Original research article

Teachers' metaphors about "creative thinking"

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Abstract: The aim of this study is the 21st century, which has an important place in the cognitive, emotional, academic, and social development of students. The aim is to reveal the metaphors produced by teachers, who are in the position of gaining creative thinking, one of the learning and innovation skills, about creative thinking. The research was carried out with 10 teachers working in different types and levels of public schools in the Efeler district of Aydın province in the 2022-2023 academic year. In the study, in which the phenomenological approach, one of the qualitative research designs, was used, the participants were asked a question in the semi-structured "creative thinking metaphor interview form" prepared by the researchers, and the data obtained were analyzed by content analysis. The metaphors produced by the teachers in the study group about creative thinking were grouped into four categories: "*generating original ideas*", "*problem solving*", "*rethinking*" and "*creating an original product*".

Keywords: 21ˢᵗ century skills; creative thinking; teacher; metaphor

1. Introduction

People apply their thinking processes and skills in order to solve the problems encountered in daily life, to realize the determined goals, to organize the information they have, to make sense of the events and situations and to have more detailed information about the developing situations (Taşcı, 2005). Creative thinking, which is among these thinking processes and skills, includes being able to put forward original opinions in solving any problem, creating different alternatives, producing different products, connecting concepts, situations and events that were previously thought to be unrelated, and separating from everyone in some solutions, bringing different solutions. (Temizkan, 2011). In other words, creative thinking is to change the point of view towards the situations and problems encountered, to produce different and original ideas by going beyond the patterns, to associate existing thoughts, to establish various connections between ideas, events and situations, to find new and different ways and methods. Gaining children's creative thinking skills should be at the top of the learning objectives in terms of the development, progress and development of societies. Teachers have a primary responsibility in helping children acquire creative thinking skills (Özerbaş, 2011).

According to the results of the research on creative thinking skills, the behaviors of teachers with a seniority of one to ten years contribute to the acquisition of creative thinking more (Yenilmez & Yolcu, 2007), the acquisition of creative thinking at school increases academic success (Sternberg, 2003), teachers improve students' creativity. The creative thinking environment affects student success positively, creative thinking can be learned and developed more easily with the creation of an appropriate environment (Özerbaş, 2011), the democratic approach of teachers to students improves their creative thinking skills. positively affects its development (Erdoğdu, 2006).

Creative thinking is seen as an indicator of creativity. There is a relationship between the acquisition of creative thinking skills and the quality of the teacher. Yıldırım (2006) emphasized the importance of teacher-student interaction at the point of development of students' creativity levels. Dündar (2015) stated that the creativity level of the student is related to the creativity and creative thinking skills of the teacher; He states that a creative teacher can know

his students well and create the learning environment in accordance with their strengths and weaknesses, thus improving creative thinking.

Metaphors are the similes we make to make sense of the phenomena or events that we often encounter in daily life. It is stated that the word metaphor, which is used in the sense of metaphor, metaphor, metaphor, comes from the Greek word "metaphora", which is used to mean "to take from one place to another" (Corbett and Connors, 1999). Metaphor is the figurative reflection of social reality (Balcı, 2016). When a situation is told by comparing it to something else related to it, it is ensured that the subject is better understood and certain aspects are emphasized (Şişman, 2014). With metaphor, knowledge transfer is carried out from a known field to a new field (Guveli et al., 2011). Metaphor is widely used both in literary studies and in everyday language and speech (Punter, 2007).

Another way for teachers to express their thoughts on any subject is metaphor (Botha, 2009). Metaphor is important in terms of explaining some situations that teachers cannot explain and revealing the situation in their minds (Tamimi, 2005). The use of metaphor can also be considered as a way of thinking and seeing that structures teachers' perception of the world and directs their understanding. What is meant to be said through metaphor is expressed more effectively and using fewer words. Metaphor drives cognitive and affective processes to work effectively, leading the individual to think creatively, to make sense of events in his own life, to expand the boundaries of the mind and to creativity (Yaşar & Girmen, 2012).

The teacher(s) has undertaken the duty and responsibility of bringing the creative thinking skills to the new generation. Bringing creative thinking skills to the new generation emerges as a necessity in the changing and developing world. Technological developments, globalization and rapidly changing workforce demands require being more flexible to change(s) and being an individual(s) with high adaptability. One of the effective ways of enabling the new generation to discover their strengths and develop their abilities, to approach problems from different angles and to find alternative solutions, and to produce more creative and original ideas is to gain creative thinking skills. It is important to determine for what reason the teacher, who undertakes the responsibility of raising individuals who have acquired creative thinking skills, compares creative thinking to what. The aim of this study is to teach teachers in the 21st century. to reveal the metaphors it produces about "creative thinking", one of the learning and innovation skills.

2. Materials and Methods

In this study, which aims to determine the metaphors produced by teachers working at different school types and levels in public schools, about 'creative thinking', phenomenology (phenomenology) design, one of the qualitative research designs, was used. Phenomenology: It is a qualitative research design that tries to describe in depth, from the perspective of people, how the phenomena (event, experience, perception, orientation, concept, situation, etc.) that we are aware of but do not have detailed information about are perceived, experienced and understood by different people (Baş & Akturan, 2013; Bogdan and Biklen, 2007). In this study, the phenomenological approach; It was preferred because it allows teachers to define in depth their perceptions, experiences, approaches to events and make sense of them, and to provide a holistic perspective on them (Yıldırım & Şimşek, 2011).

2.1 Study Group

The study group of the research consists of 10 teachers working in different types and levels of public schools in Aydın province Efeler district. Snowball and criterion sampling methods were used to determine the study group formed by the teachers. The criterion for the selection of teachers was determined as taking part in different national and international projects that require creative thinking. A study was started with 1 teacher who met these criteria, and the people recommended by the teacher were reached by snowball sampling. Information about the study group is shown in Table 1.

Table 1. Demographic characteristics of the study group.

Variable		Frequency	Percent (%)
Gender	Female	4	40
	Male	6	60
School Type	Kindergarten	2	20

Primary school	2	20	
Middle school	3	30	
High school	3	30	

As seen in Table 1, 6 (60%) of the teachers participating in the research were male, 4 (40%) were female; 2 (20%) kindergarten teachers, 2 (20%) primary school teachers, 3 (30%) secondary school teachers and 3 (30%) high school teachers.

2.2 Data collection tool

In the study, a semi-structured "creative thinking metaphor interview form" consisting of questions developed by the researchers was used as a data collection tool. In the preparation of the form, 1 question was prepared by scanning the relevant literature. For the content validity of the form, the opinions of four experts in the field of educational administration were consulted. After the necessary arrangements were made, a pilot application involving 4 teachers was carried out, and the semi-structured "creative thinking metaphor interview form" was given its final form, taking into account the data obtained after the application.

2.3 Analysis of Data

The data of this study consists of individual interview records, each lasting 10 minutes, and the researcher's observation notes. After the data were obtained, a general evaluation was made before the analysis was carried out, all the data were classified within themselves and categories were created by classifying the possible codes and then the codes. The obtained data were analyzed by content analysis. The purpose of content analysis is to reach the relationships between concepts and concepts that can define the obtained data. Concepts and themes that cannot be identified with a descriptive approach can be revealed through content analysis (Yıldırım & Şimşek, 2011).

In order to ensure the validity and reliability of the study, care was taken to use multiple data sources, to create a meaningful whole within the categories and codes, to get confirmation of the findings obtained from the participants, to describe the participants, the sample selection, the process in detail, and to support them with quotations where appropriate. In addition, the codes and categories were compared at the end of the opinions and evaluations of three education experts, and it was seen that the reliability was 86% in the calculation made by using Miles and Huberman's (1994) consensus and disagreement formula. Findings supported by direct quotations were presented as categories and metaphors, teachers' opinions about the categories created were K1, K2, K3 etc. expressed as.

3. Results

The metaphors produced by the teachers in the study group about creative thinking were gathered in 4 categories: "*generating original ideas*", "*problem solving*", "*rethinking*" and "*creating an original product*". The metaphors produced by teachers about creative thinking are given in Table 2.

Table 2. Metaphors produced by teachers in the study group about "creative thinking".

Categories	Metaphors	Frequency	Percent
Generating original ideas	Locked doors	4	40
	Oysters		
	Travel companion		
	Solution oriented robot		
Problem solving	The light at the end of the tunnel	2	20
	Bird from hatching		
Rethinking	Finding an oasis in the desert	2	20
	Puzzle		
Creating original product	Sculpture	2	20
	Finding new way		

When the table is examined, the metaphors produced by teachers working in different school types about creative thinking are gathered in 4 categories: "*generating original ideas*", "*problem solving*", "*rethinking*", and "*creating original products*".

3.1 Generating original ideas

The category of "generating original ideas" related to creative thinking is the category in which most metaphors are produced. In the "original idea generation" category, the teachers considered creative thinking as the emergence of original, innovative and creative ideas, and expressed them with 4 different metaphors: "locked doors", "oyster", "traveler", and "solution-generating robot" and explained this with reasons. Here are the expressions of the participants about the metaphors they produced in the category of "generating original ideas" about creative thinking:

- *"Creative thinking is like locked doors opened in the human brain. Because when we solve every problem we encounter with different methods, we open another door thanks to the methods and techniques we use. The creative thinking methods we use reveal new original ideas and direct them to use these ideas in our daily lives. The human brain begins to ask questions to solve a problem it encounters, as it finds the answer to each question, it opens a new door and the process continues in this way until it finds a solution (K2)".*

- *"Creative thinking is like an oyster. Because the oyster is a structure that is difficult to open, but when opened, a beautiful and unique product emerges (K4)".*

- *"Creative thought is like a travel companion that does not exist for the individual but gives confidence and peace with its presence. Because the confidence that your companion will always be with you allows you to stand on the ground more firmly and stay standing (K1)".*

- *"Creative thinking is like a solution-oriented robot to me. Because the solution-oriented robot enables us to find different alternatives to the problems (K8)".*

3.2 Problem Solving

The "problem solving" category related to creative thinking is another important category in which the most metaphors are produced. In the "problem solving" category, teachers associated creative thinking with developing different alternatives to solve existing problems or difficulties and expressed them with 2 different metaphors: "light at the end of the tunnel" and "bird out of the hatching". Here are the expressions of the participants about creative thinking about the metaphors they produced in the "problem solving" category:

- *"Creative thinking is like the light at the end of the tunnel. Because the light at the end of the tunnel illuminates the person. A brilliant idea that suddenly comes to mind offers new ways to people. Thanks to these new ways, we reach original ideas. Also, a similarity between creative thinking and light is that they are both open to exploration. Light illuminates all visible places and reveals unexplored areas. Creative thinking is also about discovering new and different ideas (K5)".*

- *"I think creative thinking is like a bird hatching. Because a bird that hatches develops in a certain process, starting from the egg. This process results in the completion of the development of the embryo inside the egg, the breaking of the egg, and then the birth of the offspring. Similarly, creative thoughts also go through a process and eventually come up with a new idea, project or product (K6)".*

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3.3 Rethinking

Another important category for creative thinking is "rethinking". In the "rethinking" category, the teachers evaluated creative thinking as rethinking the current situation or ideas, restructuring existing ideas or situations, and expressed it with 2 different metaphors as "finding an oasis in the desert" and "puzzle". Here are the expressions of the participants about creative thinking about the metaphors they produced in the "rethinking" category:

- *"The creative thinking process is like "finding an oasis in the desert", which enables to generate new ideas and solutions while encountering seemingly insoluble situations. Because the process of finding an oasis in the desert can help a person discover and renew new ways to solve their problems (K9)".*

- *"Creative thinking is like a puzzle. Because, just as a puzzle piece, when fully seated, combines with other pieces to form a whole, in the creative thinking process, the pieces are examined from different angles, rearranged and brought together to form a new whole (K7)".*

3.4 Generating original product

The last category related to creative thinking is "creating original products". Teachers evaluated creative thinking as a new and unique product in the category of "creating an original product" and expressed it with 2 different metaphors: "making sculpture" and "finding

a new way". Here are the expressions of the participants about creative thinking about the metaphors they produced in the category of "creating an original product":

- *"Creative thinking is like a sculptor making a sculpture. Because, the sculptor creates a new product by using his imagination, using different techniques or based on observations and having different perspectives (K8)".*
- *"Thinking creatively is like not going the way everyone else goes and finding a new way. Because to find a new way, it is necessary to take risks, be curious and be open to innovations (K10)".*

4. Discussion and suggestions

Creative thinking skill is of vital importance as it enables the individual to use his potential to the fullest and to find original and permanent solutions to the problems he encounters. It is one of the sine qua non for an individual to gain the ability to think creatively, to develop his potential, to adapt to changing environmental conditions, and to overcome the problems he encounters, both in the family, the environment and the education he receives at school. With the education given at school, the responsibility of giving the individual creative thinking skills is given to the teacher. The teacher, who assumes the responsibility of bringing the creative thinking skills to the individual, should have this skill and use it effectively and functionally in his daily and professional life.

It was found worthy of research since it is important to determine the reason why the teacher, who takes the responsibility of giving the individual creative thinking skills, compares creative thinking to what. In the study, metaphors produced by teachers working in different types and levels of public schools about "*creative thinking*" were grouped under the categories of "*generating original ideas*", "*problem solving*", "*rethinking*" and "*creating original products*".

- In the category of "generating original ideas", teachers see creative thinking as a source of ideas and the emergence of innovative and original ideas. In this category, creative thinking is considered as a process that allows the production of new and unique ideas using existing information.
- In the "problem solving" category, teachers define creative thinking as the process of solving a problem. In this category, creative thinking is considered as an approach that enables finding creative and innovative solutions and developing different alternatives by evaluating problems from different perspectives.
- In the "rethinking" category, teachers describe creative thinking as the ability to question the current situation, rethink the current situation or ideas, reconstruct existing ideas or situations, and approach from different perspectives. In this category, he emphasizes the importance of developing different and innovative approaches by breaking traditional thought patterns with creative thinking.
- In the "creating original product" category, teachers define creative thinking as a process that enables students to come up with original and unique products. In this category, creative thinking refers to creating original work(s) by using one's own talent and potential and handling it from a different perspective.

Considering the metaphors produced by the teachers participating in the research about creative thinking, it is seen that they deal with creative thinking from different aspects. It is important that teachers, who undertake the duty and responsibility of teaching the new generation to acquire creative thinking skills, produce metaphor(s) by considering creative thinking from different angles, to show that they do not have prejudices and perceive it correctly. In addition, the research findings can be interpreted as metaphors produced by the teachers participating in the research as having creative thinking skills and working functionally.

The metaphors produced by the teachers participating in the research about creative thinking are important in terms of showing that the said skill is acquired and used effectively. According to the research findings, the following can be suggested:

- The teachers participating in the research compared creative thinking to a "puzzle". The teacher should be able to make a self-assessment on creative thinking skills. Self-evaluation of the teacher's creative thinking skills will enable him to handle creative thinking with a critical approach and to use his potential in creative thinking effectively and functionally.
- The teachers participating in the research compared creative thinking to a "solution-oriented robot". The teacher should be able to use his creative thinking skills effectively

and functionally while dealing with the events and phenomena he encounters and seeking solutions to the daily and professional problems he encounters.

- The teachers who participated in the research compared creative thinking to "finding a new way". While fulfilling the duty and responsibility of helping the new generation to gain creative thinking skills, the teacher should be able to use original and innovative learning-teaching methods and techniques effectively and functionally, not only with theoretical education but also with applied education.

5. Conclusions

The teacher(s) has undertaken the duty and responsibility of bringing the creative thinking skills to the new generation. In this study, teachers' 21st century. The metaphors he produced about "creative thinking", which is one of the learning and innovation skills, were investigated. A semi-structured "creative thinking metaphor interview form" consisting of questions developed by the researchers was used as a data collection tool in the research. The obtained data were analyzed by content analysis. The metaphors produced by the teachers in the study group about creative thinking were grouped into four categories: "generating original ideas", "problem solving", "rethinking" and "creating an original product". The metaphors produced by the teachers participating in the research about creative thinking are important in terms of showing that the said skill is acquired and used effectively.

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