



## Metaphor perceptions of students towards online reading\*

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## ABSTRACT

This research is important in terms of determining the changes in students' perceptions of online reading at different levels. The aim of this study is to determine the metaphor perceptions of primary, secondary, high school and university students towards online reading. For this purpose, what are the metaphors created by the participants (primary, secondary, high school and university students) regarding the concept of "online reading"? Under which conceptual themes are the metaphors put forward by the participants (primary, secondary, high school and university students) gathered in terms of their common characteristics? answers to the questions were sought. The participants of the research, which was designed with the phenomenology pattern, which is one of the qualitative research methods, consists of 500 students studying in primary, secondary, high school and university 4th grade Turkish, Primary School, Social Studies, and Preschool Teachers. A semi-structured interview form was used as a data collection tool. The data were analyzed using the content analysis technique. As a result of the study, 11 categories were obtained from 271 Metaphors developed for online reading. These categories are: "Access to information", "Diversity", "Infinity", "Reliability of information", "Guideline", "Different point of view", "Sharing information", "Interesting and fun", "Addiction", "Artificialism", and "Mandatory need" is online reading.

**Keywords:** Online reading, metaphor, primary-secondary-high school and faculty of education students

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## 1. INTRODUCTION

In this study, online reading, and the perception of metaphor about it are discussed. For this reason, firstly, the definitions of the concepts of reading, online reading, and metaphor are given. When the literature is scanned, it is seen that various definitions are made for the reading skill. If we explain a few of them; reading skill can be defined as the process of knowing and understanding as well as a means of acculturation (Arıcı & Taşkın, 2019). In the constructivist approach, reading can be defined as the process of creating new meaning by combining the prior knowledge of individuals with new information because of mental processes such as problem-solving, establishing relationships, analysis, synthesis, and evaluation of the seen and perceived information (Akyol, 2006; Güneş, 2016). Reading skill is defined as a complex process that supports the development of individuals in social, cognitive, and cultural areas (Keskin & Akyol, 2014). As emphasized in the definitions of reading given here, reading is a process of constructing meaning based on mental processes. Reading activities, which have been done from printed media since the date of the writing, have started to be read in online environments as well as printed text as a reading environment with the development of computer technology.

If we consider the concept of online reading, it can be defined as reading various digital resources independently over the internet. Reading resources can be chosen by teachers or researchers, or they can be chosen by the person himself. Purposes of online reading include acquiring information, synthesizing information, or having fun (Coiro & Dobler 2007; Zhang & Duke 2008; Walraven, Brand-Gruwel, & Boshuizen 2009; Coiro 2011; Coiro, Castek, & Guzniczak 2011; Coiro, 2012; Maloch & Zapata 2011). In other words, online reading includes eye interaction, computer screen, texts presented in hypertext, and comprehension of verbal and non-verbal information. (Pino-Silva, 2006).

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Today, with the development of the internet and digital technologies, our reading habits have changed significantly. Besides information sources, traditional books are replaced by digital books, blogs, and social media platforms. As individuals' reading experiences differ with this change, metaphors are needed to describe their online reading experiences.

Students today often do online research and reading for their homework. It analyzes and evaluates the information it reads and transmits it to the relevant people using multimedia. The increase in online research and reading activity for assignments and research; increases students' need for planning, accessing information, analyzing read information, and synthesizing this information (Quintana, Zhang, & Krajcik, 2005; Leu, Coiro, Castek, et al., 2008).

According to Lakoff and Johnson's (1980) Conceptual Metaphor Theory, metaphors are not merely linguistic embellishments but rather reflect how individuals make sense of their experiences. A metaphor such as "online reading is like a library" signifies an understanding of the structured, accessible, and boundless nature of digital information. On the other hand, metaphors like "searching for a needle in a haystack" underscore the difficulty of locating reliable information online. Moreover, the metaphors were classified under eleven thematic categories, many of which (e.g., access to information, infinity, addiction, and information reliability) reflect key dimensions of Coiro's New Literacies Framework. According to Coiro (2011), online reading is not a linear decoding process but a multifaceted literacy practice that involves evaluating, synthesizing, and navigating information through multimodal environments. These results indicate that students become increasingly aware of such complexities with age.

### 1.1. Purpose of the Study

This research firstly considered in the context of the development of students' digital competencies and concept of online reading; is it an important skill to be developed. Increasing the studies on this skill will increase the techniques and activities for the efficiency of online reading. Thanks to these developed techniques and activities, students' reading comprehension skills will improve and contribute to their academic life. Thus, it will contribute to the success of individuals in their future professional lives. For this reason, it is important to increase online reading studies and research. Before starting such studies, learning the perceptions of primary, secondary, high school and university students about online reading will contribute positively to the development of methods and techniques to be developed. Another reason is that the number of studies on online reading is negligible, which is the second reason for this study. A third reason is that researchers want to deepen their work in the field of online reading. Determining students' perceptions will contribute to the future studies of researchers. In addition, there is a need for education for the rapid, continuous change and expansion of information, online reading and improving digital skills (Mikkilä-Erdmann, Warinowski & Iiskala, 2019).

From this point of view, it is thought that revealing students' perceptions of online reading will serve as a reference for the studies to be done. In addition, when the studies in the literature on metaphor are examined, it has been found that studies on a single level are generally found: Studies on metaphor perceptions of primary school students (Köksal, Erginer & Baloğlu, 2016; Susar Kırmızı & Çelik, 2015), studies on 8th grade students' metaphor perceptions (Akkaya, 2011), studies on the perception of metaphors of primary and secondary school students (Bektaş, Okur, & Karadağ, 2014), studies on metaphor perceptions of secondary school students (Akbulut, Özdemir, & Çivğın, 2017; Müldür & Çevik, 2017, Üztemur & Dinç, 2020), high school Studies on metaphor perceptions of students (Pilav & Uslu Üstün, 2013; Sağar & Özçelik, 2023), Studies on teacher candidates' metaphor perceptions (Azizoğlu & Okur, 2018; Bayram, 2018; Bozpolat, 2015; Çetinkaya Özdemir & Kaya, 2021; Emiroğlu, Arslanbaş & Işkın, 2023; Eroğlu, 2020; Göçer & Tabak, 2013; Kaptan & Beldağ, 2020; Karakuş & Kozçetin, 2016; Sadioğlu & Teke, 2022; Ulu, 2019), study on metaphor perceptions of postgraduate students (Aydın & Baysan, 2018), study on metaphors related to "Language and Literature", which is a general concept (Mete & Ayrancı, 2016), reading and writing according to disability types of teacher candidates in Special Education. metaphor perceptions (Tiryaki, 2017). Metaphor perceptions of students learning Turkish as a foreign language (Boylu & Işık, 2017). As can be seen above, no research has been found that addresses all levels simultaneously. In this study, the fact that four different levels, including primary school, secondary school, high school, and university, take place together constitutes the original side of this study.

### 1.2. Problem of the Study

This study was conducted with senior primary school students (approximately 10 years old); senior middle school students (approximately 14 years old); senior high school students (approximately 18 years old) and senior faculty of education students (at least 22 years old). These ages correspond to different critical stages of the individual. Age 10 is the stage of transition from concrete operations to abstract operations. 14 years is the period of adolescence. 18 is the stage when adolescence ends and youth begins. 22 years and beyond is the youth period. It is important to identify the changes in perceptions about online learning at these different stages. When this is clearly revealed, it is thought that the applications and planning will be more efficient.

This study aimed to explore the metaphorical perceptions of primary, secondary, high school, and university students toward online reading. To achieve this goal, the researchers focused on understanding how students at different educational levels conceptualize their experiences with reading in digital environments. In line with this objective, the study sought to answer the following research question: "What metaphors do students use to describe online reading?"

### 1.2.1. Sub-problems of the study

1. What are the metaphors of the participants (primary, secondary, high school, and university students) regarding the concept of "online reading"?
2. Under which conceptual themes are the metaphors put forward by the participants (primary, secondary, high school, and university students) gathered in terms of their common characteristics?

## 2. METHODOLOGY

### 2.1. Research Design

This research was designed with a qualitative model and a phenomenological design. Phenomenological research is expressed as the common meaning of individuals' experiences about a phenomenon or concept (Creswell, 2013). The use of phenomenology as a method in educational research literature has increased its popularity among researchers interested in understanding and generating knowledge about students' experiences in education (Stolz, 2020). Phenomenology examines the lived experiences of individuals as they frame these experiences in their own words (Rosenblatt, 2007). In this study, the phenomenology design was preferred because it tries to reveal the experiences and common perceptions of primary, secondary, high school, and university students about online reading, which is a current concept.

### 2.2. Participants

The study group consists of 500 students studying in primary school 4th grade, middle school 8th grade, high school 12th grade and university, and universities in the 4th grade Turkish, Primary School, Social Studies, and Preschool teaching in the 2022-2023 academic year. In this study, maximum variation sampling, one of the purposive sampling methods, was used to ensure the representation of diverse educational levels and developmental stages. The participants consisted of a total of 500 students, selected from four distinct educational levels: 4th grade primary school, 8th grade middle school, 12th grade high school, and 4th year university students enrolled in Turkish Language Teaching, Primary School Teaching, Social Studies Teaching, and Preschool Teaching programs. The inclusion of these four levels was intentionally designed to reflect the transition from concrete to abstract cognitive development stages, enabling comparative analysis of metaphorical perceptions of online reading across age and education groups. In Table 1, the distribution table of the students participating in the research by gender is given.

Table 1.

*The Distribution Table of the Students Participating in the Research by Gender*

Participants	Primary School	Secondary School	High School	University Students
Female	55	57	63	71
Male	68	65	61	60
Total	123	122	124	131

A total of 500 students participated in the study, representing various educational levels. Specifically, 123 participants were primary school students, 122 were secondary school students, 124 were high school students, and 131 were university students. When the gender distribution of the participants is examined, it is observed that 265 (53%) were female and 235 (47%) were male. These findings indicate a slightly higher representation of female students in the sample.

### 2.3. Data Collection Process

The data of the study is like "Online reading..... Because ....." was collected with a metaphor sentence. Since the data consists of primary school, secondary school, high school, and university students studying at four different levels, an example is given from a study on the act of writing so that students can understand the subject easily: "Writing is like an artist's canvas. Because if a blank paper is a writer's canvas, it is the painter who fills it. The painter creates a riot of colors using different colors. The author also colors his writing by using rhetoric by making metaphors." The reason why these metaphor examples are given is to help primary school children produce metaphors comfortably, and to contribute to validity and reliability. Written parental consent was obtained for all child participants. Participants were informed about the aim of the study, the voluntary nature of participation, and the confidentiality of their responses. All participation was based on informed and voluntary consent.

According to Saban (2009), the reason for using the preposition "like" in metaphor studies is to evoke the connection between the subject and the source of the metaphor. With the conjunction "because", the reason for the metaphor sentence created by the participants was tried to be explained.

The data collection process took approximately 30 days. The data were collected before the start of the lesson and 15-20 minutes before the end of the lesson. To ensure validity and reliability, the researcher collected the data himself. To enhance

the study's validity, "member checking" was conducted with twelve randomly selected participants from the sample. These participants were asked to provide feedback regarding the appropriateness of the metaphors they had produced. The analysis process was revised in light of their feedback. Researchers observed recurring themes in metaphor production across different age groups. Once no new metaphors were contributing meaningfully to the study, data saturation was deemed to have been reached.

## 2.4. Data Analysis

In this study, the data obtained concerning online reading were analyzed through a five-step process, as proposed by Saban (2004; 2008a; 2008b). The first step involved naming, during which meaningful labels were assigned to the raw data. This was followed by classification, wherein similar responses were grouped based on shared characteristics. In the third step, categories were developed to structure the classified data into coherent thematic groups. The fourth step aimed to ensure the validity and reliability of the findings through peer review and consistency checks. Finally, the processed data were systematically transferred to a computer environment for further analysis.

1. Naming Stage: At this stage, the metaphor data obtained for online reading are arranged in alphabetical order. Since the frequency numbers of the data arranged in alphabetical order differ, to facilitate readability, metaphors with a frequency number of four or more are included in the findings section. "Reading online as access to information", "Reading online as diversity", "Reading online as infinity", "Reading online as the reliability of information", "Reading online as a guide", "Reading online as a different perspective", "Reading online as transmitting and sharing information", "Reading online as interesting and fun", "Reading online as addiction", "Reading online as artificial", "Reading online as a necessity". coded by researchers.

In addition, primary school students in the study group: PS; middle school students: MS; HS for high school students is abbreviated as University Students (PST: University Primary School Teacher Students, TL: University Turkish Language Teacher Students, SST: University Social Studies Teacher Students, PT: University Pre-School Teaching Students).

2. Classification: The metaphors obtained during the classification stage were subjected to content analysis. Because primary school students who participated in the research had difficulties in creating metaphors, 40 students could not produce valid metaphors. At this stage, metaphors that do not constitute a source of metaphor, so-called weakly structured metaphors, metaphors in which the justification is not fully established, metaphors that cannot be placed in any category or that can be in more than one category, and metaphors that do not contribute to the concept of online reading have been excluded from the study. In this study, 40 papers from primary school students, 25 from secondary school students, 9 from high school students, and 2 from university students were excluded from the study in terms of validity and reliability, since they were not related to online reading. If we give an example of the papers removed from the study; PS133: Online reading is like technology because we read from devices such as phones, tablets, and computers. PS97: Reading online is like silence because you can fantasize endlessly in your own head. MS19: Reading online is like school because you learn in both, and someone teaches you. MS58: Reading online is like girls because it contains a lot of beauty. HS4: Reading online is like gases in the atmosphere because certain systems determine and use which ones are useful. HS137: Reading online is like the sky and a friend, because as we write, we express our heart to a friend or relax as if we were looking at the sky. PST88: Online reading is like a copy machine, because in the digital environment, identical printouts occur when students read them. SST134: Reading online is like dough because it needs to rise for a certain period to give it all its flavor. For online reading to be full-time, it must go through a certain stage.

3. Category Development Phase: In the study, metaphors obtained from 500 participants were analyzed by associating them with the concept of online reading. Of the 576 data obtained, 76 data were eliminated at the classification stage. From 500 data, 271 metaphors were obtained. These metaphors are gathered around 11 categories.

4. Stage of Ensuring Validity and Reliability: To ensure the acceptable and credibility of the study, first, the analysis of the data, the processing and interpretation of the findings were discussed in detail (Yıldırım & Şimşek, 2006). The eleven categories constructed for online reading were presented to two Turkish language experts and one primary school teacher, who served as subject-matter experts. Each expert received a list of the eleven category names, descriptions of each category, and a complete list of 271 metaphors. They were instructed to assign each metaphor to only one category, with this principle emphasized. Disagreement occurred in only three cases. Experts were asked to ensure that all 271 metaphors were categorized, with none left unassigned. Subsequently, the researchers' categorizations were compared with those of the experts, and the reliability and validity of the categorization were calculated using the formula proposed by Miles and Huberman (1994):  $\text{reliability} = \frac{\text{consensus}}{\text{consensus} + \text{disagreement}}$ . Based on this formula, the reliability score was calculated as  $\frac{271}{271 + 3} = 0.98$ , indicating a high level of reliability.

The three metaphors on which disagreement occurred were classified by experts under different labels: "online reading as infinity," "online reading as immersion," and "online reading as change and transformation." These differences stem from the multidimensional nature of metaphors. For instance, the metaphor "reading is like a whirlpool" could be interpreted as representing both the category of "addiction" and "infinity." However, since each metaphor was required to be assigned to only one category, minor disagreements emerged among experts. Despite this, the calculated reliability (0.98) indicates strong

agreement. Additionally, the consistency of the independent codings made by the three experts was analyzed using Cohen's Kappa coefficient, which yielded a value of 0.89. According to Landis and Koch (1977), this indicates a "high level of agreement" among coders.

5. Transferring the Data to the Computer Environment: At this stage, a total of 271 metaphors were identified and categorized into 11 distinct thematic groups across primary, secondary, high school, and university levels. These categorized data were then systematically transferred to a computer environment to facilitate organization and further analysis. The resulting findings were subsequently presented in tabular format to ensure clarity and accessibility for interpretation.

### 3. FINDINGS

The findings of this research, which was conducted to reveal the perceptions of the concept of "online reading" at primary, secondary, high school, and university levels, through metaphors, were collected under two headings: metaphors, in the second title, the metaphors created by the participants about online reading were examined.

#### 3.1. Findings Related to the First Sub-Problem

The first sub-problem, "What are the metaphors that the participants (primary, secondary, high school, and university students) created regarding the concept of "online reading"? Findings related to the question are given in Table 2-5 and Figure 1-5.

Table 2.

*Metaphors of Primary School 4th Grade Students on the Concept of "Online Reading"*

Metaphor Order	Name of Valid Metaphor	Frequency (f)	%
1	Book	26	21.14
2	World	7	5.70
3	Information	6	4.89
4	Universe	5	4.06
5	Sea	4	3.25
6	Addiction, Mind, Google, Teacher, Art, Dictionary,	3	2.44
7	Map, Weather, Life, Media, Guide, Artificial intelligence	2	1.63
8	Mind, Encyclopedia, Apartment, Atatürk's love for children, Fish, Information society, A box full of information, Informative writing, Computer, Reading together, A great store of information, A big city, A deep well, Lesson, Message in Digital Games , File, Diamond, Sky, Sun, Glasses, Camera, Black hole, Box, Library, Museum, Reading, Forest, Window, Picture, Chest, Imagination, Treasure, Story, Camera, Infinite way, Endless writing, Technology, Phone, Canvas, Space, Country, Body, Lie, Artificial environment, Artificial project	1	0.81
<b>Sum</b>		123	100

When the metaphors of primary school 4th grade students about online reading are examined; It was observed that 123 students produced 62 different metaphors. Among these metaphors, the metaphor of the book (n=26) is the most produced metaphor. Besides this metaphor; World (n=7), knowledge (n=6), Universe (n=5), sea (n=4).

Table 3.

*Metaphors of Middle School 8th Grade Students on the Concept of "Online Reading"*

Metaphor Order	Name of Valid Metaphor	Frequency (f)	%
1	Universe	12	9.84
2	Book, Library, Ocean	7	5.74
3	Information	6	4.92
4	Encyclopedia, Sea	4	3.28
5	Sky, Sun, Dream	3	2.46
6	Computer, World, Rainbow, Life, Light, People, Black hole, School, Color, Art, Infinity, Water,	2	1.64
7	Tree, Love for my mother, Friend, Addiction, Science, Glass of poisoned water, Answering questions, Paradise, Farm, Sea, File, Ship, Map, Zoo, Treasure hunt, Wall where everyone can write what they want, Construction, Talk, Market, River , Forest, Students, Learning, Pigeon, Picture, Numbers, Love, An endless loop, A bookshelf with endless shelves, Living endlessly, Sport, Waterfall, Field, Sloth, Space, Organs in our body, One of weeds and fruit trees in-between garden, artificial intelligence, eating, star	1	0.82
<b>Sum</b>		122	100

When the metaphors of secondary school 8th grade students about online reading are examined; It was observed that 122 students produced 64 different metaphors. Among these metaphors, the universe metaphor (n=12) is the most produced metaphor. Besides this metaphor; book (n=7), library (n=7), ocean (n=7), knowledge (n=6), encyclopedia (n=4), sea (n=4).

Table 4.

*Metaphors of 12th Grade High School Students on the Concept of "Online Reading"*

<b>Metaphor Order</b>	<b>Name of Valid Metaphor</b>	<b>Frequency (f)</b>	<b>%</b>
1	Library	17	13.71
2	Ocean	14	11.29
3	Space	7	5.65
4	Universe, Imagination	5	4.03
5	Sea, black hole, forest	3	2.42
6	Sun, School, Look for a needle in a haystack, Infinity	2	1.61
7	Buffet, Shopping, Encyclopedia, Driving, Research, Friendship, Atmosphere, Mirror, Garden, Fishing, Obscurity, Paint palette, Drinking tea, Flower, Florist, Playground, Looking for water in the desert, Garbage, Going to the top of the mountain, At sea Swimming, A bottomless pit, World, Reaching everyone in the world, Thought, Apple painting, Artisan bazaar, Mass production in factories, Vortex, Looking for stars in the sky, Tears, Playing ball on the astroturf, Ready meal, A dark cave, Collision of light in the dark, Discovery, Book, Box, Acculturation, Labyrinth, Lego, Mine ore, Store, Buying an item at the market, Music list, Teacher, Walking around the market, Playing the piano, Finding the right tone from the color palette, Milky way, Art, Seller, River flowing into infinity, Water, Superpower, Television, Space Travel, Printer, Food, Star	1	0.81
<b>Sum</b>		124	100

An analysis of the metaphors produced by 12th grade high school students regarding the concept of online reading revealed a total of 71 distinct metaphors generated by 124 participants. Among these, the most frequently mentioned metaphor was library (n = 17), indicating a strong association between online reading and the accessibility or organization of information. This was followed by metaphors such as ocean (n = 14), space (n = 7), and universe and imagination (n = 5). These metaphors reflect students' perceptions of online reading as vast, boundless, and complex. The diversity and richness of the metaphors suggest that students view online reading as a multidimensional experience encompassing exploration, learning, and discovery.

Table 5.

*Metaphors of University 4th Year Students on the Concept of "Online Reading"*

<b>Metaphor Order</b>	<b>Name of Valid Metaphor</b>	<b>Frequency (f)</b>	<b>%</b>
1	Library	13	9.92
2	Sea	9	6.87
3	Sky, Ocean	6	4.58
4	Earth, Space	5	3.82
5	Store, Forest	3	2.29
6	Universe, Professions, Pomegranate, Infinity	2	1.53
7	Buffet eating, Open world games, Tree jumping, Octopus, Aladdin's magic lamp, Conscious shopping, Encyclopedia, Driving, Search engine, Bee, Backstreets series, Asphalt, Talking to a wise person, Knowledge wolf, Computer playing the game, Thousands of skins, Rooting a tree, Flower, Garden stroll, Multiple choice test, Desert, A bottomless pit, A bridge between dream and reality, Electric transformer house, Headlight palette, Being able to look through different windows, A hidden treasure, Rainbow, The Sun, Ring, Chains, Life, Ready meal, Being everywhere, Teleport, Medicine, Human, Veins in the human body, Business trip, Light leaking into the dark, Unlimited reading in the dark, Mixed nuts, Expedition, Book, Reading odorless books, Saving money in a piggy bank, Music, Oxygen, Fish in the ocean, Playing games, Choosing fruits and vegetables at the market, Painter's canvas, Wind, Look for a needle in a haystack, Virtual game, An endless sea, An endless black hole, Endless car racing, Word search from dictionary, Earth, Reaching the unreachable, Transportation, Traveling to space, Lie, Artificial intelligence, Putting puzzle pieces together, Cooking, Star, Road signs, Traveling, Swimming, Timeless pool of knowledge	1	0.76
<b>Sum</b>		131	100

When the metaphors of university 4th grade students about online reading are examined; It was observed that 131 students produced 85 different metaphors. Among these metaphors, the library metaphor (n=13) is the most produced metaphor. Besides this metaphor; sea (n=9), sky, ocean (n=6), earth, space (n=5).

The findings given in the tables above are also presented with figures made in WordArt.

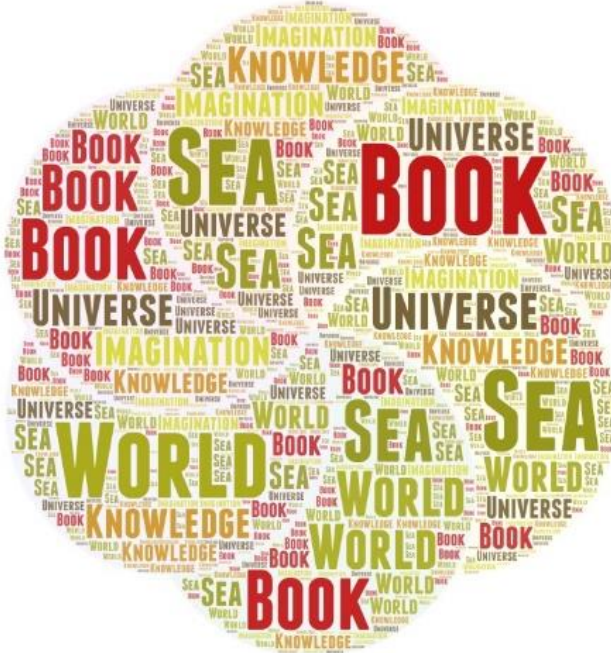


Figure 1. Displaying the most repetitive metaphors in the primary school study group

As seen in Figure 1, the most frequently produced metaphor among primary school students is the book metaphor, which was mentioned 26 times. This suggests that students at this level often associate learning and knowledge with books, highlighting their central role in education. Other commonly used metaphors include world (n=7), knowledge (n=6), universe, imagination (each n=5), and sea (n=4), reflecting a broad and imaginative perception of education and learning among young learners.

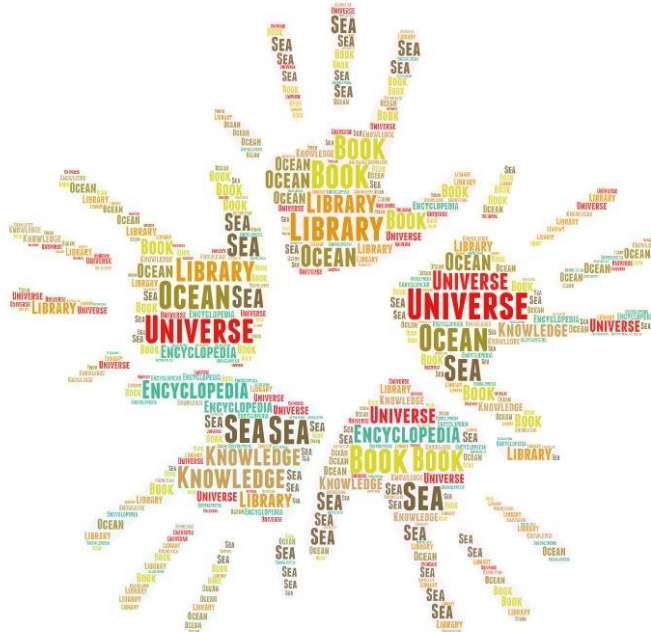


Figure 2. Displaying the most repetitive metaphors in the middle school study group

As seen in Figure 2, the most frequently produced metaphor among middle school students is universe, mentioned 12 times. This indicates that students at this level tend to view education or knowledge as vast and limitless. Other notable metaphors include book, library, and ocean (each mentioned 7 times), followed by knowledge (n=6), and encyclopedia and sea (each n=4), reflecting a continued association of learning with expansive and information-rich concepts.



Figure 3. Representation of the most repetitive metaphors in the high school study group

In Figure 3, the most frequently produced metaphor among high school students is library, mentioned 17 times. This suggests that students at this level often perceive knowledge as something organized, vast, and stored, much like a library. Other metaphors that follow include ocean (n=14), space (n=7), and both universe and imagination (each n=5), reflecting a continued trend of associating learning with depth, exploration, and creativity.



Figure 4. Representation of the most repetitive metaphors in the university study group

In Figure 4, the most frequently produced metaphor among university students is library, mentioned 13 times. This reflects a perception of knowledge as structured, accessible, and expansive, aligning with the academic environment of higher education. Other commonly cited metaphors include sea (n=9), sky and ocean (each n=6), followed by earth and space (each n=5), indicating a continued association of knowledge with vastness, depth, and the natural world.

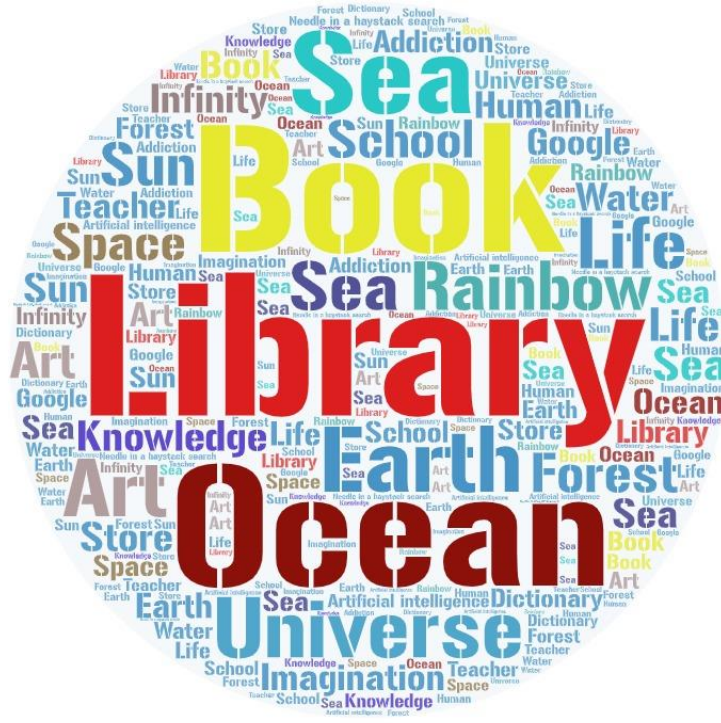


Figure 5. Representation of the most repetitive metaphors in all study groups

In Figure 5, library, and book metaphors ( $n=37$ ) are the most produced metaphors in the entire study group. The following metaphors are as follows: Ocean ( $n=28$ ), Universe ( $n=24$ ), Sea ( $n=16$ ), Earth ( $n=15$ ), Rainbow ( $n=13$ ), Knowledge, Imagination, Space ( $n=10$ ), Art, Forest ( $n=6$ ), Sea, Life, School, Infinity ( $n=5$ ), Teacher ( $n=4$ ), Addiction, Google, Dictionary, Artificial intelligence, Sun, Human, Water, Look for a needle in a haystack, Store ( $n=3$ ).

### 3.2. Findings Related to the Second Sub-Problem

The first sub-problem, "What are the metaphors that the participants (primary, secondary, high school and university students) created regarding the concept of "online reading"? Findings related to the question are given in Conceptual Categories for Research Results.

### 3.3. Conceptual Categories for Research Results

The metaphors of primary school 4th grade, middle school 8th grade, high school 12th grade and university 4th grade students regarding the concept of "online reading" were collected in 11 categories. The category headings are: "Reading online as access to information", "Reading online as diversity", "Reading online as infinity", "Reading online as the reliability of information", "Reading online as a guide", "Different point of view" Reading online as an addictive reading", "Reading online as transmitting and sharing information", "Reading online as an interesting and entertaining", "Reading online as an addiction", "Reading online as an artificial need", "Online reading as a compulsory need" read". The conceptual categories are explained below and reinforced with detailed examples.

Category 1. Online reading as access to information: Metaphors in this category are expressed with the following words: It is the most preferred metaphor for the concept of "Online reading" by primary school 4th grade, middle school 8th grade, high school 12th grade and university 4th grade students. Examples of metaphors created to reach information are given below:

*"Online reading is like a teacher because it gives us information like a teacher." (PS 22)*

*"Reading online is like a treasure hunt because it allows people to find valuable information that is hidden or prepared beforehand." (MS 47)*

*"Reading online is like the ocean because there are millions of unknowns in a bottomless pit, and we have to uncover them." (HS 21)*

*"Online reading tip is like an invisible, endless black hole, because it contains a lot of information at the same time. While reaching an information, on the other hand, it reaches the thoughts of the same information on a different view and passes the data we have through our own mind filter and delivers the most correct one to us. It delivers endless thoughts with inspired texts at the same time, with less time and less cost than books." (PST 121)*

Category 2. Reading online as diversity:

*"Online reading is like a book because it contains a lot of information." (PS 95)*

*"Online reading is like space because it contains a lot of information that we do not know yet." (MS 41)*

*"Online reading is like a store because there is more than one option, and you choose what you want and use it." (HS 89)*

*"Reading online is like the sea because there is so much diversity, like the diversity of life in the sea." (PT 48)*

Category 3. Reading online as infinity:

*"Reading online is like a black hole because it is infinite." (PS 1)*

*"Online reading is like endless information because it contains endless information that we do not know." (MS 118)*

*"Online reading is like an endless library because the information in it has no end and anyone who wants can add or take something." (HS 117)*

*"Online reading is like an ocean because it is an endless pile of information." (TLT 41)*

Category 4. Online reading as the Reliability of Information: (There is 1 in primary school)

*"Reading online is like a lie, because there is as much incorrect information as there is correct information." (PS 74)*

*"Online reading is like the sea, because there are millions of beauties in the sea, as well as in pollution." (MS 112)*

*"Reading online is like looking for a needle in a haystack because it is very difficult to find the right one among a lot of information." (HS 6)*

*"Online reading is like an endless library where we can access the information we want instantly, because it allows us to access the information we want instantly. Therefore, it may be correct to compare online reading to a library in which we can obtain all kinds of information. Of course, not all information is correct, but reading online gives us a lot of convenience in terms of time." (PST 123)*

Category 5. Online reading as a guide:

*"Reading online is like a guide because it helps us answer questions." (BC 61)*

*"Online reading is like stars in space because it is too much and radiates light. In the light, it illuminates us like knowledge." (MS 80)*

*"Online reading is like a light penetrating the darkness because it guides us in every area we want." (PST 103)*

Category 6. Reading online from a different perspective: (Not available in Primary and Secondary Schools)

*"Reading online is like a book because it is interpreted differently in each person's hand." (HS 54)*

*"Reading online is like going on a journey because the reader may encounter different thoughts and feelings while reading the article. The act of reading is a tool that takes the reader into a world full of knowledge, thoughts, and ideas. Through the language and words used in the article, the reader can enter the world of the author's mind and begin to think from the author's perspective. Therefore, online reading acts as a bridge between minds and offers the reader a different perspective." (SST 136)*

Category 7. Online reading as information sharing:

*(MS 134) "Online reading is like a book because we share what we read and read online with our friends."*

*(HS 59) "Online reading is like a book, because you are in constant interaction, and you share what you read."*

*(HS 66) "Online reading is like talking to each other because it ensures that communication with people is not lost. A relationship always lasts."*

Category 8. Reading online as engaging and entertainment:

*"Online reading is like reading together, because reading together is fun and relieves boredom." (PS 109)*

*"Online reading is like the universe, because the part we have not discovered is more than what we have discovered, and it arouses curiosity." (HS 7)*

*"Online reading is like virtual games because they are interesting like games." (TLT 39)*

*"Online reading is like playing a game, because it allows us to have a pleasant time and at the same time it allows us to learn." (PT 68)*

Category 9. Online reading as an addiction:

*"Reading online is like an addiction because everyone gets addicted once they see it." (PS 84)*

*"Reading online is like an addiction, because if you look too hard, you won't be able to stop." (PS 85)*

*"Reading online is like an addiction because people get addicted once they see it." (PS 121)*

*"Reading online is like laziness, because once technology is delayed, we don't want to do anything." (MS 9)*

*"Reading online is like a glass of poisoned water, because although it is good to drink, its poison harms the eyes." (MS 73)*

*"Reading online is like eating, because it is harmful if we eat too much food, and too much of online reading is harmful." (MS 90)*

*"Reading online is like an addiction because we cannot leave when we look at the screen." (MS 135)*

*"Online reading is like a whirlpool, because the more it wants to get out, the more it draws in." (HS 26)*

Category 10. Online reading as artificial:

*"Online reading is like artificial intelligence because it gives artificial information, but the answers are correct." (PS 129)*

*"Online reading is like a dream world because information can be accessed quickly, but it is never like the real thing." (MS 86)*

*"Online reading is like artificial intelligence because it connects what we read." (MS 126)*

*"Reading online is like a dream because it is done in a virtual environment. It is there, but it has no material existence, just like dreams are dreams." (HS 42)*

*"Online reading is like a mirror because we look at what we want to see and look at, but we cannot touch." (HS 50)*

*"Online reading is like stars because we see it on the screen as it is in online reading, but we cannot touch it like a book. Finally, information in online reading illuminates our minds just like stars illuminate the dark sky." (PST 109)*

*"Online reading, that is, using telephone, computer, etc. It is like reading odorless books from other materials, because not being able to underline the book is reading blindly, seeing and not being able to touch it is like dreaming. When I think of myself, I can understand the things that I can underline and feel, never in odorless books." (SST 138)*

Category 11. Online reading as a mandatory requirement:

*"Online reading is like the organs in our body, because we cannot live without our organs, and we cannot live without information (online)." (MS 105)*

*"Online reading is like oxygen because it has become so indispensable in our age that we cannot live without it. We did everything online and became addicted." (TLT 33)*

*"Online reading is like asphalt, because it does not taste like walking on the ground, but it is necessary for our age."  
(TLT 35)*

*"Online reading is like the veins in the human body because the blood pumped by the heart is distributed throughout the body through the veins for people to survive. Online reading is also an important point for the survival and functional use of technological tools." (TLT 13)*

#### **4. RESULTS, DISCUSSION AND RECOMMENDATIONS**

This study aimed to identify the metaphorical perceptions of primary, secondary, high school, and university students regarding online reading. The findings were analyzed and presented according to the sequence of the research questions, allowing for a structured understanding of students' perspectives at each educational level. Interpretations of the results were also included to offer deeper insight into the meanings behind the metaphors and how they reflect students' experiences with online reading.

In the results related to the first sub-problem, primary school students explained online reading generally using the metaphor of a book. Since primary school children are in the concrete operational stage; They tend to concretize abstract situations, concepts, and facts. Online reading is an abstract concept for primary school students. For this reason, the metaphors that emerged about online reading were mainly explained with the metaphor of the book, which is a concrete concept. In addition to this metaphor, world, knowledge, and universe metaphors followed. Metaphors such as world, knowledge, and universe, we can say that students attribute meaning to online reading such as size, distance, eternity, and obscurity. It is quite meaningful that primary school children, whose world of thought and depth of knowledge are below a certain level, put forward such metaphors.

Secondary school students often explained online reading with the metaphor of the universe. The universe has no definite boundaries, is infinite and contains mysteries. It is quite normal for adolescent and middle school students to attribute concepts such as "mystery, eternity, and limitlessness" to online reading. In this age group, the metaphor of the universe was followed by the metaphors of book, library, ocean, and knowledge. Because this age group is in the transition period, they come and go between both concrete and abstract thinking.

High school students often explained online reading with the metaphor of the library. The library is a metaphor that accurately describes online reading in one way or another. It is obvious and natural that these students understand online reading better than students at lower levels. The metaphor of the library was followed by the metaphors of ocean, space, universe, and imagination. The fact that high school students produce metaphors such as the ocean, the universe and dreams may be proof of their transition to the abstract period.

Finally, university students often explained online reading with the metaphor of library, like high school students. University students: Different from the metaphors produced by primary, secondary and high school students, they explained with different concepts such as sea and sky.

In the analysis of the second sub-problem, a total of 271 metaphors related to online reading were gathered from participants. These metaphors were grouped into 11 distinct categories, each reflecting a different aspect of students' perceptions. The identified categories are: Access to Information, "Diversity", "Infinity", "Reliability of Information", "Guideline", "Different Point of View", "Sharing Information", "Interesting and Fun", "Addiction", "Artificialism, and Mandatory Need". These categories illustrate the wide range of attitudes and experiences students associate with online reading, from positive views such as ease of access and enjoyment to more critical perspectives like dependency and artificiality.

The first of the conceptually coded metaphors is the category of online reading as access to information. In this category, students at all levels created metaphors to exemplify access to information. It has been stated that there are many ways to access information in this category. As the second category, diversity, it has been mentioned that there will be more than one option when reading online. In the third category, infinity, it was mentioned that while reading online, we would be confused with an infinite amount of information. The fourth category includes the theme of the reliability of information. In this theme, it was mentioned that not every information we read while reading online is correct, that there is harmful information as well as useful information, and that we also need to confirm what we read. Only one student mentioned the reliability of information at primary school level. Additionally, the presence of only one metaphor in the "reliability" category at the primary school level suggests that critical reading skills in this age group are underdeveloped. This finding aligns with the work of Coiro and Dobler (2007), who argued that internet literacy skills are closely linked to cognitive development. From here, the following conclusion can be reached: Primary school students accept every information they read as correct. When progressing to the upper level, it can be said that students are aware that there is wrong information as well as correct information while reading online. In the fifth category, online reading as a guide, a primary school student and a high school student did not produce any metaphors. In the sixth category, online reading as a different perspective, no metaphors were produced for this category at primary and secondary school level. The reason for this can be shown as the lack of development of critical thinking skills at primary and secondary school level. It is particularly striking that the categories of "information

reliability" and "critical perspective" emerged only among older students. While primary school students largely accepted online content at face value, middle and university students emphasized its uncertainty and potential inaccuracy. This finding is consistent with Afflerbach and Cho's (2009) model of strategic online reading, which emphasizes the importance of critically evaluating sources of information. Additionally, metaphors such as "searching for a needle in a haystack" and "a black hole" encapsulate the cognitive challenges of distinguishing reliable information in the digital sphere. In the seventh category, sharing information, in the online reading category, the students stated that they could share what they read with the people they wanted by using a metaphor such as "the homing pigeon". Primary school students did not produce any metaphors for the share what they read category. The reason for this is that digital communication activities such as sending sms, sending e-mails and texting are rarely encountered in primary school children. In the eighth category, online reading as interesting and fun, primary, and high school students produced a metaphor. At the secondary school level, no metaphors were produced for the category of online reading as interesting and fun. In the online reading category as addiction, which is the ninth category, enough metaphors were produced at primary and secondary school levels, and at the high school level, while no metaphors were produced at the university level. The fact that the category of "addiction" emerged solely among the younger age groups (primary and middle school) is particularly noteworthy. This could be attributed to children's increased susceptibility to screen exposure due to the amount of time they spend with digital tools. In contrast, high school and university students emphasized "necessity" and "instrumental use" over addiction. This divergence can be explained by the development of cognitive awareness and self-regulation skills with age (Zimmerman, 2002). In contrast, the theme of "addiction" was more prominent among primary and middle school students, revealing concerns about unregulated usage and overexposure to digital reading environments. At the university level, online reading was seen as a necessity, not an addiction. Notably, university students often conceptualized online reading as an "obligation," reflecting the indispensability of digital resources in academic and professional contexts. This suggests that individuals in this age group increasingly internalize digital literacy as a life skill. Enough metaphors were produced at primary, secondary, high school, and university levels in the tenth category, "Online reading as artificiality". In the eleventh category, the compulsory need category, it was explained with only one metaphor at the secondary school level in the online reading category. No metaphors were produced in the compulsory need category at primary and high school level. When it comes to the university level, only the 4th grade students studying in the Turkish language teaching department, among the students studying in Turkish, classroom, social and preschool teaching, saw online reading as a compulsory need.

To contextualize the findings of this research, a comprehensive literature review was carried out. The review revealed that studies focusing on metaphors related to online reading are still emerging, making this a relatively underexplored area in both national and international academic literature. As a result, only a small number of relevant studies were identified. However, several of these studies show similarities with the results of the current research. These matching studies are presented below to highlight common patterns and support the interpretation of the findings.

Bayram (2018) conducted a study to reveal the perceptions of pre-service teachers about reading skills, with the categories of "guidance", "entertainment" and "need" of reading skills, and this study's "interesting and fun", "mandatory need" and "translation as a guide". It coincides with the results of the study in terms of determining the problems related to the categories of "internal reading" and reading skills and taking preventive measures for this. Maden (2012), in his study, reveals the perceptions of Turkish teacher candidates about the skill of reading on the screen, with the categories of "easily accessing information", "fun and relaxation", "easy sharing", "increasing interest in reading" and "Accessing information", "Interesting and fun" overlaps with the categories of "transmitting and sharing information". Karakoç Öztürk (2021), in his study, reveals the perceptions of pre-service teachers about the concept of digital reading an e-book, the categories of "interesting", "need, requirement" and the translation of this study as "interesting and fun", "mandatory need" coincides with the reading categories. Akbulut, Özdemir, and Cıvğın (2017), in their study, to reveal the perceptions of secondary school students about reading skills, because of their study, "entertainment tool", "source of information", "necessity" categories, which are among the metaphors developed for the concept of the book, and "access to information" of this study. It overlaps with online reading categories such as "Interesting and fun" and "Necessary". In his study on reading skills, Bozpolat (2015) coincides with the categories of "Acquiring knowledge / Reading as a learning tool" and "Reading as a guide" and the online reading categories of this study as "Accessing information" and "Guide". In their study conducted by Karakuş and Kozçetin (2016) to reveal the perceptions of Turkish teacher candidates about reading skills, the categories of "guidance", and "need-necessity" overlap with the online reading categories of this study as "Guide" and "Mandatory need".

Titandanus and Suryaman (2022) conducted a study examining students' perceptions of reading digital texts. They found that a significant majority—83.3% of participants—believed that the flexibility and ease of accessing information on the internet increased their interest in learning. These findings align closely with two of the categories identified in the current study: Access to Information and Interesting and Fun, suggesting that digital reading is often perceived as both convenient and engaging by students.

Afflerbach and Cho, (2009) mentioned four types of online reading strategies in their research. Based on these strategies, he mentioned that readers use "navigating, searching, finding and reviewing" tools to select relevant websites and information. This result coincides with the categories of this study: "Access to information", "Diversity", "Information Reliability". Online reading often requires "identifying and constructing intertextual links" through the comparison of different sources and careful consolidation of the information presented (Anmarkrud, Bråten, & Strømso, 2014; Cho & Aflerbach, 2017). In addition,

since the internet offers unlimited information, it is vital for readers to develop the ability to evaluate the relevance, usefulness, and reliability of different sources, and therefore to find valuable and reliable information to read (Braasch, et al., 2012). Confirmation of information from various sources while reading online coincides with the "Reliability of Information" category of this study. Wu (2019) concluded in his study that one of the difficulties faced by English learners is to evaluate online resources. How to evaluate the features of online resources will make it easier for readers to obtain information.

It is important to reveal students' perceptions in order to help readers who have difficulty with online reading become competent in offline reading before starting online reading comprehension training. In this case, teachers have great responsibilities. Online readers essentially create the texts they read with the links they choose to follow. Readers with learning disabilities are often more engaged while reading online, largely because they control the information pathways and perceptions, they follow online (Castek, et al., 2011). Thus, teachers have important responsibilities in the organization of classroom activities to reveal the perceptions of students with reading difficulties. Teachers should be in the position of guide in teaching online reading, which is a constantly changing concept, to students and revealing their perceptions.

As a result, online reading, which is accepted as a current skill, is a skill that we cannot ignore and even shape the entire education curriculum according to this skill. Online reading is currently a skill that students at all levels frequently use while doing their homework and research. The development of these skills will contribute greatly to both their academic life and their future professional life.

This study has three limitations. The first limitation is related to the study group in which the research was conducted. Research was conducted with 4th grade primary school students; Middle school 8th and high school 12th grade students and Education faculty's last grade students of Turkish teacher training, primary teacher training, social studies teacher training and pre-school teacher training programme. All grades can be considered in future research. Thus, if desired, the change and difference in perception at the end of the stages can be looked at. As Afflerbach and Cho (2009) stated, online reading environments are constantly changing. For this reason, such studies should be done regularly. Therefore, empirical studies should be conducted investigating online reading strategies used in different content areas and in different cultural contexts. The second limitation of the study was the analysis process categorized by Saban (2004; 2008a; 2008b), which was used for data collection and analysis. In future research, researchers can use categories they have developed themselves. This research was studied with students. The perceptions of the teachers of these students also need to be studied. Because teachers' perceptions of online reading directly affect students' perceptions.

This study examined students' metaphorical perceptions of online reading across different educational levels, revealing variations in perception based on age and cognitive development. Findings indicated that as students grew older, they developed more abstract, comprehensive, and critical metaphors to describe their online reading experiences. When evaluated within the framework of Piaget's theory of cognitive development, this progression suggests a transition from the concrete operational stage to the formal operational stage, during which individuals are better able to comprehend complex concepts.

By examining the metaphorical perceptions of students across four educational levels, this study offers valuable insights into how developmental, cognitive, and technological factors influence students' conceptualizations of online reading. The findings revealed significant growth in the sophistication of students' metaphors across age groups, closely aligned with Piaget's (1970) stages of cognitive development. The variety of metaphors across age groups offers a compelling pattern: Primary school students (typically around 9–10 years old), situated in the concrete operational stage, primarily used metaphors based on tangible, familiar experiences (e.g., "book," "teacher"). In contrast, students aged 12 and older (middle school, high school, university) preferred more abstract and multidimensional metaphors (e.g., "universe," "library," "infinity"). These findings demonstrate a shift from concrete to abstract thinking in line with cognitive development.

Primary school students tended to conceptualize online reading using concrete metaphors such as "a book." In contrast, middle and high school students frequently employed metaphors like "the universe," "a library," or "an ocean," which emphasize boundlessness and informational richness. University students, meanwhile, produced more abstract and cognitively complex metaphors such as "infinity," "necessity," "guidance," and "information reliability." Notably, the themes of "information reliability" and "critical perspective" appeared exclusively in the university group, suggesting that older students develop a more selective and evaluative stance toward online content. This aligns with Coiro's (2011) New Literacies Framework, which views online literacy not merely as reading but as involving the ability to search for, evaluate, and synthesize information.

### **Research and Publication Ethics Statement**

The authors confirm that ethical approval was obtained from Uşak University the Committee for Research and Publication Ethics in the Social Sciences and Humanities (Approval Date: 15/12/2022 and Number 2022-182).

## Contribution Rates of Authors to the Article

The authors equally contributed for the article.

## Statement of Interest

The authors declare that there is no conflict of interest.

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