporting our views, how can we refute the other side's view, etc. I think that it is effective on these issues as well. (P10)"*

*"What I liked most was that we were discussing opposing ideas a lot. For example, some of our friends were saying something different, then we were trying to explain something different to him by giving an example. And we were falling into a paradox or something, I wonder if it was so or not. These were the parts that raised my mood the most. Apart from that, it was nice to ask questions, and it was also enjoyable to think about him. But in general, discussing opposing views was what got me more moody. (P6)"*

*"Our questions varied in our sessions. In particular, I think this was the most beneficial for us. In terms of asking philosophical questions, if we open it now and watch it together, I think the way every person asks questions from the first recording to the last recording or the way they approach the event we are examining has changed. Especially when we look at the first video, we tried learning these questioning techniques and talk about the subject in our first meeting. I think the questions people ask change as they get involved in philosophy, and we have changed too. That's why I think that the biggest benefit of this activity is this activity. He's made good progress, so if will to wrap it up in one sentence. (P17)"*

*"I think it made me open up more. It made me feel comfortable in terms of asking questions and speaking. (P2)"*

*"Sessions have been very challenging for me at times. So, in some sessions, I really didn't know what to think or what to answer. Sometimes, there were things that I always wanted to talk about. Plus, I said that I was very surprised, for example, how did we get this out of this subject? The things I said happened. So, our conclusions were surprising. I said, for example, how did we deduce this from the video we watched or the thing we read? I know I must think multidimensional. And I realize that I'm a little lacking in that. So I'm sure this will add something to me. (P4)"*

When the quotations above are examined, it is seen that the participants thought that they had a pleasant and productive time in the philosophical inquiry sessions and that they had positive opinions about the operation of the session process. After the participants evaluated the process, they evaluated the gains of the philosophical inquiry sessions. These views constitute the sub-theme of contribution, and different perspectives are united in the codes of transfer to daily life and personal development. Examples of participant views on these codes are presented below.

*"A topic is clogged, but going on that topic to see if it is more enriching, but it is clogged and repeating on the same topic, returning there, looking for something. (P15)"*

*"Before there were these sessions, for example, when I looked at a person, when something happened, I used to think one-sidedly. I never thought of other aspects. After these sessions, maybe because of my desire to improve myself, I started to think about more aspects. This happened, but maybe there is another side to this. These meetings gave me such advantages (P13)"*

*"Actually, I think about a subject, yes, rather than thinking that, yes, he thought so too. Actually, from his perspective, this could be the case. This is a logical view, so I can say that I am more inclined to understand other people's thoughts. I could see more from their perspective. In fact, when you look at it according to him, yes, this is logical on this side, but it seems like there may be illogicality on this side. (P15)"*

*"Before I attended the sessions, it was already my specialty, to ask why it is so, to go on top of it. Everything could be discussed, in my opinion. The thing that changed after the philosophical sessions were to want the people in front of me to acquire it as well. I strived for this. For example, my friend and I are discussing a topic, a non-philosophical one from normal daily life. While discussing that subject, I say "but why this, but why this way", I even create the antithesis there to my own opinion. According to her, what I'm doing is contradicting myself, inconsistent behavior. But I say you should question this and that, I don't think these are true, you should also question them. No, I'm sure it's true, don't blame me, I've encountered things like. My resistance dropped, and it collapsed a little. But that's how it affected my daily life for a while. Because it was so beautiful that in those sessions, I think everyone was completely open to questioning. In other words, there were some of our friends who remained constant in their ideas. But in general, everyone was open to anything. So I wanted this environment to be everywhere. (P10)"*

*"Generally, I think these activities are activities that meet the mental needs of people. For example, we approached the texts critically. During these sessions, I realized a need. I realized that I lacked to defend my own perspective more strongly. (P4)"*

*"How well we can convey what we know or what we think. How big is our vocabulary or how is our accent? In fact, these are also developing in a way besides questioning, philosophical questioning. In this respect, I think it is so valuable both in terms of learning for questioning and in terms of improving ourselves. (P5)"*

*"What changed in my life was observation. So, I seriously felt it. So, I started to observe the movements of the people I saw around me and question this. For example, a person comes, why he is so tired? What could have bothered him? or, for example, I started to examine people in public transport. I started to observe all the movements he made, his posture there, and the movements he made after sitting down (P17)."*

*"For example, if I am watching a movie, it has become more difficult for me to find the main idea of that movie and shoot it. Because I'm digging deeper, I also think the opposite of what came to my mind. It's as if there is someone in front of me saying the opposite of what I said. This is what happens in philosophy too, opinions and opposing views. It happened that way. So that's how it started. That's how the sessions changed my next life. I'm trying to go deeper. (P1)"*

When the quotations above are examined, it is seen that the participants make a conscious effort to transfer the experiences they gained from the sessions to their daily lives. All the participants describe the sessions as contributing to them and can give examples of this contribution.

The final stage of the evaluation of the session process is the criticism. In the statements of the participants, criticism of the process, criticism of other participants, and self-criticism about their own performances were encountered. Criticisms are often related to not being able to produce philosophical questions, thinking one-dimensionally while producing questions, not being able to embody the idea, not being able to give examples, and equal participation. Participant 1 said, "For example, we sometimes got stuck in the sessions. Either he

didn't change his mind or his perspective was always the same. That is, while I was looking from here and my friend was looking from there, I was looking from where he was looking and trying to understand and not talking from there. I was saying that here again, he was saying that there again. I do know if empathy was also effective. I guess we couldn't say that he was right in these aspects. We were stuck there. Did we get over it, we just got over it. I mean, it's not much, but I think we did it anyway. (Is it possible to transcend?) This is possible. As I said, we can change the question a little bit. Well, we can change the question by saying, "Can it be like this?" We should not look at the issues as I have just explained. If he stops looking, the discussion can develop again. I was one of those who stayed and watched. You know, when something happens to a person, he cannot say that I am wrong or that you are telling the truth. I have also had some, but as I said at the beginning, I was thinking after the sessions were over. So, it actually happened like this. You know, when someone said something, it was also tried refuting it. I wasn't/can't accept that my own thought was rotten. I mean, I was saying yes inwardly, but I couldn't say yes in public in the session. Once it came out of my mouth. But when the session was over, I was rethinking everything, that's when I changed my thoughts, and I saw that what you said on that side was true. I could see that there were mistakes in what I said. (P1)", he examined the whole process in terms of himself and other participants. When all expressions are examined in general, it can be said that the participants evaluated the process, other participants, and themselves objectively. The point that almost all participants agree on is the difficulties experienced in producing questions. Examples of expressions related to criticism are given below.

*"I think sometimes I ask too straight questions. So I think I'm asking a direct question without thinking deeply. (P2)"*

*"I also want to do self-criticism. In some sessions, I approached monotony in the discussions. I approached from a single dimension, for example, from the cognitive dimension. According to my friends, I remained a bit abstract in the discussion. I could not participate in their discussions. That's why my questions weren't answered either. So disconnected from friends (P4)"*

*"I would like everyone to participate equally and a lot. I mean, there were times when I hesitated to speak because of that, there were times when I was hesitant. Because there were moments when I felt tired of my own voice. You really tried to help with this. You named those who did not speak and added them. But I also wish there was more interaction. I would like everyone's participation percentage to be above 60 or above 70. (P10)"*

*"Sometimes—I'll say this for myself—I had a hard time asking questions. This bothered me a lot, for myself. I'm criticizing myself. That's why I had such a hard time there. Sometimes we asked questions, but I could not answer. I couldn't find an answer to give. I guess I didn't think too much. So this is my shortcoming. (P2)"*

## Discussions

The dual role of teachers, arising from being both subjects and objects in educational transformations, makes teacher training a growing and increasingly challenging field. It is thought that teachers will act as a catalyst for the effective acquisition of 21st-century skills. This makes it necessary for teacher education to focus on educating teachers who have these skills and can teach them. Based on this idea, this study examined the effects of philosophical inquiry sessions on pre-service teachers' 21st-century skills and critical thinking skills. The quantitative and qualitative findings of the research showed that philosophical inquiry positively affects both 21st-century learning and renewal skills and critical thinking skills. Based on the experimental process, which was carried out in the form of philosophical inquiry sessions in which 12 different stimuli were used, it was determined that it had a positive effect on the critical thinking skills and renewal and learning skills of pre-service teachers. There was a significant difference in favor of the posttest between the participants' Ennis Weir critical thinking skills written test pretest and posttest scores, and between the 21st-century skills scale renewal and learning skills subscale pretest-posttest scores. In the results of the interviews with the pre-service teachers, it was stated by the participants that philosophical inquiry sessions drew attention to skills such as asking questions, developing different perspectives and understanding the opposing view.

In the study, an increase was observed in the scores of pre-service teachers regarding their critical thinking skills after the philosophical inquiry sessions. According to Çalışkan (2019), it is important to know the methods of philosophy, to have philosophical awareness, and to live philosophy to be a critical thinker. To live philosophy, it is necessary to have critical thinking skills (Çalışkan, 2019). Philosophy emerges through clarifying the concepts, revealing the relations between the concepts, grounding and testing the ideas, and examining the logical structure of the reasoning (Cevizci, 2010). In this context, philosophizing is possible by having critical thinking skills, and being able to think critically is possible by philosophizing (Çalışkan, 2019). According to Alkın-Şahin and Tunca (2015), the teacher needs to have knowledge and awareness of the elements of philosophy and the characteristics of philosophical attitude and thought to gain critical thinking in teaching. A teacher who wants to gain critical thinking skills is expected to encourage students who think differently and to listen without prejudice. Using materials that require multidimensional thinking and looking from different angles, it is requested to include activities that require questioning. It is also asked to direct students to consistency in thought, participation in discussion, and clarification of information, concepts, ideas, and thoughts. It is expected to encourage the questioning of the accuracy and reliability of information (Alkın-Şahin & Gözütok, 2013). Scholl et al. (2014) found that philosophical inquiry sessions improved teachers' ability to select and apply pedagogical methods in their experimental study with the participation of 59 classroom teachers. Similarly, in Nichols et al. (2015)'s experimental research with the participation of 18 teachers and 227 students on science teaching using philosophical inquiry, it was determined that students develop advanced inquiry skills and inquiry and reasoning behaviors such as developing ideas, exploring alternatives, exploring concepts, testing hypotheses, and drawing logical conclusions. When viewed longitudinally (the study covers two years), it increased the transfer between learning contexts. Alkın-Şahin and Gözütok (2013), emphasized the necessity of reflecting critical thinking on teachers' behavior as a whole to raise critical thinking of individuals. They stated that behavior indicative of critical thinking such as establishing relationships, searching for reasons and evidence, tolerating ambiguities, being open, asking high-level questions, being unbiased, seeking the truth, delaying judgment, doubting, and being curious (Alkın-Şahin and Gözütok, 2013). Setting an example for students in critical thinking, and creating a tolerant classroom environment for

contradictions, inconsistencies, different opinions, and discussion is important for the mental development of individuals. This should be ensured not only for students or the classroom environment, but also for any environment where speech and discussion take place and truth is sought as critical thinking is the power of disciplined thinking. It is about learning to think for oneself and being oneself or individuating oneself. In other words, critical thinking is the practice of personal empowerment and enrichment that results from learning to use the mind to its full potential. The application ground of this practice is questioning (Durhan, 2021). Therefore, teachers need to have experience, skills, and attitudes regarding such actions in terms of the teaching processes they will prefer in their classrooms. It is thought that providing prospective teachers with philosophical inquiry sessions during their pre-service education will enable them to develop their critical thinking skills and include them in their own teaching life.

Within the scope of the research, pre-service teachers were asked to convey their feelings and thoughts about the philosophical inquiry sessions. Based on the participants' experiences of the philosophical inquiry session, they defined it as a discussion environment, the art of thinking, deep questioning, and a non-judgmental environment. Additionally, they emphasized that the sessions shaped by a discussion question determined by the participants provided them with a space of freedom, and they realized the importance of asking questions. Philosophical inquiry is a content-based approach that teaches thinking skills through dialogues focusing on philosophical issues arising from texts or stories. It requires a practitioner to form an inquiry community that develops participants' skillful inquiry, clear logical thinking, and philosophical thinking skills (Yu, 1999). In philosophical inquiry societies, people are encouraged to think critically, creatively, and thoughtfully, as Lipman describes, in order to question, hypothesize, analyze, test, evaluate, synthesize, and generalize information to daily experiences (Scholl et al., 2014). Debates continue about whether philosophical inquiry is a method or not (Fynes-Clinton, 2018). Additionally, it is assumed that participating in philosophical dialogues by including philosophical inquiry into the programs as a teaching method in teaching science to students will provide students with perspectives on the foundations of scientific questions, and it is emphasized how such questions can be systematically detailed (Schjelderup, 2009). According to Çakır Kaytancı and Dombaycı (2020), in the learning environment of the inquiry community, the individual strengthens his/her own voice with the voice of others. Being together with the community, thinking together, questioning and gaining a culture of discussion constitute the basis of this power. It is hoped that a democratic environment will be ensured in communities accustomed to this way of thinking and that cooperation toward the solution of problems will develop. Inquiry society aims to raise individuals who question what is presented to them, learn, make sense of it, and are active, in action, self-aware, live in society as themselves, and aim to improve them and the society (Sharp, 1987; Kennedy, 2012).

Participants stated that they participated in philosophical inquiry sessions for reasons such as the desire to be included in the discussion environment and to gain different perspectives, their interest in philosophy, and the need for socialization and contribution to their personal development. It can be said that the experimental procedures, which coincide with the last periods of the pandemic, offer the participants the opportunity to step out of the routine and talk about a different subject. When considered in the context of being open to new and different perspectives and critical thinking in the learning and renewal sub-dimension of 21st-century skills, it can be concluded that these dimensions overlap with the objectives of philosophical inquiry. According to Lipman (2003, as cited in Scholl et al., 2014), the pedagogical structure of the philosophical inquiry community is based on the social, constructivist learning theories of Dewey and Vygotsky. Participants work, analyze, and evaluate collaboratively with the facilitator to explore concepts. It builds new understandings based on the thought of society and reflects on thinking (Fynes-Clinton, 2018). Therefore, it emphasizes an active learning process and the student's personal participation in learning (Cam, 2011; Scholl et al., 2014). However, in the evaluation of the philosophical inquiry sessions of the pre-service teacher, it is seen that their expectations from the process are met and they contribute to both their daily lives and personal development by gaining different perspectives. On the other hand, pre-service teachers evaluated the sessions with a critical approach and offered solutions to the sessions, the participants, and the situations they saw as their own problems. In this context, it can be said that pre-service teachers analyze the process by self-criticism and self-evaluation.

In conclusion, to train global teachers (Ikeanyionwu & Enwere, 2020) who teach their students to learn, inspire their creativity by supporting them, provide new learning opportunities, and encourage lifelong learning, environments that enable teachers to be equipped 21st-century skills and to think critically in pre-service education processes are required. The philosophical inquiry community is one of the instructional practices targeting these skills. Classes can be transformed into communities of philosophical inquiry, with sessions designed as field-independent or content-based. In this way, participants can be provided with comfortable, safe, and supportive learning environments (Kennedy 1998; Kennedy, 2018; Kennedy & Kennedy, 2011; Lipman, 1995; Sarp, 1987). When communities of philosophical inquiry are supportive and include all students, it minimizes the risks of thinking and provides an environment where students know that their ideas will be valued and taken into account without fear of humiliation (Fynes-Clinton, 2018).

## Conclusions and Recommendations

Considering all these explanations, it can be said that alternative methods and techniques to be employed in teacher education will support teachers to become the global teachers of the future. In the process of gaining 21st-century skills, traditional methods can be used in the traditional classroom environment, as well as alternative methods whose goal is to develop thinking skills and life skills together. Such activities in the classroom can be employed on a continuous or part-time basis. For this purpose, educational support can be given to teachers regarding the application of the method in question. In this study, philosophical inquiry is considered to be a try method for this purpose. Since the research area was designed independently, it is in a single-group pretest-posttest model. A similar study can be designed as content-based and tested with experimental and control groups. In this study, the effect of philosophical inquiry on critical thinking skills was tested based on the basis of the relationship between critical thinking and philosophical thinking. The study can be repeated with different dependent variables (epistemological belief,

automatic thinking, and creative/reflective thinking). Another dependent variable of the research is 21st-century skills. In a different study, the relationship between philosophical inquiry and lifelong learning skills can be tested.

### Author Contributions

All authors were equally involved in all processes of the article. All authors read and approved the final version of the study.

### Ethical Declaration

This study was conducted with the approval of Pamukkale University Social and Human Sciences Scientific Research and Publication Ethics Committee (Number: 68282350/22021/G10) dated 02.06.2021.

### Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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**Extended Abstract**

When 21st-century skills are considered in terms of basic and literacy skills, critical thinking is one of these basic skills (Cansoy, 2018) means that the importance of critical thinking will continue in the future (Çalışkan, 2019). Critical thinking skill is a way of thinking that is logical, reflective, and aimed at deciding what to do and what to believe (Ennis, 1985). It is possible to question life; to distinguish between right and wrong; to criticize increasingly contaminated information, claims and propositions; to be honest in their judgments; to base their opinions on solid foundations; and to eliminate dependence on authority by thinking critically (Alkın-Şahin & Tunca, 2015). Therefore, it is an inevitable necessity to implement 21st century skills in schools and to provide them to students (Soland, Hamilton, & Stecher, 2013). Students can acquire 21st century skills with teachers who have these skills (Harris et al., 2009). Raising critical thinking individuals with critical thinking knowledge, skills and attitudes is possible with teachers who care about their students' acquisition of critical thinking skills and can apply appropriate methods and techniques in the classroom (Önal & Erişen, 2019). This situation draws attention to the methods and techniques that can be used in teaching both 21st century skills and critical thinking skills. Pre-service teachers should gain knowledge, skills and experience in appropriate methods and techniques starting from the pre-service period. Philosophical inquiry is a method that can be used to acquire these skills. According to Lipman (1995), critical thinking develops conceptualization, reasoning, generalization and research skills. He also argued that developing critical thinking through interaction with peers is much easier than teaching it technically. Philosophical inquiry is an approach that meets all these criteria. Philosophical inquiry sessions, which first started as "Philosophy with Children", were later called inquiry community and collaborative inquiry community and were carried out with participants from different age groups (Kennedy 1998; Kennedy, 2018; Kennedy & Kennedy, 2011; Lipman, 1995; Sarp, 1987). The philosophical inquiry sessions consisted of 10 stages. Relaxation exercises, determining the rules of the session, presenting the stimulus (story, object, picture, etc.), thinking about the stimulus, asking questions, linking questions, choosing the question to be asked for philosophical inquiry, developing thoughts about the question, following each other's thoughts, and encouraging questioning. It can be said that all these stages directly affect thinking and questioning skills (Trickey & Topping, 2004).

The relationship between philosophy and critical thinking stems from the similarities between the characteristics, rules, methods or concerns of philosophy and the principles, dispositions and skills of critical thinking. Philosophical thinking is a critical/questioning way of thinking, and the rules and methods of philosophical studies and the theoretical concerns of philosophy (clarity, systematicity, etc.) are parallel to the principles of critical thinking. Doing philosophy requires critical thinking and thinking is a philosophical activity. The fact that philosophical attitudes and critical thinking tendencies are coordinated and that individuals who are described as "wise" and "critical thinkers" have the same characteristics shows that there is a strong relationship between philosophy and critical thinking (Alkın-Şahin & Tunca, 2015). Philosophical inquiry sessions, which first started as "Philosophy with Children", were later named as inquiry community and collaborative inquiry community and were carried out with participants from different age groups. Philosophical inquiry sessions start with a stimulus (story, object, picture, video, etc.) and are aimed at thinking about the stimulus, asking questions, establishing connections between questions, choosing the question to be questioned, developing thoughts about the question, following each other's thoughts and opening ways of questioning. Philosophical inquiry sessions are a learning environment dating back to Socrates and finalized by Lipman in the context of philosophy programs for children (Çakır-Kaytancı & Dombaycı, 2020). According to Kennedy and Kennedy (2011), a philosophical inquiry session is a deliberate community of conversation consisting of a group of people who participate consistently and regularly.

While the debate on whether philosophical inquiry is a method or not (Kohan & Carvalho, 2019), the philosophical inquiry community also offers the opportunity to raise individuals with basic 21st century skills in increasingly crowded educational environments (Çakır-Kaytancı & Dombaycı, 2020). Therefore, it is thought that philosophical inquiry practices will provide a learning environment that allows pre-service teachers to develop both 21st century skills and critical thinking skills. When the literature is examined, pre-service teachers' 21st century skills, their perceptions of these skills (Akbay et al., 2020; Erten, 2020; Orhan Göksün & Kurt, 2017; Özdemir Özden et al., 2018; Varki 2020; Vebrianto et al, 2020) and critical thinking skills (Çolak et al., 2019; Akkaya et al., 2018; Aybek & Aslan, 2017; Deringöl, 2017) and critical thinking skills (Çolak et al., 2019; Akkaya et al., 2018; Aybek & Aslan, 2017; Deringöl, 2017). However, it is noteworthy that studies on philosophical inquiry are mostly conducted with preschool and young children (Gasparatou & Kampeza, 2012; Güven, 2019; Işıklar, 2019; Karadağ & Yıldız Demirtaş, 2018; Yıldız-Demirtaş et al., 2018). However, there is no study on the contributions of philosophical inquiry sessions that include both 21st century skills and critical thinking skills to pre-service teachers. Therefore, the main purpose of this study is to examine the effects of philosophical inquiry sessions on 21st century skills efficacy perceptions and critical thinking skills in the context of pre-service teachers' views. The research was designed in the "One Group Pre-Test - Post-Test" model, which is one of the experimental models. The main study group of the research consisted of 17 pre-service teachers (13K, 4E) studying at the faculty of education in the spring semester of the 2020-2021 academic year.

The philosophical inquiry sessions implemented within the scope of the research were held for a total of 12 weeks starting from the spring semester of the 2020-2021 academic year. According to the availability of the majority of the participants, the days and times of the sessions were determined between 16.05.2021 and 01.08.2021. However, since the sessions were conducted online, the number of participants in the sessions varied, which led to connectivity problems. Before starting the philosophical inquiry sessions, an introductory meeting was held on 08.05.2021 and information about the process was given. On 12.05.2021, a pilot philosophical inquiry session was held and then pretests were administered. Then, starting with the actual applications, 12 philosophical inquiry sessions were conducted over stimuli consisting of 9 reading passages and 3 videos.

In the study, "21st Century Skills Competency Perceptions Scale for Preservice Teachers" and "Ennis-Weir Written Critical Thinking Test (E-YETT)" were used as quantitative

data collection tools, and a semi-structured interview form was used as qualitative data. Descriptive statistical methods and Paired Samples t-Test were used to analyze the quantitative data obtained from the research, while qualitative data were analyzed by content analysis. This study examined the effects of philosophical inquiry sessions on pre-service teachers' 21st century skills and critical thinking skills. The quantitative and qualitative findings of the study showed that philosophical inquiry positively affected both 21st century learning and renewal skills and critical thinking skills. 12 different stimuli were used in the form of philosophical inquiry sessions, which had a positive effect on pre-service teachers' critical thinking skills and renewal and learning skills. A significant difference was found between the pre-test and post-test scores of the participants' Ennis Weir critical thinking skills written test pre-test and post-test scores and the 21st century skills scale renewal and learning skills subscale pre-test post-test scores in favor of the post-test. In the results of the interviews with pre-service teachers, it was stated by the participants that philosophical inquiry sessions drew attention to skills such as asking questions, developing different perspectives and understanding the opposing view.

Within the scope of the research, pre-service teachers were asked to share their feelings and thoughts about the philosophical inquiry sessions. Based on the participants' experiences, they defined a philosophical inquiry session as a discussion environment, an art of thinking, deep questioning and a judgment-free environment. They also emphasized that the sessions shaped by a discussion question determined by the participants provided them with a space of freedom and made them realize the importance of asking questions. Philosophical inquiry is a content-based approach to teaching thinking that teaches thinking skills through dialogues that focus on philosophical issues arising from texts or stories. It requires a practitioner to create a community of inquiry that develops participants' skilled questioning, clear logical thinking, and philosophical thinking skills (Yu, 1999). In philosophical inquiry communities, participants are encouraged to think critically, creatively, and thoughtfully as Lipman describes, thus enabling them to question, hypothesize, analyze, test, evaluate, synthesize, and generalize knowledge to everyday experiences (Scholl et al., 2014). There are ongoing debates about whether philosophical inquiry is a method (Fynes Clinton, 2018). It is also assumed that engaging students in philosophical dialogues by incorporating philosophical inquiry into programs as a teaching method in science teaching will provide students with perspectives on the foundations of scientific questions and emphasize how such questions can be elaborated in a systematic way (Schjelderup, 2009). According to Çakır Kaytancı and Dombaycı (2020), in the learning environment of a community of inquiry, the individual strengthens his/her voice with the voices of others. Being with the community, thinking together, questioning and gaining a culture of discussion form the basis of this power. It is hoped that in communities accustomed to this way of thinking, a democratic environment will be provided and cooperation to solve problems will develop. The inquiry society aims to raise individuals who question what is presented to them, learn, make sense, are active, take action, have self-awareness, live as themselves in society, and aim to improve themselves and society (Sharp, 1987; Kennedy, 2012).

Consequently, in order to train global teachers (Ikeanyionwu & Enwere, 2020) who teach their students to learn, inspire their creativity by supporting them, provide new learning opportunities, and promote lifelong learning, environments that equip teachers with 21st century skills and enable them to think critically in their pre-service education processes are necessary. The philosophical community of inquiry is one of the teaching practices targeting these skills. Lessons can be transformed into philosophical communities of inquiry with sessions designed to be content- or domain-independent. In this way, participants can be provided with comfortable, safe and supportive learning environments (Kennedy 1998; Kennedy, 2018; Kennedy & Kennedy, 2011; Lipman, 1995; Sarp, 1987). Because philosophical communities of inquiry are supportive and inclusive of all students, they minimize thinking risks and provide an environment where students know that their ideas will be valued and considered without fear of humiliation (Fynes-Clinton, 2018).

Based on the research findings, it can be said that alternative methods and techniques to be used in teacher education will support teachers to become the global teachers of the future. In the process of gaining 21st century skills, traditional methods can be used in the traditional classroom environment, as well as alternative methods that aim to develop thinking skills and life skills together. Such in-class activities can be used on a permanent or part-time basis. For this purpose, teachers can be provided with training support on the application of the method in question. The study can be repeated with different dependent variables (epistemological beliefs, automatic thinking and creative/reflective thinking). Another dependent variable of the study is 21st century skills. In a different study, the relationship between philosophical inquiry and lifelong learning skills can be tested.