

## Pre-Service Teachers' Evaluations of Creativity in Higher Education

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### Abstract

Creativity is recognized as an integral skill of the 21<sup>st</sup> century. For this reason, it is important for educators to learn how to nurture their students' creativity and find means of evoking it in the classroom. It is believed that creativity, a trademark of this age of innovation, can be developed with a suitable educational environment and can be taught when appropriate conditions are provided. The role and importance of universities, especially faculties of education, which elicit the development and application of new ideas, cannot be denied. This study aimed to help pre-service teachers define creativity and evaluate their undergraduate education processes in terms of gaining and using creativity-based skills. In accordance with the nature of the qualitative research, the study group of the research was selected using a random sampling strategy. The study group of the research consisted of 197 pre-service teachers being educated in the faculty of education of a state university in their final year. The data collected and entered into the online data collection form was acquired using content analysis.

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## Introduction

What is creativity? Who is a creative person? What characteristics does a creative person have? What are the factors that drive people to be creative? Can individuals be creative through education? Can creativity be developed or taught? These questions, which were in the literature for many years, were answered differently by many researchers in many fields and will continue to be answered.

Creativity comes from the root “creare” which means “to make, give birth, create, produce” in Latin. Efforts to systematically conduct scientific research on creativity and define creativity began in the mid-19th century (Andreasen, 2013). Creativity is a “complex” phenomenon that is “indefinable” (Yavuzer, 1989). San (2001) defines creativity as an ability that exists in every individual and can be found in every part of human life, as a whole of processes, an attitude and behavior style covering a wide area from daily life to scientific studies. According to Kırıçoğlu (2002), creativity is the product of a multidimensional thinking mind; it is problem-solving according to Costello (2000) and Wakefield (1992). While Özerbaş (2011) defines the creativity as going out of the ordinary, exploring new ways, looking at life from different perspectives, being curious about the unknown, breaking the imposed line of thought and revealing a new line of thinking, finding different alternative solutions for a specific problem, going off the path followed by others, finding something new that leads to other things, establishing a new relationship or relating to existing thoughts, presenting a new idea, inventing a new technique or method or making additions, Torrance defines the creativity in the form of “sensitivity to problems, disorders, lack of information, missing items, incompatibility, identifying difficulty, seeking solutions, making predictions or developing hypotheses about deficiencies, changing or re-testing these experiments, and then communicating the result to others” (as cited in San, 2001). As can be understood from the definitions, creativity is one of the concepts that contains a wide meaning integrity that cannot be handled unilaterally and has a very important place for the individual regardless of the field.

The creative person, the mental process related to creativity, the characteristics of the environment in which creativity takes place and the creative product that emerges as a result of all these processes constitute the definitions of creativity (Öztaşkın & Bacanak, 2016). Craft (2003), in his classification, deals the creativity with the dimensions of the person, qualities and character of the person, creative process, creative product types and social context in which creative action takes place.

Creativity is also among the skills of the 21<sup>st</sup>-century skills. 21<sup>st</sup>-century skills refer to the skill sets that individuals living in the information age must carry and continuously develop in order to be effective and qualified. It is seen that in the attempts of P21 (Partnership for 21st Century Learning - Partnership for 21st Century Skills), EnGauge, North Central Regional Educational Laboratory

(NCREL), ATCS (Assessment and Teaching of 21st Century Skills), ISTE (International Society for Technology in Education), European Union (EU) and OECD to classify century skills, the creativity has an important place (Boyacı & Özer, 2019). Creativity is accepted as the basis of these skills in higher education as in all educational levels. Creativity is seen as an important dimension in the development of students' knowledge and skills of the content in research and collaboration, in the integration and synthesis, as well as in ensuring cultural continuity (Craft, Jeffrey, & Leibling, 2001; Livingston, 2010).

In today's society, it is extremely important to allow creative industries to use the intellectual and creative imagination rather than to question the economy and power more critically and openly. Creative industries create the information society (Freeman, 2006). Higher education has adapted to the information society in the 21st century and has reached a crucial point in local and global dimensions with its function in raising educated people (Sakınç & Aybarç-Bursalıoğlu, 2012). Unlike the other century, the 21st century included individuals in the higher education process (Ergün, 2011). In this context, universities have become the leading educational institutions that shape society's scientific, economic, technological, social, and cultural development. University is the institution that undertakes to produce and disseminate knowledge that will be universally accepted in all branches of knowledge (Bolay, 2011). Tuchman (2009) defines universities as the city of ideas.

The role of faculties in higher education varies according to their and the discipline they train. For this reason, it is seen that the mission of education faculties is more critical than other faculties. Education faculties, which aim to educate the pre-service teachers in the best way, have to follow the change and all the innovation efforts developing in the world in order to fulfill this task they undertake. Contemporary, innovative, critical thinking and creative pre-service teachers will undoubtedly raise individuals who are beneficial to society with these virtues they gain when they start their teaching life. For this reason, the definition of creativity in this study was carried out with pre-service teachers who were continuing their education in the education faculty. It is thought that the creativity skill, which has become a more important concept day by day with the fast developing innovative age, can be improved with an appropriate educational environment (Fryer, 2006). In this context, it was aimed that pre-service teachers, as future teachers, define creativity and evaluate their undergraduate education processes to gain and use creativity skills. The following questions were asked in this research:

- How do pre-service teachers define creativity?
- What are the opinions of the pre-service teachers about whether the lectures have an effect on creativity when they consider their undergraduate education?

- What are the pre-service teachers' views on whether the instructors are creative or not?
- How do the pre-service teachers evaluate their own creativity?
- What are the suggestions of pre-service teachers for revealing and developing creativity in higher education?

## **Method**

### **Design of the Study**

In this study, it is aimed to reveal and explore the opinions of pre-service teachers, who are in the last years of their pre-service education, on the concept of creativity. The problem is addressed with the interpretative paradigm in order to achieve the purpose of the study and to find answers to research questions. This perspective leads researchers to qualitative research. Merriam (2013) states that all qualitative research is about how meaning is constructed and how people make sense of their lives and worlds, but the primary purpose of basic qualitative research is to reveal these meanings. In this study, the basic qualitative research design was chosen as the design because it is aimed to reveal how the pre-service teachers define creativity, how they evaluate the higher education process in terms of creativity, and their suggestions about applications that will reveal or improve their creativity.

It is not intended to make an in-depth examination in the study. It was aimed to explore the pre-service teachers' definitions of creativity, their views and suggestions on creativity in higher education from a broader perspective. In other words, this study is *a study which is in seeking breadth* (Patton, 2014). Its pursuit of breadth does not mean that it is aiming to generalize. The aim is not to generalize but to present a broad interpretation.

### **Study Group**

In accordance with the nature of the qualitative research, the study group of the research was selected using a random sampling strategy from purposeful sampling techniques. Since the aim of the study is to reveal a wide range of interpretations, it was tried to reach pre-service teachers studying in different branches as much as possible. In addition, since it was aimed to evaluate the higher education process in terms of creativity and to reveal their suggestions for this process, only pre-service teachers who were at the end of the higher education process were studied. The online data collection form prepared in this direction was sent to the class representatives after obtaining the necessary permissions. 197 pre-service teachers answered the data collection form in full. 54 of these pre-service teachers are studying in science education, 53 in pre-school education, 69 in primary education and 21 in Turkish Language education departments.

### **Data Collection Process**

Considering the effort to be spent in the data collection process, it was taken into the center that the research was seeking breadth, so data was collected through a form consisting of open-ended questions. In the data collection form, a question about the definition of creativity in order to reveal the definitions of creativity by pre-service teachers and questions that allow them to evaluate themselves as the components of higher education, lecturers and students were included in order to evaluate the higher education process in terms of creativity. There were also questions to determine what pre-service teachers suggest to reveal and develop creativity in higher education. The form prepared by the researchers was answered by the third-grade pre-service teachers in order to test the comprehensibility of the questions. The final form was made online in accordance with remote data collection, and with the necessary permissions, a research link was sent to the fourth-grade student representatives through the lecturers of the pre-service teachers.

### **Data Analysis Process**

The data obtained in the study were analyzed using an inductive method; therefore, content analysis was used to analyze the data in the study. First of all, the forms obtained online were grouped according to the branches and individual code names were given. Those whose code names were between ÖA001 - ÖA054 were pre-service science teachers, those between ÖA055 - ÖA107 were pre-service pre-school teachers, those between ÖA108 - ÖA176 were pre-service primary teachers, and those between ÖA177 - ÖA197 were pre-service Turkish language teachers. Then, according to the aims of the study, the answers given to the questions in the forms were divided into three groups. In the first group, there were definitions of creativity, in the second group, the evaluation of the higher education process in terms of creativity, and in the last group, the answers given to the questions aiming to reveal their suggestions for creativity in the higher education process. The answers they gave to the questions in each group were arranged on Microsoft Excel. According to the researchers, the words or word groups found to be meaningful were selected and coded. Then, categories were created with those who thought they are related to each other within the obtained codes.

### **Consistency and Credibility**

It can be said that declaring the scientificness of the study, in other words, that the results obtained are based on facts and are compatible with the real ones, is one of the tasks that researchers must fulfill. In qualitative research, whether the results match the reality or not, the concept of credibility, the fact that they are based on facts, in other words, consistency of the results with the collected data is expressed with the concept of consistency. Qualitative researchers have stated that there are many techniques to fulfill consistency and credibility (Merriam, 2013; Patton, 2014). The peer review/examination, audit trail and rich, thick descriptions techniques were used in this study. Peer review is the negotiation and discussion of the findings with colleagues. In this regard, the data

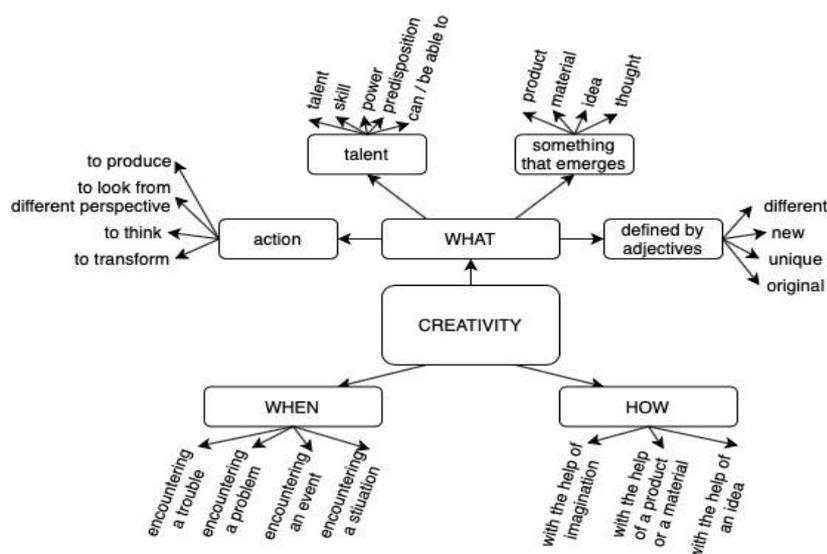
analysis was carried out only by the first author, and discussions were made with the second author about the findings. For the audit trail technique, the analysis process was carried out by supervising with an analyst log. Finally, while presenting the findings, it was tried to present rich descriptions, that is, citations for the categories obtained.

## Results

In the study, it was aimed to reveal how pre-service teachers define creativity, how they evaluate creativity in terms of courses, lecturers and themselves in the process of higher education, and what their suggestions are about practices that will reveal or improve their creativity. The findings obtained in the study designed for this purpose are discussed under three main headings depending on the research questions.

### Pre-service Teachers' Definitions of Creativity

When the pre-service teachers were asked how they define creativity, it was seen that codes and categories related to three different situations were formed in their answers. These situations contain answers about how creativity is defined, when creativity emerges and how creativity emerges. In the explanations about how creativity is defined, the pre-service teachers defined creativity as action, talent, and something emerged and associated it with some adjectives. Regarding when creativity occurs, they stated that creativity emerges in response to a problem, a problem or a situation, an event, or a subject. A small number of pre-service teachers stated that creativity emerges with the help of opinions, ideas, products or materials. The codes and categories obtained from the answers given by the pre-service teachers to the question of how do you define creativity is



summarized in

Figure 1.

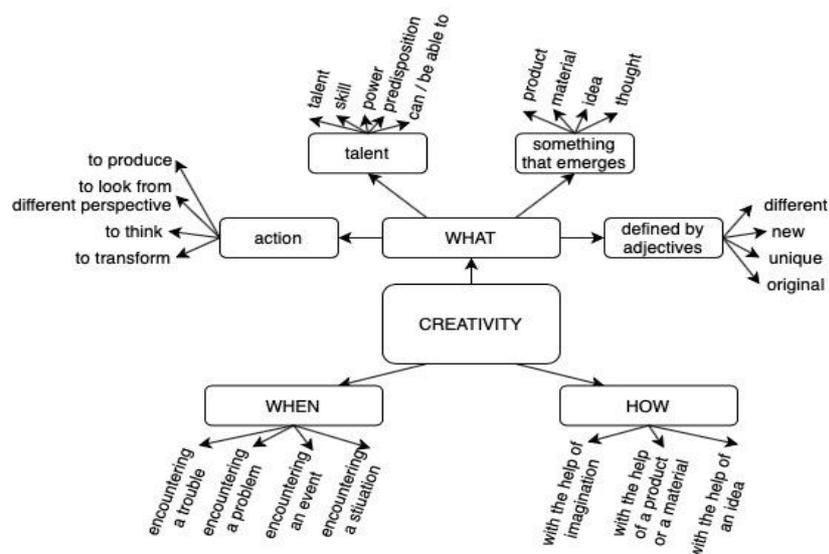


Figure 1. Pre-service teachers' definitions of creativity

### *Creativity Definitions*

Creativity Is Action: When the answers about how creativity is defined are handled, it was seen that more than half of the pre-service teachers define creativity as an action such as producing, looking from a different perspective, transforming and thinking in their answers. The most uttered action by pre-service teachers was to produce. It was understood that while some of the pre-service teachers use the expression to produce openly, some of them talk about the act of producing with expressions such as revealing, discovering, generating, creating, finding, presenting, developing, obtaining. For example, the ‘to bring out’ expression in the statement of the pre-service pre-school teacher with code ÖA060 of “*Creativity is to bring out original ideas, projects*” was considered synonymous with ‘to produce’. It was thought that the verb ‘to present an idea’ in the statement of pre-service Turkish language teacher with code ÖA188’s statement of “*To present a different idea in relation to an event, situation, subject etc.*” has the same meaning as producing an idea. Similarly, the verb ‘to create an opinion’ in the statement of the pre-service primary teacher ÖA174 of “*It is to create a different original product or opinion..*”. was considered as producing an opinion. As seen in these examples, the pre-service teachers mentioned in their answers about producing ideas, products, projects and opinions as well as producing solutions, things, thoughts, materials, and information.

Another action where pre-service teachers define creativity was to look from a different perspective. The act of looking from a different perspective was used in two different ways: to be different from other people and to look from a different angle. The answer of the pre-service pre-school teacher ÖA096 about being different is as follows: “*To see what no one sees, to think that s/he does not think, to try to do what s/he does not while looking at the same point in a community.*”

Regarding the act of looking from a different perspective, the pre-service pre-school teacher ÖA093 expressed his/her opinion with the words *“to make the fish fly, to make the bird swim, that is to see the beyond what exist”*, while the pre-service primary teacher ÖA110 used the expression of *“To use an object differently than its classical use or to design it for use.”*

The act of thinking was another action that pre-service teachers mentioned in their definition of creativity. Regarding the act of thinking mentioned by a small number of pre-service teachers, the answers of *“Thinking as broadly as you can”* by the pre-service primary teacher ÖA152, and *“To think actively and constantly.”* by another pre-service primary teacher ÖA163 or *“thinking with imagination.”* by the pre-service pre-school teacher ÖA077 can be given as examples.

A small number of the pre-service teachers participating in the study mentioned the actions interpreted as transforming in their answers. To add, add something from yourself, add richness, improve or bring forth are actions that were evaluated under the category of transforming actions. For example, the answer of the pre-service pre-school teacher ÖA092 of *“Developing existing ideas in a more comprehensive and different way.”* was covered under the category of transforming. The answer of another pre-service pre-school teacher ÖA058 of *“Turning things into opportunities is making things useful by using them outside of their intended use”* was among the answers evaluated under the category of transforming. The code of 'to add' in the answer of the pre-service primary teacher ÖA158 of *“To create something that does not exist or to add on top of what is.”* was interpreted under the category of transforming.

**Creativity Is a Talent:** Nearly half of the pre-service teachers participating in the study expressed creativity as talent, skill, power and predisposition. For example, it was understood that pre-service science teachers ÖA047 and ÖA051 defined creativity as a predisposition with the words of *“... a predisposition driving to create something from within ...”* and *“It is a person's predisposition to create new things by using different methods”* so they defined creativity as a predisposition. The pre-service primary teacher ÖA141 expressed creativity as a power with the expression of *“Creativity is the imagination of a person”*. Another pre-service primary teacher ÖA130 defined creativity as power in his/her expression: *“Creativity is the power that enables people to produce new ideas.”* In addition to these, pre-service teachers have mentioned talent and skills expressions. Thinking skill (ÖA64, ÖA106, PT108), producing skill (ÖA027, ÖA057), reasoning skill (ÖA022, ÖA125), extrapolating skill (ÖA019), imagining skill (ÖA012), solving skill (ÖA006), ability to reveal (ÖA002) were examples that pre-service teachers defined creativity as a skill. The expressions in which the word ability was clearly used were as follows: *ability to build* (ÖA014), *ability to create* (ÖA041, ÖA120, ÖA129), *ability to produce* (ÖA030, ÖA194), *authenticity ability* (ÖA021), *imagination ability* (ÖA007), *ability to find a solution* (ÖA081).

Another group of expressions evaluated under the skill category was expressions that include the mode of competence such as can/be able to. The mode of competence, which means request, allow, possibility, also means the power to do a job. For this reason, the explanations that the pre-service teachers expressed in the qualification mode were also evaluated under the skill and ability category. As can be seen from the pre-service pre-school teacher ÖA068's expression of *"It is that individuals can solve emerging problems in an original way."*, it was thought that the competence mode relates to the power of analysis. The answer of the pre-service primary teacher ÖA161 of *"The art of looking and interpreting from another window"* can be given as an example.

In some of the answers evaluated under the skill category, the pre-service teachers stated that creativity exists in person or was innate. As it can be understood from pre-service science teacher ÖA022's expression of *"It is the capacity within individuals. I think it's based on a balance of reasoning skills and imagination."* or pre-service pre-school teacher ÖA056's expression of *"It is a mental ability that is innate in an individual and can be developed as much as environmental conditions and genetic differences allow."* that creativity exists in the individual.

**Creativity Is Something That Emerges:** Some of the pre-service teachers who tried to define creativity expressed creativity as an idea, product, thought, thing, material or situation in their definitions. For example, the pre-service Turkish language teacher ÖA189 has defined creativity as *"genius ideas."* Similarly, the pre-service primary teacher ÖA177's expression of *"Product, idea, thought created within the possibilities available."* can also be given as an example. Another classroom teacher ÖA142 defined creativity as follows: *"Everything that occurs as a result of the liberation of human imaginations, such as the vast space or the black hole we know to disappear in it."*

**Creativity Is Defined by Adjectives:** It was seen that more than half of the pre-service teachers participating in the study used adjectives such as unique, original, new, different, fast, subjective, rare, functional, practical, useful, broad in their creativity definitions. Among these adjectives, the most voiced adjective was the adjective different. 54 pre-service teachers used the adjective different in their answers. The pre-service teachers used the adjective different as being different, looking from different aspect, thinking different, applying different, using different, seeing different, making different, different perspective, different ways, different approach style, different idea, different product, different thinking. After the adjective different, the adjective that pre-service teachers most often express was the adjective new. The adjective new expressed by 29 pre-service teachers was stated as new idea, new product, new things, new phenomenon, new proposition, new knowledge, and new opportunity. Adjectives different and new were followed by adjectives unique and original. The adjective unique was mentioned 23 times and the adjective original 15 times. The

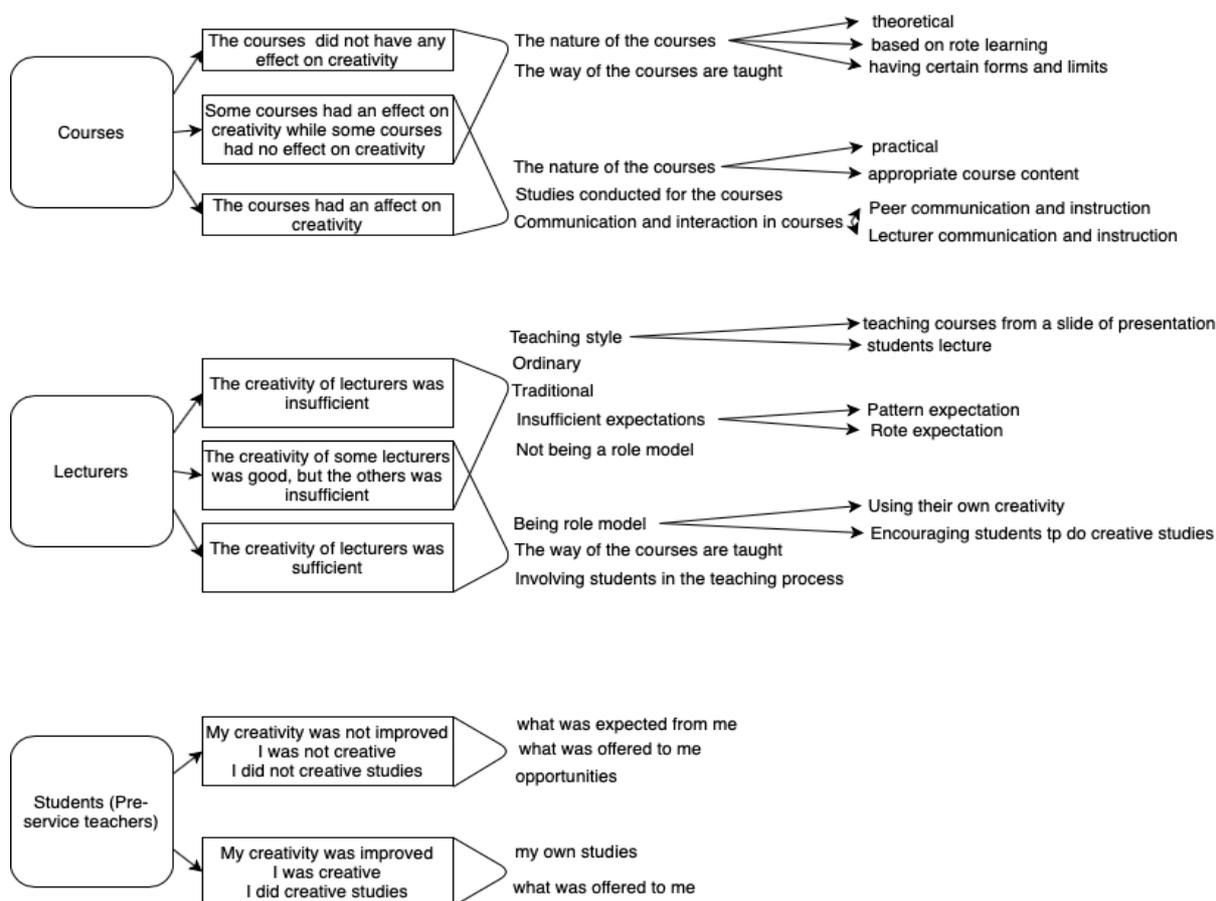
pre-service primary teacher ÖA176 used the adjective original as follows while defining creativity: *“Creating an original product or opinion that is very different from the usual product or opinion.”*

**Creativity Arises in Reply to Something:** Some pre-service teachers also explained the situations in which creativity occurs in their answers. For example, they stated that creativity occurs when encountering a trouble or a problem. The answer of *“... I think it is mostly done to find a solution to a problem.”* included in the description pre-service science teacher ÖA034 shows that pre-service teacher thinks that creativity arises when faced with a problem. It was thought that from the answer of *“Creativity is to solve a problem in a way that nobody solves.”* of the pre-service primary teacher ÖA156, creativity arises against a problem. The pre-service teachers participating in the study included their statements about an event, situation and subject other than a trouble and a problem in their answers.

**Creativity Arises with the help of a Something:** It was observed that some of the pre-service teachers who participated in the study stated that creativity emerged with the help of something in their answers. For example, it was understood that from the answer of *“I think it is the ability to solve the encountered problem with a new product and a new idea.”* of the pre-service science teacher ÖA006, the pre-service teacher thought that creativity emerges with the help of a product or an idea. It was seen that from the answer of *“To reveal the non-existent with existing thoughts, ideas or materials.”* of the pre-service primary teacher ÖA117, the pre-service teacher defined creativity by using the expressions of the help of thoughts, ideas or materials. The pre-service science teacher ÖA043 defined creativity as with the help of imagination with the expression of *“Anything done using the imagination, including thinking.”*

### **Pre-service Teachers' Evaluations of Creativity in the Higher Education Process**

One of the study aims was to reveal pre-service teachers' evaluations about creativity in terms of various components in the higher education process. The components that the pre-service teachers were asked to evaluate were the courses in the higher education process, the lecturers and the students, that is, themselves. Categories and subcategories resulting from the answers given for all these components are given in Figure 2.



**Figure 2.** Pre-service teachers' evaluations of creativity in the higher education process

***Pre-service Teachers' Evaluations on the Effects of the Courses Taken in the Higher Education Process on Their Creativity***

When the answers of them to the question of “when you consider your undergraduate education, how do you evaluate whether the courses have an effect on creativity?” were analyzed, it was seen that the answers were grouped under four categories. In their answers, 14 pre-service teachers stated their opinions about creativity in general instead of their opinions about whether the courses in undergraduate education are effective or not. Therefore, the answers of these pre-service teachers were not included in the analysis. It was seen that the pre-service teachers mostly made an evaluation that some courses had an effect on creativity, while some courses had no effect on

creativity. Almost a third of the pre-service teachers defended the view that the courses have an effect on their creativity, while nearly a quarter of them claimed that the courses do not have any effect on creativity. A small number of pre-service teachers stated that the courses had a partial effect on creativity while making their evaluations. Some of the pre-service teachers who make their evaluations according to the above-mentioned categories, like the pre-service pre-school teacher ÖA093 *“It changes from course to lesson, while some support it, some dampen it”* or pre-service Turkish language teacher ÖA179 *“Of course, it is at a minimum level.”* or like the pre-service primary teacher ÖA141 *“Obviously, courses have no effect on creativity.”* explained their opinions about the effect of courses on creativity without making any explanation. However, they did not give any information about the reason for their statements. On the other hand, while some pre-service teachers were explaining their opinions, they also explained the reason for their opinion. These explanations were handled in detail and pre-service teachers asked why the courses in higher education are effective on creativity or why the reasons why they are not effective were revealed.

Reasons for Courses Being Evaluated as Ineffective on Creativity: When the explanations made by the pre-service teachers about the ineffectiveness of the courses in higher education on creativity, it was seen that two categories emerged. The first category named as the nature of the courses was formed from the opinions of the pre-service teachers about the courses being theoretical, based on rote learning and having certain forms and limits. For this opinions, the answer of the pre-service teacher ÖA171 of *“I did not see much benefit on creativity because theoretical courses were taken in general.”* and of the pre-service science teacher ÖA048 *“... we take these courses with an education system based on rote-learning. I think rote learning dulls creativity.”* can be given as an example. It was deduced that some pre-service teachers think that the courses do not have an effect on the development of creativity since they think that the courses do not have an effect on the development of creativity due to certain patterns and limits regarding the courses, like the pre-service science teacher ÖA037 said that *“... if we think that certain patterns and things to be done are determined in advance and we do the course work and homework for these, they dull creativity.”*

The other category consisting of the answers of the pre-service teachers who stated that the courses had no effect on creativity was the category of the way of the courses are taught. In this category, there were opinions of pre-service teachers about presenting ready-made information and instructing teacher-centered. It was understood from the answer of the pre-service primary teacher ÖA135 of *“They have not much effect on it because most of the things are presented as ready-made information ...”* because there was ready-made information in the courses and from the answer of the pre-service pre-school teacher ÖA091 of *“They are not effective. Because the courses are taught teacher-centered.”* because the courses were taught teacher-centered, they thought that the courses in undergraduate education had no effect on creativity.

Reasons for Courses Being Evaluated as Effective on Creativity: When the answers of the pre-service teachers about the effects of the courses on creativity were examined, it was seen that the reasons were grouped under three categories. The most common reason expressed by the pre-service teachers is about the studies conducted for the courses. They stated that the materials, presentations, activities, lesson plans, teaching practices, ideas, products, homework, works, studies and evaluations they prepared for the courses improve the creativity. The explanations of the pre-service Turkish language teacher ÖA187 of “*I made many presentations, evaluations and studies at the university. I think university is an important place for creativity.*”; pre-service science teacher ÖA010 of “*We used our creativity in course plans, materials and activities we prepared.*”; classroom pre-service teacher ÖA158 of “*We used our creativity in course plans, materials and activities we prepared.*” can be given as an example.

The nature of the courses was another category that is formed based on the answers of pre-service teachers. Regarding the nature of the courses, the pre-service teachers stated that the practical courses, some course contents, the courses encouraging thinking and the nature of undergraduate education have an effect on creativity. Pre-service pre-school teacher ÖA067's statement of “*I think they improve creativity because they encourage thinking, researching and producing*” was one of the answers evaluated under this category. Regarding the contents of the course, the statement of the pre-service science teacher ÖA028 of “*Improving your creativity in some courses varies with the content and lecturer of the course.*” can be given as an example. Another pre-service science teacher ÖA015 expressed his/her opinion on the nature of undergraduate education with the following words: “*While in my previous high school and middle school education, I was mostly pushed into certain thinking patterns, I had the opportunity to develop my own ideas in undergraduate education, which allowed me to develop my creativity.*” In some of the answers evaluated under this category, the pre-service teachers directly gave the names of the courses and stated that the courses they gave their names had an effect on creativity. 7 teachers just like the pre-service Turkish language teacher ÖA194 mentioned the material designing course by expressing openly of “*Except for material designing and special teaching methods,*” none of the courses were beneficial for creativity. In addition to the special teaching methods course seen in the answer of ÖA194, teaching practice, teaching principles and methods and robotic coding courses were the courses that are thought to affect creativity by pre-service teachers. In addition, only pre-service science teachers stated that education courses and laboratory courses were also effective on creativity.

The last category about why courses were effective on creativity was communication and interaction in courses category. The answers evaluated under this category were considered as two subcategories. These subcategories were peer communication and interaction, and communication and interaction with the lecturer. The pre-service teachers stated that the ideas of their friends, the exchange of ideas with their friends and the work of their friends made in the courses affected their

creativity. In addition, they stated that the teaching methods of the lecturers, the ideas of the lecturers, the applications they make in the courses and the presentations were effective on their creativity. The expression of pre-service science teacher ÖA042 of *“Of course, courses are effective on creativity, we learn a lot from our lecturers and improve ourselves every day, even such intellectual interactions increase creativity.”* stated that she/he was influenced by both lecturers and her/his friends in the courses. Another pre-service science teacher ÖA053 expressed how she/he was affected by the works of her/his friends: *“Preparing a plan and telling everyone about their plans as if they were in the classroom sets an example for us, and we can find more creative and new applications based on an activity our friends have done.”*

### ***Pre-service Teachers’ Evaluations on the Effects of Lecturers in the Higher Education Process on Their Creativity***

Another higher education component that pre-service teachers were asked to evaluate about creativity in the undergraduate education process was lecturers. For this, pre-service teachers were asked *“When you consider your undergraduate education, how do you evaluate the creativity of the lecturers (course, assignment, presentation, and exam)?”* The answers of 27 pre-service teachers did not contain an evaluation about the creativity of the instructors. For example, the pre-service science teacher ÖA021 answered as *“Some of were the lecturers who valued our ideas and others loved rote learning sentences”*. From the answer of the pre-service teacher, no inference could be made about the creativity of the instructors. Therefore, this and similar answers were excluded from the analysis. The most expressed opinion by a third of the pre-service teachers included in the analysis was that the creativity of the lecturers was insufficient. Slightly more than a quarter of the pre-service teachers stated that the creativity of some lecturers was good, but the others as insufficient. While evaluating the creativity of the lecturers, the pre-service teachers participating in the study made evaluations according to the courses, assignment, presentations and exams that were directed within the question. Most of the pre-service teachers who made this evaluation commented on the creativity of the assignment given by the lecturers. Additionally, they evaluated the creativity of the lecturers in exams, presentations, applications and activities, course content and lecture transfer. Some pre-service teachers also stated that they found the creativity of the lecturers at medium level as stated in the words of the pre-service teacher ÖA006 *“I find their creativity at medium level, neither too much nor less than it should be”*. Eighteen of the pre-service teachers whose answers were included in the analysis evaluated the creativity of the lecturers as good. Some of the pre-service teachers expressed their opinions without any justification when they made their evaluations about the creativity of the lecturers, like the pre-service pre-school teacher ÖA074, *“no creativity”* or the pre-service science teacher ÖA003, *“let me say, in half. While some of our teachers made us taste creativity, some did not even say a single word.”* Some pre-service teachers, on the other hand, gave their justifications for

evaluating the creativity of the lecturers. These justifications have been analyzed and explained below under two headings.

Reasons for Evaluating the Creativity of Lecturers as Insufficient: When the answers of the pre-service teachers who evaluated the creativity of the lecturers as insufficient were examined, it was seen that five different reasons emerged. The most expressed one was that the lecturers' creativity was seen as insufficient because of their teaching style. In the answers evaluated under this category, there were opinions of pre-service teachers about lecturers on teaching courses from a slide or presentation, and direct instruction method thereof and having students lecture. The expressions of the pre-service primary teacher ÖA131 "*Except some lecturers, generally all lecturers teach their courses through presentations, so I don't think this has an impact on creativity.*" and of the pre-service pre-school teacher ÖA105 "*Our creativity does not improve because other teachers except some read from the slide*" can be given as an example. The fact that lecturers teach their courses in the form of direct instruction was one of the reasons why their creativity was considered as insufficient. While the pre-service science teacher ÖA49 stated that "*Because each lecturer teaches courses in a different way, some of them teach more straightforward and without much contribution to creativity ...*", another pre-service science teacher ÖA054 explained her/his opinion evaluated under this category with the following words: "*I do not think that some of the lecturers have a very creative thought because they just teach the course and go.*" Making the students lecture was another reason for the pre-service teachers to evaluate the creativity of the lecturers as insufficient. ÖA099's answer "*Some lecturers usually ask students to distribute topics and make presentations because they teach these lessons for the first time.*" can be given as an example of this opinion mostly expressed by pre-service pre-school teachers.

Secondly, the most expressed reason was that the lecturers were ordinary. Some pre-service teachers clearly emphasized mediocrity with their discourse "*ordinary teaching methods*" (ÖA115), "*ordinary assignment, exams and lectures*" (ÖA005), "*ordinary presentations*" (ÖA150). However, expressions of pre-service teachers such as "*same assignments, presentations and exams*" (ÖA016, ÖA142), "*copy paste things*" (ÖA178), "*ready-made presentations*" (ÖA69, ÖA95, ÖA099, ÖA115) have been evaluated under this category.

Another reason why pre-service teachers consider the creativity of lecturers ineffective or insufficient was that the lecturers were traditional. The answers of the pre-service science teachers ÖA015 and ÖA024 were good examples that can be given for this category: "*Some of our teachers have reflected creativity to us with creative materials and activities, but we still have teachers who utilizes more traditional education.*"; "*Except for a few lecturers, most of them continued their course processes with traditional rote learning methods, so I think they are insufficient.*" Apart from these pre-service teachers, who clearly used "traditional" expression in their answers, some pre-service

teachers emphasized the inadequacy of the lecturers' creativity because they used the old system and put classical exams.

Another category that emerges regarding the evaluation of lecturers' creativity as insufficient was expectations of lecturers. Teacher candidates evaluated their creativity as insufficient due to the rote expectations and pattern expectations of the lecturers. These opinions were expressed by pre-service science teachers.

ÖA044 expressed her/his opinion *"It is not very effective on creativity because lectures are conveyed by slides or verbally. We are expected to memorize."* The pre-service science teacher ÖA039 stated that there were patterns that the lecturers expect and there was no creativity because of these patterns: *"... there is an expected pattern and we were expected to make an assignment within those patterns. How free is a person of limited boundaries? I think free thinking brings creativity with it..."*

The last reason why lecturers' creativity was considered insufficient was not being a role model. The pre-service pre-school teacher ÖA086, explained her/his opinion with the following words: *"Lecturers demand very creative activities. They want us to be creative in assignment and lectures, but they are not role models themselves."*

Reasons for Evaluating the Creativity of Lecturers as Sufficient: The answers of the pre-service teachers who evaluated the creativity of the lecturers as sufficient were examined in detail. As a result of the analysis, it was seen that the answers were focused in three categories. The one with the highest frequency among these categories was related to lecturers' being role models. They considered lecturers' being role models, that is, showing their own creativity, in two different ways: using their own creativity in courses and encouraging students to do creative studies. Some of the pre-service teachers stated clearly, that lecturers show their own creativity in courses, in their expressions such as *"prepares creative lectures"*(ÖA049), *"prepares creative activities"* (ÖA041), *"uses creative techniques"* (ÖA035). On the other hand, some pre-service teachers evaluated the creativity of the lecturers as good, as they had them do studies and gave them assignment that would lead creativity. The answer of ÖA124, who was a pre-service primary teacher, as *"I think that the creativity of the lecturers is at a high level with the presentations and assignments they presented to us."* can be given as an example of the answers evaluated in this category.

Another category obtained from the answers of the pre-service teachers who consider the creativity of the lecturers well included statements about teaching styles of the lecturers. The pre-service teachers talked about the creativity of the lecturers who support the lesson with materials, use different teaching techniques, use alternative measurement techniques, and teach the course interesting. The pre-service Turkish language teacher ÖA187, whose answer was evaluated under this

category, expressed her/his opinion as follows: *“Each lecturer applied different techniques. There are also those who create their own style. Therefore, for our department, I consider the teachers are creative.”* Pre-service science teacher ÖA037, on the other hand, explained her/his opinion as *“...I think our creativity has increased because they want us to create a product as a result of what we have learned in the course instead of the exam...”*.

The last category emerging from the pre-service teachers' answers was involving students in the teaching process category. In the opinions in this category, it was mentioned about the lecturers who make practices that will enable the student to be active during the course or keep the students active in the course with the style of the lecture. Considering the answer *“Some lecturers could reveal creative things or teach the course better and involve us, namely the students in the course better.”* It was understood that pre-service primary teacher ÖA153 meant that the creativity of the lecturers who keep the students active with the way of teaching was good. The pre-service science teacher coded ÖA047 mentions the lecturers who involved the students in the process with the following answer: *“There are some I think are creative and there are some I think are not. Some of them just teach their lecture and go away. Some of them make us use different applications and encourage us to participate in the process and think by keeping us in contact.”*

#### ***Pre-service teachers' evaluations of their own creativity***

The pre-service teachers were asked to evaluate the student, which is another higher education component, that is, themselves in terms of creativity. When the answers given by the pre-service teachers were analyzed, it was observed that they answered the question in three different dimensions. In the first of these dimensions, there were answers regarding whether or not the creativity of pre-service teachers developed in the undergraduate education, and categories as *“improved”*, *“not improved”* and *“decreased”* emerged. Just over a quarter of the pre-service teachers stated that their creativity improved during their undergraduate education. When the answers of the pre-service teachers participating in the study were analyzed, almost half of the participants who said *“my creativity improved”* did not explain about what improved or why, just like the pre-service primary teacher ÖA116 said, *“I know that I am not at the point where I first started. Somehow there has been improvement.”* A small portion of the pre-service teachers stated that their creativity was not improved. Some of these pre-service teachers gave similar answers to the opinion of ÖA024, *“I do not think I made much progress compared to my previous condition”* and did not make any explanation. A very small number of pre-service teachers stated that their creativity decreased and became dull during their undergraduate education.

In another dimension, the teacher candidates generally evaluated their own creativity and the categories of *“I am creative”*, *“I am not creative”* and *“my creativity is average”* emerged. Almost half of the pre-service teachers replied as *“I am creative”*, or *“I am not creative”*. In one third of

these answers, pre-service teachers considered themselves as creative similar the expression *“I think my creativity is high.”* (ÖA019). Nearly one third of the pre-service teachers stated that they were not creative. Pre-service primary teacher ÖA142, who was one of the pre-service teachers who thought similar, said *“I cannot define myself as a creative personality.”* While the pre-service teachers were evaluating their creativity, one third of them stated that they were at a medium or average level. As an example, the opinion of the pre-service Turkish language teacher ÖA187 on her/his own creativity can be given: *“I did not see myself as creative. But it can be done when you force it. Because teachers want to see a different style. But I have average creativity.”*

Finally, pre-service teachers made comments about whether they did creative studies during the undergraduate education, and the categories were obtained as *“I did creative studies during the undergraduate education”* and *“I did not do creative studies during the undergraduate process”*. Three quarters of these pre-service teachers claimed that they did creative studies during their undergraduate education. Some pre-service teachers explained that they prepared creative assignments, while some of them stated that they prepared creative presentations, but they clearly used the concept of creative. Some pre-service teachers implied that their studies with adjectives such as original, different, new, extraordinary, outside the box, far from the traditional, without using the concept of creativity explicitly, was creative. Some of the pre-service teachers gave answers expressing the effort that *“I did my best”, “I tried to do better”, “I pushed myself”, “I used my creativity as much as possible”*. The expressions of pre-service Turkish language teacher ÖA179 *“I tried to be as creative as I could. I think I’m good at it.”* can be given as an example. A small portion of the pre-service teachers stated that they did not do creative studies. Some of the pre-service teachers answered the question about how they would evaluate their creativity during undergraduate education with the similar responses as pre-service primary teacher ÖA131 as *“I worked just to pass the class. I did not make an effort to deliver something different.”*

While the pre-service teachers participating in the study were evaluating their creativity over their undergraduate education, some of them expressed their opinions without any explanation as stated above. Some of them made explanations about the nature of their opinion. Analyzing these explanations made by the pre-service teachers, their positive and negative opinions about their creativity have been explained under two headings below.

**Reasons for Students to Consider Their Own Creativity Insufficient:** Almost one third of the pre-service teachers stated that they were not creative, did not improve their creativity or did not perform creative studies while evaluating their creativity. When the answers of the pre-service teachers who explained their opinions with their reasons among who hold this view were examined, it was understood that they have a negative opinion about their creativity due to what was expected of them, what was offered to them, and the opportunities. Some of the pre-service teachers who thought

that they did not perform creative studies or that their creativity did not improve stated that they have this idea because of what was expected of them. Pre-service pre-school teacher ÖA069, by saying *“We were mostly asked to prepare PowerPoint presentations, so we could not add much creativity in this part.”*, stated that they could not be creative in line with what was expected of them. Some pre-service teachers talked negatively about their creativity or creativity development due to what was offered to them. While pre-service science teacher ÖA011 stated *“There are no subjects that require creativity.”* and so referred to the subjects in the courses she/he have taken in her/his undergraduate education with, another pre-service science teacher ÖA048 expressed that they did not grow up creatively due to the education system and therefore did not consider herself/himself as creative, by mentioning: *“I don’t consider myself as a creative person either, as the education offered to me is not creative. Because I have been educated with a rote learning-based system since primary school and my thoughts have always been limited.”* It was understood that a small number of pre-service teachers stated negative opinions about their creativity due to their opportunities. Stating *“Considering the footsteps and demands of the academicians in line with the possibilities (time, cost and peer friends), it cannot be said that I am creative.”* Pre-service primary teacher ÖA141 expressed that she/he was not creative because of the possibilities.

Reasons for Students to Consider Their Own Creativity Sufficient: Two groups of opinion emerged about why pre-service teachers, who made positive evaluations about their creativity, think this way. In the first of these, pre-service teachers stated that they were creative or their creativity improved thanks to their own studies. They stated that their creativity improved thanks to the presentations, materials, activities, course plans, assignment and lectures they prepared about their own studies. The expression of the pre-service primary teacher ÖA149 *“Especially the assignment, materials and activities I dealt with in the courses of teaching had a positive effect on my creativity.”* can be given as an example.

In the second opinion group that emerged about the creativity and creativity of the pre-service teachers, the pre-service teachers stated that they were creative or their creativity improved thanks to what was offered to them. The pre-service teachers, who thought that their creativity improved thanks to what was offered to them, answered that their creativity improved thanks to the courses, the exams and the lecturers. Pre-service science teacher ÖA046, by stating that *“I think our lecturers and teachers have shed light on my creative thinking by adding new perspectives to me since the 1st year.”*, expressed the contribution of lecturers to his/her creativity. Pre-service primary teacher ÖA122 also mentioned the impact of the exams with the words *“I have learned to think differently when we have had creative exams.”*

### **Pre-service Teachers' Suggestions to Reveal or Improve Their Creativity**

The pre-service teachers were asked about their views on what could be the practices that would reveal or improve their creativity when they evaluated their undergraduate education in terms of lecturers, courses, physical environment, administrative management and student criteria. The suggestions of the pre-service teachers regarding each criterion are explained below in order.

#### ***Suggestions for Lecturers***

The pre-service teachers' suggestions about the lecturers were collected in four categories in order to reveal or improve their creativity. These categories consisted of suggestions regarding the lecturer's teaching of the course, student studies and evaluations, setting an example for students, and personal characteristics and development of the lecturers. Suggestions for lecturers for teaching of the courses included lecturing styles, providing students' active participation in the course, and opinions on technology. Regarding the teaching styles of the course, pre-service teachers suggested that lecturers use different activities in their courses, apply different methods and techniques, do not teach based on presentations only, do not present ready-made information, and teach courses based on discussion and that direct to research. The pre-service teachers made suggestions for lecturers in terms of student studies and evaluations that they should not push for grades, they should give feedbacks, that the evaluation criteria should be clear, different exam techniques should be benefited and they should not only provide studies on presentation for students. Setting examples for students was another category that emerged from the suggestions of pre-service teachers. In this category, it was mentioned that lecturers set an example for pre-service teachers with both their own studies and the studies they encouraged students. The last category created from the suggestions of the teacher candidates to the lecturers in order to reveal or improve their creativity was the suggestions for the personal characteristics and personal development of the lecturers. The pre-service teachers stated that the fact that being equipped, fair, enthusiastic, curious, respectful, moderate, extraordinary, open to change/innovation, open to criticism, open-minded, tolerant and sincere, and not being ego-centered, was effective in lecturers' creativity. They also stated that lecturers may receive training on creativity and they should improve themselves thereof.

#### ***Suggestions for Courses***

The pre-service teachers were asked what could be the practices that would reveal or improve their creativity when they evaluate their undergraduate education in terms of courses. Three categories were derived from analyzing the answers given by the pre-service teachers. These were oriented towards the teaching of the course, the content of the course and the courses themselves. Almost half of the codes emerging regarding the emergence and improvement of creativity of pre-service teachers were suggestions about teaching of the course. The most expressed opinion on this subject was the

one which included suggestions for teaching methods of the lecturers. Pre-service teachers suggested that lecturers should apply different methods, techniques and strategies while teaching, not teach courses only through presentations, teach in an entertaining, interesting and attractive way, and the duration of the lecture should not be too long. A small number of pre-service teachers mentioned the similar expressions to pre-school teacher ÖA074 as *“Courses are open to creativity in terms of content. It is the teachers who block the way for this.”* and implied that the lecturers were effective in revealing or improving their creativity. In another opinion group evaluating under the category of lecturing, pre-service teachers suggested that the courses should be student-centered. However, they proposed the use of materials in the courses, the teaching of courses rich in efficiency, the association of the courses with daily life, and teaching by technological developments. In the last opinion group addressed in the teaching of the courses category, the pre-service teachers stated that the courses should be conducted in a comfortable and friendly environment so that they could express their thoughts and opinions freely.

Another category consisting of suggestions for the courses for revealing and improving creativity was the category of the content of the courses. Almost half of the pre-service teachers participating in the study made a suggestion about content of the courses. The most voiced suggestion about the course contents was that the courses should be practical. In relation to that, some pre-service teachers also stated that the course contents should not be in a theoretical structure that much. The fact that the content of the courses was interesting as well as encouraging students to think and question was among the suggestions related to the courses in revealing and improving their own creativity. Another suggestion made by pre-service teachers was that course contents should not be restricted and should be flexible. It was also stated that the content of the courses should be able to be teachable outside the classroom and should be arranged in a way to bring out skills.

Considering the suggestions about the courses, the last category that emerges was the courses themselves. In the statements evaluated under this category, they stated that elective courses should be organized in a way to improve creativity, and there should be more courses such as creative drama, sports, music, visual arts. Additionally, they stated that lessons such as creativity and mind games should be added to teacher training programs. Finally, the pre-service teachers stated that they should take the courses appropriate for their professional fields and functional for their profession.

### ***Suggestions for Physical Environment***

The pre-service teachers were asked what could be the practices that would reveal or improve their creativity in terms of physical environment. When the answers given to this question were analyzed, four categories were created: suggestions for classes, suggestions for a different environment for teaching the courses, suggestions for a comfortable and ideal environment, and suggestions for an inspiring, colorful and entertaining environment. In suggestions for classes, having

classes suitable for the content of the course was the suggestion made by the highest number of pre-service teachers. In addition, it was suggested that the classes be supported with materials related to the content of the courses. In addition to these, it was stated that classroom design suitable for group work and active participation of students in the course was also effective in the emergence and improvement of creativity. Another category that was derived from the suggestions of the pre-service teachers about the physical environment was the different environments for teaching the courses category. It was among the suggestions of the pre-service teachers to have out-of-class environments where courses can be taught, and to have workshops and laboratories so that the courses were not taught only in the classroom. The pre-service teachers also stated that in order to be prepared for their professional life, realistic classroom environments should also be created. Another category related to the physical environment was comfortable and ideal environment category. One fourth of the pre-service teachers stated opinions similar to that the science teacher ÖA054 said, *"I think that people can think more comprehensively in a comfortable and spacious environment, otherwise they may not be able to think."* They argued that besides being comfortable and spacious, being an ideal environment in terms of light, heat and sound was also effective in the emergence and improvement of creativity. The last category emerged for the physical environment was an inspiring, colorful, entertaining environment category. While the pre-service primary teacher ÖA112 suggested *"First of all, corridors and classrooms which are even more colorless than the hospital corridors should be dealt with."* addressing that the environment should be colored, the pre-service science teacher ÖA042 suggested *"It must be energetic, there is no environment in which we can hear music in our school, no dance, entertainment and music, I do not think that a person who is not happy can dream and be creative."* addressing a fun environment. A small number of pre-service teachers also suggested that the boards in classrooms and corridors be equipped with inspirational model studies and posters.

### ***Suggestions for Administrative Management***

The pre-service teachers were asked, when they consider their undergraduate education, to think about the practices that will reveal or improve their creativity in terms of administrative management and to make suggestions. Six categories emerged from the answers given by the to think about the practices that pre-service teachers. The first of these categories was administrative management should be supportive, which was voiced by 38 pre-service teachers. Here, pre-service teachers mentioned the necessity of administrative management to support both students and lecturers. Another category was they should organize events category. Teacher candidates, with their statements similar to the pre-service primary teacher ÖA163's expression *"Administrative management may organize trips, seminars and competitions that improve creativity. Competitions motivate creativity."*, stated that the administrative management should organize various activities. The third category that emerged from the answers was they should provide equipment-material

category. In the answers that create this category, suggestions ranked such as *“laboratory equipment, materials required for the classroom, etc. conditions like these should be met.”* (ÖA050); *“Necessary needs should be met, a space should be allocated, places where suitable materials can be obtained for creativity to places where work areas are located should be allocated.”* (ÖA141); and *“Providing necessary equipment”* (ÖA917). Another category created from suggestions about administrative management was, they should listen to the students. It was stated by the pre-service teachers that they listen to the students’ ideas, problems, requests and cooperate with the students when necessary. They should organize and supervise teaching category was another category derived from pre-service teachers’ suggestions to administrative management in the emergence and improvement of creativity. The answers of the pre-service primary teacher ÖA154 and the pre-service pre-school teacher ÖA080 can be given as examples of the answers evaluated under this category, respectively: *“Management should add the necessary courses to the curriculum for students to discuss and exchange ideas”* and *“Administration may supervise the lecturers and how the courses are taught”*. The last category emerged about administrative management was administrative management should be flexible category. Here, the pre-service teachers mentioned that administrative management should not be strict and oppressive.

### ***Suggestions for Students***

Attitudes, personal development and sociability categories emerged from the answers of pre-service teachers to evaluate applications that reveal or improve their creativity in a student dimension. The attitudes category consisted of three subcategories. These categories were found to be compatible with attitude components and were named cognitive, affective and behavioral. In the answers evaluated in the cognitive attitude subcategory, the pre-service teachers mentioned that they, namely the students, should conduct research and questioning, think, be critical and solve problems. Answers such as *“Students should not rely on for everything from their teacher, they should research and question”* (ÖA015); *“Information should be sought in different ways, constantly considering different perspectives”* (ÖA154); *“students should definitely have problem solving skills”* (ÖA027) may be cited. As in the statements in affective attitude subcategory, by the pre-service primary teacher ÖA172 as *“First the student should be enthusiastic and I think he should really want it.”* and by the pre-service science teacher ÖA045 as *“The most important elements for the student to be creative are willing and curious. A student does not think about a subject he/she is not curious about and cannot be creative.”*, being enthusiastic and curious has been expressed by many pre-service teachers. Additionally, answers such as being self-confident, motivated, not embarrassed, and free of prejudice were evaluated under the affective attitude category. The last subcategory under the attitude category was behavioral attitude. In the answers evaluated under this category, there are statements about behaviors such as students should work and strive, not to take the easy way out, participate actively in courses, express their opinions, come to classes well-prepared and take responsibility.

In personal development category, pre-service teachers mentioned about students to develop themselves, participate in activities, projects and be open to innovation and development in order to improve themselves. While pre-service primary teacher ÖA135 expressed his/her opinion on self-improvement: *“The student should be a good person who is open to innovations, enthusiastic, positive, constructive, strives to improve himself, in solidarity with his environment, interested in a social endeavor.”*, the pre-service science teacher ÖA013 used the following statement: *“I think students can participate in courses, trainings, seminars and conferences in various fields to improve creativity. They may focus on interests.”*

The last category that emerged for the student regarding the emergence and improvement of creativity was the sociability category. Under the sociability category, they talked about students being in cooperation with their peers and being social. *“My friends and I should encourage each other to do activities that will improve our creativity.”* the pre-service primary teacher ÖA149 mentioned cooperation with peers. Another pre-service primary teacher, ÖA171, expressed his/her thoughts on sociability with the following words: *“Students should be active, comfortable, engaged. I think the creativity of pre-service teachers should be supported by social responsibility projects. I think that coming to school as if you were in high school and being taught a couple of courses and returning home is an application that reduces the student’s mood a lot. ...”*

### **Discussion, Conclusion and Recommendations**

In this research, which aims to define creativity of pre-service teachers as teachers of the future and evaluate undergraduate education processes in terms of gaining and using creativity skills, the results reached according to the findings are listed below.

In the study, pre-service teachers were first consulted on how they defined creativity. According to the results of the research, it was observed that pre-service teachers define creativity in different ways. Most pre-service teachers saw creativity as an action; they defined it as producing something and being able to take a different approach when compared to other people. The “thing” used here means products, thoughts, ideas, materials. Some of the pre-service teachers defined creativity as talent, skill, strength and predisposition, and pointed out that creativity was used in a similar sense to talent by using the -ability/-able to ability mode in these definitions. Quite few of the pre-service teachers defined creativity as something that emerged, and stated that the resulting product, idea, thought, thing, material and situation are indicative of creativity. When making definitions of creativity, it has been observed that teacher candidates describe creativity using adjectives such as authentic, original, new, different, fast, subjective, rare, functional, practical, useful and broad. As a result, creativity arises against an issue, problem, event, situation, object and subject encountered with the help of a product, ideas, thoughts, materials and imagination according to the pre-service teachers. Pre-service teachers’ views on the definitions of creativity are in line with the

literature (Costello, 2000; Crompton, 2011; Ehtiyar & Baser, 2019; Güven, Gediz, & Koşukoğlu, 2020; Özerbaş, 2011; Seeling, 2012; Sternberg, 2002). Creativity is to generate ideas and possibilities, explore ways to find problems, complex situations and systems, combine ideas and produce things with a difference (Jackson & Shaw, 2005). Jahnke, Haertel, & Wildt (2015) stated that students' views on creativity are of great importance in the improvement of creativity in higher education. Students have stated that creativity arises when they develop their own thoughts, when they can make independent decisions, when curiosity and motivation increase, when they produce things and develop original new ideas.

According to the opinions of the pre-service teachers regarding whether the courses have an impact on creativity when they take into account their undergraduate education, the pre-service teachers stated that the courses in undergraduate education provide the opportunity to develop their ideas. Additionally, they stated that the presentations made in the courses improved creativity, that the materials developed in the courses and the knowledge obtained based on research had an effect, and yet the experiences acquired in the peer group affected creativity. Some pre-service teachers have expressed ambivalence about whether the courses have an impact on creativity. As a reason for this, they said that undergraduate courses are based on theory and memorization, that the courses are taught in certain patterns according to the rules and that the education is teacher centered. According to Yeşilyurt (2020), many factors such as schools, curriculums (courses), teachers and sources of information influence the improvement of individuals' creativity and creative thinking skills. Therefore, it is extremely important that course contents particularly improve creativity. This finding supports the result achieved in the research.

The opinions of pre-service teachers regarding whether the lecturers are creative or not are another dimension that is discussed in the research and evaluated as a finding. Most pre-service teachers found lecturers inadequate in terms of creativity. As a reason for this, the pre-service teachers listed grounds such as that the lecturers offered a traditional teaching, gave the lessons with slides, used the direct instruction method, and did not include the students in the course. According to Jackson (2006), creativity is not involved in the intellectual region of analytical and critical thinking that dominates academics. Therefore, lecturers are not creative. This finding is in line with the results of the research. There were quite few pre-service teachers who expressed that the lecturers were creative. Pre-service teachers attributed the creativity of some lecturers to their use of different methods in conveying information to students, in-course and in-class practices. Few of the pre-service teachers stated that the creativity of the lecturers was related to the course they attended; that lecturers should not be expected to be creative in theoretical-verbal courses. This view is in line with the research conducted by Jahnke et al. (2015) in higher education.

The pre-service teachers also evaluated their own creativity within the scope of the research. Most of the pre-service teachers stated that undergraduate education develops themselves and that creativity has a great effect on the preparation of lecture presentations, coursework and materials, and they find themselves creative; however few of them stated that the lessons were based on memorization because they were theoretical and that there was no factor that would reveal the creativity characteristics (Ayden & İşgüzar, 2016). Ehtiyar & Baser (2019), in their studies with university students, reached the conclusion that students think that university education does not improve their own creativity, it even dulls them.

Finally, in the study, the opinions of the pre-service teachers regarding the suggestions to reveal or improve their creativity were presented to the lecturers, lessons, physical environment, administrative management and students as recommendations. Pre-service teachers expressed that lecturers should be open to change, innovation and criticism, equipped, moderate, fair and respectful. They stated that they can be more successful in creativity and develop themselves by not using different methods and techniques, not only teaching through presentation and theoretical lessons, but concentrating on activities, and encouraging students to discuss and research. One of the most important tasks of schools in today's societies is to educate individuals for creativity (Sawyer, 2006). According to Coombs and Smith (1999), creativity can be taught in higher education. Fryer, in (1996), made studies on the improvable and teachable characteristics of creativity in higher education. According to Lakota (2007) , some of the students in higher education are creative. Being creative is one of the most characteristic features of being human. Some students have a more improved sense of creativity, while others need to improve it. Academics should be role models for both colleagues and students, liberate students in decision-making, help them become aware of their own characteristics and skills without controlling them, and encourage them to be creative (Sokol, Gozdek, Figurska, & Blaskova, 2015). The more the lecturers understand and use creativity, the more they can improve their students' creativity (Turner & Day, 2012). As a result, it can be said that the creativity of university students can be improved by lecturers (Papaleontiou, Varnava-Marouchou, Mihai, & Konis, 2014). The pre-service teachers made suggestions that not only the presentations should be performed in the lessons for the evaluation of student studies and studies, but feedback should also be given to the students by the lecturers in the assignment studies, the evaluation criteria should be clear, different exam techniques should be benefited and there should be no pressure for the grade among the students. The pre-service teachers stated that the lessons were to be practical rather than theoretical and the course contents were to be flexible in order to improve creativity, that widening of the range of lessons can increase the functionality of the lessons, and that the process can reveal creativity by using different methods and materials for teaching the lesson. The fact that the lessons were a little more related to life, that out-of-class practices can further increase creativity and that a course called creativity should be in all departments can be listed as the other suggestions put by the

pre-service teachers. Students should be able to work in cooperation with each other more by putting their efforts in, not by taking the easy way out. They should take responsibility, be open to innovation and improvement, and participate more in activities by researching and questioning. They emphasized the importance of addressing different variables related to the physical environment and enriching different environments such as workshop and laboratory in the improvement of creativity. The suggestions that the classrooms should be colorful, comfortable and spacious, ideal in terms of light were included, and the necessity of active use of learning environments outside the classroom was emphasized. Cole, Sugioka, & Yamagata-Lynch (1999) in their study, emphasized that classroom practices in higher education have a great effect on the improvement of students' creativity. Schools are expected to improve students' skills such as being imaginative, taking risks, experiencing, analyzing data, ideas and situations, and communicating. Thus, students will be able to be creative (Jackson, 2006).

The pre-service teachers stated that the administrative management should manage and supervise the education process better and support students and lecturers in order to improve the creativity of pre-service teachers and lecturers. They also emphasized that administrative management should be flexible, not oppressive, and should be easily accessible and not oppressive, by listening to students more. They highlighted the importance of improving the facilities offered at the faculty and enhancing the physical environment in terms of making students more effective in performing creative activities. From this point of view, it would not be wrong to say that the administration was inadequate to support the creativity of students and lecturers. According to Sungur (1992), the distrust of those at the top of the hierarchy towards their subordinates, authoritarian management, desire to be flawless, desire to perform serious work are organizational obstacles that hinder creativity. Therefore, administrative management may be insufficient to support creativity. Jackson (2006) also emphasized that management should support the creativity of lecturers and students.

In this study, pre-service teachers, who will be teachers of the near future, evaluated higher education processes in terms of creativity and made some suggestions regarding the components of higher education. When we consider the evaluations and suggestions of the pre-service teachers, it is understood that they are calling for a reform in education faculties. This call has already been made also by educators (Özcan, 2013; Trilling & Fadel, 2009). It can be said that the basis of this call for reform lies in the emergence that accessing or having knowledge is not a particularly important virtue in this period in which we live the information age. In other words, education systems, which aim to raise the people needed by the society, are expected to raise individuals who "contribute to the cultural knowledge society" needed by the information society, and one of the skills of these individuals is said to be creativity and innovation (Trilling & Fadel, 2009, p.14). Ken Robinson, in his widely watched TED speech in 2006, says that creativity is as important as literacy in education and that we should see them in the same status. He also states that we are not trained in a way to improve

our creativity in the education system, but in a way to move away from creativity (Robinson, 2006). Robinson, (2011) states in another study that creativity is misunderstood as something specific to special people and special jobs. Contrary to this view, he emphasizes that people are born with a great capacity for creativity and the only thing to do is to improve this capacity. In this case, it can be said that the reforms to be made for education should include studies aiming to improve the creativity skills of individuals. As a result, education faculties should develop a new teacher training system that will both help improve the creativity capacities of future teachers and enable them to become teachers who will improve their own students' creativity capacities by correcting the mechanism on creativity.

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