

EXAMINING THE RELATIONSHIP BETWEEN SYSTEMS THINKING
ENVIRONMENTAL PERCEPTION



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EXAMINING THE RELATIONSHIP BETWEEN SYSTEMS THINKING
AND ENVIRONMENTAL PERCEPTION

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AND ENVIRONMENTAL PERCEPTION

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ABSTRACT

In this study, the relation between individuals' systems thinking skills and their environmental perception was researched. In addition, how individuals' social media usage levels differ for both individuals' systems thinking skills and environmental perception is analyzed. Therefore, firstly, the data about the social media usage of individuals were collected using the personal information form created by the researcher. Then, the Environmental Perception Scale developed by Mürşet Çakmak (2020) and the Systems Thinking Perception Scale developed by Dolansky et al. (2010) and adapted to Turkish by Harmancı (2019) were implemented face-to-face or digitally. The reliability coefficient of the scale of systems thinking scale used in this study was higher than 0.7 (.926). The reliability of the coefficient of the environmental perception scale used in this study was higher than 0.7 (.979). The sample of the research consists of 315 individuals residing in Istanbul, over the age of 17, using social media. Pearson correlation test was applied to the data collected about the variables of the study. As a result of the analysis realized with the SPSS program, a medium level of positive correlation was found between the systems thinking perception and the environmental perception (.46). Besides a low level of positive correlation was found between the individuals' systems thinking levels and the use of social media. A low level of positive correlation was also found between the environmental perception and the use of social media (.16). To sum up, it has been determined that there is a positive correlation between individuals' social media usage times and their perceptions of systems thinking and environmental perceptions. It has been determined that there is a positive correlation between environmental perception and system thinking, environmental perception and social media usage level, and system thinking and social media usage level.

Based on the results of the study, it could be said that systems thinking should be included in the education curriculum together with its outcomes in order to improve environmental perception, and social media platforms can be restructured with the principles of systems thinking in the context of environmental perception.

Key Words: Systems thinking, the perception of environment, climate crisis, social media, new media.



ÖZ

Bu yüksek lisans tez çalışmasında bireylerin sosyal medya kullanımının ve sistemsel düşünme beceri düzeyinin çevresel algı düzeylerine etkisi araştırılmıştır. Bunun için önce araştırmacı tarafından oluşturulan kişisel bilgi formuyla bireylerin sosyal medya kullanımlarıyla ilgili veriler toplanmış ardından Mürşet Çakmak (2020) tarafından geliştirilen Çevresel Algı Ölçeği ve Dolansky, M. vd. (2010) tarafından geliştirilen Duygu Nazime Harmancı tarafından Türkçeye uyarlanan (2020) “Sistemsel Düşünme Ölçeği” yüz yüze ya da dijital olarak uygulanmıştır. Kullanılan sistemsel düşünme ölçeğinin güvenilirlik katsayısı 0.7’den yüksek çıkmıştır (.926). Araştırmada kullanılan çevresel algı ölçeğinin güvenilirlik katsayısı da 0.7’den yüksek çıkmıştır (.979). Araştırmanın örneklemini, Türkiye’nin farklı şehirlerinde ikamet eden, farklı eğitim düzeylerinde ve yaşlarında olan, 17 yaş üstü sosyal medya kullanan 315 birey oluşturmaktadır. Araştırmanın değişkenleriyle ilgili toplanan verilere Pearson korelasyon testi uygulanmıştır. SPSS programıyla yapılan analiz sonucunda, çalışmaya katılan bireylerin çevresel algı düzeyleri ve sistemsel düşünme düzeyleri arasında orta düzeyde pozitif korelasyon (.46) olduğu görülmüştür. Ayrıca araştırmada yer alan bireylerin sistemsel düşünme düzeyleri ve sosyal medya kullanımı arasında da düşük düzeyde pozitif korelasyon (.19) ilişkisi saptanmıştır. Çevre algısı ve sosyal medya kullanımı arasında da düşük düzeyde pozitif korelasyon ilişkisi (.16) bulgulanmıştır. Özetle, çevresel algı ile sistemsel düşünme düzeyleri arasında, çevresel algı ile sosyal medya kullanım düzeyi arasında ve sistemsel düşünme ile sosyal medya kullanım düzeyi arasında pozitif yönlü bir korelasyon ilişkisi olduğu tespit edilmiştir. Çalışmanın sonuçlarından hareketle çevresel algının geliştirilmesi için sistem düşüncesinin eğitim müfredatında kazanımlarıyla beraber yer

alması gerektiğini ve sosyal medya platformlarının çevresel algı bağlamında sistemsel düşünme ilkeleriyle yapılandırılabilirliğini söyleyebiliriz.

Anahtar Kelimeler: Sistem düşüncesi, çevre algısı, iklim krizi, sosyal medya, yeni medya.



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TABLE OF CONTENTS

Abstract	iv
Öz	vi
Acknowledgement	viii
Table of Contents	ix
List of Tables	xii
1. INTRODUCTION	1
1.1. Background of the Study	1
1.2. Significance of the Study	3
1.2. Limitations of the Study	5
1.3. Definitions of The Terms	5
2. REVIEW OF THE LITERATURE	7
2.1. The Concept of Systems Thinking	7
2.2. The Concept of Social Media	8
2.3. The Concept of Environmental Perception	10
3. METHOD	15
3.1. The Purpose of the Study	15
3.2. Research Questions	15
3.3. Sample	16
3.4. Instruments	17
3.4.1. Demographic information form for attendess	18
3.4.2. Social media usage level and preferences information form for attendess	18
3.4.3. Environmental perception scale form for attendess	18
3.4.4. Systems thinking scale form for attendess	18

3.5. Data Collection	18
3.6. Data Analysis	18
4. RESULTS.....	20
4.1. Is There A Significant Relationship Between Environmental Perception And Systems Thinking?	20
4.2. Is There A Significant Relationship Between Social Media Use And Environmental Perception?	20
4.3. Is There A Significant Relationship Between Social Media Use And Systems Thinking?	21
4.4. Is There A Significant Relationship Between Social Media Use And Systems Thinking And Environmental Perception?	21
4.5. Is There A Significant Relationship Between Social Media Platforms And Environmental Perception And Systems Thinking?	24
5. DISCUSSION.....	30
5.1. Discussions of Findings	30
5.1.1. Discussions of findings in terms of environmental perception	30
5.1.2. Discussions of findings in terms of systems thinking perception	31
5.1.3. Discussion of findings in terms of social media using	32
5.1.4. Discussion of findings in terms of correlation between systems thinking, environmental perception and social media using	34
5.2. Suggestions	34
REFERENCES	37
Appendix A: Permission from Ethical Committee of Yeditepe University	46
Appendix B: Demographic Information Form	49
Appendix C: Social Media Usage Level and Preferences Form.....	50

Appendix D: Environmental Perception Scale	51
Appendix E: Systems Thinking Scale.....	54
Appendix F: List of Abbreviations	55



LIST OF TABLES

Table 1	<i>Distribution of the attendees in terms of gender and graduates.....</i>	16
Table 2	<i>Average time spent per day on social media</i>	17
Table 3	<i>Environmental perception scale reliability.....</i>	18
Table 4	<i>Systems thinking scale reliability.....</i>	19
Table 5	<i>The relationship between environmental perception and systems thinking</i>	20
Table 6	<i>The relationship between social media using and environmental perception</i>	20
Table 7.	<i>The relationship between social media using and systems thinking.....</i>	21
Table 8	<i>Between correlation relations of systems thinking scale, the perception of environment and social media using</i>	21
Table 9	<i>The relationship of time spent on social media between the perception of environment and system thinking</i>	22
Table 10	<i>The relationship of Twitter usage between the perception of environment and systems thinking</i>	24
Table 11	<i>The relationship of Instagram usage between the perception of environment and systems thinking</i>	24
Table 12	<i>The relationship of TikTok usage between the perception of environment and systems thinking</i>	25
Table 13	<i>The relationship of YouTube usage between the perception of environment and systems thinking</i>	26
Table 14	<i>The relationship of Facebook usage between the perception of environment and systems thinking</i>	26

Table 15	<i>The relationship of Whatsapp usage between the perception of environment and systems thinking</i>	27
Table 16	<i>The relationship of Telegram usage between the perception of environment and systems thinking</i>	27
Table 17	<i>The relationship of Twitch usage between the perception of environment and systems thinking</i>	28
Table 18	<i>The relationship of Twitch usage between the perception of environment and systems thinking</i>	28



1. INTRODUCTION

In this chapter, background, significance and limitations of the study, and definitions of the terms presents.

1.1. Background of the Study

In today's age, environmental problems, environmental disasters and discussions on their prevention in a wide range from daily conversations to academic research have become permanent at the top of the agenda (Şengün, 2015). Search of "How to protect nature?" on Google has reached an all-time high in 2021 (Google, n.d.). Increasing use of concepts such as climate crisis and "capitolence" in the scientific community; other environmental problems, pandemics, natural disasters have increased the importance of environmental studies (Başoğlu & Akyazı, 2015). It was human activities that led to this environmental destruction that we witnessed (Kete et al., 2017; Kocaeren, 2016; Yücel & Özkan, 2014). Human activities, social systems established by humans have been as effective as a meteor or a super-volcano in the life of our planet, the only place where we know that life exists. The period we are living in has begun to be called the Anthropocene or the Capitulocene Age by scientists (Crutzen & Stoermer, 2000; Lewis, & Maslin, 2015). It could be said that people's environmental perceptions, their actions shaped by their environmental perceptions, and the social orders they establish and manage with their environmental perceptions are effective at the source of this climate crisis that affects our entire planet (Chen et al., 2013; Yücel & Özkan, 2014; Trenberth, 2018). For this reason, in order to prevent the emergence of environmental problems, it is important to understand the factors that determine the environmental perception of individuals and to scientifically demonstrate the functionality of these factors in the development of

environmental perception. At this point, there have been many studies emphasizing the importance of bringing systems thinking and holistic approach to individuals in developing people's perceptions of the environment. (Ecimovic et al., 2002; Davis & Stroink, 2016). With this assumption, training studies based on practice are started to be carried out (Elsawah et al., 2021; United Nations Development Programme [UNDP], 2021). The common result of these studies carried out on different dates with different researchers; systems thinking improves the environmental perceptions of individuals, enables them to trust more scientific sources on this subject, and makes individuals more resistant to conspiracy theories. Evaluation of systems thinking has become vital in today's world, where the necessity of understanding complex systems by individuals and institutions and the necessity of taking scientific truths as a reference are increasing day by day. In addition, a recent meta-analysis emphasized the importance of education programs for the success of environmental studies (Anderson et al., 2021). In addition to this effect of systems thinking to improve environmental perception, cognitive skills and being open to interaction play a central role in studies on the acquisition of systems thinking (Assaraf & Orion, 2005). There are expert opinions and studies that show that interaction, which has an important place in the acquisition of systems thinking, can be achieved through social media (Solmaz et al., 2013; Tiryakioğlu & Erzurum, 2011). Considering that media environments have a psychological and social impact independent of the content they convey according to their structural originality (McLuhan, 2017). It could be said that the original result of social media as a medium is based on interaction (Yanık, 2016). The fact that social media is a widespread reality that brings together individuals and masses from different cultures, different segments in the context of interaction (Vural et al., 2010), makes it a variable that cannot be ignored in our study. In the literature

review, studies were found that the use of social media increase critical thinking (Kesici, 2021). It has been observed that even when social media is used only for non-political purposes such as finding friends, it allows learning and being politicized due to the interaction it contains (Diehl et al., 2015). In addition, it has been observed by the researcher that the studies on the effect of systems thinking on people's perceptions need to be updated both in terms of temporal and factual aspects. The social media factor that determines the interactions of individuals globally has doubled in the last ten years, and the number of users has reached 5 billion (Kemp, 2022). Although the accuracy of the information contained in social media as an information source is highly controversial, social media is the most used information source for individuals and societies (Kemp, 2022; Soylular, 2018). However, the fact that individuals with a high level of systems thinking are less likely to believe in conspiracy theories (Lezak & Thibodeau, 2016) adds importance to the system thinking-social media relationship in terms of preventing manipulations in social media, which is the biggest source of disinformation today. In addition, no study has been found on the relationship of systems thinking with the social media factor, which is new in terms of the literature. Considering the identified role of social media in creating value (Ayaydın & Ayaydın, 2018) the need to evaluate the relationship of social media with systems thinking in developing environmental perception also arises.

1.2. Significance of the Study

In today's world, societies and individuals are becoming more and more complex and dependent on each other, it has become vital for individuals to realize the complex processes in their own contexts in all areas from the individual to the social level. Besides the function of this reality in preventing problems, its function in

eliminating the attitudes that cause problems is more decisive. The problems we face are the result of our patterns determined by our individual and social choices. For this reason, the main purpose of the study is to emphasize the functionality of systems thinking in the context of transforming our attitudes that lead to environmental destruction, the characteristics of our lifestyle, and even preventing them from being acquired as a behavior at an early age. In the literature review, no study was found between systems thinking and social media use. Through our study, the relationship between systems thinking and social media usage will be examined. Besides, there are studies that show that the use of social media by non-governmental organizations operating in the field of environment in Turkey is limited (Erkmen et al., 2019). Our study will contribute to attracting the attention of institutions operating in this field to the subject. Evaluation of social media platforms in terms of environmental perception in our study will mean a "platforms map" for these non-governmental organizations. As a result of our study, an opinion will be presented about the functionality and possibility of social media whose number of users has reached 5 billion (Kemp, S. 2022) on an international issue such as the climate crisis. In addition, as a result of our study questioning the relationship between systems thinking and social media, the claim that social media will enable interaction (Tiryakioğlu & Erzurum, 2011) and the claim that interaction is an important determinant in the acquisition of systems thinking (Assaraf & Orion, 2005), will be indirectly questioned. The potential of social media in this vital issue will be scientifically demonstrated to educational institutions and relevant institutions operating in this field. Related institutions will be able to make inferences about the situation of social media platforms in the context of environmental perception and holistic thinking. System thinking, which has been presented as a tool in the context

of education programs until now, will be evaluated as a tool in the context of social media that permeates every aspect of individuals' lives.

1.2. Limitations of the Study

The Systems Thinking Scale and the Environmental Perception Scale, which we used in the research, are perception scales. Perception scales are scientific materials based on measuring the situation of people on the relevant topic with the opinions of people. Therefore, the results measure people's perceptions on the relevant topic, not their exact situation. A comparative study with the help of "Functional Near Infrared Spectroscopy (fNIRS)" revealed that those who scored low on a systems thinking perception scale different from the scale we used in our study were more prone to systems thinking (Hu et al., 2019). Our study comprises these structural limits of perception studies.

The sample of the study consists of 315 people over the age of 17 who reside in different cities in Türkiye, have different education levels and occupations, and use social media.

1.3. Definitions of The Terms

Systems Thinking: It is a set of concepts that prioritizes seeing the world as a holistic and in a network of relations, assuming that facts, actions and behaviors consist of patterns, explaining the whole not with the singular sum of the parts they contain, but with the interactions of the parts, discovering the dynamic complexities and showing them with relations and specific concepts (stabilizing-reinforcing processes, behavior graph over time, structures that delay the consequences of actions, causal loop diagram, ladder of inference, iceberg modeling) (Eğitimde Sistem Düşüncesi, 2022a; Şenaras & Sezen, 2017; Çelikten, 2022).

Environmental Perception: Environmental perception is the sum of the beliefs, intentions, tendencies, values attributed to the environment, or the individual's worldview about the environment, which consists of the interactions of living and non-living beings, in which the individual interacts and positions themselves in some way (Çakmak, 2020; Çopuroğlu, 2011; Schultz et al., 2003; Yücel & Özkan, 2014).

Social Media: Non-hierarchical written-visual tools that arise from the development of the network structure created by computer technologies, that emerges as a result of the use of WEB 2.0 environments with media needs, that is sometimes met with the concept of new media (Demir Askeroğlu, & Ersöz Karakulakoğlu, 2019) that differs from traditional media with its sharing and interaction feature that individuals-institutions create their content by sharing their knowledge and thoughts and that there is no hierarchy compared to traditional media (Akan, 2016; Arslanbaş, & Cizrelioğulları, 2020; Iavarone, 2020; Solmaz et al., 2013). 1

2. REVIEW OF THE LITERATURE

The research literature most relevant to the purpose of the present study is summarized in this chapter.

2.1. The Concept of Systems Thinking

The word “system” which derives from French (Nişanyan Sözlük, 2022.) means “order, method order, way, method, mechanism, device, model, system” in daily use (Türk Dil Kurumu Sözlükleri, 2022). The word system has a wide range of meanings, from the field of biology, engineering, business to the field of education, beyond this kind of meaning in daily use (Wikipedia, 2021). Another explanation is that systems are integrated structures that produce an output that is more of an outcome than the sum of its parts (Incese, 2019). As it turns out, key concepts of systems thinking have been put forward in different fields before. Holistic and interactive thinking, the main emphasis of systems thinking with the concepts of holism and synergy dating back to Aristotle, has been defined in various fields and defended as an explanation method (Şahinoğlu, 2021; Vikipedi, 2021). The Gestalt approach in the psychology of science, which argues that the perception cannot be understood by separating it and that the whole is different from the parts, is also in intersection with the concepts of system thinking with the emphasis on holism (Çelikten, 2022; Şimşek, 2008).

Jay W. Forrester, Donella H. Meadows, Dennis L. Meadows, John Sterman, Richard Bennett and Peter M. Senge laid the foundations of the systems thinking concept on which our research is based. System thinking according to the conceptual framework created by these people; It is a way of thinking that focuses not on the parts, but on the interactions of the parts that make up the whole, revealing the relevant whole in the temporal plane (Meadows, 2009). Therefore, for the concept of

systems thinking, it is the thought that models the interactions that reveal the phenomena with its own tools (inference ladder, behavior graph over time, stock flow diagram, etc.) instead of reducing them to parts (Şenaras & Sezen, 2017). It is to focus on a large number of interactive variables in a holistic context rather than focusing on single large parts or causes (Lezak & Thibodeau, 2016). Systems thinking is relational and holistic thinking in a complex and cyclical world (Thibodeau et al., 2015). In systems thinking, the concepts of interaction and integrity take place as basic criteria for defining the entities and explaining the problems in the world (Sariaslan, 1984). It is a problem-solving approach that prioritizes seeing the phenomena in the context of relations, rather than linear cause-effect relationship reductionism and the mechanics of dividing the phenomena into parts that cannot be further divided (Tecim, 2016). In summary, systems thinking; It is an interdisciplinary approach that advocates an integrated analysis of phenomena and problems with sub-tools such as analysis and synthesis in the temporal plane, and examines actions with the results they create, their impact flows and the relations they initiate. This comprehensive concept of systems thinking, which has its origins in biology and engineering, has been encountered in theoretical and applied studies in educational science in recent year (Dizikes, 2015). The intellectual field that our study takes as a direct reference in the context of the concept of systems thinking is the "system thinking in education" approach, which is used in educational studies and already has an important literature (Eğitimde Sistem Düşüncesi, 2022b).

2.2. The Concept of Social Media

Social media definitions in the literature were made by examining different features of social media (Fuchs, 2020). In these definitions made by different people at different times, the interaction feature comes to the fore. According to one of them,

social media; It is a collection of websites and applications designed to create and develop online communities for information sharing and communication (Jeremiah, 2014). According to Jeremiah, the only difference between social media gathering around the dispenser and sharing is that this sharing takes place online. According to this definition, social media is characterized by the way real-life interactions take place online. According to another study that defines social media by centralizing its interaction feature, social media is the media type with the highest interaction capacity (Vural et al., 2010). According to another definition, social media is the general name of online tools that create interaction by offering the opportunity to share interest and information (Sayımer, 2008). There are also explanations that focus on the differences of social media from traditional media and emphasize the participatory aspect that emerges with its structure based on the creation of media content by users (Solmaz et al., 2013). There are other studies that consider the feature of the content being structured based on the individual, the feature of synchronization being given to the initiative of the individual and the interaction that these structurally support as the most distinctive feature of social media (Vural et al., 2010; Tıngöy & Bostan, 2007; Yanık, 2016; Yıldız, 2020). Based on these definitions in the literature; we can define it as digital environments where individuals share their interests, thoughts and feelings about many subjects and institutions structure their commercial activities and advertisements in an interactive way. No study has been found in the literature about the relationship between social media which the interaction feature is indispensable in the definitions in the literature, and interaction which is also an indispensable feature in the acquisition of systems thinking. One of the reasons why social media is included as a variable in our study is this interaction

partnership, which it shares structurally with system thinking, as well as its widespread use all over the world.

2.3. The Concept of Environmental Perception

Although the concept of environment has been used limitedly to these living things due to the destruction of plants and animals in recent years, it actually refers to the whole, the environment in which living and non-living beings interact at various levels (Yücel & Morgil, 1999; Keleş & Hamamcı, 2005). Therefore, we can say that the environment is the sum of biotic and abiotic environments, the life cycles of living things and all the factors in these cycles (Çepel, 1992; Yücel & Morgil, 1998; Çimen & Yılmaz, 2011).

Human perception of the environment has changed throughout history (Akkol, 2018). It has also been seen that the concept of environment has been replaced by the concept of geography in the development of environmental perception. There are also intellectual approaches that explain cultures, individual and social structures with environmental differences. In this context, it has also been witnessed the approaches that are frequently expressed as "Geography is destiny", which states that the environment is the determinant of everything. These differences make the environment has evolved from conceptual frameworks in which the environment plays a philosophical and sacred role to enrichment and associating it with economic purposes as a raw material source (Antmen, 2008; Kutgi, 2016). The perception of the environment to which our research refers; It is the place where people are a part of interacting with all their biotic and abiotic elements throughout their life, and where they conceptually position the environment they affect with their choices (Arı, 2017). The framework that originates the environmental perception in our study "environment education perception", "environment protection perception",

“environment issues perception”, “environment awareness responsibility perception”, “problems of sensory perception” and “environment-friendly activities perception” developed by Mürşet Çakmak consists of the sum of its dimensions(Çakmak, 2020).

In our study, the basic assumption that brings together the concepts of system thinking, environmental perception and social media usage; One of the characteristic features of these three concepts is the thought that interaction. These three areas, which intersect with each other due to their structural nature of interaction, can be functional in developing the holistic perspective that our world needs individually and socially today. Because addressing our problems in a holistic and interactive way, rather than in isolation, constitutes the source of our new problems. According to this assumption, many of the problems we face are based on the choices we make, consciously or unconsciously, while building our social structures, systems, and creating our lifestyle. As a result of these elections, we develop individual and social relations and create social structures (culture, constitution, law, etc.). While these social structures that we have created solve the problems they target, they prepare the ground for new problems. For example, the systems we developed to solve our energy needs caused environmental problems while solving our energy problem (Mikhaylov et al., 2020). The solutions we have developed to meet our transportation needs have revealed the traffic problem (Ullah et al., 2014). The chemical solutions we use while fighting agricultural pests have led to mineral loss in the soil and plants, and the emergence of stronger pests. Similarly, the antibiotics we use to destroy harmful bacteria in the human body have supported the emergence of super bacteria with high antibiotic resistance. It has been shown that the climate crisis we are experiencing is also human-induced.

The concept of environment is defined as the environment created by the interaction of living and non-living beings (Çepel, 1992; Yücel & Morgil, 1999). The distinctive content of the concept is interaction (Çimen & Yılmaz, 2011). Living and non-living things create the environment through interactions over time. Living and non-living things that seem unrelated to each other form a dynamic structure that is in contact with each other with positive or negative effects. The environment, as a system, is determined openly to the positive-negative inputs of the parts it contains, and includes interaction as a structural feature, making it a frequently used example in systems thinking.

Systems thinking explains the phenomena in nature and society with tools such as inference ladder, stock flow diagram, causal loop diagram. The common feature of all of these tools in systems thinking is to consider the interactions that take place in the short or long time. The environment is the most preferred resource both in explaining systems thinking as a way of thinking and in understanding the problems we experience as a tool. The fact that systems thinking is a way of thinking that centers on interaction, and the emergence of the environment with this relationship plays an important role in this. Therefore, the environment and environmental problems are very convenient to use systems thinking tools.

Many media studies, (Jeremiah, 2014; Sayımer, 2008; Solmaz et al., 2013; Tıngöy & Bostan, 2007; Vural et al., 2010; Yanık A. 2016; Yıldız, 2020) distinguishes social media from other types of media with its structure that allows interaction, and defines social media with this. According to these approaches, one of the main features of social media that differentiates it from traditional media is that it has a feature based on multi-faceted interaction.

It is thought that the development and experience of one of the two concepts that have structural commonalities with each other on the conceptual plane will provide a predisposition to the other. The characteristic feature of these two concepts is the interaction, the fact that social media also has a characteristic feature constitutes the main reason for investigating the functionality of social media in the context of the development of these two concepts. In addition, despite the rapid digitalization of many sectors, social actions and services, social media has grown faster than the internet in the last ten years and has become an important method and area of individual and social interaction (We Are Social, 2022). Globally, the most common reasons for individuals to use the Internet were found to be 61.8% accessing information, 55.2% interacting with friends and family, and following the agenda and developments with 53.1% (We Are Social, 2022). The primary reason for using social media has been interaction. The primary reason for using social media in 2022 was to interact with friends and family (We Are Social, 2022). Considering the prevalence of use, the evaluation of social media in the context of system thinking and environmental perception, whose relationship is questioned due to interaction partnerships in our study, appears as a natural result in front of the researcher, as the area where interaction takes place the most.

The main purpose of the study our aim is to propose scientifically the potential of systems thinking and social media, which is today's dominant source of information, for the studies carried out to improve our perception of the individual and social environment that leads to the climate crisis. Recognizing our policies, actions and choices that are the source of the problem in the context of the climate crisis, it is the widespread use of systems thinking in our other social problems and in our search for solutions. Thus, instead of solutions that turn our problems in any field

into bigger problems, a contribution will be made that proposes to take into account the habit of thinking that deals with problems with a more advanced understanding and early notices the new problems that current solution proposals are pregnant with, has already been used widely (We Are Social, 2022).



3. METHOD

In this chapter, it is identified that the methodological procedures. Firstly, the purpose of the study is explained. Secondly, research questions are ordered. Thirdly, attendees are mentioned. Then, the four instruments that are used in present study are imparted in forth part. In the fifth part, the data collection procedure has been clarified, and the procedure of data analysis has been explained in the sixth part.

Since the variables of our study, which is based on correlation research, have an interdisciplinary character, the questionnaire method, which allows different types of data to be collected was preferred as a data collection method (Odabaşı, 1999). In the survey method, which is one of the most preferred data collection methods in social research, the data are obtained through questions asked directly by the researcher to the individuals forming the sample (Bryman, 2015). Questionnaires were administered digitally or face-to-face. It was applied face-to-face to individuals with low education level and low digital literacy.

3.1. The Purpose of the Study

The aim of this study by observing the effects of individuals' systems thinking levels and social media usage levels on environmental perception, it is recommended to individuals and institutions to use systems thinking and structured social media for a radical change in perception about our problems (e.g. climate crisis) instead of individual behavioral changes.

3.2. Research Questions

Research questions of this study are as below:

- a. Is there a significant relationship between environmental perception and systems thinking?

- b. Is there a significant relationship between the use of social media and environmental perception?
- c. Is there a significant relationship between the use of social media and systems thinking?
- d. Is there a significant relationship between the use of social media and systems thinking and environmental perception?
- e. Is there a significant relationship between social media platforms and systems thinking and environmental perception?

3.3. Sample

The sample of the study was designed as a purposive sample to represent the diversity of the study population. Our sample, which consists of 315 people, between 17- and 65-years old living in different cities of Turkey (Kırklareli, Istanbul, Karabük, Giresun, Erzincan, Mardin, Gaziantep, Balıkesir, Kocaeli, Mersin, Ankara, Eskişehir, Antalya, Aydın, İzmir), using at least one social media platform of individuals and at different education levels (primary school, secondary school, high school, undergraduate, graduate, doctorate).

Table 1

Distribution of the attendees in terms of gender and graduates

		Frequency	%
Person's Gender	Male	118	37,3
	Female	197	62,3
	Total	315	100,0
Persons' Graduate	Primary	10	3,2
	Middle School	6	1,9
	High School	37	11,7
	Bachelor	210	66,5
	Master	48	15,2
	Doctorate	4	1,3
	Total	315	100,0

315 of attendees were male persons (%37,3), 315 of attendees were female students (%62,3). Also, 315 of attendees were PhD graduate 4 (1.3%), secondary school graduate 6 (1.9%), primary school graduate 10 (3.2%), high school graduate 37 (11.7%), master degree 48 (15.2), and bachelor's degree 210 (66.5).

Table 2

Average time spent per day on social media

		Value	Count	Percent
Standard Attributes	Position	13		
	Label	How much time do you spend on social media platforms on average day?		
	Type	Numeric		
	Format	F8.2		
	Measurement	Ordinal		
	Role	Input		
Valid Values	1.00	1-3 saat	132	41.8%
	2.00	3-5 saat	107	33.9%
	3.00	5+ saat	76	24.1%
Missing Values	System		1	0.3%

41% (132) of the participants in the sample spend 1-3 hours, 33.9% (107) 3-5 hours, 24.1% (76) spend an average of more than 5 hours a day on social media.

3.4. Instruments

In accordance with the purpose of the research, the "Demographic Information Form for Attendees" form prepared by the researcher to reach information such as gender and education level of the participants, and the "Social Media Information Form for Attendees" prepared by the researcher to reach the information of daily average social media usage times and social media platform preferences. The "Systems Thinking Scale" scale was applied to the participants to reach the information about the levels of systems thinking, and the "Environmental Perception Scale" scale to reach the information about the environmental perception levels.

3.4.1. Demographic information form for attendess

Items that related to participants' gender, level of education. (see Appendix B).

3.4.2. Social media usage level and preferences information form for attendess

Items that related to attendee's social media usage level and their preferences are included in Social Media Usage Level and Preferences Information Form for Attendess (see Appendix C).

3.4.3. Environmental perception scale form for attendess

Items that related to attendee's environmental perceptions are included in Environmental Perception Scale Form for Attendess (see Appendix D).

3.4.4. Systems thinking scale form for attendess

Items that related to attendee's systems thinking levels are included in Environmental Perception Scale Form for Attendess (see Appendix D).

3.5. Data Collection

After obtaining permission from Ethical Committee of Yeditepe University (see Appendix A), researcher adapted to all inventories online. The scales are examined online and face to face. The study was conducted with a total number of 315. For all attendees, live in different cities in Turkey. 197 of them were female, 118 of them were male.

3.6. Data Analysis

The reliability of the scales used in the study was checked.

Table 3

Environmental perception scale reliability

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
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.979	.981	32
(N=315)		

As seen in Table 3, the environmental perception reliability coefficient was higher than 0.7. Thus, we can say that the scale used in the study is a reliable scale

Table 4

Systems thinking scale reliability

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.926	.927	20
(N = 315)		

System thinking scale reliability coefficient was higher than 0.7. Thus, we can say that the scale used in the study is a reliable scale.

All the statistical analyses were conducted by using the IBM SPSS version 21.0 (IBM Corp. Released 2012. Armonk, NY, USA) with Armonk, packaged software. In order to determine the variable values used in the study, the averages were taken by asking more than one question. It was observed that the resulting data showed normal distribution. Pearson correlation test was applied. The relationship directions between the data according to the variables were determined. It was observed that the use of some social media platforms had a significant and positive correlation with both environmental perception and systems thinking, while others did not have a significant relationship with environmental perception and systems thinking perceptions. However, it was noticed that some social media platforms only have a significant relationship with environmental perception or systemstinking.

4. RESULTS

In this chapter, results submits that related to systems thinking levels, social media usage levels, environmental perceptions level and social media platforms preferences.

4.1. Is There a Significant Relationship Between Environmental Perception and Systems Thinking?

Table 5

The relationship between environmental perception and systems thinking

		Total environment perception	Total systems thinking	Total social media usage
Total environment perception	r	1	.462**	.157**
	p		.000	.005
Total systems thinking	r	.462**	1	.188**
	p	.000		.001
Total social media usage	r	.157**	.188**	1
	p	.005	.001	

A significant correlation was found between environmental perception and systems thinking ($r = .462$, $p < .005$).

4.2. Is There a Significant Relationship Between Social Media Use and Environmental Perception?

Table 6

The relationship between social media using and environmental perception

		Total environment perception	Total systems thinking	Total social media using
Total environment perception	r	1	.462**	.157**
	p		.000	.005
Total systems thinking	r	.462**	1	.188**
	p	.000		.001
Total social media using	r	.157**	.188**	1
	p	.005	.001	

A significant positive correlation was found between the use of social media and the perception of the environment ($r = .157, p < .005$).

4.3. Is There a Significant Relationship Between Social Media Use and Systems Thinking?

Table 7.

The relationship between social media using and systems thinking

		Total environment perception	Total systems thinking	Total social media using
Total environment perception	r	1	.462**	.157**
	p		.000	.005
Total systems thinking	r	.462**	1	.188**
	p	.000		.001
Total social media using	r	.157**	.188**	1
	p	.005	.001	

A significant positive correlation ($r = .188, p < .001$) was found between social media use and systems thinking.

4.4. Is There a Significant Relationship Between Social Media Use and System Thinking and Environmental Perception?

Table 8

Between correlation relations of systems thinking scale, the perception of environment and social media using

		Total environment perception	Total systems thinking	Total social media using
Total environment Perception	r	1	.462**	.157**
	p		.000	.005
Total systems Thinking	r	.462**	1	.188**
	p	.000		.001
Total social media using	r	.157**	.188**	1
	p	.005	.001	

(N=315)

There were statistically significant correlations between using social media, systems thinking and environmental perception.

Table 9

The relationship of time spent on social media between the perception of environment and system thinking

How much time do you spend on social media platforms on average day?		Total environment perception	Total systematic thinking	How much time do you spend on social media platforms on average day?
.	Total environment perception	r	. ^a	. ^a
		p	.	.
		N	0	0
	Total systems thinking	r	. ^a	. ^a
		p	.	.
		N	0	0
	How much time do you spend on social media platforms on average day?	r	. ^a	. ^a
		p	.	.
		N	0	0
1,00 1-3 hours	Total environment perception	r	1	.464**
		p		.000
		N	132	132
	Total systems thinking	r	.464**	1
		p	.000	.
		N	132	132
	How much time do you spend on social media platforms on average day?	r	. ^a	. ^a
		p	.	.
		N	132	132
2,00 3-5 hours	Total environment perception	r	1	.410**
		p		.000
		N	107	107
	Total systems thinking	r	.410**	1
		p	.000	.
		N	107	107
	How much time do you spend on social media platforms on average day?	r	. ^a	. ^a
		p	.	.
		N	107	107
3,00 5+ hours	Total environmental perception	r	1	.585**
		p		.000
		N	76	76
	Total systems thinking	r	.585**	1
		p	.000	.
		N	76	76
	How much time do you spend on social media platforms on average day?	r	. ^a	. ^a
		p	.	.
		N	76	76

According to the Pearson correlation analysis, as the daily time spent on social media platforms increases, systems thinking and environmental perception increase positively. As a result of the analysis, a significant positive correlation was found between the use of social media for 1-3 hours per day and the perception of the environment ($r = .1, p < .001$). Again, a significant and positive correlation was found between daily use of social media for 1-3 hours and systems thinking ($r = .464, p < .001$). It has been observed that there is a significant, positive high correlation between the use of social media for 3-5 hours per day and the perception of the environment ($r = 1, p < .001$). It has been observed that there is a significant and positive correlation between social media use and environmental perception between 3-5 hours per day ($r = 1, p < .001$). A significant and positive correlation was found between the use of social media for 3-5 hours per day and systems thinking ($r = .410, p < .001$). It should be noted that 3-5 hours of social media use per day has a lower positive correlation with systems thinking than 1-3 hours of daily use of social media. It was observed that there was a significant and high correlation between the use of social media for more than 5 hours per day and the perception of the environment ($r = 1, p < .001$). A significant and positive correlation relationship between the daily average use of social media for more than 5 hours and the level of systems thinking has emerged as a result of our analysis ($r = .585, p < .001$).

One of the questions of our research is “Is there any relationship between the duration of social media use, systems thinking and environmental perception?” An answer was given to the question as a result of our research. A significant and positive correlation was found between the duration of social media use, systems thinking and environmental perception.

4.5. Is there a relationship between social media platforms and systems thinking and environmental perception?

Table 10

The relationship of Twitter usage between the perception of environment and systems thinking

		Total environment perception	Total systems thinking	Frequency of use of Twitter
Total environment perception	r	1	.462**	.139*
	p		.000	.013
	N	315	315	315
Total systems thinking	r	.462**	1	.199**
	p	.000		.000
	N	315	315	315
Frequency of use of Twitter	r	.139*	.199**	1
	p	.013	.000	
	N	315	315	315

According to the results of the Pearson correlation analysis, a significant positive correlation was found between the use of Twitter and the perception of the environment ($r = .139, p < .001$). Again, a significant positive correlation was found between the use of Twitter and systems thinking ($r = .199, p = .001$).

Table 11

The relationship of Instagram usage between the perception of environment and systems thinking

		Total environment perception	Total systems thinking	Frequency of use of Instagram
Total environment perception	r	1	.462**	.163**
	p		.000	.004
	N	315	315	315
Total systems thinking	r	.462**	1	.143*
	p	.000		.011
	N	315	315	315
Frequency of use of Instagram	r	.163**	.143*	1
	p	.004	.011	

N	315	315	315
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As seen in the table, according to the results of the Pearson correlation analysis, a significant positive correlation was found between the frequency of Instagram use and the perception of the environment ($r = .163, p < .004$). Again, a significant and positive correlation was found between the frequency of Instagram use and systems thinking ($r = .143, p < .011$).

Table 12

The relationship of TikTok usage between the perception of environment and systems thinking

		Total environment perception	Total systems thinking	Frequency of use of TikTok
Toplam environmental perception	r	1	.462**	.044
	p		.000	.434
	N	315	315	315
Total systems thinking	r	.462**	1	.055
	p	.000		.329
	N	315	315	315
Frequency of use of TikTok	r	.044	.055	1
	p	.434	.329	
	N	315	315	315

According to the Pearson correlation analysis, no significant relationship was found between the use of TikTok, another social media software, and the perception of the environment ($r = .044, p > .434$). No significant relationship was found between TikTok use and systems thinking ($r = .055, p > .329$). Therefore, we cannot say that TikTok use can be a functional tool in the context of improving environmental perception and systems thinking skills.

Table 13

The relationship of YouTube usage between the perception of environment and systems thinking

		Total environmet perception	Total systems thinking	Frequency of use of YouTube
Total environment perception	r	1	.462**	.104
	p		.000	.066
	N	315	315	315
Total systems thinking	r	.462**	1	.142*
	p	.000		.012
	N	315	315	315
Frequency of use of YouTube	r	.104	.142*	1
	p	.066	.012	
	N	315	315	315

According to the results of Pearson correlation analysis, no significant difference was found between YouTube usage and environmental perception ($r = .104, p > .066$). There was a significant positive correlation between YouTube usage and systems thinking ($r = .142, p < .012$).

Table 14

The relationship of Facebook usage between the perception of environment and systems thinking

		Frequency of use of Facebook	Total environmental perception	Total systems thinking
Frequency of use of Facebook	r	1	-.049	-.125*
	p		.386	.027
	N	315	315	315
Total environmental perception	r	-.049	1	.462**
	p	.386		.000
	N	315	315	315
Total systems thinking	r	-.125*	.462**	1
	p	.027	.000	
	N	315	315	315

According to the results of Pearson correlation analysis, no significant relationship was found between Facebook usage and environmental perception ($r = -.049, p > .386$). It was observed that there was a significant, negative correlation between Facebook use and systems thinking ($r = -.125, p < .027$).

Table 15

The relationship of WhatsApp usage between the perception of environment and systems thinking

		Total environmental perception	Total systems thinking	Frequency of use of WhatsApp
Total environmental perception	r	1	.462**	.145**
	p		.000	.010
	N	315	315	315
Total systems thinking perception	r	.462**	1	.065
	p	.000		.247
	N	315	315	315
Frequency of use of WhatsApp	r	.145**	.065	1
	p	.010	.247	
	N	315	315	315

According to the results of Pearson correlation analysis, there was a significant and positive correlation between WhatsApp usage and perception of the environment ($r = .145, p < .010$). However, no significant relationship was found between WhatsApp use and systems thinking ($r = .065, p > .247$).

Table 16

The relationship of Telegram usage between the perception of environment and systems thinking

		Total environmental perception	Total systems thinking	Frequency of use of Telegram
Total environmental perception	r	1	.462**	.109
	p		.000	.054
	N	315	315	315
Total systems	r	.462**	1	.137*

thinking	p	.000		.015
	N	315	315	315
Frequency of use of Telegram	r	.109	.137*	1
	p	.054	.015	
	N	315	315	315

According to the results of Pearson correlation analysis, no significant relationship was found between Telegram usage and environmental perception ($r = .109, p > .054$). A significant positive correlation was found between telegram use and systems thinking ($r = .137, p < .015$).

Table 17

The relationship of Twitch usage between the perception of environment and systems thinking

		Total environmental	Total systems thinking	Frequency of use of Twitch
Total environmental perception	r	1	.462**	-.044
	p		.000	.434
	N	315	315	315
Total systems thinking	r	.462**	1	-.010
	p	.000		.854
	N	315	315	315
Frequency of use of Twitch	r	-.044	-.010	1
	p	.434	.854	
	N	315	315	315

According to the results of Pearson correlation analysis, no significant relationship was found between Twitch use and environmental perception ($r = -.044, p > .434$). No significant relationship was found between Twitch use and systems thinking ($r = -.010, p > .854$).

Table 18

The relationship of Discord usage between the perception of environment and systems thinking

		Total environmental perception	Total systems thinking	Frequency of use of Discord
Total environmental perception	r	1	.462**	.002
	p		.000	.977
	N	315	315	315
Total systems thinking	r	.462**	1	.112*
	p	.000		.047
	N	315	315	315
Frequency of use of Discord	r	.002	.112*	1
	p	.977	.047	
	N	315	315	315

As seen in Table 18'de no significant relationship was observed between the use of Discord and the perception of the environment, according to the results of Pearson correlation analysis ($r = .977$, $p > .977$). A significant correlation was found between Discord use and systems thinking ($r = .112$, $p < .047$).

5. DISCUSSION

The discussion and exposition of the present study results, suggestions and advices for prospective research are mentioned in this chapter.

5.1. Discussions of Findings

5.1.1. Discussions of findings in terms of environmental perception

The dominant environmental perception of the period we live in, as Antmen stated, was shaped by the industrial revolution and the technological developments that led to it. This environmental perception has dragged the human-environment relationship into a consumption-based relationship.

The changing perception of the environment throughout history is included in our study because it is the cause of the mass extinction, we are in. The epidemic we left behind; It has shown that the policies and behaviors of institutions and people are at the source of many vital problems we face. Our perception of the environment, which has led to these behaviors and policies, has attracted the attention of many subjects, together with individuals and institutions that carry out activities and research for the protection of the environment. What happened has led to the questioning of the damage caused by humans to the environment, the relationship between humans and the environment and the perception of the environment. In particular, the environmental perception of decision makers has caused and continues to cause irreversible damage to our planet, the only place where we know that life exists. This situation has brought to the fore the necessity of targeting the environmental perception that leads to actions and behaviors instead of focusing on individual actions and habits in ecological awareness studies. In the literature review, the lack of studies that question the role of social media and systems thinking in the

development of environmental perception together in the context of solution has attracted the attention of the researcher.

As a result of the analysis of the collected data, it was seen that there is a positive relationship between the use of social media and systems thinking and the perception of the environment. By identifying this assumed relationship in the research design, the functionality of structuring the use of social media and developing the perception of systems thinking in order to improve the perception of the environment was confirmed.

According to the parts of the research, individuals' perception of the environment, their use of social media, and their systems thinking have a perfectly seamless relationship. According to these groups, individuals' styles can be functional in creating a life practice that is compatible with the operating environment for systems thinking and the use of social media platforms to prevent harm to their life planet.

5.1.2. Discussions of findings in terms of systems thinking perception

The cognitive action or main trend which human apply to understanding the facts and concepts during intellectual development as a species, in modern age; fragmenting, reducing and mechanizing them again (Tecim, 2016). Especially in the period when great technological breakthroughs were made, technology production became easier by observing nature with this intellectual method. However, this fragmented, non-holistic or one-dimensional holistic mechanical way of thinking has brought the end of our planet today. Because the results of our actions and choices often do not appear immediately after we take them, we find it difficult to realize the environmental cost of our actions (Senge, 2022). Therefore, it cannot be said that we are successful in recognizing the environmental consequences of our actions directed

by our individual and social perceptions, and the extent of influence of our actions on the environment that grows over time. Systems thinking, on the other hand, offers a holistic method of thinking that we need, by seeing reality, facts, and subjects within systems and focusing on the interplay of these that creates the system (Davis & Stroink, 2016; Incese, 2019). In the literature review, no study was found that questioned the possible effects between the use of social media and systems thinking, and between these two and the perception of the environment. However, according to the results of our research, there is a positive correlation between the use of social media and systems thinking and environmental perception. The assumption on which our research was based was that the paradigm that proposes a holistic approach, such as systems thinking, would improve our perception of the environment, which shapes our actions. As a result of the analysis made with the collected data, it was seen that there is a high positive correlation between systems thinking and environmental perception. This finding confirms our assumption regarding the systems thinking involved in the design of our study.

5.1.3. Discussion of findings in terms of social media using

The use of social media has been included in the context of environmental perception and system thinking, taking into account the fact that it is widely used especially by younger generations in limiting the negative consequences of the life crisis caused by the current environmental perception.

The fact that the social media usage level variable in our study plays an active role in shaping the perceptions of individuals seems to be compatible with the findings and assumptions in the literature. There are many studies in the literature emphasizing the effects of social media on changing the sensitivities, beliefs, priorities and social structure of the masses (Sucu, 2021; Demir Askeroğlu & Ersöz

Karakulakoğlu, 2019). However, as we emphasized in the previous sections, social media creates a participatory culture with its interactive and unique structure (Misçi, 2006). Although we cannot say that the structural feature of social media, which allows intense interaction and being informed, always produces positive results, it is possible to say that it strengthens the tendency of individuals to be inquisitive by creating a participatory culture with this structure (Demir Askeroğlu & Ersöz Karakulakoğlu, 2019).

In our study, the concept of social media takes place in the context of environmental perception and system thinking based on these potentials. In the literature review, no research was found on the relationship between social media use and environmental perception and system thinking. However, one of the most important perceptual barriers to the necessity of developing a holistic approach such as environmental perception is that the environmental consequences of our actions or choices do not appear immediately after they are realized (Senge, 2022). Just at this point, social media can be a tool we need in order to be aware of the results of our actions, with the intense interaction feature that it structurally supports.

As a matter of fact, as a result of the analysis made with the collected data, it was seen that the use of social media has a high positive correlation with environmental perception and systems thinking. According to this finding of the study, the use of social media may be functional for individuals to develop a planet-friendly environment perception. Therefore, our assumption that the social media in our research design will play a positive role in the development of the perception of the environment and the perception of systems thinking has been confirmed by the findings.

5.1.4. Discussion of findings in terms of correlation between systems thinking, environmental perception and social media using

It is on our agenda from daily conversations to academic research, where the perception of the individual and social dominant environment of the period we live in threatens life and makes the world an unlivable place. Although all sides of the issue have different solutions, the source of the problem is the human perception of the environment, as emphasized by scientists and recent studies. Of course, environmental perceptions, which are the source of the policies of companies and states that shape the world, are the biggest responsible for this disaster. However, in order for the masses to put pressure on decision makers in favor of the environment, a common, massive and international sensitivity should be created. Therefore, the masses and individuals' development of their perceptions and their ability to demonstrate an effective attitude in this regard play an essential role in solving the problem.

According to the results of our research, there is a positive correlation between social media use and systems thinking and environmental perception. This finding supports the structuring of social media as a tool, which is the main purpose of our research, in the context of improving environmental perception with a systems thinking approach.

5.2. Suggestions

As a result of our research, we can suggest structuring the use of social media with a systems thinking approach and disseminating system thinking among individuals and institutions as an effective and radical solution method in the context of improving environmental perception.

Not seeing the results of our actions and choices makes it difficult for individuals to realize that they are decisive in the face of facts and prevents their perception of responsibility. Social media and technology in general can be one of the tools to be used quickly to make visible the negative effects of our behavior and choices in many different areas, especially the environment. Thinking about the problems we face independently of our choices is one of our basic misconceptions that prevent awareness and learning. Most of the time, our suggestions for solutions on any subject do not change the assumption of the behavior causing the problem, but change the finding of the problem. That's why systems thinking which changes our thought patterns that cause problems has an effective perspective in preventing problems. In the light of the results of our study, we can say that the causes of the climate crisis we live in are caused by the effect widths of our individual and social choices, and can be shown on different platforms with the modeling methods offered by systems thinking.

Developments in our age have shown that isolated information is insufficient. In addition, while under the information bombardment, associating and organizing the information with the right context has become a problem in itself. As some researchers note (Szabla & Blommaert, 2020), this situation leads to context collapse with the effect of social media. For this reason, systems thinking should be used in the design and implementation of education programs, and skills related to systems thinking should be included in curriculum as an acquisition.

Accepting and managing uncertainty, accepting that uncertainty is one of the behavior patterns of reality, knowing that people cannot reach the satisfying philosophical answers they seek for their existence throughout their lives are the basic thresholds that enable the individual to fully mature in many areas of his life (Morin,

2013). In addition, developments such as epidemics, technological revolutions that radically changed our lives without giving us the opportunity to adapt; managing uncertainties and being able to withstand chaotic periods become the basic social skills of this period. Systems thinking includes many effective tools such as “behavior graph over time”, “stock flow diagram”, “iceberg modeling”, “ladder of inference” and “causal loop diagram” in terms of explaining how uncertainties or phenomena come to their present state (Eğitimde Sistem Düşüncesi, June 10.). For this reason, we can suggest that systems thinking can be functional in the context of managing uncertainty in a wide area from bilateral relations to the global plan, discovering the dynamics that cause uncertainty and accepting them.

Moving away from the tendency of holistic understanding with the fragmented thinking structure brought about by the specialization that left its mark on the last century is one of the factors that lead to loss of responsibility. Being a “world citizen” and being able to develop principles that guide our behavior by considering the impact flows it will create come to the fore as a civic skill that all societies need. We can state that the results of our study are also remarkable in terms of raising “world citizen” individuals.

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Appendix A: Permission from Ethical Committee of Yeditepe University







Appendix B: Social Media Using Information Form

Yaşınız. *	
Kısa yanıt metni	
Cinsiyetiniz nedir?	...
1. Kadın	
2. Erkek	
3. Diğer	
Eğitim düzeyiniz nedir? *	
1. İlkokul	
2. Ortaokul	
3. Lise	
4. Üniversite	

Appendix C: Social Media Usage Level and Preferences Form

Aşağıdaki sosyal medya platformlarını kullanım sıklığınıza göre en çok kullandığınıza 5, hiç kullanmadığınıza 1 puan olacak şekilde işaretleyiniz. *

	1	2	3	4	5
Facebook	☐	☐	☐	☐	☐
Instagram	☐	☐	☐	☐	☐
Twitter	☐	☐	☐	☐	☐
YouTube	☐	☐	☐	☐	☐
Twitch	☐	☐	☐	☐	☐
Tiktok	☐	☐	☐	☐	☐
Telegram	☐	☐	☐	☐	☐
Whatsapp	☐	☐	☐	☐	☐
Discord	☐	☐	☐	☐	☐

Appendix D: Environmental Perception Scale

		Totally Agree	Agree	Undecided	Disagree	Never Agree
Perception of Environment Overview (PEO)						
1	Environment protection is an asset that should be cared for. Çevre korunması, özen gösterilmesi gereken bir varlıktır.					
2	The environment is our life/living area. Çevre, hayat/ yaşam alanımızdır.					
3	Environmental sensitivity is an indicator of development. Çevresel duyarlılık gelişmişlik göstergesidir.					
4	The environment is the expression of happiness and welfare. Çevre, mutluluğun ve huzurun ifadesidir.					
5	The environment is our means of living. Çevre, geçim kaynağımızdır.					
6	Environment affects our future. Çevre, geleceğimizi etki eder.					
7	The environment is the expression of dignity value. Çevre, kıymetin/değerin ifadesidir.					
8	The environment is the expression of beauty. Çevre, güzelliğin ifadesidir.					
Environment Education Perception (EEP)						
9	Environment education should be compulsory. Çevre eğitimi zorunlu olmalıdır.					

- 10 Environment education makes us feel presence of environmental problems.
Çevre eğitimi çevresel sorunlarının varlığını hissettirir.
- 11 Environment Education is universal.
Çevre eğitimi evrenseldir.
- 12 Environment education is a continuous and constant process.
Çevre eğitimi sürekli ve daimi bir süreçtir.
- 13 Environment education creates sensitivity about the environment
Çevre eğitimi çevre konusunda duyarlılık oluşturur.
- 14 Environment education is a need.
Çevre eğitimi ihtiyaçtır.
- 15 Environment education creates awareness
Çevre eğitimi farkındalık yaratır

Environment Protection Perception (EPP)

- 16 Plants/trees should be planted to protect the environment.
Çevreyi korumak için bitki/ağaç dikilmelidir.

- 17 It is a must to take precautions for environment protection.

- 18 Food resources should be consumed Consciously.
Gıda kaynakları bilinçli tüketilmelidir.
- 19 Environment education increases economical behaviours.
Çevre eğitimi tasarruflu davranışları artırır.

Environment Issues Perception (EIP)

- 20 Noise is environmental pollution.
Gürültü bir çevre kirliliğidir.
- 21 Extinction of forests is an environmental problem.
Ormanların yok olması çevre sorunudur.
- 22 Drought is an environmental problem.
Kuraklık bir çevre sorunudur.
- 23 Extreme use of natural resources leads to environment problems.
Doğal kaynakların aşırı kullanımı çevre sorunlarını oluşturur.

Environment Awareness Responsibility Perception (EARP)

- 24 Educators increase awareness about environmental issues.
Eğitimciler çevre konularına farkındalığı artırır.
- 25 Various institutions, foundations and units can attract attention on environmental issues.
Çeşitli kurum, kuruluşlar ve birimler çevre konularına dikkat çekebilirler.
- 26 Legal regulations create awareness about environmental issues.
Yasal düzenlemeler çevre konularına farkındalık oluşturur.

Problems of Sensory Perception (EPSP)

- 27 Environmental problems create fear in me.
Çevre sorunları bende korku oluşturur.
- 28 Environmental problems create regret in me.
Çevre sorunları bende pişmanlıklar oluşturur.
- 29 Environmental problems create a feeling of guilt in me.
Çevre sorunları bende suçluluk oluşturur.

Environment-Friendly Activities Perception (EFAP)

- 30 Sportive activities increase environmental conscientious and awareness.
Sportif faaliyetler çevresel bilinç ve farkındalığı artırır.
- 31 Performing travels to nature increase environmental conscientious.
Doğa gezilerinin yapılması çevre bilincini artırır.
- 32 Artistic activities increase awareness about environmental issues.
Sanatsal etkinlikler, çevre konularına farkındalığı artırır.

Appendix E: Systems Thinking Scale

Sistemselsel Düşünme Ölçeği (SDÖ)						
İlerleme Kaydetme						
Yönergeler: Lütfen aşağıdaki ifadeleri okuyup size uygun olduğunu düşündüğünüz sıklık derecesini “x” işareti ile belirtiniz:						
Hayatımda bir ilerleme kaydetmek istediğimde...		Asla	Nadiren	Bazen	Sıklıkla	Çoğu Zaman
1	Bir durumla ilgili çevremdeki herkesin fikrini alırım.	☐	☐	☐	☐	☐
2	Belirli bir sorunun nedenlerini anlamak için arkasında yatan olayları incelerim.	☐	☐	☐	☐	☐
3	Olaylar zincirinin nasıl oluştuğunu anlamamın önemli olduğunu düşünürüm.	☐	☐	☐	☐	☐
4	Bir sorunu çözmek için çevremdeki kişileri de sürece dâhil ederim.	☐	☐	☐	☐	☐
5	Tekrarlanan olayların, bir kez olan olaylardan daha önemli olduğunu düşünürüm.	☐	☐	☐	☐	☐
6	Karşılaştığım sorunların, birbiriyle bağlantılı gelişen olayların bir sonucu olduğunu düşünürüm.	☐	☐	☐	☐	☐
7	Bir durumu oluşturan neden ve sonuçları dikkate alırım.	☐	☐	☐	☐	☐
8	Birlikte çalıştığım arkadaşlarımla arasındaki ilişkileri göz önüne alırım.	☐	☐	☐	☐	☐
9	Sistemlerin sürekli değiştiğini düşünürüm.	☐	☐	☐	☐	☐
10	Belli kişileri değil, çalışma ortamını etkileyecek çözümler öneririm.	☐	☐	☐	☐	☐
11	Önerilen değişikliklerin bütün sistemi etkileyebileceğini düşünürüm.	☐	☐	☐	☐	☐
12	Başarı için bir ya da iki kişiden daha fazlasının gerektiğini düşünürüm	☐	☐	☐	☐	☐
13	Çalıştığım organizasyonun misyonunu ve amaçlarını dikkate alırım.	☐	☐	☐	☐	☐
14	Küçük değişikliklerin önemli sonuçlara neden olabileceğini düşünürüm	☐	☐	☐	☐	☐
15	Birden fazla değişikliğin, birbirini nasıl etkileyebileceğini göz önünde bulundururum.	☐	☐	☐	☐	☐
16	Çalıştığım organizasyonda farklı görevlerdeki kişilerin gelişmelerden nasıl etkilenebileceğini düşünürüm.	☐	☐	☐	☐	☐
17	İnsan hafızasına dayalı olmayan stratejiler denerim.	☐	☐	☐	☐	☐
18	Sistem sorunlarının, geçmişteki olaylardan etkilendiğini bilirim.	☐	☐	☐	☐	☐
19	Kurumumun geçmişini ve kültürünü göz önünde bulundururum.	☐	☐	☐	☐	☐
20	Sistemin durumuna bağlı olarak, benzer eylemlerin zaman içinde farklı sonuçlar doğurabileceğini düşünürüm.	☐	☐	☐	☐	☐

Appendix F: List of Abbreviations

N -- Total sample size



Çağın Sabancı_Predefense

by Çağın Sabancı

Submission date: 16-Jan-2023 11:57AM (UTC+0300)

Submission ID: 1993501793

File name: MS_THINKING,_SOCIAL_MEDIA_USE_AND_ENVIRONMENTAL_PERCEPTION.docx (68.49K)

Word count: 10373

Character count: 58251

Çağan Sabancı_Predefense

ORIGINALITY REPORT

15%	10%	8%	5%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Yeditepe University Student Paper	2%
2	acikbilim.yok.gov.tr Internet Source	1%
3	www.researchgate.net Internet Source	1%
4	abd88079-bdc5-4274-9638-f3715aab13b0.filesusr.com Internet Source	1%
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