



Sustainable graphic design in educational environments

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Abstract

The human life process includes a great consumption cycle. In order to survive, to learn, to shelter and to live within the framework of a standard, people are in a constant state of consumption. Undoubtedly, human beings, who are also productive beings, have to pay attention to their consumption in order to leave the world they live in in a more livable condition for future generations. Otherwise, the deterioration of the vital balance of the earth brings with it the deterioration of ecology, the environment and human health. The concept of sustainability refers to the efforts to provide the ability to be continuous in the world we live in as well as the material produced. In addition to being a concept that should be the basic philosophy in many fields and disciplines, the common denominator of these fields is the sustainability of the world we live in. One of the fields that play the most active role in the construction of a sustainable world is the field of design. The field of design has a wide framework. In this study, the subject of sustainability in graphic design, which is one of the branches of the design field has been investigated. Sustainable design with its simple definition is the process of designing economic, ecological, sustainable objects and materials. In today's world where consumption is very fast, almost everything is consumed rapidly, outdated and information is getting old quickly, design has a major responsibility in the name of sustainability, but on the other hand, technological developments make sustainable designs possible. Sustainable designs enable the designer to create solutions that create value not only for today but also for the future by making the design process long-term.

Keywords: Education, graphic design, design, sustainable design

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1. Introduction

Today, design has become a strategic process that includes innovation that creates added value and creates competition. Design is considered an important factor in the sustainability of natural resources, knowledge and economic resources. Man is a living creature that is constantly learning and has the ability to solve the problems he encounters in life in unorthodox ways. People who use their mind and talent simultaneously can come up with different products and ideas to meet their needs. In addition to surviving since its existence, trying to raise the standard of living is one of the main pursuits of humanity. Just at this stage, if it is necessary to define the design is the restructuring of the available material and or data in a way that can gain a different

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function and have a different effect. The background of the design, which makes the design functional and creative and one of the most important building blocks of design, constitutes the philosophy of the design. Although the design is based on an object or image that exists in nature, it makes the product or work more effective.

Design is in the dictionary of the Turkish Language Association (TDK); The form envisioned in the mind, the first draft of a work of art, structure or technical product, the drawing, the design, the framework that designs the ways and processes to be followed in various stages of a research process, the later copy of an object or event that has been perceived before in the consciousness. (TDK). Design, which is a discipline on its own, is closely related to all fields of science. Design is an effort to reflect what is in the "Essence" in the shortest way and most effectively. In this respect, design plays an important role in the transfer of scientific knowledge. "Design is the most basic communication model that humans establish with objects. This model manifests itself in the categories of knowledge, ethics, aesthetics and technique. Their informational designs gain their highest presence in science and philosophy. These designs embody as model theories in science, systems of thought in philosophy, and systems of philosophy" (Tunali, 2012).

Design products, like works of art, have two basic structures; foreground and background. While the visible concrete form, aesthetic form and ergonomics of the work of the product form the foreground, the problem solved by the design, the abstract ideas and purposes that can create a link between people and the design, and the reflection of emotion also form the background. The background contains the philosophy of the design. If we consider a communication design here; Planning from the target audience analysis to the selection of the instruments to be used in the development of the communication language, designing how the message to be delivered will be perceived by the target audience, which emotions will be addressed, and the construction of the emotional impact to be left on the target audience are all background studies.

"Design; Although it has different meanings in communication, literature, philosophy, art, architecture and engineering, design is a problem-solving process with common concerns" (Çaydere, 2010). Design in interpersonal communication; While the information and message to be conveyed are delivered to the target in the shortest way, in the shortest time, in the most effective way, without losing its essence, it also includes digital media in the process.

Graphic design

Graphic design is the arrangement of text and visuals together or alone, with aesthetic concerns and considering design principles. That design is a problem-solving process. The problem that graphic design tries to solve is basically communication. Graphic design emerges as a new type of communication, arising from the use of pictures and text, which are the two basic elements of communication, in the same environment. From the invention of writing to the present day, masters of writing, calligraphers, artists and printers have contributed to the development of this branch. However, graphic design has provided the art movements that took place at the end of the nineteenth century and

the beginning of the twentieth century, and it has evolved into a communication tool in today's sense (Bektaş, 1992). Today, graphic design is an effective way of communication. Graphic design aims to convey the information to the target audience in the shortest way in an aesthetic way. We come across graphic design products wherever communication and information transfer are necessary. The information delivered to the target audience within the graphic design discipline is in an effortless and easily understood form. Graphic design, which is at the core of art as a phenomenon, has a structure in itself and a planning behind this structure, rather than making a model mold or ornament (Becer, 2008). Graphic design; In addition to being one of the most contemporary branches of plastic arts, it is also one of the most popular professions of our age that produces functional products. Graphic design as a profession is experiencing a rapid technological evolution. Graphic design, a profession that traditionally produces print-based works, is focused on the digital future. In this process, which requires teamwork from different disciplines, graphic designers have focused on solving the visual communication problem by working more than ever (Quam, A.2016).

Today, design is a digital reality, the product of computer technology. If we consider the images on the internet, we see that these images are virtual but real. This paradoxical quality, this antagonism, arises from the integration of virtual and reality. This virtual reality is not a reality that people find ready. Thus, the epistemology that has dominated for centuries is abandoned. Knowledge now means the production of alternative design models to nature. In this respect, our age can be defined as a design age (Tunali, 2012). Graphic design has been reshaped as a long-term tool whose aim is social progress, with modernist manifestos, writings and works emerging from the revolutions of the early 20th century. It aimed to provide graphic design, military and civilian propaganda, camouflage and information design during and after the Second World War (Twemlow, 2011).

During the Second World War, when mass media were limited to radio and newspapers, a public communication was established through graphic design, the public was informed with posters, propaganda was made, and a social perception that would support the army and governments was created. "The traumas experienced by societies, social self-confidence, goals and hopes have expressed themselves on posters in various periods and have undertaken very important social missions periodically. We can say that the most effective branch of plastic arts in the society is poster art" (Çaydere, 2015).

Graphic design is a field where creativity becomes visible. The fact that the user receives and perceives the message effectively in a short time enables the emergence and description of different needs for use. This process lays the foundation for innovation. "Since the relationship between the concept of innovation and creativity intersects with art, it is a more correct approach to consider the concept in a technological and social context with a focus on creative thinking and innovative thinking. Creativity is a broad concept that covers the process of producing new and useful information in every field, making, revealing the existence, revealing something new that cannot be seen by using intelligence, thought and imagination, and describing the process, not the product"

(Demir, 2017). Graphic design, which is a close follower of technology, also uses contemporary communication tools as a design surface. Most of the time, graphic design, which also directs technology, is the cornerstone of the concept of "User-Friendly" in the use of technology. Graphic design is present in all communication environments. While creating the basic communication language in current digital environments, the biggest task falls to graphic design. How you write is as important as what you write. "Social media and new social possibilities make it necessary to develop design processes with different components. The continuity of being connected with social media, the sustainability of staying in touch, the updatability and the disappearance of borders in information tracking and information acquisition are reflected in the design processes" (Bedir Erişti, 2016).

If we do not get lost in cities with millions of vehicles and people, if we can find what we are looking for, graphic design contributes greatly to this. If we can quickly reach what we are looking for in shopping malls, hospitals and similar complex structures, graphic design has a great contribution to this. If we can start using a newly purchased mobile phone, tablet or washing machine without the need for instructions, it is thanks to the user-friendly products of graphic design. With this feature, graphic design can also be used to increase the effectiveness and quality of education, which is the most basic need of people. In this context, in this study, it is aimed to determine how sustainable graphic designs in education are realized today, to ensure the sustainability of the digital resources where information is transferred and to reveal the communication language of the user group. This study is important in terms of raising awareness about the effectiveness of educational materials, their adaptation to innovative communication environments and their sustainability.

2. Method

Qualitative research approach was used in the research. Qualitative research is defined as a research in which qualitative data collection methods such as observation, interview and document analysis are used, how perceptions and events take place in the natural environment and a qualitative process is followed to reveal them in a holistic way" (Yıldırım and Şimşek, 2005). In the research, the data was reached through written materials and the data were classified by the researcher within the framework of the subject and three sub-objectives were explained under three headings.

3. Findings

3.1. Current Situation of Sustainable Graphic Designs in Education

3.1.1.1. Sustainable World

Man, like other living things, is a part of nature and interacts with nature throughout his life. While other living things adapt to nature and its conditions, man changes nature in his favor. It was only after the second half of the 20th century that the irreversible destruction of man on nature began to be noticed, seriously discussed and precautions

were taken (Sevim, 2012). The concept of sustainability is increasingly being addressed in global development. The construction of a sustainable worldview rests on three pillars: economic, environmental and social. The sustainable design approach not only expands the scope of the agenda, but also leads to significant changes in many areas (Trimingham, R. 2016). For a sustainable world, voluntary individual activities or local and regional measures were not enough. Since we share the same planet, its natural resources and atmosphere, it was necessary to fight against environmental problems altogether. Therefore, since the 1980s, a number of legal regulations, measures and sanctions came one after another (Sevim, 2012). Printer paints and toners are the second-largest use of black carbon, which is produced when oil is not fully combusted, and the paper industry is the third-largest coal consumer worldwide, one of the biggest contributors to air and water pollution, landfill waste, and climate-changing gases, according to an alarming statistic. (Twemlow, 2011).

Sustainable Design

With the industrial revolution, design became closely related to production. Playing an important role in the marketing part of production, design is positioned in a place that is at least as effective for sales as the product, and from time to time, even more than the product. In addition to designing the product itself, graphic design works are also carried out for the promotion and protection of the product to be sold and delivered to the customer. The fact that the materials used in this process, such as paint, are environmentally friendly and recyclable, it also ensures that these designs are sustainable. Sustainability approach in design is among the urgent needs of today. It is very important to develop a methodology for sustainable designs in order to create an infrastructure where future generations can meet their own needs. In the decision taken by the World Development and Environment Commission in 1987; The subject of sustainable design education was discussed and pointed to the development of new methodologies. Basically, the teaching, placement and promotion of sustainability awareness are among the recommendations of the commission. In the Kyoto Design Declaration signed on March 28, 2008, attention was drawn to sustainable design and important decisions were taken on this issue.

Representing the global community of design educators and researchers, Cumulus members take the initiative outlined in this 'KYOTO DESIGN STATEMENT' to dedicate themselves to the ideals of sustainable development. In addition, Cumulus members can collaborate with educational and cultural institutions, companies, governments and government agencies, design and other professional organizations and NGOs to promote and share their knowledge of sustainable development ideals (<https://www.cumulusassociation.org/kyoto-design-declaration-signed-on-march-28-2008/>). While presenting his work, the artist plans the creation process by paying attention to the accessibility of the viewer and the survival of his work for many years. From scrapings on cave walls to durable canvas cloths and searching for paint that will not fade or lose value over the years. In addition, the visibility and accessibility of the work is an important factor that motivates the artists and the artistic creation process.

Today, when we want to talk about accessible platforms, we place digital platforms at the top of the list. Digital platforms also attract the attention of artists in terms of accessibility and longevity. We know that the most important factor that gives a work the quality of a work of art is the reflection of the artist's emotions on the work. In this respect, when the emotions of the artist and the philosophy of artistic design are the main issues, it is an undeniable fact that digital media can be used as a design surface and material/technique in this process. Digitality comes into direct contact with daily life through fictional and virtual ways. The fictional contact also brings up the existence of exploratory and pragmatist (utilitarian) tendencies in art (Demir, 2017).

3.2. Status of Ensuring Sustainability of Digital Resources from which Information is Transferred

3.2.1. Educational Design

For many designers, a book is defined by its purpose rather than its form, and so one of the book designer's duties is to shape, edit, curate and add his own critical view of the author's material to enhance the reading experience. Perhaps the reason for this approach is the fear of becoming useless in a culture that is increasingly dependent on digital platforms (Twemlow, 2011). We see that graphic design has a great responsibility in order to achieve success in the education system, which has gained a new dimension with the pandemic. The way to transfer information in the most effective way without a shortcut is through a successful graphic design process. With the development of technology, the field of graphic design has become more of a necessity in digital environments rather than printed products. Since digital environments, and especially social media, are dynamic and reach the masses very quickly, both individuals and companies need graphic design and arrangements when sharing content such as graphics, photos, videos, news, and articles shared in social media (Yavuz, 2019).

Developing technology and digital platforms with increasing accessibility have created a new communication language as well as creating a new communication field. Words, images, videos, music and animations can be used effectively in this new communication language, which is a fast and understandable language suitable for the requirements of the age. Undoubtedly, these instruments should be used when designing new generation educational materials. As a professional field, design is a changing and developing discipline. The role of visual communication designers in design education has become critical. Designs for the world of the future present more challenging problems than ever before. However, this is also an opportunity for the design field (Yeo, J., and Teo, C. 2020). The rapid process experienced with technological developments brings a structure and interaction that transforms faster day by day. This makes the concept of user experience inevitable in digital publishing. User experience designs focus on the interaction of the target audience in the process of using new media technologies. Developing an empathetic perspective is a point that user experience designers should emphasize (Akdağ Satır, 2020).

Sustainability in Educational Design

Considering the issue of sustainability; reusable materials, innovative approaches in production with less damage to nature come to mind. Undoubtedly, natural resources are not endless and they are very valuable. For a livable world, in addition to the careful use of these resources, it is also very important to protect "information", which is at least as valuable as natural resources. Designing information access resources that we can protect for centuries, access in a short time and ensure that they are up-to-date when we access them, just like works of art, is an important area of sustainable design.

In line with the declaration published at the Kyoto design conference, Cumulus members declared that they would fulfill their mission of contributing to sustainable social, environmental, cultural and economic development for current and future generations, and that they would contribute to an environment and culture that enables a harmonious and healthy life. They are committed to provide further education for young people within a value system in which each member is aware of their global responsibility to build sustainable, people-centered, creative societies (<https://www.cumulusassociation.org/kyoto-design-declaration-signed-on-march-28-2008/>).

There may be difficulties in adapting sustainability, which is a new development concept, to social life due to the lack of cultural paradigm. While existing pedagogical practices continue, students should be able to be involved in a participatory process. To the extent that we focus on traditional methods in design education, we move away from sustainability (Souza, P., and Faria, A. 2004). Algorithms and generative adversarial networks are used to create different types of products in the field of graphic design. Algorithms can be used more in meaningful visual products and concept studies as they contain more human control. An unlimited number of graphic design products can be produced using algorithms (Sen and Atiker, 2020). The development of the internet and the increase in digital platforms have led people to spend more time in these channels. This fact should not be ignored when constructing a contemporary educational environment. Designing educational content for these channels where people are present is important both for a sustainable design process and for creating an effective learning environment.

3.3. Revealing the Communication Language of the User Audience

According to the report study of We Are Social, the internet and social media usage habits of the whole world and Turkey as of January 2021 is as follows; We spend about 7.5 hours a day on the Internet, almost 3 hours of this is spent on social media. According to this report:

Table 1. What electronic device does the % of the population in Turkey use?

Device	Percentage
Only those with a smartphone	89
Those with a personal/desktop computer	67
Those with tablets	45
Those with game consoles	20
Those with smart watches/wristbands	17
Those with virtual reality devices	4.3

In our country with a population of 83 million, the number of people using the internet via any device is 62.07 million. In other words, 72% of the population are internet users. It is seen that the number of internet users increased by 2.4 million from January of last year to January of this year, an increase of 4 percent. (<https://www.webtekno.com/turkiye-de-kac-kisini-ne-kadar-ve-hangi-amacla-internet-Ugurdigi-aciklandi-h107112.html>)

As can be seen in the table above, the use and access to internet-based digital communication tools is at a very high level. It is an important environment for the readiness of the students, who are the target audience of this education. It is inevitable that the basis of the new language to be developed in education is here. The sustainability of materials developed in digital environments is higher than classical materials. Moreover, hybrid materials can be developed, existing books can be enriched with applications such as augmented reality and virtual reality, and their content can be expanded digitally every year.

4. Conclusion and Recommendations

With the changing world, the needs of people also change. The development of standards in life not only increases the need for learning, but also leads to radical changes in learning styles. The speed of daily life is also reflected in the communication of young people. One of the basic elements of an effective communication is speed and accessibility. Designing educational materials that are both environmentally friendly and sustainable enough to protect the future of the world, and that are capable of establishing correct communication with the youth in the target audience, and that are enriched with different elements, are an important need for countries to increase their education quality.

Universities can establish open libraries with enriched content from the Ministry of National Education. Educational programs for preparing new generation content can be organized in education faculties and teacher training institutions.

Thus, with the sustainable education materials designed, both the future of our world and the quality of education are invested. It is also possible to ensure the sustainability of knowledge.

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