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ARTIFICIAL INTELLIGENCE AND VISUAL COMMUNICATION: A REVIEW FROM A STUDENT PERSPECTIVE

YAPAY ZEKA VE GÖRSEL İLETİŞİM: ÖĞRENCİ BAKIŞ AÇISIYLA BİR İNCELEME

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Abstract

This study aims to examine the impact of artificial intelligence technologies on students studying visual communication design, as well as their attitudes toward AI. While AI automates creative processes, providing designers with speed and efficiency, it also raises ethical concerns such as the potential decline in traditional creative skills and issues related to copyright. This research utilizes a survey method to reveal visual communication design students' perspectives on AI technologies, their usage, and their contributions to the design process. The majority of participants found AI technologies beneficial and actively integrated them into their design work. However, concerns were also observed regarding the potential loss of manual skills and the effects of AI on copyright.

Key Words: *Artificial Intelligence, Visual Communication, Design.*

Öz

Bu çalışma yapay zeka teknolojilerinin görsel iletişim tasarımı alanında eğitim gören öğrenciler üzerindeki etkilerini ve öğrencilerin yapay zekaya yönelik tutumlarını incelemeyi amaçlamaktadır. Yapay zeka yaratıcı süreçleri otomatikleştirerek tasarımcılara hız ve verimlilik sağlamasına rağmen aynı zamanda geleneksel yaratıcı becerilerin körelmesi ve telif hakları gibi etik sorunları da beraberinde getirmektedir. Bu araştırma görsel iletişim tasarımı öğrencilerinin yapay zeka teknolojilerine olan bakış açılarını, bu teknolojilerin kullanımını ve tasarım sürecine olan katkılarını ortaya koymak için anket yöntemi kullanmıştır. Katılımcıların çoğunluğunun yapay zeka teknolojilerini faydalı bulduğu ve tasarımlarında aktif olarak kullandığı tespit edilmiştir. Bununla birlikte manuel becerilerin kaybolabileceği ve yapay zekanın telif hakları üzerindeki etkileri konusunda kaygıların bulunduğu gözlemlenmiştir.

Anahtar Kelimeler: *Yapay Zeka, Görsel iletişim, Tasarım.*

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INTRODUCTION

Artificial intelligence is a scientific discipline that examines the intelligent behaviors of humans, animals, and machines and aims to understand how such behaviors can be manifested by human-made devices. AI studies typically focus on analyzing cognitive processes in humans to develop similar artificial instructions (Güney & Yavuz, 2020). In recent years, with the rapid advancement of digital technologies, AI has also brought about significant transformation in many sectors, including art and design. Particularly in creative disciplines like visual communication design, AI has become a tool that not only accelerates work processes but also offers new opportunities to designers. Visual communication, which involves the conveyance of information and emotions through visual means, has the potential to enhance the production speed and creativity of designs when AI is applied in this field (McCosker, 2020). However, the impact of AI on traditional design skills and the ethical concerns related to artistic production are also topics of discussion (Elgammal, Liu, Elhoseiny, & Mazzone, 2017).

Rudman and Stefik (2019) address this issue by stating that "AI-generated designs challenge traditional notions of authorship and ownership, raising questions about who—if anyone—can claim the copyright of such creations." The absence of clear legal frameworks exacerbates this issue, leaving designers, developers, and institutions uncertain about the rights associated with AI-driven outputs.

Another ethical debate concerns creativity and originality, specifically whether AI-generated works can be considered genuinely creative or original. As AI systems mimic human creative processes, they blur the boundaries between human-authored and machine-generated designs. Boden (2004) argues that "while AI may simulate creative processes, the outputs lack the intentionality and subjective experience inherent in human creativity." This raises philosophical and ethical questions about whether works produced by algorithms can truly be regarded as art and whether their creators—programmers or users—should be credited as the authors.

Ballı (2020) discusses artificial intelligence and creativity, suggesting that AI has reached a stage where it can create art using intuitive and empirical approaches to produce unexpected data. He notes that if "creativity" is considered an exclusively human trait, the ability of AI to generate aesthetically valuable artworks or pass an artistic "Turing Test" might compel us to reconceptualize our understanding of art. Current developments in AI involve creating architectural intelligence for composing music and poetry.

AI's ability to automate design processes has sparked concerns about its impact on traditional skills and professional opportunities in the creative industries. Murray (2019) warns that "reliance on AI in design may lead to the erosion of manual skills and reduce the perceived value of human creativity."

While AI offers unprecedented opportunities for efficiency and innovation in design, these ethical concerns underscore the need for a balanced approach. Educational institutions and industry stakeholders must address these issues by fostering awareness and developing frameworks that promote the responsible use of AI technologies. As McCosker (2020) suggests, "the integration of AI into creative disciplines should be guided by ethical considerations to ensure that technological advancements benefit rather than undermine human creativity."

One of the most notable contributions of AI to the field of visual communication is the acceleration of creative processes. According to Soddu (2018, p.72), a robot's ability to store experiences acquired through deep learning in its memory allows for unique and non-repetitive production. Traditional design processes, which typically require a significant amount of time, can be completed within minutes thanks to AI-supported tools (Davenport & Kirby, 2016). For instance, the integration of AI into graphic design software enables designers to instantly experiment with shape and color combinations using pre-programmed algorithms (Krizhevsky, Sutskever, & Hinton, 2012). While these technologies clearly help designers save time and generate more creative ideas, some critics are concerned that they may lead to a decline in designers' creative skills (Murray, 2019).

The influence of AI on design extends beyond speed and efficiency; it has also led to the emergence of new forms of artistic expression that challenge creative boundaries. According to Canan and Acungil (2018), AI systems designed by artists or programmers mimic the human mind, enabling them to learn and subsequently develop behavioral changes. In contrast to traditional artistic production methods, artworks created with AI are shaped by algorithms. Artists and designers use these algorithms to produce new and original works, which are recognized as part of artistic creativity (Elgammal et al., 2017). However, this also raises debates about copyright and the concept of "originality" in art. Questions regarding the ownership of AI-generated designs and whether these works can be classified as art remain prominent discussions within academic and artistic communities (Rudman & Stefik, 2019).

For visual communication design students, the integration of AI into educational processes is becoming increasingly important. Students' attitudes toward AI technologies provide crucial insights into how these technologies should be

incorporated into educational curricula. While McCosker (2020) emphasizes that AI technologies offer students greater flexibility and possibilities in creative processes, concerns are also raised about how these technologies might impact students' development of fundamental design skills. Consequently, educational institutions are encouraged to utilize the opportunities presented by AI while ensuring the preservation of manual skills in their efforts to enhance students' creative potential (Murray, 2019).

In this context as the influence of AI technologies on art and design continues to grow, it is necessary to evaluate both the positive and negative impacts of these technologies on creative processes. Visual communication design students, in particular, should understand the new opportunities provided by these technologies and learn how to integrate them into their creative workflows. This study aims to explore students' attitudes toward AI technologies and examine how these technologies can be integrated into educational and professional development processes.

ARTIFICIAL INTELLIGENCE AND VISUAL COMMUNICATION

Say (2018) defines artificial intelligence as a scientific discipline that examines how cognitive activities performed by natural systems can be executed by artificial systems at higher levels of performance. Similarly Artut (2019) known for his work on theories of technology and art, describes artificial intelligence as the ability of computational systems to perform cognitive functions such as logic, self-awareness, comprehension, reasoning, problem-solving, and creativity within a non-biological structure.

AI technologies have created groundbreaking advancements in the fields of art, design, and communication in recent years. Visual communication design is one of the areas most affected by these innovations. The potential of AI to accelerate creativity and design processes has transformed traditional design methods, offering a more dynamic and flexible environment (Davenport & Kirby, 2016).

AI technologies are bringing significant transformations to the field of visual communication design. AI tools with the capacity to accelerate digital design processes and enhance efficiency are altering traditional design workflows and providing designers with new creative possibilities (Davenport & Kirby, 2016). Particularly in graphic design, the use of AI-supported algorithms automates various stages, from color palette selection to composition adjustments, thereby reducing designers' workloads and allowing them to dedicate more

time to creative thinking. The ability of AI to optimize user experience (UX) and user interface (UI) design based on data analytics contributes to the production of user-centric solutions (McCosker, 2020).

The development of AI in the art and design world has gained significant momentum since the early 21st century. AI systems like "Creative Adversarial Networks" (CAN) have redefined the process of artistic creation (Elgammal, Liu, Elhoseiny, & Mazzone, 2017). By enhancing the capacity of AI to produce artworks, CAN systems have contributed to the acceleration of creative processes. These advancements have led to art evolving from a human-centered activity into a discipline in which algorithms actively participate. There have been many important developments in art production with artificial intelligence, and The Next Rembrabt is one of them.

Ballı (2020) highlights a project known as The Next Rembrandt, where artificial intelligence was utilized to create a painting in the style of the renowned artist Rembrandt. This collaboration, initiated by a Dutch financial company and a local advertising agency, involved contributions from Microsoft, Delft University of Technology, and art institutions like the Mauritshuis gallery and the Rembrandthuis Museum. The project aimed not just to mimic Rembrandt's work through pastiche but to capture the essence or "aura" of his artistry. Using deep learning algorithms and data from 346 of Rembrandt's paintings, the AI analyzed elements such as colors, textures, brushstrokes, and the geometry of human figures.

Figure 1. *The Next Rembrandt Project data processing example (Vinesh Gayadin, 2024).*

This analysis was further enriched with 3D scans and digital files to replicate the intricate layering and texture of Rembrandt's paintings. The final result, achieved through advanced algorithms and a multi-layered ink printing technique, produced a painting that adhered closely to Rembrandt's unique style, demonstrating AI's potential to profoundly influence contemporary art (Ballı, 2020).

Figure 2. *The figure that emerged as part of The Rembrandt Project, (Vinesh Gayadin, 2024).*

According to Yakar and Kınık (2020), CAN is a system that aims to produce original works by analyzing and learning from existing art pieces. The system adopts an approach similar to an artist's creative process, periodically increasing and decreasing its level of creativity. As machine learning becomes more creative, it pushes the boundaries of algorithms and generates unpredictable results, thus creating new opportunities for the creative process. At this point, certain stages of creativity—such as the choice of colors or brushstrokes in a painting or word selection in a poem—may require decisions that are random and without specific reasons.

In his book 50 Questions About Artificial Intelligence, Cem Say discusses the question "Can computers create art?" and suggests that computers are capable of producing works of art such as paintings, musical compositions, and poetry. According to Say, engaging in such creative activities appears to be feasible for artificial intelligence (2018).

When considering the development of AI in the field of design and art, it is evident that AI contributes significantly to creative processes. In recent years, AI-based algorithms and tools have enabled artists and designers to explore new forms of expression, while also supporting creativity and productivity (Elgammal et al., 2017).

For example the painting shown in Figure 3, created by the artist AI robot Ai-Da developed by British gallerist Aidan Meller, depicts AI pioneer Alan Turing. It has been noted that "A.I. God: Alan Turing Portrait (2024)," auctioned by the world-renowned Sotheby's in October, is the first artwork created by a humanoid robot utilizing artificial intelligence. This piece, crafted by the artist robot Ai-Da was sold for $1.08 million during an auction held on October 31 at Sotheby's in the United States. This sale serves as a striking example of the impact of artificial intelligence on artistic creation processes (TheGuardian, 2024).

Figure 3. *The work "A.I. God: Portrait of Alan Turing 2024", produced by the artist robot Ai-Da, (Habereksprès, 2024).*

Figure 4. *Ai-Da Robot, in front of their portraits of Turing, (TheGuardian, 2024).*

Similarly, an example of artwork created through data sets has emerged from Turkey. The "Human Cell Atlas," an AI-generated data artwork produced by Ouchhh Studio and sent to the Moon, stands out as the first Turkish art piece created using artificial intelligence to reach space. The piece landed on the

lunar surface via a SpaceX rocket and made its world premiere at Art Dubai. This work combines science and art by utilizing the world's largest data set related to the human body. Ferdi Alıcı one of the founders of Ouchhh Studio, explained that scientists use this data set to find cures for diseases, while the studio aimed to transform the data into an artistic portrait, exploring how machines perceive humanity (İstanbulSanat, 2024).

Figure 5. *Ouchhh Studio "Human Cell Atlas," exhibition at Art Dubai, (İstanbulSanat, 2024).*

According to Alemdar Çatalbaş (2024) creativity is described in various sources as a phenomenon encompassing originality, innovation, and problem-solving processes. The defining feature of creativity is the ability of imagination-based thought and actions to produce unique and valuable outcomes. This feature distinguishes creativity from other processes and is typically seen as part of the human experience. However, it is now observed that AI can also produce creative solutions. In her book The Creative Mind: Myths and Mechanisms, Margaret Boden examines the relationship between creativity and machines, demonstrating how computational concepts and artificial intelligence can transform these abstract worlds into new ones. Moreover, she argues that machines can also exhibit a certain degree of creativity. Creativity is a frequently discussed concept in the legal and philosophical evaluations of AI products. Ballı (2020) states that robots equipped with virtually produced intelligence have the ability to perform logical operations in a manner similar to intelligent or non-intelligent beings, and this capability holds the potential to create art or profoundly influence it.

Davenport and Kirby (2016) assert that AI not only accelerates creative processes but also facilitates designers' exploration of new styles and forms.

In this context, as AI technologies continue to influence the field of art and design, they also contribute to the transformation of creative disciplines. By enabling the emergence of new approaches in creative expression and design processes, AI makes art more accessible and dynamic (McCosker, 2020).

By introducing new creative processes in visual communication design, AI expands the boundaries for artists and designers. AI algorithms automate processes previously reliant on human creativity, enabling designers to save time and speed up workflows (McCosker, 2020).

AI's contribution to creativity can be seen as both positive and negative. On one hand, the automated solutions provided by AI technologies accelerate creative processes; on the other hand, they raise ethical and professional concerns regarding creative originality. Particularly in the fields of visual arts and design, the contribution of AI to creativity has been a controversial topic. Discussions continue on whether AI-generated works can replace the human creative process. The impact of AI on creative processes also transforms the definition and scope of creativity. Murray (2019) questions the role of AI in creative processes, highlighting the potential of AI-generated content to replace human creativity, and warning that this may lead to a decline in manual design skills. Krizhevsky, Sutskever, and Hinton (2012) state that the integration of AI-based algorithms into visual communication design has the potential to alleviate designers' workloads while enhancing creativity. However, the convenience offered by AI technologies also brings the risk of reducing individual creativity to automated processes. Therefore, carefully evaluating AI's contribution to creative processes and maintaining manual skills are critical requirements both in educational contexts and professional practices.

AI is utilized in visual communication design through various tools. There are numerous examples worldwide of the use of AI-supported design tools. For instance, Google's AI project DeepDream allows artists and designers to create complex and abstract images. Similarly, tools like Runway ML enable users to create intricate visual projects with minimal technical knowledge. Such tools have revolutionized the art and design world and redefined how creative processes are carried out (McCosker, 2020). AI-supported design tools like Adobe Sensei enable designers to work more efficiently in the graphic design process. These tools offer functionalities such as automatic photo editing, color palette suggestions, and visual content creation, thereby speeding up designers' workflows (Krizhevsky, Sutskever, & Hinton, 2012). The integration of AI algorithms into graphic design tools not only allows designers to bring their creative visions to life but also enables them to experiment with a wider range of design options.

According to Karaman (2024) AARON designed to produce creative drawings and paintings in the field of visual arts, and Simon Colton's The Painting Fool, another example of AI in creating visual art, are noteworthy instances of artificial intelligence in this domain. Unlike AARON, The Painting Fool operates with a more autonomous structure. While it does not physically apply paint to a canvas, it simulates various styles within a digital environment. Both software programs share common features: they encode information, datasets, parameters, and combinations to create original art and design works.

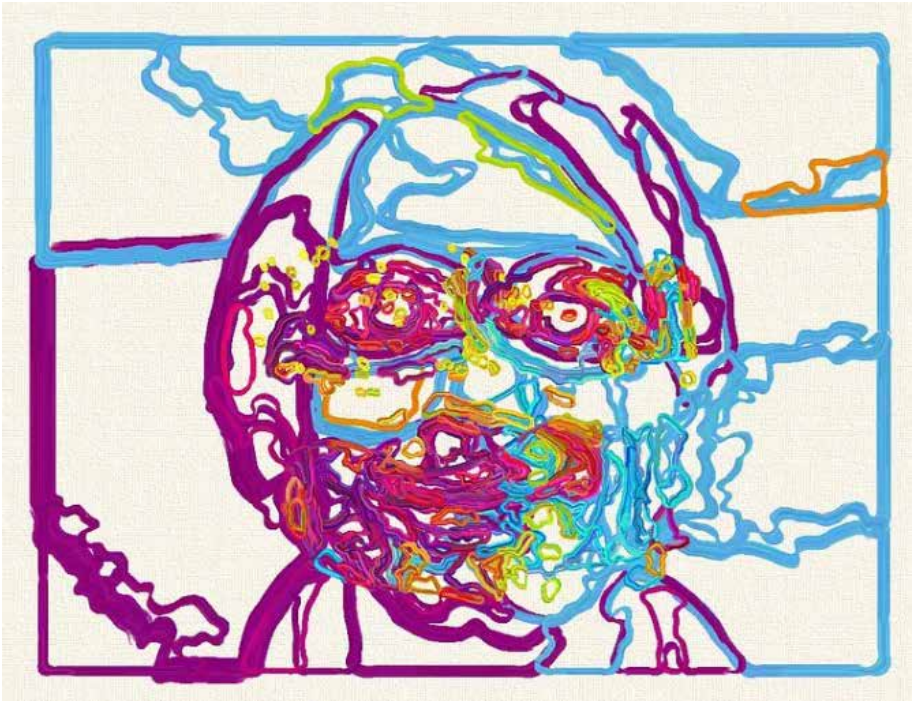

Figure 6. *The Painting Fool, Emotionally Aware Portraiture, (Medium, 2024).*

The Painting Fool demonstrates creative behavior by utilizing artificial intelligence and graphic computation techniques to invent scenes and objects that do not exist in reality. In the example shown in Figure 6, the You Can't Know My Mind project takes the idea of digitizing human emotions a step further by incorporating a basic personality trait into TPF. This process provides a compelling example of how artificial intelligence can exhibit a personal and creative character in artistic production (Medium, 2024).

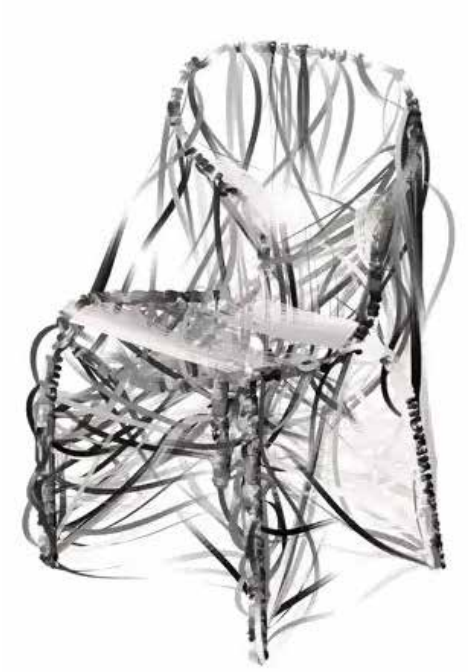

Figure 7. *The Painting Fool, Uneasy, (NewScientist, 2012).*

Such visualization-focused applications are typically command-driven software that operates and shapes outcomes based on the given instructions. However, in certain instances, these applications may produce unexpected results. For example, in the design depicted in Figure 7, although the user provided a command for a colorful output, The Painting Fool software independently chose to create the design in black and white. This instance serves as an intriguing example of how AI-based applications can exhibit autonomous creativity (NewScientist, 2012).

AARON a computer program developed by painter Harold Cohen in the early 1970s, is designed to autonomously produce original artistic images. Cohen equipped AARON with knowledge about basic objects, physics, and drawing techniques, enabling the program to create works that mimic human decision-making processes. The evolution of AARON is regarded as a significant milestone at the intersection of artificial intelligence and art (Atamaner, 2024). According to Yavuz (2024) the Whitney Museum of American Art has highlighted the visionary "AARON" series created by the late pioneer of art and technology.

Figure 8. *Harold Cohen, AARON KCAT, 2001. Whitney Museum of American Art, New York (ArtNewspaper, 2024).*

Figure 9. *Harold Cohen: AARON, Whitney Museum of American Art, New York. Untitled, 1982 (ArtNewspaper, 2024).*

According to Güney and Yavuz (2020), AI can perform the same task flawlessly millions of times, whereas human performance is limited by certain constraints, such as fatigue and the need for rest, making the likelihood of error much higher in comparison to AI software.

Additionally AI facilitates data-driven design processes, offering more effective and user-friendly solutions in areas such as UX and UI design. These technologies automatically generate personalized designs based on user behavior enhancing the overall user experience (Davenport & Kirby, 2016). When examining the pros and cons of AI technologies, it is evident that their contributions to visual communication design are extensive. On the one hand, AI accelerates design processes, enabling higher-quality outcomes at lower costs. On the other hand, there is a risk that traditional design skills may be undervalued.

The adaptation of students and professional designers to these technologies involves both advantages and disadvantages. A positive aspect is that the automated functions provided by AI allow designers to save time and focus on more creative projects (McCosker, 2020). Moreover, it is observed that AI tools enhance creativity and enable designers to push their creative boundaries. In particular, the various options provided by algorithms allow designers to produce creative solutions they had not previously considered (Elgammal et al., 2017).

On the other hand, the negative aspects of AI include concerns about the limitations placed on creativity by algorithms and the diminishing value of human creative processes. Issues such as copyright and originality are also part of this debate. Questions about the ownership of AI-generated designs and whether these works can be regarded as art remain important topics in both academic circles and the art world (Rudman & Stefik, 2019).

According to Karabulut (2021) the production style of a visual design specialist can be digitally reconstructed through the imagery shaped by social symbols and the interaction between designer–distributor–reader/viewer. The rapid development of technology and collaboration with designers today facilitate the emergence of products to which AI contributes within design processes. However, predicting a future in which AI fully takes over the design process, eliminating the role of designers, currently remains a mere speculation. Nevertheless this topic is often discussed among researchers and raises various questions for further exploration.

METHODOLOGY

This research was conducted using a descriptive research approach to determine visual communication design students' attitudes towards AI technologies and their perceptions of their usage. The study was carried out

with students from the Visual Communication Design department at Istanbul Topkapı University's Altunizade Campus. Participation was voluntary, with 107 students serving as participants. The data for this study were collected through a survey evaluating the use and impact of AI technologies. The survey was structured to measure participants' habits of using AI technologies, their access to these technologies, and their attitudes toward aspects such as usefulness and ease of use.

The survey used in the research is based on quantitative data collection through percentage and frequency analysis. The survey data were analyzed based on demographic characteristics such as gender and class, and students' overall attitudes towards AI technologies were statistically evaluated. The participants included students from different class levels studying visual communication and design. The analysis of the data aimed to identify the general tendencies of participants toward AI technologies and the factors influencing these tendencies.

This method provides a general framework for students' use of AI technologies and presents information and findings that will contribute to future educational planning. The findings obtained from the data analysis serve as a guide for both educational institutions and sector professionals who envision a future integrated with AI in art and design.

Research Problem

The integration of artificial intelligence into the field of visual communication design has introduced both opportunities and challenges for students. While AI facilitates creative processes, enhances efficiency, and expands the possibilities for design, it also raises concerns about the decline of manual skills, ethical dilemmas in artistic production, and copyright issues. Despite its growing prevalence, there is limited research on how students perceive these technologies, particularly in terms of their practical applications, benefits, and potential drawbacks. This gap in the literature necessitates an in-depth exploration of students' attitudes toward AI and its impact on their creative and educational experiences. Understanding these perspectives is crucial for developing effective strategies to integrate AI into design education while addressing the concerns surrounding its adoption.

Research Universe and Research Sample

The research universe consists of undergraduate students enrolled in the Visual Communication Design Department at Istanbul Topkapı University. These students represent a diverse group in terms of gender, academic standing, and

experience with artificial intelligence technologies. The selected participants, who voluntarily participated in the survey, provide valuable insights into the perceptions and usage habits of future professionals in the design field. The study focuses on students' engagement with AI technologies, their opinions on their usefulness, and their impact on the creative process. By examining this specific group, the research aims to shed light on the broader implications of AI integration in design education and its potential to shape the skills and competencies of emerging designers.

The characteristics of the research universe in this study are aligned with the Visual Communication Design Department at Istanbul Topkapı University. This limitation corresponds to specific dimensions of the research universe that can be discussed as follows:

First, there is a scope limitation. By focusing on a single department within one university, the study encounters a distinctive academic and institutional context. While this limitation may exclude the attitudes and experiences of students from other institutions or disciplines—who might have differing perspectives—it enables a detailed and context-specific analysis of the integration of AI technologies into design education.

Second, there is homogeneity among participants. The selected sample represents a relatively uniform group in terms of academic discipline and curricular exposure. This homogeneity ensures consistency in participants' educational background, which enhances the internal validity of the findings. However, it restricts the diversity of viewpoints that might arise from a broader, more varied sample.

Third, practical feasibility is achieved by limiting the sample to a single department. This choice likely reflects practical considerations such as accessibility to participants and available resources. While this enhances the feasibility of data collection and analysis, it also narrows the scope of the study, potentially excluding significant differences in attitudes toward AI technologies that might exist across other disciplines or universities.

Finally, the sample aligns well with the study's purpose of exploring the role of AI technologies in visual communication design education. Students actively engaged in this field provide insights directly relevant to the research objectives, which include understanding the specific challenges and opportunities of integrating AI into design education. This targeted approach strengthens the contribution of the study by offering a focused analysis of the topic. Limiting the research universe to a single department prioritizes depth over breadth, allowing for a detailed understanding of the subject while acknowledging the reduced generalizability of the findings.

Significance of the Research

AI technologies are rapidly developing in today's digital world, leading to significant changes across multiple sectors. Particularly in the fields of visual communication and design, AI is transforming creative processes and reshaping the ways in which art is produced and presented. The automated solutions offered by AI accelerate the creative process and make it more accessible. However, these technologies also raise ethical and professional debates that question the value of traditional creative processes and manual skills.

The significance of this study lies in its potential to provide a roadmap for integrating AI technologies into educational curricula and teaching strategies by revealing the perspectives of students—who are the future professionals in visual communication design—on these technologies. The perceptions of students studying art and design toward AI technologies are critical for understanding the role these technologies will play in their professions and how they should adapt to these roles. Additionally, understanding the positive and negative effects of AI on creative processes from the perspective of students can contribute to the development of sustainable strategies at both academic and sectoral levels.

Purpose of the Research

The primary purpose of this research is to examine how AI technologies are perceived in the field of visual communication and design, as well as to explore students' attitudes and usage habits regarding these technologies. The study aims to evaluate students' views on the impact of AI technologies on art and design and to assess their potential outcomes for creative processes and professional skills.

The research analyzes how students use AI, the ease of access and usability of these technologies, and their impact on educational processes. Furthermore, students' perceptions of the influence of AI technologies on artistic production, their views on the role of AI in art creation, and copyright issues are among the focal points of this research. Accordingly, the study aims to provide suggestions on how AI can be more effectively utilized in art and design education.

Research Findings

This section presents the findings related to the data obtained from the survey in the research. Figure 10 includes demographic characteristics, while Figure 11 displays the research questions and the percentage frequency rates of the students' responses to these questions.

Variable	Group	n	%
Gender	1. Female	66	61.68
	2. Male	41	38.32
Class	1st Year	32	29.91
	2nd Year	31	28.97
	3rd Year	25	23.36
	4th Year	19	17.76

Figure 10. *Demographic characteristics of participants by gender and class*

When examining the gender distribution of the participants, it is observed that 61.68% (n=66) are female, and 38.32% (n=41) are male. This distribution indicates that the majority of the students participating in the study are female. When analyzing the distribution by class level, it is seen that most participants are 1st-year students (29.91%, n=32), followed by 2nd-year (28.97%, n=31), 3rd-year (23.36%, n=25), and 4th-year (17.76%, n=19) students. These data suggest that the survey is mainly concentrated on lower classes, with relatively low participation from upper-class students.

Survey Questions	Agree		Neutral		Disagree	
	n	%	n	%	n	%
I keep up-to-date with AI technologies.	71	66,36	30	28,04	6	5,61
I frequently use AI technologies in my designs/assignments/ works.	73	68,22	27	25,23	7	6,54
I find AI technologies useful.	87	81,31	18	16,82	2	1,87
I like the designs created by AI.	74	69,16	27	25,23	6	5,61
I find the interface and use of AI technologies complex.	47	43,93	29	27,10	31	28,97
I can easily access AI technologies financially.	66	61,68	28	26,17	13	12,15
I can easily use AI technologies.	81	75,70	25	23,36	1	,93
I think AI contributes positively to art and design.	79	73,83	19	17,76	9	8,41
I think AI makes designers' work easier.	89	83,18	12	11,21	6	5,61
I think AI hinders individuals' ability to use design programs.	66	61,68	27	25,23	14	13,08
I think AI contributes to creativity.	72	67,29	25	23,36	10	9,35
I think AI negatively affects copyright issues.	62	57,94	32	29,91	13	12,15
I consider the designs created by AI as art.	57	53,27	14	13,08	36	33,64
I think AI technologies will have a greater impact on design in the future.	87	81,31	16	14,95	4	3,74
I think AI negatively affects/will affect designers' professions.	64	59,81	29	27,10	14	13,08

Figure 11. *Distribution of survey questions*

A total of 66.36% of the participants (n=71) stated that they closely follow AI technologies. While 28.04% (n=30) were neutral on this matter, only 5.61% (n=6) indicated that they do not keep up-to-date with these technologies. Considering the widespread use of AI technologies in contemporary design practices, these findings suggest that a significant portion of the students are receptive to technological advancements. However, the proportion of those who remain neutral or do not follow these technologies points to potential gaps in access and awareness of AI technologies, indicating a need for further information and education in this area.

A total of 68.22% (n=73) of the participants reported frequently using AI technologies in their designs, assignments, or projects. 25.23% (n=27) were neutral, while only 6.54% (n=7) indicated that they do not actively use these technologies. These findings indicate that a large proportion of students actively use AI technologies in their applications and that these technologies are increasingly integrated into design processes. However, the presence of neutral participants suggests that there may be a lack of knowledge regarding the use of AI technologies or that some challenges exist in accessing these technologies.

A total of 81.31% (n=87) of the participants found AI technologies useful, indicating a generally positive approach toward these technologies among students. Only a small group (1.87%, n=2) stated that they did not find AI useful, suggesting that the functionality and contribution of AI to design processes are generally appreciated. On the other hand, the 16.82% (n=18) who were neutral might develop a more positive attitude toward these technologies with further information and practical experience.

Among the respondents, 43.93% (n=47) found the interface and use of AI technologies complex. This finding suggests that AI technologies should be developed with user-friendly and practical interfaces. In terms of financial access, while 61.68% (n=66) held positive views, 12.15% (n=13) of the participants stated that they face financial difficulties in accessing these technologies. These findings highlight the importance of making AI technologies more economically accessible to students.

A total of 73.83% (n=79) of the participants believed that AI has positive contributions to art and design. At the same time, 61.68% (n=66) expressed concerns that while AI makes designers' work easier, it may hinder individuals' ability to use design programs. These findings bring to light the concerns surrounding the potential decline of manual skills, alongside the functional benefits of AI. Furthermore, 57.94% (n=62) of participants believed that AI could have negative effects on copyright issues, reflecting debates about the originality and ownership of AI-generated content.

A total of 53.27% (n=57) of the participants accepted AI-generated designs as artworks. While this finding indicates that new technologies are reshaping traditional concepts of art, the fact that 33.64% (n=36) disagreed demonstrates that traditional notions of art continue to hold significant weight.

Of the participants, 81.31% (n=87) predicted that AI technologies would have a greater impact on the design field in the future. Only 3.74% (n=4) did not share this view, suggesting that AI is expected to play an inevitable role in the future of design, and students in this field should develop the skills to adapt to and use these technologies.

Survey findings indicate that students generally exhibit a positive attitude toward AI technologies, albeit with some concerns and uncertainties. While most students find AI technologies useful, issues related to their impact on creative processes and potential copyright problems may hinder the full acceptance of these technologies. Therefore, educational institutions must increase awareness about AI technologies, address students' concerns, and ensure that these technologies are used effectively in creative processes.

CONCLUSION

This study evaluated the results of a survey conducted to examine students' attitudes, usage habits, and perspectives on the impact of AI technologies on art and design. Overall, it was observed that while students generally exhibit a positive attitude toward AI technologies, there are areas of uncertainty and concern.

The majority of participants actively follow AI technologies and frequently use them in both their design and academic work. The fact that 66.36% of the students reported keeping up-to-date with AI technologies suggests that future designers are largely interested in and adapting to these technologies. Similarly, 81.31% of the students found AI technologies to be useful and stated that they contribute to their creativity. These results demonstrate that AI technologies are becoming increasingly prevalent in educational and professional contexts.

Although there is strong evidence that AI technologies facilitate the design process (83.18%), there are also noteworthy concerns that these technologies may undermine individuals' manual design skills (61.68%). These findings highlight the awareness among students of the need to preserve the importance of traditional skills, despite the functional benefits of technology. A balanced approach to the role of AI in the design process may enable

designers to benefit from the advantages of technology while ensuring that their creative skills are not weakened.

A total of 57.94% of the students believed that AI could have negative effects on copyright issues. This finding highlights the fact that AI technologies bring new legal and ethical challenges to the field of art and design. Students question whether works produced by AI can be considered art, with 53.27% recognizing these works as artworks, while 33.64% disagreed. These data indicate that the artistic value of AI-generated designs is still under debate, with no clear consensus yet reached.

Looking to the future, 81.31% of the participants anticipated that AI technologies would have a greater impact on the design field. This suggests that AI will inevitably play a role in art and design processes, and this process will progress rapidly. Therefore, integrating design education with these technologies can help students become aware of both the technical skills and the ethical and creative processes involved.

In this regard, this study revealed that while students generally exhibit a positive attitude toward AI technologies, they also have certain concerns in specific areas. Educational programs must adopt a balanced approach that allows students to effectively use AI technologies while preserving their creative skills and enhancing ethical awareness. Arrangements made within this scope will prepare future designers to be more equipped and conscious in the age of AI.

This study has revealed the effects of AI technologies on visual communication design students and their attitudes toward these technologies. The findings suggest that students appreciate the contributions of AI to the acceleration and facilitation of design processes and are willing to actively use these technologies. However, the concerns that the use of AI tools may hinder the development of manual design skills and create ethical issues regarding copyright are also noteworthy. These findings, in line with the points raised by McCosker (2020) and Murray (2019), indicate the need for the careful integration of AI into visual communication design and emphasize the importance of structuring education to maintain a balance with these technologies.

Based on the findings of this article, it is recommended that the integration of AI technologies into the creative processes of visual communication design education should be carefully balanced, and a comprehensive curriculum should be established that develops students' technological skills while preserving their manual design skills. To ensure that students make the most of the advantages provided by AI technologies while retaining their creative abilities, educational institutions should offer programs that enhance awareness and application skills related to these technologies.

REFERENCES

Alemdar Çatalbaş, S. (2024). Yapay zekâlı robotlar sanatçının rolüne bürünebilir mi? Yedi: Sanat, Tasarım ve Bilim Dergisi, 31, 29–43. https://doi.org/10.17484/yedi.1171098

Artut, S. (2019). Yapay zekâ olgusunun güncel sanat çalışmalarındaki açılımları. İnsan&İnsan, 6(22), 767–783.

Ballı, Ö. (2020). Yapay zekâ ve sanat uygulamaları üzerine güncel bir değerlendirme. Sanat ve Tasarım Dergisi, 26, 277–306.

Boden, M. A. (2004). The creative mind: Myths and mechanisms. Routledge.

Canan, S., & Acungil, M. (2018). Dijital gelecekte insan kalmak. Nefes Yayıncılık.

Davenport, T., & Kirby, J. (2016). Only humans need apply: Winners and losers in the age of smart machines. Harper Business.

Elgammal, A., Liu, B., Elhoseiny, M., & Mazzone, M. (2017). CAN: Creative adversarial networks generating "art" by learning about styles and deviating from style norms. In Proceedings of the 2017 Conference on Creativity and Cognition (pp. 1–4).

Güney, E., & Yavuz, H. (2020). Yapay zeka ile sanatsal üretim pratiğinde sanatçının rolü ve değişen sanat olgusu. Sanat ve Tasarım Dergisi, 26, 415–439.

Karabulut, B. (2021). Yapay zeka bağlamında yaratıcılık ve görsel tasarımın geleceği. Elektronik Sosyal Bilimler Dergisi, 20(79), 1516–1539. https://doi.org/10.17755/esosder.844536

Karaman, M. (2024). Use of artificial intelligence technologies in visual design. Medeniyet Sanat Dergisi, 10(2), 121–138. https://doi.org/10.46641/medeniyetsanat.1525769

Krizhevsky, A., Sutskever, I., & Hinton, G. E. (2012). ImageNet classification with deep convolutional neural networks. Communications of the ACM, 60(6), 84–90. https://doi.org/10.1145/3065386

McCosker, A. (2020). Artificial creativity: Exploring the role of AI in digital media design. Journal of Visual Communication, 19(2), 150–163. https://doi.org/10.1177/1470357217732044

Murray, R. (2019). AI and creativity: A balancing act. Design Issues, 35(1), 45–57. https://doi.org/10.1162/desi_a_00507

Rudman, J., & Stefik, M. (2019). The ethics of AI in the creative industries. Journal of Business Ethics, 160(2), 415–432.

Say, C. (2018). 50 soruda yapay zeka. Bilim ve Gelecek Kitaplığı.

Soddu, C. (2018). AI organic complexity in generative art. In C. Soddu & E. Colabella (Eds.), XXI. Generative Art Conference (pp. 68–79). Verona.

Yakar, G., & Kınık, M. (2020). Yapay zeka ile üretilen görsel sanatlar eserlerinde fikri mülkiyet. SDÜ Art-e, Güzel Sanatlar Fakültesi Sanat Dergisi, 491.

INTERNET REFERENCES

Atamaner, O. (2024). Yapay zekâ ve sanat: yeni bir yaratıcılık dönemi https://www.tskb.com.tr/blog/genel/yapay-zeka-ve-sanat-yeni-bir-yaraticilik-donemi Access date: 30.11.2024.

İstanbulSanat, (2024). Ouchhh Studio, Ay'a sanat eseri gönderdi https://www.istanbulsanatdergisi.com/ouchhh-studio-aya-sanat-eseri-gonderdi/#:~:text=T%C3%BCrk%20sanat%20st%C3%BCdyosu%20Ouchhh%2C%20dijital,ile%20Ay%20y%C3%BCzeyine%20ini%C5%9F%20yapt%C4%B1. Access date: 30.11.2024.

The Guardian (2024). First artwork painted by humanoid robot to sell at auction fetches $1m https://www.theguardian.com/artanddesign/2024/nov/08/alan-turing-portrait-ai-da-robot-painting-sale-price-auction Access date: 29.11.2024.

Medium, (2024). Computational creativity: the case of The Painting Fool https://medium.com/@griziamauro/computational-creativity-the-case-of-the-painting-fool-9dfe6acf9ec0 Access date: 28.11.2024.

NewScientist, (2012). Painting Fool's portfolio reveals artificial artist https://www.newscientist.com/gallery/painting-fool/ Access date: 28.11.2024.

FIGURE REFERENCES

Figure 1. The Next Rembrandt Project data processing example, 2024. https://vineshgayadin.com/project/the-next-rembrandt Access date: 02.12.2024.

Figure 2. The figure that emerged as part of The Rembrandt Project, 2024. https://vineshgayadin.com/project/the-next-rembrandt Access date: 02.12.2024.

Figure 3. The work "A.I. God: Portrait of Alan Turing 2024", produced by the artist robot Ai-Da, (Haberekspres, 2024). https://www.haberekspres.com.tr/yapay-zeka-robotu-resim-yapti-rekor-fiyata-satilabilir Access date: 03.12.2024.

Figure 4. Ai-Da Robot, in front of their portraits of Turing, 2024. https://www.theguardian.com/artanddesign/2024/nov/08/alan-turing-portrait-ai-da-robot-painting-sale-price-auction Access date: 03.12.2024.

Figure 5. Ouchhh Studio "Human Cell Atlas," exhibition at Art Dubai, (İstanbulSanat, 2024). https://www.istanbulsanatdergisi.com/ouchhh-studio-aya-sanat-eseri-gonderdi/#:~:text=T%C3%BCrk%20sanat%20st%C3%BCdyosu%20Ouchhh%2C%20dijital,ile%20Ay%20y%C3%BCzeyine%20ini%C5%9F%20yapt%C4%B1. Access date: 03.12.2024.

Figure 6. The Painting Fool, Emotionally Aware Portraiture, (Medium, 2024). https://medium.com/@griziamauro/computational-creativity-the-case-of-the-painting-fool-9dfe6acf9ec0 Access date: 02.12.2024.

Figure 7. The Painting Fool, Uneasy, (NewScientist, 2012). https://www.newscientist.com/gallery/painting-fool/ Access date: 02.12.2024.

Figure 8. Harold Cohen, AARON KCAT, 2001. Whitney Museum of American Art, New York (ArtNewspaper, 2024). https://www.artnewspaper.com.tr/2024/02/29/harold-cohenin-yapay-zekayla-uretilen-isleri-jeneratif-sanati-tekrar-gundeme-tasiyor Access date: 04.12.2024.

Figure 9. Harold Cohen: AARON, Whitney Museum of American Art, New York. Untitled, 1982 (ArtNewspaper, 2024). https://www.artnewspaper.com.tr/2024/02/29/harold-cohenin-yapay-zekayla-uretilen-isleri-jeneratif-sanati-tekrar-gundeme-tasiyor Access date: 04.12.2024.

Figure 10. Demographic characteristics of participants by gender and class

Figure 11. Distribution of survey questions