Vilnius University Press

Contents lists available at Vilnius University Press

Acta Paedagogica Vilnensia
2024, vol. 52, pp. 171–190

ISSN 1392-5016 eISSN 1648-665X
DOI: https://doi.org/10.15388/ActPaed.2024.52.6

# The Evaluation of Metaphoric Perceptions of the Concept of "Geography" by Geography Teacher Candidates

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**Abstract.** This study was carried out to reveal the metaphors by geography teacher candidates about the concept of "Geography." The data of the study were collected with qualitative research method and the study was carried out on the pattern of phenomenology. The data were subjected to content analysis. In order to determine the students' perceptions about the concept of geography, a semistructured form was prepared, and this form included the sentence of "Geography is like a/an ....., because ....." Students were asked to complete this sentence in the form. When the findings of the study were evaluated, it was seen that 86 valid metaphors had been produced by the students. These metaphors were coded in terms of their common features and 8 different conceptual categories were created. The prominent ones of these categories were "Geography as the source of discovery and learning," "Geography as the source of diversity," "Geography as similar to humanity," "Geography as the source of peace and acceptance," and metaphor numbers and frequencies of these categories were high.
**Key Words:** Metaphor, Geography, Teacher candidate, Qualitative research, Perception

## Metaforinis būsimųjų geografijos mokytojų sąvokos „geografija" suvokimo vertinimas

**Santrauka.** Straipsnyje pristatomu tyrimu siekiama atskleisti, kokias metaforas sąvokai „geografija" taiko būsimieji geografijos mokytojai. Tyrime taikyta kokybinio fenomenologinio metodo prieiga, atlikta duomenų turinio analizė. Siekiant ištirti tyrime dalyvavusių studentų geografijos sąvokos suvokimą, buvo parengta pusiau struktūruota forma, į ją įtrauktas sakinys: „Geografija yra kaip ....., nes .....", ir studentų buvo paprašyta užpildyti šį sakinį formoje. Tyrimo radiniai atskleidė, kad studentai pateikė 86 validžias metaforas. Metaforos buvo koduojamos pagal bendrus bruožus, sukurtos 8 konceptualios kategorijos. Iš jų labiausiai išsiskiria šios: „Geografija kaip atradimų ir mokymosi šaltinis", „Geografija kaip įvairovės šaltinis", „Geografija kaip tai, kas panašu į žmoniją", „Geografija kaip taikos ir pripažinimo šaltinis" – visos šios kategorijos išsiskyrė metaforų skaičiumi ir dažnumu.
**Pagrindiniai žodžiai:** metafora, geografija, būsimieji mokytojai, kokybinis tyrimas, suvokimas.

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**Received:** 02/05/2023. **Accepted:** 30/05/2023

## Introduction

A collection of methodical and systematic knowledge with qualities such as applicability, accuracy and certainty, which chooses a part of the universe or events as its subject, is called science. The science of geography is one of such methodical and systematic sciences and is among the sciences with a deep-rooted history (Doğanay and Sever, 2013, p. 1). It is accepted that the term geography was first used in ancient times in the early 3rd century BC as gégraphé or geographia by Eratosthenes (275–195 BC), who lived in Alexandria, ancient Egypt (Doğanay and Sever, 201, p. 1). Geography is a branch of science that studies landforms, the factors affecting their formation, the relationships between human, plant and animal communities and the natural environment, and their distribution. In short, examining the natural environment and the relationships between the natural environment and human beings constitutes the main subject of geography (Atalay, 2012, p. 1). The events related to the geographical earth are examined by adhering to the research methods (trip-observation and reasoning methods) and principles of thought (distribution, connection, cause–effect principles) of the science of geography (Doğanay, 1993, p. 7). Geography is a science that examines the relationships between human beings and the earth and what human beings have done and can do as a result of these relationships (Aydın, 2010, p. 1310).

The science of geography addresses the issues as an equation with three or four unknowns, finding solutions to problems arising from environment–human interaction and its consequences. This science includes no education or learning principle or method such as memorization. Therefore, while teaching many geography subjects, it is necessary to push and stimulate students' imaginative horizons to the fullest. This can be possible by sufficient field studies, using a large number of tools, and making frequent use of auxiliary and visual figures (Doğanay and Sever, 2013, p. 7). According to these comprehensive definitions of geography, geography is human-centered and emerges as a synthesis science covering many branches of science. The fact that it is related to many branches of science enables it to contain many concepts. Learning these scientific concepts correctly makes it easier to understand geography subjects. In order for concepts to be learned, made permanent and easily remembered, they need to be coded in a way that creates associations in our minds. One of the best methods for this is to achieve conceptual learning by associating a concept with similar stimuli and other concepts.

As is known, concepts help us to understand our physical and social world. Thanks to concepts and terms, we distinguish events, facts, thoughts and substances from each other. In geography teaching, concepts and terms constitute the word groups, that is, the building blocks of information, to be taught to students while teaching the course, and geographical facts and events can only take place in students' minds through concepts and terms (Turan, 2002, p. 70)

A concept is the common name for objects that can be different in many aspects (Arı et al., 1999, p. 187). Concept learning is basically "learning to distinguish". In this type of learning, people learn to use the concept name for all objects with appropriate

properties, excluding the objects that do not have that feature from that concept (Arı et al., 1999, p. 187). Concepts are the most basic mental formations that help people sustain their lives since people recognize, distinguish, select and combine through concepts (Bozkurt, 2018, p. 7). While teaching concepts and terms in geography teaching, it is necessary to create a series of methods that will enable students to understand, avoiding methods that will lead them to memorization as much as possible (Turan, 2002, p. 68). According to Geçit and Gencer (2011, p. 2), when perceiving concepts, their common aspects with other concepts are often brought to mind. A newly learned feature of a concept is often matched with the features of other well-known situations, or analogies are created in the mind. Thus, metaphors appear in formal and informal learning as a way of explaining difficult-to-understand concepts with known concepts through analogy.

Metaphors first emerged from a perspective called "mental metaphor theory" developed by Lacoff and Johnson in the 1980s. According to this theory, "If our conceptual system is mostly metaphorical, then our way of thinking and every phenomenon we experience is metaphorical in some way." Metaphors are very effective in learning abstract concepts that can be learned indirectly (cited in Şahin and Baturay, 2013, p. 179). According to Levine (2005, p. 172), the word "metaphor" is derived from the Greek word "metapherein" and is formed by combining the words meta (to change) and pherein (to carry).

In the traditional understanding, metaphors are mentioned together with simile and metonymy and are known as using one word instead of another (Parın, 2017, p. 150). In Turkish, the concept of metaphor is used as similes and figurative expressions. This etymological structure shows the ability of metaphor to reconceptualize a phenomenon or object, to connect and express it from different angles (cited in Eraslan, 2011, p. 3). According to Kövecses (2020, p. 5), in our effort to comprehend this world, metaphors make it easier for us to conceptualize "less cognitively accessible areas in terms of more easily accessible areas." According to Forceville (2002, p. 2), for something to be a metaphor, at least the following questions must be answered. In order for something to be accepted as a metaphor, three questions must be answered: 1) What is the subject of the metaphor, 2) What is the source of the metaphor, 3) What are the features that are intended to be transferred from the source of the metaphor to its subject (Forceville, 2002). There are two domains in metaphor: The target domain, created by the current topic, and the source domain, in which important metaphorical reasoning occurs and which provides the source concepts used in this reasoning (Lakoff and Johnsen, 2003, p. 324).

In the metaphorization process, the metaphor is based on the relationship (C) between two elements (A and B). The metaphorical process can be explained in the example of "Ali is a lion" as follows. Ali (A) = The "target" to be explained (Figure 1). Lion (B) = The "source" in the explanatory position. (C) is the semantic quality (such as being strong and powerful) used concretely in this example (Tepebaşılı, 2013, p. 17–18).

The essence of metaphor is to understand and experience one kind of thing according to the terms of another kind of thing (Lakoff-Johnson, 2003, p. 30). The differences in interpretation of the events and situations experienced by people represent the essence of metaphor. Revealing the image formed in the mind for a concept makes the existing

perception of that concept available (Mete and Ayrancı, 2106, p. 53). Metaphors can create realities for us, especially social realities. Metaphor, therefore, can be a guide for our future actions (Lakoff and Johnsen, 2003, p. 205). Metaphor is used when one wants to explore and understand something esoteric, abstract, novel or speculative. As a general rule, the more abstract or speculative it is, the greater the variety of metaphors required to deal with it (Yob, 2003, p. 134). Metaphor is a powerful mental mapping and modeling mechanism for individuals to understand and structure their own world (Arslan and Bayrakçı, 2006, p. 103).

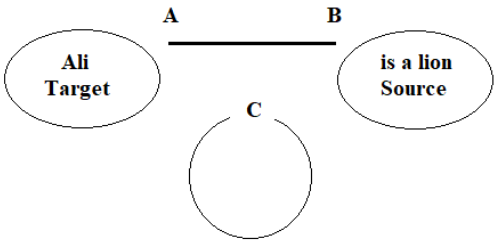


***Figure 1.*** *The relationship between source domain and target domain (Adapted from Tepebaşılı, 2013, p. 18).*

Metaphor is creative because it directs our minds beyond existing and obvious similarities, relationships and views to new similarities and views of their own creation. Metaphor is discovery because a dimension of meaning that the word alone would not have previously carried is discovered, thus expanding the horizons of both the word and the thought (Lakoff and Johnson, 2003). Metaphors, like attitudes, are formed as a result of experience and provide information about the individual's behavior on the subject (Göğebakan Yıldız, 2017, p. 115). Metaphor is a label, meaning or conceptual expression that a concept creates in an individual. It is a process of seeing and understanding. It is a more important and powerful mental production than simply explaining one concept with another concept because it expresses the depth and experiences that individuals have regarding the relevant concept (Eraslan, 2011, p. 1). Metaphor is not a form of expression, it is a conception, an event, a situation or an entity that is associated with (referred to, likened to, reminded of) the situation, event or idea that is intended to be explained while describing a phenomenon, a situation, a thought or an event. In this context, metaphor is not what is intended to be explained, but an element that makes expression and understanding impressive and makes it easier to understand (Demir & Yıldırım, 2019, p. 1089).

As Shuell (1990, p. 102) emphasizes: "If a picture is worth 1000 words, a metaphor is worth 1000 pictures. Because, while a picture only provides a static image, a metaphor offers a mental framework for thinking about a phenomenon." (cited in Saban, 2008, p. 460). Real ideas that individuals cannot express, or that they avoid expressing, or that they specifically form, and mental images related to those concepts can be reached

through metaphors (Şahin and Baturay, 2013, p. 188). When strong connections are established between new learning and pre-existing knowledge, retention also improves. One of the most important aspects of metaphor as a teaching tool is that it can create an environment that ensures long-term retention (Arslan and Bayrakçı, 2006, p. 102).

Metaphor is an effective way to express, convey and ensure understanding of everything that concerns people and society, because they enable people to relax by allowing thoughts to be expressed in the shortest ways (Turan, 2017, p. 571). Metaphors can be used as a powerful "pedagogical tool" in revealing, understanding and (perhaps) changing the mental images that teacher candidates have regarding certain phenomena during teacher education (Saban, 2008, p. 490). Mislearning of concepts in the teaching process causes students to make wrong analogies when using metaphors. Therefore, creating content-specific metaphors in all subjects of the high school geography curriculum enables students to learn easily and have fewer misconceptions (Çoşkun, 2010, p. 924). Correctly produced mental images or metaphors ensure the permanence of information and its assimilation by the person (Avcı & Kana, 2022, p. 257). Within the scope of this literature, one of the ways to determine how any subject is structured in the minds of students in geography teaching is to use metaphors. Metaphors can be guiding in explaining geographical concepts. In this context, it was tried to determine how students studying geography at the university perceived the concept of "geography" and with what images they explained it. Metaphors can be used to determine the perceptions of students at different stages of education on geography-related issues. There are some sample studies using the metaphor technique in geography education. For example, Aydin (2010a) considers metaphors that secondary school students have regarding the concept of geography. Additionally, Kaya and Aladağ (2023) considers determination of geography students' cognitive structures and metaphorical perceptions regarding the concept of earth key; Couclelis (2013) considers worlds of information – the geographic metaphor in the visualization of complex ınformation.

### *Objective*

The focus of the research is how the concept of geography is perceived. Therefore, the main aim is to determine through which metaphors prospective teachers express their mental images regarding the concept of geography. In addition, it is to determine under which conceptual categories the metaphors created by students can be grouped according to their common features and semantic relationships. In this regard, it was tried to determine the students' knowledge and perceptions about the concept of geography, their ability to define the concept of geography and their ability to associate it with different subjects.

## Method

### *Research Design*

This study was designed with a phenomenological approach, which is one of the qualitative research methods. The phenomenological design focuses on phenomena that we are aware of but do not have an in-depth and detailed understanding of. In the world we live in,

phenomena appear in various forms such as events, experiences, perceptions, tendencies, concepts and situations. However, this familiarity does not mean that we fully understand phenomena. Phenomenology provides a suitable research basis for studies that aim to investigate phenomena that are not completely foreign to us but whose full meaning we cannot understand (Yıldırım & Simsek, 2016, p. 69). The basis of effective educational activities is to attract and maintain students' interest. In order to keep students' interest in the learning situation alive, it is necessary to have a developed phenomenological logic to make the best use of innovation, diversity and risk situations (Durmuş & Baş, 2016, p. 78). In this context, the phenomenon focused on in the research process is the thoughts of geography teacher candidates about the concept of geography with the help of metaphors and how they organize and conceptualize the concept of geography in their minds.

### *Study group*

This study was conducted with 46 (28 males and 16 females) fourth grade teacher candidates studying at Necmettin Erbakan University, Ahmet Keleşoğlu Faculty of Education, Department of Geography, in the spring semester of the 2016–2017 and 2017–2018 academic year (Table 1). The students participating in the study were determined on a voluntary basis. In addition, the students participating in the study were selected by convenience sampling method.

***Table 1.*** *Frequency (f) and percentage (%) distributions of the students participating in the study by gender*

| Gender | N | % |
|---|---|---|
| **Female** | 16 | 36 |
| **Male** | 28 | 64 |
| **Total** | **44** | **100** |

### *Data Collection*

The students participating in the study were given a form consisting of an open-ended question "Geography is like ....., because....." and they were asked to write their opinions. At the beginning of the study, the students were given information about metaphor, and examples related to metaphor were shown. Then, teacher candidates were asked to fill in these incomplete forms within 20 minutes.

### *Data Analysis*

The data obtained in this study were analyzed using the content analysis approach. Content analysis is a technique used to reveal the concepts and relationships necessary to explain the data obtained.

The common denominator of content analysis techniques is based on inference. They all aim to provide an interpretation based on the elements observed and described in the messages (Bilgin, 2014, p. 1). The main purpose of content analysis is to reach concepts

and relationships that can explain the collected data. The data summarized and interpreted in descriptive analysis are subjected to a deeper process in content analysis, and concepts and themes that are not noticed with a descriptive approach can be discovered as a result of this analysis (Yıldırım & Şimşek, 2016, p. 242).

The metaphors developed by the participants regarding the questions in the interview form and their answers were analyzed in five stages.

These stages are (1) coding the data, (2) creating categories, (3) arranging the data according to codes and categories, (4) ensuring validity and reliability, (5), defining and interpreting the findings (Altun and Apaydın, 2013, p. 333–334; Yıldırım and Şimşek, 2016, p. 243).

### *Coding the Data*

Before analyzing the data, the students' answer sheets were coded with numbers from 1 to 46. The answers given by the students to the first and second questions on the answer sheets were collected under the headings "metaphor" and "explanation." The metaphors identified among the data were classified using the content analysis technique, based on their similarities. In addition, the explanations written by each student for the metaphors were analyzed and classified. A capital letter (K) was added to the end of each student's statements in the papers numbered 1 to 46, and the relevant paper number was written together and given in parentheses.

### *Creating Categories*

For the open-ended questions on the answer sheet regarding the phenomenon of geography, the metaphors produced by each student were coded, those with semantic similarity were brought together, and a total of 8 different conceptual categories were formed. The number of metaphors in each category, how many students repeated the metaphor (frequency) and percentage values were calculated and tables were created. In addition, a separate table was created for the reasons why students preferred the metaphors used for each open-ended question.

### *Arranging Data According to Codes and Categories*

At this stage, the data was arranged according to the resulting codes and categories. After the detailed coding in the first stage and the determination of the categories that could bring the related codes together, the researcher created a system to arrange the collected data and carried out the arranging process according to this system.

### *Ensuring validity and reliability*

The validity of this study (according to Yıldırım and Şimşek, 2016, p. 269) was based on the criteria of expert review. The reliability of the study was ensured by comparing the codes and categories related to the codes by two researchers in order to confirm wheth-

er the codes under the conceptual categories based on the research data represent these conceptual categories. The reliability of the data analysis conducted accordingly was calculated using the formula [Agreement / (Agreement + Disagreement) x 100] (Miles & Huberman, 1994, p. 64). The average reliability between the coders was found to be 93%, and consensus was achieved. According to Saban (2009, p. 288), in qualitative studies, a desired level of reliability is achieved when the agreement between expert and researcher evaluations is 90% and above.

### *Defining and Interpreting the Findings*

In this last stage, the information described and presented in detail is interpreted by the researcher and conclusions are drawn. In this stage, the researcher has to give meaning to the data collected and explain the relationships between the findings, establish cause and effect relationships, draw some conclusions from the findings and make explanations about the importance of the results obtained (Yıldırım and Şimşek, 2016, p. 251–252). In this context, metaphors were categorized and their frequencies and percentages were calculated. The tabulated categories were explained and interpreted, and a word cloud was created from the prominent metaphors. Metaphors that reflect the characteristics of the science of geography and are considered important were defined with their reasons.

## Findings

The findings obtained regarding the metaphors developed by the participants for the concept of "geography" were tabulated and analyzed within the framework of the research questions. The participants revealed a total of 86 valid metaphors about the concept of "geography" (Table 2). 23 of these metaphors were developed by 2 or more participants. The number of students representing these 23 valid metaphors varied between 2 and 10. The most frequently used metaphors related to the concept of "geography" by the students were Life (10), Human (9), Destiny (9) and Nature (8). The remaining 63 metaphors were written by the students only once and their ratio in total metaphors was calculated as 73%. Some of the most important ones consist of expressions such as *Family, Rule-maker, Foresight, Objective, Civilization, Synthesis, Dynamism, Bottomless well, An enjoyable game, Mirror, Foundation of a building, Bridge*.

The conceptual categories formed from the metaphors that geography teacher candidates have for the concept of geography are grouped under 8 categories. These categories are "*Geography as a source of peace and acceptance," "Geography as a source of sensitivity," "Geography as a habitat," "Geography as a guide," "Geography as a source of discovery, learning and knowledge," "Geography as a systematic and organized science," "Geography in terms of its similarity to human," "Geography as a source of diversity."* The frequency and percentage distributions of the categories formed according to the common features of the metaphors developed by geography teacher candidates regarding the concept of geography are given in the table below (Table 3).

***Table 2.*** *Valid metaphors put forward by teacher candidates about the concept of "geography" (according to frequency), number of students and percentages*

| Order of Metaphor | Name of Metaphor | Frequency (f) | Percentage (%) | Order of Metaphor | Name of Metaphor | Frequency (f) | Percentage (%) |
|---|---|---|---|---|---|---|---|
| ***1*** | life | 10 | 6.41 | 44 | destiny | 9 | 5.77 |
| 2 | person | 9 | 5.77 | 45 | nature | 8 | 5.13 |
| 3 | living | 5 | 3.21 | 46 | soil | 5 | 3.21 |
| 4 | universe | 4 | 2.56 | 47 | science | 4 | 2.56 |
| 5 | everything | 4 | 2.56 | 48 | culture | 3 | 1.92 |
| 6 | economy | 4 | 2.56 | 49 | water | 3 | 1.92 |
| 7 | environment | 4 | 2.56 | 50 | discovery | 2 | 1.28 |
| 8 | mom | 2 | 1.28 | 51 | guide | 2 | 1.28 |
| 9 | natural life | 3 | 1.92 | 52 | war | 2 | 1.28 |
| 10 | sea | 2 | 1.28 | 53 | history | 2 | 1.28 |
| 11 | our future | 2 | 1.28 | 54 | picture of earth | 2 | 1.28 |
| 12 | homeland | 2 | 1.28 | 55 | entertainment | 1 | 0.64 |
| 13 | child | 1 | 0.64 | 56 | peace | 1 | 0.64 |
| 14 | family | 1 | 0.64 | 57 | happiness | 1 | 0.64 |
| 15 | prescriptive | 1 | 0.64 | 58 | love | 1 | 0.64 |
| 16 | trip | 1 | 0.64 | 59 | mercy | 1 | 0.64 |
| 17 | lifetime | 1 | 0.64 | 60 | greed | 1 | 0.64 |
| 18 | love | 1 | 0.64 | 61 | politics | 1 | 0.64 |
| 19 | coffee table | 1 | 0.64 | 62 | dictionary | 1 | 0.64 |
| 20 | panorama | 1 | 0.64 | 63 | poem | 1 | 0.64 |
| 21 | atmosphere | 1 | 0.64 | 64 | foundation of building | 1 | 0.64 |
| 22 | habitat | 1 | 0.64 | 65 | privilege | 1 | 0.64 |
| 23 | desert | 1 | 0.64 | 66 | octopus | **1** | 0.64 |
| 24 | foresight | 1 | 0.64 | 67 | constitution | 1 | 0.64 |
| 25 | sun | 1 | 0.64 | 58 | mirror | 1 | 0.64 |
| 26 | weather | 1 | 0.64 | 69 | map | 1 | 0.64 |
| 27 | lens | 1 | 0.64 | 70 | bridge | 1 | 0.64 |
| 28 | water supply | 1 | 0.64 | 71 | a whole | 1 | 0.64 |
| 29 | forest | 1 | 0.64 | 72 | understanding the world | 1 | 0.64 |
| 30 | maths | 1 | 0.64 | 73 | chain | 1 | 0.64 |
| 31 | civilization | 1 | 0.64 | 74 | soup | 1 | 0.64 |
| 32 | natural systems | 1 | 0.64 | 75 | bottomless pit | 1 | 0.64 |
| 33 | ocean | 1 | 0.64 | 76 | general culture | 1 | 0.64 |
| 34 | novel | 1 | 0.64 | 77 | volcano | 1 | 0.64 |
| 35 | art | 1 | 0.64 | 78 | ease | 1 | 0.64 |
| 36 | sea of information | 1 | 0.64 | 79 | to develop | 1 | 0.64 |
| 37 | lab | 1 | 0.64 | 80 | to see | 1 | 0.64 |
| 38 | agriculture | 1 | 0.64 | 81 | living organism | 1 | 0.64 |
| 39 | synthesis | 1 | 0.64 | 82 | ıt will never end | 1 | 0.64 |
| 40 | dynamism | 1 | 0.64 | 83 | an enjoyable game | 1 | 0.64 |
| 41 | a regular structure | 1 | 0.64 | 84 | indispensable | 1 | 0.64 |
| 42 | a messy person | 1 | 0.64 | 85 | struggle | 1 | 0.64 |
| 43 | a regular person | 1 | 0.64 | 86 | our body | 1 | 0.64 |
| | | | | | **TOTAL** | **156** | **100** |

***Table 3.*** *The metaphors developed by teacher candidates regarding the concept of "geography" and the categories in which these metaphors are included*

| S.No | Categories | Metaphor names | Number of Metaphors | Metaphor frequency (n) | Metaphor percentage % |
|---|---|---|---|---|---|
| ***1*** | *Geography as a source of peace and acceptance* | *destiny (9), love (1), entertainment (1), peace (1), happiness (1), affection (1), compassion (1), dictionary (1), poetry (1), coffee table (1)* | 10 | 18 | 11.54 |
| **2** | *Geography as a source of sensitivity* | *family (1), mother (2), child (1)* | 3 | 4 | 2.56 |
| **3** | *Geography as a habitat* | *nature (8), natural life (3), habitat (1), environment (4)* | 4 | 16 | 10.26 |
| **4** | *Geography as a guide* | *octopus (1), mirror (1), map (1), exploration (2), guide (2), bridge (1), sun (1)* | 7 | 9 | 5.77 |
| ***5*** | *Geography as a source of discovery, learning and knowledge* | *Understanding the world (1), chain (1), soup (1), science (4), everything (4), culture (3), sea (2), bottomless pit (1), general knowledge (1), ocean (1), novel (1), universe (4), art (1), sea of ınformation (1), laboratory (1), synthesis (1), dynamism (1), foresight (1), privilege (1), homeland (2), objective (1)* | 21 | 34 | 21.79 |
| **6** | *Geography as a systematic and organized science* | *foundation of a building (1), a messy person (1), an orderly person (1), an orderly structure (1), a whole (1), the rule maker (1), the constitution (1), mathematics (1)* | 8 | 8 | 5.13 |
| ***7*** | *Geography in terms of its similarity to human* | *living organism (1), human (9), lifespan (1), our future (2), developing (1), seeing (1), life (10), never ending (1), ındispensable (1), living (5 ), our body (1), water (3)* | 12 | 36 | 23.08 |
| 8 | *Geography as a source of diversity* | *an enjoyable game (1), civilization (1), struggle (1), war (2), travel (1), politics (1), history (2), ambition (1), economy (4), agriculture (1) ), forest (1), convenience (1), volcano (1), panorama (1), atmosphere (1), air (1), water source (1), soil (5), natural system (1), desert (1) picture of the earth (2)* | 21 | 31 | 19.87 |
| | | **Total** | **86** | **156** | **100** |

### *Category 1. Geography as a source of peace and acceptance*

When the category "Geography as a source of peace and acceptance" is analyzed in Table 3, it is seen that 18 students developed 10 different metaphors. The percentage of metaphors repeated 18 times is 11.54. It is seen that the most frequently repeated metaphor among the metaphors developed by the students in this category is the word destiny (f=9). The other 9 words were expressed only once. In this category, students likened

geography to destiny. The justifications written by the students for the metaphors in this category are given below.

*Love: Geography is a love of the homeland in the hearts of us, the geographers, and the homeland is our love (K4)*

*Entertainment: Dealing with geography gives people happiness and peace (K24)*

*Affection: It always maintains the excitement and is therefore addictive (P33)*

*Mercy: It is the one who keeps water in the deserts and gives summer rain (K21)*

*Destiny: It can go as far as the positive opportunities provided by the geographical environment. It struggles as much as the effect of geographical obstacles (P8)*

*Destiny: As Ibn Khaldun said, it is destiny itself. We experience the destiny of the geography we were born in (P24)*

*Destiny: Especially when we think about our country and the geography we are in, it determines the destiny of our life, economy and politics (P27)*

*Destiny: People can exist as much as the physiological and human environment they live in offers them, and geography determines this (K35)*

*Dictionary It enables people to make sense of their lives (P18)*

*Poetry: It is the source where dreams meet reality (K15)*

### *Category 2. Geography as a source of sensitivity*

The number of metaphors that emerged under this category was 3 and the frequency was calculated as 4. The percentage ratio was 2.56 and had the lowest value. Students developed the metaphors of *Mother (2), Child (1) and Family (1)* for this category. The reasons for why the students developed the metaphors that constitute the *"source of sensitivity"* category are given below.

*Family: It takes care of people, protects them, helps them, makes them happy (P23)*

*Mother: The mother has children in a general sense. She draws strength from them, feeds and looks after them.*

*Mother: Geography also has children such as hydrography, cartography, etc. (P39)*

*Child: The more you care, the more you love. The more you love, the more you care (P23)*

### *Category 3. Geography as a habitat*

When Table 3 was examined, it was seen that a total of 4 metaphors in the category of "Geography as a habitat" were formed by 16 teacher candidates and the rate corresponds to 10.26%. When the frequency distribution of the metaphors in this category was analyzed, it was observed that the most frequently used metaphor was the concept of Nature (8). The others were immediate environmental elements, *environment (4), natural life (3) and habitat (1),* respectively. Some of the sample sentences written by teacher candidates for this category are as follows.

*Nature: It examines the natural environment on site, notes it and measures its resistance against time (P5)*

*Nature: Geography is nature. All formations on earth are in nature (P12)*

*Natural life: It includes both natural and human sciences (32)*

*Natural life: Air, water and soil are the subject of geography (38)*

*Habitat: It is the place where all living things, whether plants or animals, live (P11)*

*Environment: It examines the environment, protects the environment, cleans the environment (P4)*

*Environment: It examines the mutual effects of humans and the environment (P38)*

### *Category 4. Geography as a guide*

7 metaphors were collected under this category. The frequency was calculated as 9 and the percentage rate was 5.77. The frequencies of metaphors produced by students for this category were low. Almost all of them were repeated once. These metaphors inferred by the students reveal that geography is a science of synthesis and is related to different branches of science and subjects. These metaphors were produced in relation to words such as *Octopus (1), Mirror (1), Map (1), Discovery (2), Guide (2), Bridge (1), Sun (1).*

*Octopus: It has so many sub-branches that we see geography wherever we look (industry, tourism, population, transportation, energy, geomorphology, climatology, etc.) (P18)*

*Mirror: It reveals the similarities between nature and humans and enables them to understand each other better (P14)*

*Map: It enables us to see the earth with all its elements and make comments about it (P19)*

*Discovery: We discover new beauties and the environment while exploring (P22)*

*Discovery: Since it is related to all branches of science, all discoveries are also related to geography (P24)*

*Guide: It enables human beings to understand and enter into a constructive relationship with nature (P14)*

*Guide: It makes sense of the environment we live in and teaches the correct use of it (P22)*

*Bridge: It provides the connection (transition) between nature and human (P18)*

*The sun: It sheds light on all sciences (P26)*

### *Category 5. Geography as a source of discovery, learning and knowledge*

In this category, students used a wide variety of expressions about the source of discovery and learning to express geography with a metaphor. The important concepts identified with geography here are science, ocean and culture. With these metaphors, students perceive geography as a branch of science that needs to be researched, contains a lot of information and can lead to the emergence of new information and findings at any time. In this category, the details of which are given in Table 3, 21 metaphors were produced

by 34 students and the percentage ratio was 21.79. The most repeated metaphors in the category were *Science (4), Universe (4), Everything (4), Culture (3), Sea (2)*. The other metaphors in this category were expressed by 1 student each. Some of the justifications in this category are given below.

*Understanding the world: Any event in the world is definitely related to geography (P42)*

*Soup: It works in many different fields. It obtains knowledge from different fields (P41)*

*Science: It is dynamic, not static. It is always progressing (P30)*

*Science: New research requires new observations at every moment (P35)*

*Science: Geography is an experiment-based, research-based science (P36)*

*Everything: Geography includes other sciences. The starting point of every science comes from geography (P6)*

*Everything: There is nothing that is not related to geography (P16)*

*Everything: It is the breath you take, the soil you step on, the water you drink and the sky you see (P21)*

*Bottomless well: Neither its beginning nor its end is clear. It is always open to development and change (P25)*

*Culture: There are many different geographies and cultures in the world (P9)*

*Culture: Geography affects people's eating and drinking, shelter, sleeping hours, working conditions, customs, skin color, in short, everything, and it forms culture by mixing them together (P12)*

*Ocean: The geography is very wide, deep, difficult to reach (P33)*

*Novel: There is always something to learn (P43)*

*Art: It is an engineering marvel system created for people to live (P11)*

*Sea of knowledge: There is always something to learn (P43)*

*Laboratory: An area where you can find and research anything at any time (P43)*

*Synthesis: While it is the source of many sciences, it is also influenced by many other sciences (P39)*

*Dynamism: It constantly updates itself with new information that changes every day, even every moment (P39).*

*Universe: The universe includes everything. It touches on everything in geography and is related to everything (P23)*

### *Category 6. Geography as a systematic and organized science*

This category consists of the perceptions of students who see geography as a systematic and organized science when expressing it with a metaphor and make inferences related to it. While creating these metaphors, teacher candidates generally see geography as a science that is systematic, organized and continuous, not disorganized, and has its own principles. For this category, 8 metaphors were written once and expressed by 8 students. This category has a rate of 5.13% among all categories. The metaphors in this category

consist of words such as the *foundation of a building (1), a disorganized person (1), an organized person (1), an organized structure (1), a whole (1), a rule maker (1), constitution (1), mathematics (1).* Some expressions in this category are given below.

*The foundation of the building: If the foundation is not solid, the other sciences we put on it are left up in the air (P26)*

*An organized person: Everything can get mixed up with natural events (K21)*

*An organized person: It puts everything in its place when the time comes (K21)*

*An organized structure: There are no disruptions or irregularities (K20)*

*A whole: It is intertwined, systematic and indivisible (K25)*

*Rule maker: Even if you struggle, everything returns to its original state (K21)*

*Constitution: It sets the rules of the natural environment (K14)*

*Mathematics: It is systematic, it has rules (K26)*

### *Category 7. Geography in terms of its similarity to human*

This category was created with the title "Geography in terms of its similarity to human". While creating these metaphors, university students generally expressed geography as a situation related to human beings, human life and also as a dynamic and constantly developing science. In this category, 12 metaphors were produced by 36 students and the ratio was calculated as 23.08. It is seen as the category with the highest frequency and percentage rate. The two most repeated metaphors in the category were *Life (10) and Human* (9). Some expressions in this category are given below.

*Living organism: It is like an organism that constantly renews, continues and gives birth to new developments (P29)*

*Human: Just as the organs of human beings work in harmony with each other, the elements of geography work in harmony to sustain their existence (P19)*

*Human: Just as humans have positive and negative effects on their environment, geography also has an effect.*

*Human: It is a dynamic science. It changes constantly. Geography, which is a whole with its subdivisions, is born, lives and dies. Then it is born again (P41)*

*Lifespan: Every element in geography has a stage of development and death (P37)*

*Our Future: It allows us to take precautions by making predictions about the future (P18)*

*Developing: The prerequisite for the development of a country is the science of geography (P16)*

*Seeing: People look and do not see, geographers look and see (P24)*

*Life: It is the place where people get oxygen, have fun and spend their lives (P10)*

*Life: Its topics are from life and the environment we live in (P35)*

*Life: Geography, like life, is very broad in scope (P37)*

*It will never end: As long as the world exists, the ecosystem and atmosphere must exist (P3)*

*Indispensable: We live in geography whether we want it or not (P5)*

*Living: Everything that keeps people alive, such as air, water, soil, is geography (P9)*

*Living: While geographical elements can be the source of life, the same elements can pose a life-threatening situation (P36)*

*Water: It is indispensable for a person to survive (P1)*

### *Category 8. Geography as a source of diversity*

This category can be considered as the most interesting category created for the concept of geography. Since the metaphors under this heading cannot be associated with other categories and consist of metaphors and justifications that have no semantic closeness, it was deemed appropriate to present them under the category of geography as the source of diversity. As seen in Table 3, there are a total of 21 metaphors in this category. These 21 metaphors were created by 31 students and their ratio to the total number of students was calculated as 19.87%. The metaphors repeated twice or more are *Soil (5), Economy (4), War (2), History (2) and A picture of the Earth (2).* It is the category with the highest number of metaphors. The reasons for the metaphors associated with this category are given below.

*An enjoyable game: As people learn, it becomes more enjoyable when they examine what they have learned in the environment (P20)*

*Civilization: Countries and various civilizations have developed according to the geography in which they were founded (P25)*

*Struggle: People are in a constant struggle to adapt to the conditions of the geography they live in (P9)*

*War: If you are in a geopolitically important location, you will be in a war for people's interests (P2)*

*Travel: Learning by traveling and seeing is the most important feature of geography (P13)*

*Politics: Strategies, state policies, energy policies, interests and benefits are all formed according to geography (P12)*

*History: Geography and history are interconnected. The impact of historical events on the formation and development of today's geographical events is very important (P36)*

*Economy: It is shaped according to the geography where people live (P9)*

*Agriculture: It ensures the development of agriculture, which is a prerequisite for economic development (P16)*

*Convenience: It teaches the principles of human and nature. This provides convenience to people (P13)*

*Volcano: It unleashes its full power when the day comes (P15)*

*Panorama: Geography allows us to study the world from all aspects: physically, humanly and economically (31)*

*Atmosphere: There are natural and human effects of the events that take place in the atmosphere (P16)*

*Air: It finds solutions by examining air, water and soil with the branches of science with which it is related (P4)*

*Soil: Every element in the soil is a geography (P6)*

*Natural system: The subject of geography is natural systems consisting of lithosphere, hydrosphere and atmosphere (P44)*

*A picture of the earth: Geography basically helps us to recognize the world we live in, to see and analyze it as a whole (P30)*

*Desert: In a vast expanse, it is in almost everything (P25)*

The visual below was created from the most prominent and most repeated metaphors among the 8 categories defined above. Thus, the findings obtained were made more visible visually. The distribution of prominent metaphors is shown in the word cloud visual, which was created by taking into account the frequency values of the metaphors developed by the participants related to the key concept of geography (Figure 2). As seen in the visual, *Life (10), Human (9), Destiny (9), Nature (8), Life (5), Earth (5), Universe (4), Everything (4), Economy (4), Environment (4), Science (4), Culture (3), Water (3)* were repeated the most. The answer words in the word cloud visual were composed of words repeated between 2 and 10.

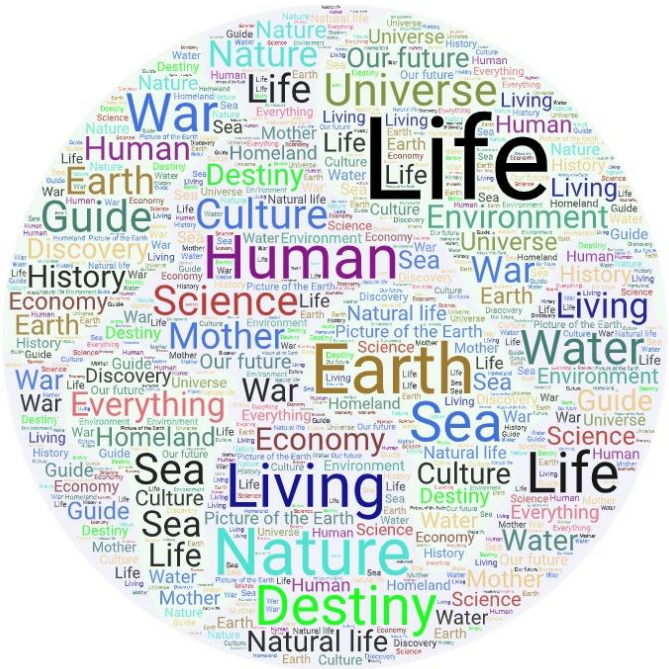


***Figure 2.*** *Word cloud visual created according to frequency values of metaphors (created with WordArt)*

## Conclusion and discussion

Some important issues were revealed in the conceptual categories created by examining the metaphors that emerged from geography students' perceptions of the key concept "geography." First of all, it was seen that geography students have sufficient basic knowledge about the concept of "geography," their cognitive structures are sufficient and a certain awareness is formed. The 86 different metaphors that students inferred about the concept of geography also show that their perception of the concept is quite different and diverse.

The general characteristics of metaphors used to directly reach geography students' ideas about the concept of geography and to reveal their mental images on this subject are as follows: 86 valid metaphors related to the concept of geography were produced by the students and 63 metaphors were written once by the students and their ratio in total metaphors was 73%. Some of the important ones can be listed as (Family, Rule-maker, Foresight, Objective, Civilization, Synthesis, Dynamism, Bottomless Pit, An enjoyable game, Mirror, Foundation of the building, Bridge). The number of students representing the remaining 23 valid metaphors varies between 2 and 10. The most frequently used metaphors related to the concept of "geography" by teacher candidates were Life (10), Human (9), Destiny (9), Nature (8), Life (5), Earth (5), Universe (4), Everything (4), Economy (4), Environment (4), Science (4), Natural life (3), Culture (3), Water (3). The rate of these metaphors was found to be 27%. The most frequently expressed metaphors were Life, Human, Destiny and Nature. In their study, Geçit and Gencer (2011, p. 8) determined that a total of 52 metaphors were developed for the concept of geography by the students participating in the study and that the most frequently used metaphor among them was "life."

In the expressions written about the metaphor of life, there are expressions such as "The subjects are from life and the environment we live in," "Geography is like life, its scope is quite wide," Another most repeated metaphor was the "human" metaphor. Human beings have been in constant interaction with the environment since the moment they started to live on earth. The fact that the human being, who is dependent on the environment, is frequently mentioned as a metaphor by the students shows that the perception that human beings are at the center of geography is formed in the minds of the students. In Durmuş and Baş's (2016, p. 90) study on the concept of "Geography" with social studies teacher candidates, it is seen that life (f=15) and human (f=5) metaphors are among the most repeated words. These results largely coincide with the findings of the study.

Another important metaphor created for the concept of geography was the word "destiny." The students tried to explain the metaphor of destiny with reasons such as "As Ibn-i Haldun said, it is destiny itself," "We live the destiny of the geography we were born in," "Especially when we think of our country and the geography we are in, it determines the destiny of our life, economy and politics."

It is seen that many perceptual and semantic relationships were established by the teacher candidates between the concept of geography and the concepts of nature, life and

natural life. When the studies are examined, it is seen that similar results have emerged. According to Aydın (2010, p. 1310), when the metaphors of secondary school students regarding the concept of geography were examined, it was seen that the most preferred metaphors were world (f=14), earth (f=10), nature (f=8), science (f=8) and life (f = 8). This reveals that students perceive geography as a science that describes the world and nature. Öztürk (2007, p. 68) found that 33% of the 357 teacher candidates who participated in the study perceived geography as "a source of life/life itself" and 23.2% perceived it as a "habitat." In their study on the concept of "Geography" with social studies teacher candidates, Durmuş and Baş (2016, p. 90) stated that the concept of life (*f*=15) was among the most repeated metaphors.

In addition, the frequencies of many other metaphors produced by teacher candidates remained at low levels. However, the reason why many valid metaphors were produced, even if their frequencies were low, is that the concept of geography is very comprehensive and many events in our environment, which we interact with every moment, whether we are aware of it or not, are related to geography. The creation of many metaphors regarding the concept of geography with such a feature, reveals that students have a richness of perception.

In short, how an important concept such as geography, which is a science of synthesis, is perceived by the students, how they express their thoughts about geography with different concepts, how they concretize abstract concepts, their ability to elaborate the concept of geography and associate it with other concepts were revealed with the help of metaphors. Therefore, it seems that the use of metaphors is an effective method for teaching a subject, making knowledge permanent, and helping students remember concepts easily. According to İbret and Aydınözü (2011, p. 101), using metaphors is a good teaching technique that allows concepts to be viewed from different perspectives. Saban (2008, p. 490), on the other hand, states that metaphors can be used as a powerful "pedagogical tool" in revealing, understanding and (perhaps) changing the mental images that teacher candidates have regarding certain phenomena during teacher education. According to Eraslan (2011, p. 20), metaphor can be used to determine students' prior knowledge about the subject. Students' readiness for a new subject can be determined with the help of metaphors they can produce. In their related studies, Arslan and Bayrakçı (2006, p. 106) stated that metaphors are extremely useful in helping students to understand difficult concepts and terms more clearly in the classroom, in concreting and visualizing abstract concepts in the mind, and that they enable the learned information to remain in the mind for a longer time and be remembered more easily. They also indicated that metaphors had an increasing effect on motivation to learn.

As a result, it shows that the use of metaphors at all levels of education can be a good tool in determining what is in students' minds regarding concepts. With this study, what students understand from the concept of geography and how they associate the concept of geography with other concepts were determined through their metaphorical perceptions. Accordingly, a significant number of the students were able to write many valid metaphors related to the concept of geography. This shows that the students have

sufficient knowledge about the concept of geography. However, in order to make this knowledge usable in practice, it is necessary to create geographical awareness and develop geographical literacy skills by using appropriate methods and techniques.

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