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Determination of the Metaphors Related to the Virus Concept of Pre-Service Science Teachers in the Pandemic Process by Using Phenomenological Method

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ABSTRACT

In this study, it was aimed to determine the metaphors of pre-service science teachers about the concept of "virus" during the pandemic process. Qualitative research approach and accordingly phenomenology method were preferred in this study. The study group consists of 47 volunteer pre-service science teachers, chosen by purposeful sampling. The data were collected by using the semi-structured interview technique. The data obtained were processed by content analysis method, which is also known as descriptive-interpretative analysis. As a result of the analysis, it was determined that 41 metaphors were formed. Regarding these metaphors, 6 metaphor themes were created: These are; "Anxiety and Worry, Education and Training, Spreading Structure and Process, Warning and Sanction, Violence and Harm, Unexpected Situation and Dissatisfaction". As a result, it is suggested that by conducting such studies both in the same programs of different universities and in different teacher education programs, representative findings of our country can be obtained.

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Introduction

Concepts are the name given to the unit of thought formed by gathering entities, events, people and thoughts under a common group according to their similarities. Concepts have an important role in classifying our knowledge and transferring it to other people (Kaptan, 1999). Concept learning has been realized with the information created in our minds by dividing the similarities into categories. On the other hand, the creation and transfer of new information in our brain is directly related to the creation and transfer of concepts (Piaget, 1968). Individuals create associations in their minds by using the common features of another known concept in order for the concept or phenomenon to be learned to settle in our minds (Atasoy et al., 2013; Koohang & Harman, 2005). Teaching concepts in educational sciences is one of the most frequently emphasized topics (Çepni, 2018). In the related literature, it is possible to find many postgraduate theses and articles on concept teaching and the detection of misconceptions (Duman & Avcı, 2016; Kaya, 2017; Okur, 2009). When these publications are examined, it will be seen that many theories, approaches, models and strategies are used in the development of conceptual understanding (Atasoy et al., 2013; Çalık, Okur & Taylor, 2011; Doğru, et al., 2012). It is known that many educational materials such as conceptual change methods, worksheets, refutational

texts, analogies, concept maps are used to eliminate misconceptions (Çalık et al., 2008; Demirbaş et al., 2011). Another method used in concept teaching is metaphors (Akşit & Erkan, 2015).

Metaphor is derived from the combination of the Greek words “meta and pherein” and can be translated as literally “moving beyond” (Levine, 2005; Öztürk, 2007). There are many definitions in the literature about metaphor. Metaphor is defined as a process of transferring knowledge from the similar to the unknown according to Ekiz (2001); a view, a way of thinking and seeing that allows us to understand and explain the unknowns around us according to Çelikten (2006); the formation and progress of our ideas, a factor that causes structuring in our minds according to Saban (2004); a tool used by individuals to explain surroundings according to Geçit and Gencer (2011); the use of concrete events in explaining abstract phenomena according to Kalyoncu & Liman (2013); and concretizing abstract concepts with the help of concepts that are placed in our minds through experiences in daily life according to Ekici (2016). According to Cerit (2008) individuals can make explanations using different simulations in order to perceive the environment and events they live in. Based on these definitions, we can define metaphor as the analysis of concepts that warn of explanation by occupying people's minds with the help of a different concept. Metaphors are frequently used in teaching subjects and concepts in many different disciplines such as psychology, sociology, language teaching, and education (Gibbs & Ortony, 2008). As seen in other fields, metaphors are a frequently used method in identifying and teaching concepts and topics in science education.

Due to the abundance of abstract concepts in science education, the decrease in students' attitudes and motivation towards science education and their academic achievement resulting in a decrease in students' interest in the course. In science teaching, explanation of concept associating with daily life is an important fact (Coştu, Ünal & Ayas, 2007). It is said that the experiences gained from daily life using metaphors are used as an important tool in concretizing abstract science concepts and in structuring the concepts by analyzing them in our minds (Anılan, 2017; Ergün & Kıyıcı, 2019; Kızılay & Tanık Önal, 2020). When the relevant literature is examined, it is seen that there have been many studies about metaphor in the field of education in recent years (Anılan, 2017; Beyoğlu & Demirali, 2018; Bolat, 2017; Duban & Arısoy, 2017; Ekiz & Gülay, 2018; Eren, 2018; Gezer, 2020; Girgin, 2019; İncebacak, Sarışan & Yaman, 2018; Karaca & Ada, 2018; Karapınar & Arıbaş, 2017; Limon & Durnalı, 2018; Namalı, Temel & Güllü, 2017; Radmard & Soysal, 2019; Şahin, 2019; Toksun, 2019; Turan, Yıldırım & Clickman, 2016; Yıldız, Sevilay & Özen, 2018). When the recent studies in the field of science education are examined in general, Kızılay and Tanık Önal (2020) in their study tried to reveal the perceptions of academicians in the field of science towards the science course through metaphors and concluded that "life, life and sun" metaphors were formed. In their study, Aksakal and Yılayaz (2019) tried to determine the perceptions of pre-service science teachers towards art in science activities and as a result, metaphors for art in science activities were revealed. Ergün and Kıyıcı (2019) aimed to determine the metaphorical perceptions of pre-service science teachers about STEM education, and accordingly revealed that pre-service teachers perceived it as an interdisciplinary approach aiming to raise individuals who could find solutions to problems related to STEM education.

When metaphor studies on concept teaching in science education were examined, Carolan (2006) investigated metaphors used in environmental sciences. Vennille, Gribble, and Donovan (2006) analyzed students' metaphors about genes. Eilam (2009) stated that biology teachers produced metaphors with their own self-criticism and that these metaphors reveal the teaching experiences of experienced teachers and their professional development from the past and still continue. Kalra and Baveja (2012) examined the metaphors about the "science lesson" in their research. Lancor (2015) tried to identify which conceptual metaphors are used by students to explain the role of energy in various systems in an interdisciplinary science course. Demirci (2020) aimed to determine the perceptions of science and primary pre-service teachers about science-related subjects and concepts through metaphors in his study. In their study, Değirmenci, Karamustafaoğlu, and Karamustafaoğlu (2019) tried to reveal the differences of theology and science pre-service teachers' perceptions about the concept of "light" through metaphors. As a result of the research, it was determined that there are 44 different metaphors for the concept of light in the students studying theology, and 35 different metaphors in the

students studying science. Gürlen and Köseoğlu (2019) also tried to identify metaphors about the concepts of "soil" and "soil pollution" in a study conducted with university students. It has been suggested that the metaphors obtained as a result of the research are an important educational tool in teaching these concepts. Özbuğutu (2018) aimed to identify metaphors for the concept of "evolution" with pre-service science teachers in his study. As a result of the research, 58 different metaphors were obtained and presented in tables. Kalaycı and Yoğun (2018) aimed to identify metaphors of secondary school students' related to the concepts of "red blood cells, white blood cells and blood platelets". It was also found that they produced 74 metaphors about the concept of red blood cells, 63 about the concept of white blood cells and 60 about the concept of blood platelets. Especially in recent years, it is seen that studies on metaphors in science education have gained momentum. When the relevant literature is examined, it is seen that studies on the concept of "virus" in science education seem to be limited. In addition, it has become important to determine how metaphorical perceptions about the concept of "virus" occur during the pandemic process we are in. In this context, it is thought that conducting such a research would be used as an important educational tool in teaching the concept of "virus".

Purpose of the Research

The purpose of this study is to determine the perceptions of pre-service science teachers about the concept of virus with the help of metaphors. Within the framework of this general purpose, answers for the following questions were sought:

1. Through which metaphors do pre-service science teachers explain their perceptions about the concept of "virus" during the pandemic process?
2. Under which themes are the obtained metaphors collected in terms of common features?

Method

Research Method

The phenomenology method, which is one of the qualitative research approaches, was preferred in the study to determine the metaphorical perceptions of the pre-service science teachers towards the concept of "virus" in the pandemic process. Phenomenology method is a method that focuses on phenomena that we do not have an in-depth and comprehensive understanding but are aware of (Annells, 2006; Creswell, 2013). With this research method, the differences in perceptions that individuals understand from a concept, topic or a written text they read can be revealed (Çepni, 2018; Yıldırım & Şimşek, 2013). Ekiz and Koçyiğit (2012) defined the phenomenology method as explaining the situations that individuals are aware of but cannot clarify by revealing the relationships between the situations and phenomena they encounter. Melanlıoğlu (2013) defined the phenomenology method as a method that focuses on revealing the differences in the perceptions of individuals about the phenomena around us. In brief, the purpose of this method is to perceive and interpret events happening around the individual in a unique way (Fraenkel & Wallen, 2008). In the study, through the phenomenology method, it was aimed to identify and interpret the metaphors of pre-service science teachers about the concept of "virus" in the pandemic process.

Study Group

In the research, the study group was formed by using the purposeful sample selection in accordance with the nature of the qualitative research method. Purposeful sampling is based on the principle that groups show similar characteristics and are formed homogeneously (Çepni, 2018). The purpose of this method is not to directly generalize the results obtained in the study to the population, but to describe and understand the situation or individuals investigated in depth (Ekiz, 2020). In the study, individuals with certain qualities were selected and the homogeneous sampling method was

preferred. The study group consists of 47 pre-service teachers studying at Sivas Cumhuriyet University Faculty of Education, Department of Science Education, based on voluntary sampling and selected according to appropriate situation sampling. The data were presented by coding as S1, S2, S3, ..., S47 to keep the identity information of the pre-service teachers participating in the study confidential. Information on the study group is given in Table 1.

Table1

Structure of the study group

Gender	Pre-Service Teacher's Code	Number
Male	S1, S4, S5, S8, S11, S14, S15, S16, S17, S19, S20, S23, S24, S27, S29, S31, S32, S33, S34, S35, S38, S41, S42, S46	24
Female	S2, S3, S6, S7, S9, S10, S12, S13, S18, S21, S22, S25, S26, S28, S30, S36, S37, S39, S40, S43, S44, S45, S47	23

Data Collection

In the study, the data were collected by using semi-structured interview technique. Due to the pandemic process, the interviews were carried out by using the technological meeting tools like Zoom, WhatsApp and Skype. The data were recorded. Also, the answer to question "I am likening the virus to a..... because...." is also asked from the study group in writing.

Data Analysis

Analyzes of the metaphors that 47 pre-service science teachers studying at the department of science education produced as a result of the interviews made with them on the concept of "virus" during the pandemic process were analyzed with the content analysis method, one of the high-level analysis methods. Content analysis is a type of analysis that consists of examining the content of qualitatively obtained data in detail and expressing it numerically (Ekiz, 2020). Yıldırım and Şimşek (2013) defined content analysis as organizing and interpreting the findings in a way that can be understood by the examiners, by creating tables by combining the obtained findings by creating concepts and themes. The analysis of the data in the study was carried out in six stages: coding, classification, arrangement, theming, tabulation and interpretation of the findings. In the research, it was tried to be themed by coding from the raw data. During this process, the unnecessary codes that were repeated and the expressions that were determined to be unrelated to the meaning they attributed to the metaphor were removed by classification, and new codes were created and edited where necessary. In this process, expert opinion in the analysis was also consulted in order to ensure validity and reliability. Finally, the edited data were presented in tables. In the presentation of the data, quotations from the statements of pre-service teachers were included in order to make the metaphors more explanative as well as descriptive and valid.

Findings

In this section, the analysis and findings of the data collected by the semi-structured interview technique conducted with 47 pre-service teachers studying in the department of science teaching are included. Information about the first metaphor produced by the pre-service teachers participating in the study and their explanations accordingly are presented in Table 2.

Table 2*Raw-obtained metaphors and their explanations*

Pre-Service Teacher	Metaphor	Explanation
S1	Faded Flower	Even if the flower fades away, it always keeps its seed inside. Those seeds will give rise to more flowers the next spring. Although the virus also looks bad, it contains different beauties in the name of humanity.
S2	Fire	It burns out where it splashes.
S3	Reminder	It reminded us of what we forgot in this process.
S4	Apple Worm	The apple looks like nothing on the outside, as if everything is normal. But if this little worm inside the apple is not cleaned, it will damage the whole apple and even all the apples in contact nearby in time, starts to rot them. The virus is like this; it first infects itself and begins to spread.
S5	Harmful Worm on a Leaf	Just as those worms rot the leaf, or even the plant in a short time, the virus also rots people.
S6	Cage	Like a bird longing to fly in the sky stripped of its liberty, being stuck in a cage.
S7	Relative	I don't want to meet with anybody, but I have to meet. I don't know whether to eat it or rub it on. But it also shows its importance in family chat.
S8	The Avalanche Whose Domain is the World	It grows more and more every day.
S9	An Invisible Enemy	It is dragging humanity into a crisis, both materially and spiritually. It causes great damage to the economy. It negatively affects the education and health sector to a great extent. The scariest thing is that people die in pain and without seeing their loved ones one last time. The virus attacks humanity with all its might, like a ruthless enemy. I hope we get rid of this invisible enemy as soon as possible.
S10	Biological Enemy	The aim is to imprison death, dominate the world and bring the end of humanity.
S11	A Genetic Weapon	In a scientific article I read, Bill Gates mentioned that in 2019 such an epidemic would emerge from the Chinese city of Wuhan and spread to the world.
S12	War	It teaches to win only in this way to act in unity and solidarity with people, as war causes bad consequences. The virus has caused many deaths, but it has taught people what it means to be clean, what a great thing to be able to stroll on the street, not to value money very much, and what it means to live day by day, and most importantly, that the great treasure is health.
S13	Sharing	Spreads as you share.
S14	Study Lesson	Wherever I go it always comes across.
S15	A Bad Dream	It's like I'll wake up one day and everything will pass. I will continue my normal life saying, "Oh! it was a dream."

S16	Teacher who does not fulfill his/her duty properly	Just as a virus emerges in a certain period of life, it reveals the fact that it will leave people as a bad mark not only in the period of its emergence but also in the future. A teacher who does not fulfill his/her duty properly cannot touch the lives of a group of students assigned to him to train. Just as the precaution taken early is a step to prevent the spread, the teacher who takes the early steps in training will start success sooner in their professional life.
S17	Some Punishment of the Universe against Man	All this time people were punishing and destroying the universe. While people are punishing the nature, animals and forests, we see the punishment that the universe gives us with the virus. With this punishment, while a great lesson is given to mankind, we see that nature renews itself at this time. The shoots seeded among the stones, in which we slaughtered the forest, and the wandering swans freely in the forest can be the greatest evidence for this. While the virus symbolizes death, panic, fear and despair for people, it appears as a self-renewal process for nature. While the universe is recovering itself, man is now resting on the breaking point. In short, the virus teaches freedom to nature while teaching us captivity.
S18	Japanese Glue	If Japanese glue gets on our hands, it will hardly come off. This disease is also transmitted by contact and makes us uncomfortable.
S19	Rules of Law	It teaches people to live by the rules and keeps people living in a certain order.
S20	Thief	There is nothing beautiful that it brings to us, but there is a lot it takes from us with its existence. Whatever we have, it takes away from us.
S21	Barbed Wire	We want to go somewhere, we encounter barbed wire, if we take precautions and pass, and we will not have trouble. If we pass without any precautions, we will suffer great damage. The virus is such a thing, if we take precautions, we will not have trouble.
S22	Shoes and Halay (Anatolian Folk Dance)	It travels everywhere. It looks like halay. Because when we go from point a to point b in the problem, we go everywhere with halay, and the virus goes everywhere like halay.
S23	World War	Many people die; regardless of age, race or gender. Countries are in a state of panic and no one can get out because of the fear. Economically, everybody is limited and there is no complete freedom.
S24	Stimulant	We are paying for our sins.
S25	Mosquito	It doesn't come out until it wants and it's annoying in any situation.
S26	Wi-fi	It affects everything nearby, like Wi-fi.
S27	Bailiff Officer	People understand the value of what they have in their normal time when they lose them. This virus came just like a bailiff and took our health, freedom, our school,

		our social life, and everything that I have not yet been aware of, but which is very valuable, and took away from us permanently-temporarily. This bailiff is enforcing all over the world. But it shows humanity how valuable life is.
S28	Examination and Poor Education	It is in our hands to pass or fail in the exam - Every student who grows up with a poor education will continue by harming his environment as well as himself.
S29	Rotten Fruit	One rotten fruit can quickly rot nearby fruits where it is found. Similarly, the virus can quickly transmit from a sick person to thousands of healthy people and can make them sick.
S30	Relative visit	Once it starts, doesn't end.
S31	Nightmare	It ruined all my plans.
S32	Nature's Reaction	By sending this virus in order not to be destroyed anymore, nature shows us that human beings cannot exist without nature and nature cannot exist without humans.
S33	Enemy	In order to defeat the virus, we must fight it and take the necessary measures.
S34	IQ test	People who can understand the seriousness of the issue and use their mind will easily overcome this process.
S35	Uninvited Quest	The coronavirus came like an uninvited guest and spread to all countries.
S36	Addiction	Although I want to get rid of it and not be infected at all, I can be exposed because of others.
S37	Prison	It locked us in the house. This dungeon virus is almost a fence. It prevents me from getting out. The walls are coming upon me.
S38	Tornado	A disease strong enough to destroy a city.
S39	Person Smoking at Gas Station	Can cause the death of many people by creating an explosion alone.
S40	War	Leads to boredom and frustration.
S41	Stone Thrown into the Lake	Spreads very quickly like a wave effect.
S42	Fear	It scares me that someone in my family or anyone I love could get this disease.
S43	Hot War	It is a frightening problem for all people in the area where it spreads. At the same time, wherever we are, a situation that will end with the common struggle of the people in the region where it is infected.
S44	Gossip	It spreads as fast and as dangerous as gossip.
S45	Ignorance	Because if the ignorant person spreads some ignorance to everyone she/he communicates with, if we stop the conversation with the ignorant person, we will prevent this ignorance from spreading.
S46	Cliff	The person who fell is hard to get rid of
S47	Whirlpool	It is very difficult to get rid of.

When Table 2 is examined, it will be seen that 47 pre-service teachers created 49 different metaphors for the concept of "virus" and explained their reasons for creating these metaphors. The data in this table are given as raw. It is understood that pre-service teachers with codes S22 and S28 produced two different metaphors. Table 3, which gives the final form of the metaphors, was created by examining the raw data above.

Table 3

The metaphors formed and their frequencies

Pre-Service Teacher	Metaphor Name	Freq., (f)	Pre-Service Teacher	Metaphor Name	Freq., (f)
S12, S23, S43, S40	War	4	S24	Stimulant	1
S9, S10, S33	Enemy	3	S25	Mosquito	1
S15, S31	Nightmare	2	S26	Wi-fi	1
S4, S5	Fruit Worm	2	S27	Bailiff Officer	1
S7, S30	Relative Visit	2	S28	Examination	1
S1	Faded Flower	1	S29	A Rotten Fruit	1
S2	Fire	1	S32	Nature's Reaction	1
S3	Reminder	1	S34	IQ test	1
S6	Cage	1	S35	Uninvited Guest	1
S8	Avalanche	1	S36	Addiction	1
S11	A Genetic Weapon	1	S37	Prison	1
S13	Sharing	1	S38	Tornado	1
S14	Study Lesson	1	S39	Smoking in Gas Station	1
S16	Poor Teacher	1	S41	Stone thrown into the lake	1
S17	Punishment of the Universe against Man	1	S42	Fear	1
S18	Japanese Glue	1	S44	Gossip	1
S19	Rules of Law	1	S45	Ignorance	1
S20	Thieves	1	S46	Cliff	1
S21	Barbed Wire	1	S47	Whirlpool	1
S22	Shoes	1	S28	Poor Education	1
S22	Halay (Anatolian Folk Dance)	1			

When Table 3 is examined, it is seen that 49 metaphors formed by 47 pre-service teachers about the concept of "virus" are classified and simplified. The answers given by the pre-service teacher S12, S23, S40, S43 are under the code "War", the answers given by the pre-service teacher S9, S10, S33 are under "Enemy" code, and the answers given by the pre-service teacher S15, S31 are under the code "Nightmare". It is understood that the answers given by the pre-service teachers with the codes S4, S5 are classified under the code of "Fruit Worm", and the answers given by the pre-service teacher S7, S30 under the code "Relative Visit". In addition, the answers given by the pre-service teachers with the codes S8, S16, S17 and S39 were simplified. It is seen that the 49 metaphors obtained as raw as a result of the operations were reduced to 41 metaphors. The themes were created with 41 codes obtained after these processes and are displayed in Table 4.

Table 4*Themes created*

Theme Number	Themes	Codes	f _c	Pre-service Teacher	f _s
1	Anxiety and Worry	Nightmare	9	S15, S31	12
		Fear		S42	
		Whirlpool		S47	
		Cliff		S46	
		Thief		S20	
		Enemy		S9, S10, S33	
		Prison		S37	
		Cage		S6	
		Mosquito		S25	
		Examination; Poor Education		S28	
2	Education and Training	IQ Test	6	S34	5
		Study Lesson		S14	
		Poor Teacher		S16	
		Ignorance		S45	

		Wi-fi; Gossip		S26; S44	
		Stone thrown into the lake		S41	
		Shoes; Halay (Ant. Folk Dance)		S22	
3	Spreading Structure and Process	Sharing	9	S13	8
		Avalanche		S8	
		Rotten Fruit		S29	
		Faded Flower		S1	
		Punishment of the Universe against Man		S17	
		Rules of Law		S19	
		Nature's Reaction		S32	
4	Warning and Sanction	Reminder	7	S3	7
		Barbed wire		S21	
		Bailiff Officer; Stimulant		S27; S24	
		War		S12, S23, S40,	
		Fire		S43	
5	Violence and Harm	Genetic Weapon	6	S2	10
		Smoking at a Gas Station,		S11	
		Fruit Worm; Tornado		S39	
				S4, S5; S38	
6	Unexpected Situation and Dissatisfaction	Uninvited Guest		S35	
		Relative Visit	4	S7, S30	5
		Japanese Glue; Addiction		S18; S36	

When Table 4 is examined, it is understood that the metaphors created by 47 pre-service teachers for the concept of "Virus" are gathered under 6 themes. These are: the metaphors formed by 12 pre-service teachers under the theme of "Anxiety and Worry" are gathered around 9 codes; the metaphors formed by 5 pre-service teachers under the theme of "Education and Training" are gathered around 6 codes; the metaphors formed by 8 pre-service teachers under the theme of "Spreading Structure and Process" are gathered around 9 codes; the metaphors formed by 7 pre-service teachers under the theme of "Warning and Sanction" are gathered around 7 codes; the metaphors formed by 10 pre-service teachers under the theme of "Violence and Harm" are gathered around 6 codes; and the metaphors formed by 5 pre-service teachers under the theme of "Unexpected Situations and Dissatisfaction" are gathered around 4 codes.

Discussion, Conclusion and Recommendations

In present study conducted to determine the metaphorical perceptions of the concept of "Virus" during the pandemic process with 47 pre-service teachers studying at the department of science teaching, it is seen that 49 metaphors were formed in raw form and 41 metaphors in reduced form. In addition, when the findings are examined, it is understood that 6 themes have occurred. Among these themes, the theme of "Anxiety and Worry" has come to the fore, which constitutes 9 metaphors in terms of the number of codes and expressed by 12 participants. When this theme was examined, the participants S9, S10 and S33 used the "Enemy" metaphor more frequently than other metaphors. The metaphor of "Nightmare" has been repeated twice and other metaphors have been expressed once. Considering that the period in which the research data was collected is the period of struggle with pandemics and the high number of deaths in the period (Ministry of Health, 2020), it is thought that the concept of "virus" is effective in the formation of this theme that causes anxiety, worry and fears. Constructed by 9 metaphors and expressed by 9 participants; the theme related to "Spreading Structure and Process" comes to the fore second. The metaphors of "Wi-fi, Gossip, Stone Thrown into the Lake, Shoes, Halay, Sharing, Avalanche, Rotten Fruit, Faded Flower" under the theme of "Spreading Structure and Process" reveals the perception that the virus infects more people by spreading in physical environment/solid, liquid, gas/transferred from point to point. According to the statements of the participants, this spreading process is sometimes perceived as being with a solid object such as a shoe or faded flower, and sometimes with electromagnetic waves such as Wi-Fi. It is also seen that spreading is explained by emotional expressions such as "sharing". "Warning and Sanction" theme consists of the metaphors "Punishment of the Universe Against Man, Rules of Law, Nature's Reaction, Reminder, Barbed Wire, Bailiff Officer, Stimulant". When the theme is examined, it is stated that humanity is punished with abstract concepts such as the universe and nature, and at the same time, nature renews itself positively in this process. From these statements, we can deduce the perception that the virus has made natural selection in the participants. As can be understood from the other codes in the theme, it may be revealed that humanity must obey some rules while living on the earth, and if it does not, it will be subject to sanctions. The theme of "Education and Training" consists of 6 metaphors with the code "Examination, IQ Test, Study Lesson, Poor Teacher, Ignorance, Poor Education". The metaphors such as "poor teacher" and "poor education" in the theming of the virus with education and training, the fact that a teacher who does not perform his/her duty properly or individuals trained by an education system that does not function well will play a role in raising the next generations has taken into account. Considering the role of education in raising people, this will cause a chain deformation and this situation is compared to a virus. It is thought that the transmission of the virus in contact with others of an infected person is interpreted as associated with poor education. In addition, it is understood from the participants' statements that the concept of virus caused the formation of metaphors such as "examination", "IQ test" and "Study Lesson" due to the effect of the pandemic process. Associating the virus with concepts such as studying lesson, examination, and ignorance reveals that by creating a perception of an exam to be infected or not, they evaluate the inclination of the virus to increase and decrease according to whether warnings of the authorities and the said precautions are followed or not.

The theme "Violence and Harm" consisted of 6 metaphors expressed by 9 participants. Among the metaphors that constitute this theme, the metaphor of "War" was expressed by 4 participants and appears to be the most common metaphor in the study. Participants stated that the war was terrible, killed many people regardless of age, race, or gender in the region and associated it with the virus, and a situation that restricts freedom. This situation is thought to be caused by restrictive measures in the pandemic environment and the death of people infected with the virus regardless of age, gender and race. While explaining this situation by likening the virus to a "weapon", S11 gave an example from a book he had read and stated that this virus was produced and spread in a laboratory environment. It can be said that the main reason for the formation of codes such as "Fire, Fruit Worm and Smoking at the Gas Station" is that the virus affects everyone around it. The theme of "Unexpected Situations and Dissatisfaction" is formed by 5 participants with 4 codes. In this theme, the participants associated the virus to unpleasant situations such as Japanese glue that is difficult to remove from their hands and their addiction they could not quit. In addition, a participant was uncomfortable with his/her relatives coming to them constantly and associated this situation with the virus. It is thought that the formation of this theme is based on the fact that the virus appears at an unwanted moment and it is very difficult to get rid of it. Considering the metaphors formed within the scope of the study, it is seen that metaphors containing mostly negative statements came up with the effect of the pandemic process. When the literature is examined, this situation is similar to the metaphors formed for the GMO concept in Uzunkol's (2012) study and the metaphors formed in Arslan and Zengin's (2016) study on the concept of global warming. Lakoff and Johnson (2003) stated in their study that metaphorical thinking consists of the situations and experiences of the individual. In present study, it was determined that due to the pandemic process, quite rich, meaningful and containing different perspectives were formed. In particular, it is known that using metaphors in science education helps learning (Harrison & Treagust, 2006; Jeppsson, et al., 2013). In present study, the phenomenological method, one of the qualitative research approaches, was used, and it is suggested that present method can be used in the same department and in different departments, as well as by developing quantitative measurement tools to collect findings that represent Turkey.

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