



## Research Article

# Examining shared experience in visual design in three categories

Mehmet Remzi Demirel<sup>1</sup>

*Visual Communication Design, Faculty of Art and Design, Dicle University, Diyarbakır, Türkiye*

### Article Info

**Received:** 5 April 2024  
**Accepted:** 27 June 2024  
**Available online:** 30 June 2024

### Keywords

Artificial world  
Real world  
Shared Experience  
Virtual world  
Visual Design

### Abstract

The concept of the shared experience plays an important role in human life as well as in the arts and sciences. Because users communicate with the objects in the environment they are in, depending on the time, and as a result of this communication they can be psychologically affected in a positive or negative way. In this sense, it is necessary to study what kind of structure the objects have in the shared experience space in which the user is located. The main purpose of the research is to examine the concept of shared experience in visual design by considering the relationship between user, object and time in three different worlds: real, artificial and virtual. The method used for the article was document analysis, one of the qualitative research methods. In this context, a search process was carried out in various sources, based on the keywords experience and common experience concept. At the centre of these different worlds, which are treated in three different categories, are the user and the object. It is concluded that the shared experience resulting from the different ways in which users communicate with the object has certain limitations in all three categories. In the real world, due to the unique structures of natural objects, shared experience means unlimited diversity for users, while in the artificial world, objects have more limitations due to their imitation or similar structure. It was found that the virtual world simulates the real world and therefore has certain limitations in terms of originality and creativity. It was also found that all three worlds are different from each other in terms of structural aspects and user experience. As a result, it was concluded that real, artificial and virtual worlds have intertwined relationships with each other in the context of shared experience; the real world can be defined as the universe, the artificial world is a subset of the real world, and the virtual world is a subset of the artificial world. It was also concluded that these defined the worlds have the potential to show variability in the context of object-time relationships.

2717-8870 © 2024 The JIAE.  
Published by Genc Bilge (Young Wise)  
Pub. Ltd. This is an open access article  
under the CC BY-NC-ND license



### To cite this article

Demirel, M.R. (2024). Examining shared experience in visual design in three categories. *Journal for the Interdisciplinary Art and Education*, 5(2), 153-162. DOI: <https://doi.org/10.5281/zenodo.12601833>

## Introduction

The concept of experience plays a very important role in human life. As soon as a person is born, he or she must be in a certain space and interact with the objects in that space. Through this exchange, each human receives unique experiences of their own. A review of the literature shows that there is a great deal of scientific research on various topics related to the concept of experience. For example, some studies have examined the communication between the product or service and the user in the context of user experience. The user's thoughts, feelings, inferences, experiences and perceptions about the product or service are included in the concept of user experience (Eğüz, 2022; Miller 2015). Furthermore, it has been found that in 3D applications, users can imitate real behaviours as well as do things that are not real (Hartson & Pyla, 2012). In another study, it is seen that user behaviours are treated in different categories such as direct communication, controlled evaluation and complex evaluation (Caddick, & Cable, 2011).

<sup>1</sup> Asst. Prof., Dicle University, Faculty of Art and Design, Diyarbakır, Türkiye. E-mail: mremzi.demirel@dicle.edu.tr ORCID: 0000-0002-9075-4513

In a study in the field of communication, it was determined that common experience was used as giving the same meaning to a word. Then, it was stated that common experience areas covered elements such as the individual's perceptions, awareness, language and cultural structure (Çilenti, 1979; Küçük, 2012). An important study related to attention and social influence examined the concept of shared experience and found that sharing experiences with others enhances those experiences (Boothby et al., 2014). Another study related to shared experience focused on experience design and graphic design. It examined how experience design changes everyday skills, motivations and expectations, and how graphic design adapts to these changes (Ergen, 2022). Another study, which examined experience in an aesthetic context and within the boundaries of visual communication design, referred to the importance of first impressions (Ertürk, 2018). In addition, there is another important study that addresses and defines the concept of shared experience. In the relevant study, shared experience is defined as a process in which participants contribute to the shared experience, extract interpretations and meanings from their own life contexts, and develop social practices (Batterbee, 2003).

Many studies have been conducted on the concept of shared experience or the important sub-concepts that nourish it. However, there is no research that categorically examines the concept of shared experience in real, virtual, and artificial worlds. Based on the question of what shared experience is in visual design and whether it varies in real, artificial, and virtual worlds, such a research attempt was made with the aim of filling this gap in the field.

### **Problem of Study**

The aim of this research is to explore the concept of shared experience in visual design in three different categories consisting of real, artificial, and virtual worlds. The shared experience in three different worlds is analysed in terms of time and object. Within the stated purpose, answers to the following sub-research questions were searched for:

- Do time and object in the real world differ according to the user in the context of the shared experience?
- Do time and object in the artificial world differ according to the user in the context of the shared experience?
- Do time and object in the virtual world differ according to the user in the context of the shared experience?

### **Method**

Document analysis, one of the qualitative research methods, was used in the article. In line with this method, books, scientific articles, current studies published on the subject on web pages, documents in the form of pictures and videos were analysed in the context of the concept of shared experience. During the document analysis, the 5 stages identified by Forster (1994) were used. These stages are as follows: (1) access, (2) checking the authenticity, (3) understanding the documents, (4) analysing the data and (5) utilizing the data. In the light of these steps, the following procedures were carried out in the research process.

The first step in accessing documents was to identify the concept of experience and related electronic resources. The scope of these sources includes academic articles, books, papers presented at congresses and symposiums, official websites of relevant institutions and videos of the product. In the second step, the originality check, it was ensured that the sources were primary. In addition, the reliability of the sources was emphasised by looking at whether the sources had been manipulated. Since the document analysis method is the main and only data collection method of this research, in the third step of understanding the documents, an attempt was made to understand the documents by associating them with each other and making content interpretations accordingly. For example, associations and analyses were made through each point of view and the ways of interpreting the phenomena in the documents obtained from different disciplines. Then, in the fourth step, the step of data analysis, the sources that could be related to the experiences and shared experiences in the fields of social sciences were included in the study for the selection of the sample from the data considered in the analysis. In this context, it was seen that the concept in question should be treated categorically in real, artificial, and virtual worlds.

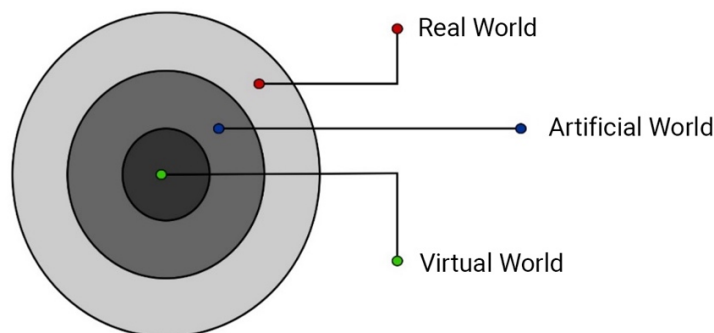
Finally, in the step of using the data, comments were made on the documents finally obtained, and since these resources are open access resources, each of them is referenced and presented in the study.

## Results

As a result of the data obtained from the documents, it was found that the shared experience varied in terms of time and object in real, artificial, and virtual worlds. Because of these differences, the findings section of the research is divided into three categories. Each category contains specific examples.

### Three Categories of Shared Experience

In general terms, a person's communication with the environment and all the objects in that environment over a period of time is considered to be an experience. The concept of shared experience, on the other hand, can be generally defined as seeing, hearing, and behaving with others in an environment and the objects within it over a period of time. Batterbee (2004) stated that in the context of shared experience, people are encouraged to evaluate their experiences and bring them to the collective attention of others, thus forcing others to interpret and respond to these experiences in some way. This experience-based communication varies according to the type of environment in which it takes place in terms of time, space, and object. Depending on the type, these environments can be analysed in three ways: real, artificial, and virtual. In fact, in this research, the concept of shared experience within the boundaries of visual design is defined as the perception of an object in real, artificial, and virtual worlds by different users in a given time interval. These worlds are analysed in three categories, as shown in Figure 1.



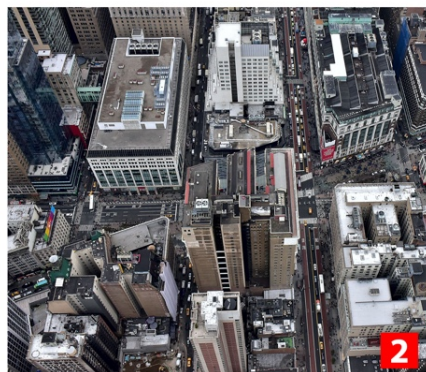
**Figure 1.** Real, artificial, and virtual worlds

It can be seen that shared experience in the worlds we have considered in the research tends to be limited from the real world to the virtual world. The range of shared experience in the real world is quite wide, both physiologically and psychologically. In the real world, an artificial world has been created consisting of different objects. In the artificial world, objects are created by human beings rather than natural beings. Therefore, users' communication with objects in the artificial world is more limited than in the real world. The artificial world has also created a virtual world within itself. In the virtual world, which has its own unique objects, the user's movement space is somewhat more limited. This is because the virtual world itself and its objects are mostly created with the elements and principles of visual design.

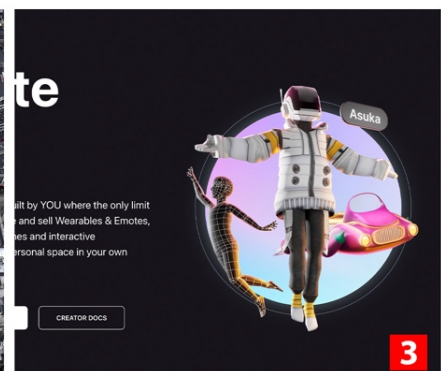
In Figure 1, all three worlds are visualised as clusters within each other. It is not possible to treat these worlds, which we have grouped into three distinct categories, independently.



**Figure 2.** Tenerife, Spain



**Figure 3.** New York, USA



**Figure 4.** Decentraland

The three worlds considered (Figures 2, 3 and 4) are unidirectionally related. The real world is the superset and contained, the artificial world is its subset and contained, and the virtual world is a subset of the artificial world and therefore the lowest layer of the contained world. A user-centred evaluation can be made for the three different worlds. Because users are also at the centre of the concept of shared experience. There are two important elements that are valid in each world. These are time and object.

Schatzschneider et al. (2016) emphasised that time and objects in the virtual world can be arbitrarily determined. In their research on time transitions, they highlighted four important possibilities. These possibilities are a realistic time experience based on local time, a compressed time experience where a day is reduced to a few minutes, a fixed time experience that never changes, and a time experience that can be travelled back and forth. In addition, there are other studies that show that the time spent in the virtual world is perceived differently by users. Mullen and Davidenko (2021) compared 3D virtual reality and traditional 2D monitors in terms of time and found that users' perception of time spent in the 3D environment was more ambiguous. Therefore, although users spent more time in the virtual environment, they thought they spent less time. Miller (2016) stated that the time spent in the virtual world is a kind of illusion.

**Table 1.** Time and state of objects in different worlds according to the user

According to User	Real World	Artificial World	Virtual World
Time	not variable	not variable	variable
Object	variable	not variable	not variable

The differences in time and objects according to the user in real, artificial and virtual worlds, where shared experiences can be analysed in three categories, are shown in Table 1. According to this, in the real world, time does not change according to the user, but objects can change. In the artificial world, time and objects do not change according to the user. In the virtual world, time changes but objects do not. It can therefore be seen that each category has a unique type of experience.

### Shared experience with the real world and its objects

The properties of organic objects in the real world are constantly changing and do not require human intervention. Here, the communication and behaviour of users with objects can be shaped in a very broad way. Moreover, thanks to the formal changes that objects in nature undergo over time, users are more likely to feel different things than in other worlds. This is because the objects in this world and the events associated with these objects are unique in their essential qualities.

The constant change of natural objects at a time appropriate to their own structure means an infinite richness of shared experience. It is these natural objects that feed the creativity of the visual designer in terms of colour, light, shadow, and form. For example, the shape of a tree is constantly in a state of change as it grows. Figure 4 shows how an oak tree has changed in colour and shape with the seasons. The fact that the oak tree, which is an object of shared experience, changes its shape over time causes it to be perceived in different ways by users. The time in which the oak tree changes is the same for all users.

Shared experiences with real-world objects also positively affect individuality and creativity (Plambech & Konijnendijk, 2015; Yeh et al., 2022). Some scientific studies have shown that experiences with natural objects positively affect people psychologically, cognitively and socially (Bratman et al., 2019; Keniger et al., 2013; Puhakka & Hakoköngäs, 2024). Furthermore, another study on the topic expressed concern about the loss of experiencing nature (Turner et al. 2004). Therefore, there may be a negative psychological impact on users due to the lack of experience with natural objects that constitute the real world.





**Figure 5.** Four seasons of an oak tree (Die vier Jahreszeiten einer Eiche)

### Shared experience with the artificial world and its objects

The objects of the artificial world are man-made and generally do not change their structure without human intervention. Simon (1996) distinguishes artificial things from natural ones in terms of characteristics such as being synthesised by humans, lacking the reality of natural things because they are imitations, being characterised in terms of their functions and being discussed in terms of necessity in design. In the context of visual design, there are many artificial textures in the artificial world in terms of visual and tactile aspects. According to Özsoy and Ayaydin (2016), we encounter new artificial textures with every material that enters our lives. These visual and textural data, obtained by the user as a result of encountering objects, can also be considered in the context of shared experience. However, there is a kind of limitation problem for all man-made objects in the artificial world. Artificial objects do not have the ability to renew themselves independently like natural objects. Therefore, there is a negative atmosphere in terms of creativity and originality in the shared experience of users in the artificial world. For example, most city dwellers live within the boundaries of an artificial world that is far from the real world. According to Trevors and Saier (2010), many people in the artificial world live their lives without having an understanding of even simple facts about the natural world or the real world.

The fact that people in the artificial world think in a similar and limited way in terms of creativity and imagination may be related to the fact that they live in a world full of one type of object and fixed forms. Because the objects in the environment generally have a fixed structure, their properties such as shape, colour and volume do not change. For example, a chair that has been used for many years does not create a richness of form or texture in the user's mind. This is because the form or texture of the chair is fixed as an object of shared experience.



**Figure 6.** A variety of chair designs

Like the objects themselves, the number of users of the objects in the artificial world can be limited. Figure 5 shows different designs of the chair, an important object in the Artificial World. These chairs, which are designed and produced in response to a basic need such as sitting, bear the traces of the era or period in which they are found. Users can own chairs according to their means and the conditions of the time. It can therefore be said that users do not have access to chairs of every quality at every time. Limited access means limited shared experience.

#### **Shared experience with the virtual world and its objects**

There are more limitations in the virtual world than in the artificial world and its objects. This is because the presentation of objects in the virtual world and the communication that users will establish with them are pre-designed in 2D or 3D. Although an interactive environment is created, it is built on a purely fictional basis. The virtual worlds relate to the real world in terms of time, space, movement, behaviour and objects. In fact, some studies consider the virtual world as a simulation of the real world (Bombari et al., 2015; Hussain et al., 2023; Tal & Wansink, 2011; Wang, 2020). The experience of the virtual world considered as a simulation is defined as the sensory or non-sensory experience of virtual objects (Lee, 2004).

The image from the game PUBG (Figure 7) shows the imitation of objects in the real and artificial world. Objects and time are simulated in the game. Unlike the real world, the shared experience between players in the virtual world is limited to visual and audio elements. For example, players cannot go beyond the defined map and behaviours, even if they want to. Unlike in real life, the objects of shared experience in this virtual environment remain unchanged in shape and colour in each new game. Many studies have found that players in competition with a limited map and behaviour are negatively affected psychologically in the game (Al-Qahtani et al., 2020; Riaz et al., 2023; Sunil et al., 2021).

Software and visual design, which are highly influential in the virtual world, can create a common visual and behavioural culture specific to the application among users. Therefore, the communication, behaviour and reactions of users of the same application in the virtual environment can be similar. For example, when a group of Instagram users discuss a topic related to the application's interface among themselves, each user can contribute to the relevant topic because they have a similar visual experience. However, a user who has no experience with the interface of the same application will find it difficult to contribute to the topic.





**Figure 7.** PUBG Battlegrounds

Verbal communication in the virtual environment can also be seen as an object of shared experience. For example, players in video games form virtual groups and play games together. In these games, groups can create a shared experience through verbal communication among themselves. It is said that this verbal world in the virtual environment has its own complex rules. It has been suggested that this complexity arises from the competitive environment in which two groups struggle to win (Wright et al., 2002).

### **Discussion and Conclusion**

The research approached the concept of shared experience from a perspective specific to visual design and found that the concept in question varied in the context of time-object in real, artificial and virtual worlds. Therefore, a categorical method was used to analyse the user-dependent states of time and objects in all three worlds. As a result, it was concluded that time is invariant in real and artificial worlds and variable in virtual worlds, whereas object is variable in the real world and invariant in artificial and virtual worlds.

Although it can be seen that different concepts such as experience, shared experience, experience design and user experience are addressed in the research, it can be seen that the user is at the centre of the research (Allanwood & Beare, 2019; Battarbee, 2004; Buley, 2013; Coxon, 2014; Goodman et al., 2012; Turner, 2017). This research has continued the tradition of user-centred experience research, but has also addressed the concept of shared experience in a systematic way specific to the field of visual design.

The fact that the shared experience of the real world has a positive psychological, visual and cognitive effect on users is also supported by some other studies (Crespo & Mesurado, 2015; Geddes & Passmore, 2021; Keniger et al. 2013; Wilson, 2007). In line with this view, it is concluded that creativity and originality, which are important for visual designers, cannot be achieved away from natural objects in the real world. In artificial and virtual worlds, the experience has been found to be constrained by objects. However, the fact that objects in artificial and virtual worlds remain unchanged in shape and colour forces users to live within certain visual boundaries. Especially in the urban environment, which can be considered a small universe for artificial objects, there are many elements that can negatively affect people in terms of psychological experience (Turan, & Besirli, 2008; Summer, 2020). There are also some studies that show that there are benefits for users when it comes to education and science-based simulations in the experience of artificial and virtual worlds (Chernikova et al., 2020; Landriscina, 2013; Lateef, 2010). However, the proportion of studies showing that users were negatively affected by these worlds in terms of their experience was higher than the proportion of positive studies.

## Recommendations

Since experience is one of the subjects that will not lose its value in human life, more research needs to be done in visual design and its subfields. In this study, it is suggested that the shared experience, which has been addressed in a systematic way specific to visual design, should be the subject of further research with an interdisciplinary or multidisciplinary approach.

### Biodata of Author



Asst. Prof. Dr. **Mehmet Remzi Demirel**, between 2001-2005, he studied at Diyarbakır Anatolian Fine Arts High School Painting Department. Between 2005-2011, he continued his education at Mimar Sinan Fine Arts University Painting Department. Between 2012-2014, he studied at Alanus University (Ananus Hochschule für Kunst und Gesellschaft) in Bonn, Germany, with an interdisciplinary approach in the field of fine arts and completed his master's degree. From 2015 to 2019, he continued his interdisciplinary studies at Yıldız Technical University Institute of Social Sciences, Faculty of Art and Design, where he completed his Ph.D. programme. In the spring semester of 2016, he started working as a lecturer at Istanbul Arel University and in the autumn semester at Beykent University. He worked as a lecturer at Beykent University Faculty of Fine Arts until 2019. In the autumn semester of 2019, he started working as an Asst. Prof. Dr. at Dicle University Faculty of Art and Design. He is currently working in the Visual Communication Design Department of this university and continues his studies. **Email:** mremzi.demirel@dicle.edu.tr **ORCID:** 0000-0002-9075-4513

**Academiaedu:** <https://independent.academia.edu/MEHMETREMZ%C4%B0DEM%C4%B0REL>

**Researchgate:** <https://www.researchgate.net/profile/Mehmet-Demirel-19>

## References

- Allanwood, G., Beare, P. (2019). *User experience design: a practical introduction*. United Kingdom: Bloomsbury Publishing.
- Al-Qahtani, A. A., S Alenzi, A. A., & Ali, A. S. (2020). Playerunknown's battlegrounds: yet another internet gaming addiction. *Journal of Ayub Medical College, Abbottabad: JAMC*, 32 (1), 145–146.
- Battarbee, K. (2004). *Co-Experience, understanding user experiences in social interaction* (Doctoral Thesis). Publication Series of the University of Art and Design Helsinki, Finland.
- Battarbee, K. (2003). Defining Co-Experience. *Proceedings of the 2003 International Conference on Designing Pleasurable Products and Interfaces, New York, 23-26 June 2003*, 109-113. <http://dx.doi.org/10.1145/782896.782923>
- Bombardi, D., Schmid Mast, M., Canadas, E., & Bachmann, M. (2015). Studying social interactions through immersive virtual environment technology: virtues, pitfalls, and future challenges. *Frontiers in Psychology*, 6, 869. <https://doi.org/10.3389/fpsyg.2015.00869>
- Boothby, E. J., Clark, M. S., & Bargh, J. A. (2014). Shared experiences are amplified. *Psychological Science*, 25(12), 2209–2216. <https://doi.org/10.1177/0956797614551162>
- Bratman G. N. vd. (2019). Nature and mental health: An ecosystem service perspective. *Science Advances*, 5(7). <https://doi:10.1126/sciadv.aax0903>
- Buley, L. (2013). *The user experience team of one: a research and design survival guide*. Page 4. United States: Rosenfeld Media.
- Caddick, R., Cable, S. (2011). *Communicating the user experience: a practical guide for creating useful ux documentation*. Germany: Wiley.
- Chernikova, O., Heitzmann, N., Stadler, M., Holzberger, D., Seidel, T., & Fischer, F. (2020). Simulation-based learning in higher education: A meta-analysis. *Review of Educational Research*, 90(4), 499–541. <https://doi.org/10.3102/0034654320933544>
- Coxon, I. (2014). *Fundamental aspects of human experience: a phenomenological explanation, page 11. editor: peter benz. experience design: concepts and case studies*. United Kingdom: Bloomsbury Publishing.
- Crespo, R. F., & Mesurado, B. (2015). Happiness economics, eudaimonia and positive psychology: From happiness economics to flourishing economics. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, 16(4), 931–946. <https://doi.org/10.1007/s10902-014-9541-4>
- Çilenti, K. (1979). *Educational Technology*. Ankara: Kadioğlu Matbaası.
- Eğüz, E. B. (2022). *A Research on Augmented Reality Applications and User Experience in the Context of the Concept of Convergence*. Page 204. İstanbul: Efe Akademi Yayınları.
- Ergen İ. (2023). The effect of experience design on graphic design. *Journal of Arts*, 6(1), 55-64. <https://doi.org/10.31566/arts.1969>



- Ertürk, M. (2018). Aesthetic Experience in Visual Communication Design and The Importance of First Attraction. *İdil Sanat ve Dil Dergisi*, 7(41), Doi: 10.7816 /idil-07-41-08
- Forster, N. (1994). The analysis of company documentation. C. Cassell & G. Symon (Eds). *Qualitative methods in organizational research: A practical guide*. London: Sage Publications.
- Geddes, O., & Passmore, H.-A. (2021). *Green exercise: Actively flourishing in nature*. In E. Brymer, M. Rogerson, & J. Barton (Eds.), *Nature and health: Physical activity in nature* (pp. 35–46). Routledge/Taylor & Francis Group. <https://doi.org/10.4324/9781003154419-4>
- Goodman, E., Kuniavsky, M., Moed, A. (2012). *Observing the user experience: a practitioner's guide to user research*. Page 45. Netherlands: Elsevier Science.
- Hartson, R., Pyla, P. S. (2012). *The UX Book: Process and guidelines for ensuring a quality user experience*. pages 3-7. Netherlands: Elsevier Science.
- Hussain A. T., Halford E., AlKaabi F. (2023). The Abu Dhabi Police Virtual Training Centre: A case study for building a virtual reality development capacity and capability. *Policing: A Journal of Policy and Practice*, <https://doi.org/10.1093/police/paad028>
- Keniger, L., Gaston, K., Irvine, K. N., & Fuller, R. (2013). What are the benefits of interacting with nature? *International Journal of Environmental Research and Public Health*, 10(3), 913–935. <https://doi.org/10.3390/ijerph10030913>
- Küçük, M. (2012). *Communication information, communication concept and communication process*. Page 10. Eskişehir: T.C. Anadolu Üniversitesi Yayını
- Landriscina, F. (2013). *Simulation and learning: a model-centered approach*. Pages 1-7. United States: Springer New York.
- Lateef, F. (2010). Simulation-based learning: Just like the real thing. *Journal of Emergencies, Trauma, and Shock*, 3(4), 348-352 doi: 10.4103/0974-2700.70743
- Lee, K. M. (2004). Presence, Explicated, *Communication Theory*, 14(1), 27–50. <https://doi.org/10.1111/j.1468-2885.2004.tb00302.x>
- Miller, L. (2015). *The Practitioner's Guide to User Experience Design*. United Kingdom: Little, Brown Book Group.
- Miller, R. (2016) Oculus founder thinks VR may affect your ability to perceive time passing. *The Verge*. <https://www.theverge.com/2016/3/17/11258718/palmer-luckey-oculus-time-vr-virtual-reality-gdc-2016> 12.03.2024
- Mullen, G., & Davidenko, N. (2021). Time Compression in Virtual Reality. *Timing & Time Perception*, 9(4), 377-392. <https://doi.org/10.1163/22134468-bja10034>
- Özsoy V., & Ayaydın A. (2016). *Visual Design Elements and Principles*. Page 55. Ankara: Pegem Akademi
- Plambach T. & Konijnendijk C. (2015). *The impact of nature on creativity – A study among Danish creative professionals, Urban Forestry - Urban Greening*, 14(3), 255-263 Doi: <https://doi.org/10.1016/j.ufug.2015.02.006>
- Puhakka R. & Hakoköngäs E. (2024) Adolescents' experiences in nature: Sources of everyday well-being. *Journal of Leisure Research*, 55(2), 250-269, doi: 10.1080/00222216.2023.2204346
- Riaz, T., Akram, M., Afera, A., Parmar, P. (2023). The PUBG Paradox: Exploring the Link between Video Games and Suicide Risk. *LAIM*, 10(8), 8-14.
- Schatzschneider, C., Bruder, G., & Steinicke, F. (2016). Who turned the clock? Effects of manipulated zeitgebers, cognitive load and immersion on time estimation. *IEEE Trans. Vis. Comput. Graph.*, 22(4), 1387–1395. doi: 10.1109/tvcg.2016.2518137.
- Simon, H. A. (1996). *The sciences of the artificial, third edition*, Page 5, Cambridge, Massachusetts: MIT Press
- Summer, M. (2020). *Connecting with life: finding nature in an urban world*. Page 27. USA: Summer Press.
- Sunil, S., Sharma, M. K., & Anand, N. (2021). Impact of PlayerUnknown's Battlegrounds (PUBG) on mental health. *The Medico-legal Journal*, 89(2), 99–101. <https://doi.org/10.1177/0025817220981817>
- Tal A, Wansink B. (2011). Turning Virtual Reality into Reality: A Checklist to Ensure Virtual Reality Studies of Eating Behavior and Physical Activity Parallel the Real World. *Journal of Diabetes Science and Technology*, 5(2), 239-244. doi:10.1177/193229681100500206
- Trevors, J.T. & Saier Jr., M.H. (2010) A Tale of Two Worlds: The Natural World and the Artificial World. *Water Air Soil Pollut* 205 (Suppl 1), 37–38. <https://doi.org/10.1007/s11270-007-9444-7>
- Turan, M. T., & Besirli, A. (2008). Impacts of urbanization process on mental health. *Anatolian Journal of Psychiatry*, 9(4), 238-243.
- Turner, W. R., T. Nakamura, and M. Dinetti. (2004). Global Urbanization and The Separation Of Humans From Nature. *BioScience*, 54(6), 585–590. [https://doi.org/10.1641/0006-3568\(2004\)054\[0585:GUATSO\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2004)054[0585:GUATSO]2.0.CO;2)
- Turner, P. (2017). *A Psychology of User Experience: Involvement, Affect and Aesthetics*. Pages 9-10. Germany: Springer International Publishing.
- Wang, W. (2020). Difference between the Real World and Virtual World, *Proceedings* 47, no. 1: 35. <https://doi.org/10.3390/proceedings2020047035>
- Wilson, R. (2007). *Nature and young children: encouraging creative play and learning in natural environments*. Pages 4-5. United States: Taylor & Francis.
- Wright, T., Boria, E., & Breidenbach, P. (2002). Creative Player Actions in FPS Online Video Games. Playing Counter-Strike. *The International Journal of Computer Game Research*, 2(2), 103-123.

Yeh, C. W., Hung, S. H., & Chang, C. Y. (2022). The influence of natural environments on creativity. *Frontiers in Psychiatry, 13*, 895213. <https://doi.org/10.3389/fpsy.2022.895213>

### Visual Bibliography

**Figure 1:** Demirel, M. R. (2024). Real, artificial and virtual worlds

**Figure 2:** Pidvalnyi, O. (2022). Tenerife, Spain. Pixabay. <https://pixabay.com/photos/park-mountains-tenerife-teide-7670716/>

**Figure 3:** Steinmetz, T. (2021). New york, Manhattan. Pixabay. <https://pixabay.com/photos/new-york-manhattan-usa-skyscrapers-6578473/>

**Figure 4:** Decentraland, <https://decentraland.org/>

**Figure 5:** Jolanda, D. (2013) Four seasons of an oak tree (Die vier Jahreszeiten einer Eiche). Flickr. <https://www.flickr.com/photos/120241063@N05/14596241385>

**Figure 6:** Variety of chair designs, <https://kitkemp.com/a-brief-history-of-chairs/>

**Figure 7:** PUBG Battlegrounds, Maps, Gallery. <https://pubg.com/en/game-info/maps/erangel>