An Inquiry Concerning the Characterıstics of the Creative Person

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Abstract
This study was conducted with the participation of 20 pre-service science teachers. The study aims to examine pre-service science teachers' views on the characteristics of the creative person. The data collected was analyzed by coding the answers. It was found that pre-service teachers mostly identified the following characteristics as the characteristics of a creative person: 'thinks/interprets differently/originally', 'curious', 'enjoys research', 'has imagination', 'observant', 'self-confident', 'questions/enjoys questioning', 'sociable, not shy', 'open to new ideas', 'knowledgeable', 'farsighted', 'enjoys exploration', 'patient', 'enjoys learning', 'open to criticism', and 'talented'. These descriptions indicate that the creative person is considered to have a very wide and varied range of characteristics. This does not mean, however, that a creative person needs to have all of these characteristics at once.
Keywords: creative personality characteristics, creativity, science education

Introduction
One of the most effective ways to improve the quality of life and to live a higher-quality life is to acquire the ability for creative thinking and finding creative solutions to problems (Çelebi Öncü, 2014). Creativity forms the basis of all aspects of human life and human development. Creative functioning of the right hemisphere of the brain takes place not only during mental processes, but also in all processes where creativity is needed, including bodily behaviors. Creative thinking is reflected in cognitive, affective, and bodily processes (Özdemir Beceren and Ünsal, 2014).

Creativity applies both to science and to daily life (Farooq, 2008). Creativity is often used in one of two senses. One of these is 'discovery', and the other is 'innovation'. Even this distinction, however, is not final. Innovation may be used in reference to something considered novel because it was not previously seen when the innovation took place, or with reference to an absolute novelty, in the sense of creating something or some idea that that did not exist before (De Bono, 2002).

According to Shanahan (2009) science students need to learn that scientists are creative individuals who use their imagination to form hypotheses, to make explanations, and to engage in debates, and that more creative activities are needed to remove the disparity between students and science. Educational programs should provide guidance for students on sophisticated, abstract, critical, creative, and independent thinking, problem solving, generating knowledge, learning how to learn, developing self-worth and self-confidence, and appreciating difference (Kandaz, 2014). In this context, this study aims to examine pre-service science teachers' views on the characteristics of the individual person.

Methodology
This study was conducted with the participation of 30 pre-service teachers attending the second year of the science teaching program of the faculty of education of a university in Turkey. Participants were asked to describe the characteristics of a creative person. Answers given were coded into categories, and the frequency distribution of the codes was analyzed.

Results
The study's findings are reported in the table below using the codes. Data analysis is based on the frequency distribution of the codes reported in Table 1.

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Table 1. Codes regarding the characteristics of the creative person

Codes	N
Thinks/interprets differently/originally	20
Curious	11
Enjoys research	9
Has imagination	8
Observant	5
Self-confident	5
Questions/enjoys questioning	5
Sociable, not shy	5
Open to new ideas	5
Knowledgeable	5
Farsighted	3
Enjoys exploration	3
Patient	3
Enjoys learning	3
Open to criticism	3
Talented	3
Smart	2
Determined	2
Driven	2
Hard-working	2
Other (one answer each)	24

As Table 1 shows, pre-service science teachers mostly identify the following characteristics as the characteristics of a creative person: 'thinks/interprets differently/originally', 'curious', 'enjoys research', 'has imagination', 'observant', 'self-confident', 'questions/enjoys questioning', 'sociable, not shy', 'open to new ideas', 'knowledgeable', 'farsighted', 'enjoys exploration', 'patient', 'enjoys learning', 'open to criticism', and 'talented'.

Conclusion and Discussion

Piaget took imagination seriously and argued that using imagination, it can be seen that what looks like separate disciplines actually have common foundations (Voneche, 2003). In Maslow's hierarchy of needs, creativity is expressed in the 'self-actualization' need of a person, which is located at the very top of the pyramid, which indicates that for creativity to emerge, other needs have to first be met (Maslow, 1968, cited by Baykal, 2003). Expert knowledge and creative thinking skills are not sufficient to bring about creativity, as these components need to be complemented by internal motivation (Ünlüer, 2014). Teaching people ways to express themselves helps improve their creativity (Özcan, 2007). In the re-structuring of education programs, creative thinking is encouraged using a student-centered approach, and class environments, methods, and techniques that would help improve the creative thinking skills of the students by encouraging creative thinking are designed (Orçan, 2013). Maslow defines creativity as ability to self-express (Hanley and Abell, 2002).

This study found that pre-service teachers mostly identified the characteristics of: 'thinks/interprets differently/originally', 'curious', 'enjoys research', 'has imagination', 'observant', 'self-confident', 'questions/enjoys questioning', 'sociable, not shy', 'open to new ideas', 'knowledgeable', 'Farsighted', 'enjoys exploration', 'patient', 'enjoys learning', 'open to criticism', and 'talented', as the characteristics of a creative person. These descriptions indicate that the creative person is considered to have a very wide and varied range of characteristics. This does not mean, however, that a creative person needs to have all of these characteristics at once. According to Edmonds, Weakley, Candy, Fell, Knott, and Pauletto (2005), creative people try to develop new techniques and new forms, and the creative process needs to be combined with rigorous laboratory work. Use of laboratory time, one that integrates critical and creative thinking processes and in which logical thinking about science issues and learning is achieved, is an effective method in science education (Koray and Köksal, 2009).

Designing a creative educational environment by making changes in the classroom or in the schoolyard can be very important in developing creativity (Öztürk Aynal, 2010). When creative children's behaviors are misinterpreted at school or at home, this might blunt their creativity (Ünlüer, 2014). It is important that pre-service teachers, who will be leading classes in the future, have creative problem solving experience, and have a cognitive perception of that experience (Reiter-Palmon and Illies, 2004). Creativity is present at birth, but develops only in a suitable context and environment. Providing this appropriate context and environment for children at an early age is possible if there are educational processes that support creativity (Yıldırım, 2014).

According to Fisher (2013), to develop creativity, children should be taught that the process of problem solving is more important than the end result. In this context, it is important that pre-service science teachers are trained to recognize and develop creativity skills.

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