

THE ROLE OF ILLUSTRATION IN DIGITAL GAME DESIGNS

Dijital Oyun Tasarımlarında İllüstrasyonun Rolü

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Article Information	Abstract
<i>Research Article</i>	This study aims to thoroughly examine the relationship between digital game design and illustration by analysing the artistic, design, and narrative dimensions of illustrations through popular 2D and 3D digital games. In this context, Minecraft, Fortnite, Animal Crossing: New Horizons, Super Mario Odyssey, Hollow Knight, Cuphead, Gris, Hades, and Undertale were selected as prominent examples representing 2D and 3D illustration styles due to their popularity and artistic designs. The research employs a descriptive analysis method to evaluate the color schemes, character designs, environmental details, and general stylistic features of game illustrations, exploring their artistic impacts on the gaming world. The selected games span various genres, and their visual, artistic, and technical contributions were analysed in detail. This study emphasizes that illustrations play a critical role in digital game design by enhancing aesthetics, storytelling, user experience, and character depth. The findings reveal that illustrations are not merely visual elements but serve as fundamental tools in game design processes, fostering interaction with players, enriching the gaming experience, and creating an emotional connection to the game world.
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Makale Bilgisi	Özet
<i>Araştırma Makalesi</i>	Bu çalışma popüler 2D ve 3D dijital oyunlar aracılığıyla illüstrasyonların sanatsal, tasarım ve anlatım boyutlarını analiz ederek dijital oyun tasarımı ile illüstrasyon arasındaki ilişkiyi derinlemesine incelemeyi amaçlamaktadır. Bu çerçevede, Minecraft, Fortnite, Animal Crossing: New Horizons, Super Mario Odyssey, Hollow Knight, Cuphead, Gris, Hades ve Undertale gibi oyunlar, popülerlikleri ve sanatsal tasarımları göz önünde bulundurularak 2D ve 3D illüstrasyon tarzlarını temsil eden seçkin örnekler olarak belirlenmiştir. Araştırma oyun illüstrasyonlarının renk şemalarını, karakter tasarımlarını, çevresel detaylarını ve genel üslup özelliklerini incelemek amacıyla tanımlayıcı bir analiz yöntemini kullanmış, bu unsurların oyun dünyası üzerindeki sanatsal etkilerini keşfetmeye yönelik bir yaklaşım benimsemiştir. Seçilen oyunlar farklı türlerdeki görsel, sanatsal ve teknik katkıları bakımından detaylı bir şekilde analiz edilmiştir. Çalışmanın bu yönü illüstrasyonların estetik değerinin, hikaye anlatımını, kullanıcı deneyimini ve karakter derinliğini geliştirerek dijital oyun tasarımında kritik bir rol oynadığını vurgulamaktadır. Araştırma bulguları illüstrasyonların yalnızca görsel unsurlar olmaktan öte, oyun tasarım süreçlerinde temel araçlar olarak işlev gördüğünü, oyuncularla etkileşimi teşvik ettiğini, oyun deneyimini zenginleştirdiğini ve oyun dünyasıyla duygusal bağ kurduğunu ortaya koymaktadır.
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INTRODUCTION

Games are activities performed by individuals within specific rules for purposes such as entertainment, learning, or socialization. In Johan Huizinga's work *Homo Ludens*, games are defined as "a human activity freely engaged in, based on rules, and carrying an intrinsic purpose" (Huizinga, 1938). With these characteristics, games nurture human creativity and imagination. Throughout history, games have persisted as a cultural expression and a means of entertainment. With the rapid advancement of technology, games have transitioned to digital platforms, giving rise to the concept of "digital games." Digital games are interactive games played on digital environments such as computers, consoles, and mobile devices. Salen and Zimmerman (2004) describe digital games as "rule-based, interactive games that often offer visually rich experiences in a technological environment."

Digital game design is the creative process that integrates the mechanics, aesthetics, and user experience elements of these games. This process involves both technical and artistic approaches and plays a critical role in shaping the gaming experience. According to Crawford (1997), game design is primarily an artistic process but also incorporates a technical dimension. A game designer must simultaneously meet the demands of both the artistic and technical domains. Even while working within the constraints of code and technical details, they must continue to pursue their artistic objectives. Visual elements in game design are crucial for engaging players and facilitating interaction. In recent years, with the advancements in augmented reality (AR) and virtual reality (VR) technologies, game worlds have become more immersive. Consequently, the significance of visual design and illustration in the digital game design process has grown.

Illustration is an artistic form of expression that combines lines, colors, and design to visualize a thought or narrative. Merriam-Webster (2023) defines illustration as "artistic depictions created to visually explain or embellish a narrative or concept." In digital game design, illustration forms the foundation of the visual world. Illustrations are particularly vital in areas such as character design, world-building, and storytelling, enhancing the aesthetic value of games and strengthening the bond between players and the game. Illustration defines the visual atmosphere of a game, serving as a critical tool to make the player's experience meaningful and memorable. With the widespread use of technology, digital games have been equipped with more complex and detailed illustrations, enabling more immersive and compelling visual experiences in game worlds. Illustration is not merely a visual ornament but a component that supports the theme and emotional dimension of the game.

In digital game design, illustration shapes the overall visual theme and atmosphere of the game. From character designs to environmental elements, user interfaces, and in-game storytelling, illustrations provide players with a rich visual experience. By defining the artistic identity of games, illustrations strengthen players' emotional connection to the game. For example, the minimalist drawing styles used in 2D platform games offer a nostalgic atmosphere, while detailed and realistic illustrations in 3D open-world games provide a more immersive experience. Advances in technology have also transformed illustration techniques. Tools such as graphic tablets, digital painting software, and 3D modelling programs enable artists to express their creativity more freely. Additionally, innovations in game engines and graphic processors have facilitated the integration of illustrations into game worlds, offering game designers and illustrators opportunities to

create more realistic and impactful visual experiences.

This study examines the basic characteristics and design processes of digital games, focusing on the intersection of digital game design and illustration to reveal the significance and areas where these two disciplines converge. The first section of the study explores the definition and design processes of digital games. The second section examines the concept of illustration, its history, and its transformation through digitalization. The third section provides a descriptive analysis of illustrations used in popular digital games, focusing on aspects such as color, line, and character design. This approach highlights the artistic and functional dimensions of illustration and its role in game design.

Objective and Importance of the Study Digital games hold a significant place in both entertainment and cultural production as they reflect the visual and interactive experiences enabled by contemporary technology. The primary objective of this study is to analyse the role of illustration in digital game design from an artistic and aesthetic perspective, using examples from popular 2D and 3D games. Specifically, the study aims to describe the impact of illustrations—focusing on elements such as color, line, character design, and overall visual style—on storytelling, atmosphere creation, and user experience in digital games.

The evolution of digital games in terms of visual design has increased the central role of illustration in the gaming experience. In this context, the study emphasizes that illustration enhances the aesthetic value of games and strengthens the interaction between the player and the game. Additionally, by examining the interdisciplinary intersection of digital game design and illustration, the study aims to provide a broader perspective on design processes in these fields.

The games analysed in this study were selected using a purposive random sampling method in line with the qualitative research approach. According to Baltacı (2018), the purpose of purposive random sampling is to enhance credibility by reducing doubts about why certain cases were selected for the study. However, such research does not possess statistical representativeness. During the selection process, care was taken to include games that represented different illustration styles, artistic diversity, and technological infrastructures. The criteria for digital games selected within the scope of the research generally take into account the elements of diversity, popularity and representation of different display styles and are based on the elements of usual formats among the most performed games. The games were chosen to determine the representational role of movement in game design because they were analysed for popular games with a large player base and because they had different visual behaviours such as minimalist, stylized, watercolor, gothic, and cartoon.

The games analysed in this study consist of examples representing different illustration styles, artistic diversity and technological infrastructures. In the selection process, purposeful random sampling technique was used to provide diversity in terms of different genres and visual approaches. The games selected with this method were determined to cover a wide range in order to understand the effect of visual design on the gaming experience. In this context, different games were evaluated, from minimalist designs (e.g. Minecraft) to detailed and stylized visuals (e.g. Gris, Hades). This approach allows the results of the study to be interpreted in a broader context. Purposeful random sampling is the classification of systematically and randomly selected case examples in a purposeful way in line with the purpose of the research (Marshall & Rossman, 2014).

This research serves as a guide for academics, artists, and developers working in game design, highlighting the importance of the artistic and technical dimensions of illustration in game design. The findings are expected to contribute both theoretically and practically to the visual design processes of digital games. **Methodology** This study employs a descriptive analysis method to examine the visual and artistic characteristics of illustrations in digital games. Descriptive analysis is a research method aimed at revealing the current state of a phenomenon and detailing it from various perspectives. Within the scope of the study, illustrations used in selected popular 2D, and 3D games are analysed within a specific framework.

The research process follows these steps; Games to be analysed are selected from various genres and levels of popularity. The selection criteria prioritize games with prominent visual designs and broad player appeal. Illustrations used in the selected games are examined in detail based on criteria such as color usage, line style, character design, environmental design, and overall visual atmosphere. The findings are categorized to identify commonalities and differences in the visual elements of the games.

The descriptive approach adopted in this research integrates both artistic and technical perspectives in describing visual design elements. Fundamental design concepts such as color theory, principles of composition, and the use of characters and lines are evaluated in relation to the illustrations in games. This method was chosen to clearly articulate the current state and significance of illustrations in digital game design. The study aims to provide a detailed framework regarding the selected games and their illustrations, contributing to the theoretical foundation of this field.

Digital Games and Digital Game Design

Games can be defined as activities individuals engage in within certain rules for entertainment and learning purposes. Throughout human history, games have held a significant place as cultural and social expressions within societies. Games serve not only as a means of entertainment but also as a medium for learning and communication. As Johan Huizinga's *Homo Ludens* states, games are activities conducted with intrinsic motivation, allowing individuals to temporarily escape reality and act freely within a different world (Huizinga, 1938).

According to Özhan (2011), games have become an indispensable form of entertainment in contemporary life. The concept of games encompasses a broad spectrum, from physical activities to games played on computers, consoles, and mobile devices. While the term "computer games" was commonly used in the past to describe electronic games, the term "digital games" has gained wider acceptance since the mid-2000s. Digital game design is the creative and technical process that constitutes the foundation of these games. This process brings together elements such as game mechanics, storytelling, visual design, and user experience.

The digitalization of games began with technological advancements in the late 20th century and gained significant momentum in the 21st century. Digital games immerse players in interactive and visually rich experiences, drawing them into virtual worlds. The development of digital games has had impacts beyond the entertainment industry, influencing areas such as education, healthcare, and cultural communication. For instance, educational games support students' learning processes, while serious games are utilized in fields such as healthcare and military training (Salen & Zimmerman, 2004).

Brisbois (2007) notes that 1972 marked a turning point when digital games transitioned from scientific laboratories to becoming a part of the cultural industry. At that time, arcade game machines brought games to public spaces, and the Magnavox Odyssey console made games accessible at home. According to Yılmaz (2018), the history of games dates to the origins of humanity, encompassing a wide variety of forms, including street games, educational games, and recreational games. Technological advancements have also influenced games and their designs, moving them from physical formats to digital platforms.

Aydingüler (2023) highlights that arcade games, which emerged in the 1970s, represented a significant milestone in the history of computer games. These games, operated by inserting coins or tokens, included popular titles such as Pac-Man, Cadillacs & Dinosaurs, and Street Fighter. In the 1980s, computer games gained further prominence in popular culture, with notable examples such as Space Invaders (1978), Asteroids (1979), Pac-Man (1980), Tetris (1984), and Super Mario Bros (1985) (GüncelHaberMerkezi, 2024).



Figure 1. Pac-Man Game, 2024

Source: (Pinterest, 2024)

Pac-Man is a maze game where the player controls the yellow character Pac-Man. Players are given three lives, and the character can move in four directions: right, left, up, and down. Throughout the maze, there are dot-shaped objects called Pac-Dots, and the player must collect all these objects to complete the level. At the centre of the maze, there is an area called the "ghost house," where four differently colored ghosts named Pinky, Inky, Blinky, and Clyde reside. The game begins when the ghosts exit the house, and their objective is to catch Pac-Man (Aydingüler, 2023).

The player's primary goal is to collect all the Pac-Dots without being caught by the ghosts and progress to the next level. However, if Pac-Man comes into contact with a ghost, he loses one life, and the game continues from where it left off. The main objective of the game is to score as high as possible by collecting Pac-Dots, Power Pellets, and defeating the ghosts. As the levels progress, players encounter different objects such as cherries, strawberries, oranges, apples, watermelons, flags, bells, and keys, which grant extra points (Aydingüler, 2023).

The 1990s marked a period of significant technological innovation for the gaming industry. Initially, games were often designed in 8-bit formats, but by the mid-1990s, they evolved into 16-bit designs. This technical advancement not only improved the graphics and sound quality of games but also allowed game mechanics to become more complex.

Increased processing power enhanced the aesthetic and auditory quality of games, offering players more immersive experiences. Advancements in graphics and sound technologies made game narratives more compelling and strengthened the players' connection to the games.

According to game designer Crawford (1997), game design is primarily an artistic process but also contains a technical aspect. A game designer must operate within both artistic and technical domains during development. Even while dealing with code, they must remain true to their artistic goals. Crawford argues that every art form requires a physical medium for expression, and games are one such medium. Tekinbaş and Zimmerman (2003) state that with the increasing demand for games, new genres with more diverse content emerged during this period. By the late 1980s, role-playing games (RPGs), adventure games, and strategy games had gained popularity.

While games previously targeted younger audiences, their target demographic and scope have significantly expanded in recent years. According to 2023 data from We Are Social, 81.9% of internet users aged 16-64 globally reported playing games on various devices such as computers, consoles, mobile devices, and smartwatches. Today, in addition to gaming experiences via computers or televisions, players can easily download and play games on mobile devices. For example, according to Udonis (2023), the three most downloaded mobile games of all time are Subway Surfers, Candy Crush Saga, and Free Fire. Subway Surfers stood out with 278 million downloads in 2023 alone, surpassing 4 billion total downloads, achieving remarkable success in this field.

Educational games are also believed to positively influence learning. According to Yıldırım (2016), “Game-based environments provide settings where students can engage actively and independently, offering opportunities for learning by doing and experiencing.” Additionally, Yıldırım (2016) states that “Game design programs equip young people and children with transferable skills they can use in all areas of their lives.” These technological advancements made the 1990s-2000s a highly productive decade for the gaming industry. Many foundational graphic and design principles of games still widely played today were established during this period. Particularly, improvements in graphic quality increased the appeal of games and laid the groundwork for the technological infrastructure of modern gaming. Conversely, as Dikmen (2019) notes, developing new games is a costly process, and the success of these games is often uncertain. In response, game companies aim to reach broader audiences by producing sequels or new versions of successful games. The appeal of visuals and graphics, the story, and the immersive nature of the game are considered crucial factors. Innovations during this period, especially advancements in image quality and color depth, provided players with more engaging visual experiences. From the mid-1990s onwards, developments in data processing technologies brought about significant transformations in game design, paving the way for the transition from 2D graphics to 3D graphics. This transition was a turning point, particularly in the FPS (First Person Shooter) genre, where players felt like an integral part of the game. The depth and realism offered by 3D graphics became key elements that immersed players in game worlds. Today, advancements in artificial intelligence technologies and digital art have led to the development of games featuring 3D illustrations and animations.

Game Engines as Tools for Digital Game Design

Game engines are fundamental software used in the development of digital games, combining elements such as graphics processing, physics simulation, sound editing, and

game mechanics. These tools enable game designers and developers to create projects more quickly and efficiently. With their user-friendly interfaces and extensible structures, game engines have become an indispensable part of the game development process (Johnson and Carter, 2020).

Globally, numerous game engines are in use, with prominent ones including Unreal Engine, Unity, Godot Engine, and CryEngine. According to Dursun (2024), significant advancements in game engines and graphic processing hardware during this period fundamentally transformed the gaming industry. Unity, released in 2005, and Unreal Engine 3 (UE3), introduced in 2006, remain central to game development processes today. Both engines not only deliver high-quality graphics and impressive visual effects but also provide detailed features such as lighting, motion, shading, reflection, and refraction, enabling realistic visual and auditory experiences in game worlds. Johnson and Carter (2020) identify Unity and Unreal Engine as the most widely used game engines in the industry. Unity is preferred for mobile games and independent projects, while Unreal Engine is a leader in large-budget game projects requiring high-quality graphics. The release of Unreal Engine 5 has further increased its adoption. Meanwhile, the open-source Godot Engine has gained popularity among independent developers.

The general trend in the industry is that the choice of game engine depends on the type and budget of the project. While Unity is preferred for mobile platforms, Unreal Engine is more commonly used for AAA projects. The comprehensive features and user support provided by both engines ensure their continued dominance in the gaming industry.

In recent years, AI-integrated features in game engines have played a crucial role in enhancing gaming experiences. These elements are processed by AI engines, making games more dynamic and personalized. The ability of games to offer a realistic experience is directly related not only to the effectiveness of graphics and physics engines but also to the efficient use of AI components. Many platforms today offer AI support, enabling games to adapt to players' preferences and expectations. This development is considered revolutionary for the gaming industry. With the rise of augmented reality (AR) and virtual reality (VR) platforms, it is anticipated that user experiences will become even more immersive with the support of AI.



Figure 2. Unreal Engine User Interface Screenshot, 2024
Source: (Unreal Engine, 2024)

Unreal Engine, developed by Epic Games, is a powerful game engine used in fields such as gaming, simulation, and animation. First released in 1998, Unreal Engine is particularly renowned for its high-quality graphics and realistic physics engine (Epic Games, 2023). The detailed lighting, shading, particle systems, and dynamic environmental effects provided by Unreal Engine have made it a leading tool in the world of game and multimedia development (Smith, 2021).



Figure 3. Unreal Engine User Interface Screenshot, 2024
Source: (Unreal Engine, 2024)

Designed especially for 3D games and realistic simulations, Unreal Engine's advanced graphics engine is also widely utilized in the film industry, architecture, education, and virtual reality (VR) projects. The next-generation technologies introduced with Unreal Engine 5, including Nanite micro-polygon geometry and the Lumen dynamic lighting system, enable the creation of more realistic and detailed visuals (Epic Games, 2023).

Another significant feature of Unreal Engine is its cross-platform support. A game or project developed using Unreal Engine can run on a variety of platforms, including Windows, macOS, Linux, Android, iOS, game consoles, and VR devices. Additionally, Unreal Engine's structure is suitable for a wide range of projects, from large-scale multiplayer games to independent productions. Unreal Marketplace further accelerates game development by offering developers various tools, models, and pre-made content (Parker, 2022).

According to Tavus (2023), Unreal Engine offers numerous advantages during game development processes. Its robust infrastructure is particularly suitable for creating complex game designs, making it a critical tool for developing VR and AR games. With its rich library of graphics, sound, and animation resources, it provides users with a wide range of creative possibilities. Furthermore, its "Blueprint" visual scripting system allows developers to create game mechanics without writing code, significantly speeding up the development process. Its user-friendly interface also enables basic and intermediate designers to create three-dimensional designs, making Unreal Engine a standout tool for game design and multimedia projects.



Figure 4. Unity User Interface Screenshot, 2024

Source: (MasteryCoding, 2021)

Unity is a globally popular game engine used in game development. First launched in 2005, Unity is platform-independent, enabling developers to create games for a wide range of platforms, including mobile devices, computers, game consoles, AR, and VR devices (Unity, 2023). One of Unity's greatest advantages is its user-friendly interface and extensive plugin support, making it attractive to both professional developers and beginners. Its event-driven programming system allows developers to create interactive and dynamic mechanics in games. Additionally, Unity's visual editing tools and powerful graphics engine enable users to develop both 2D and 3D games (Resnick and Silverman, 2019).

According to Dursun (2024), Unity's event-driven programming system allows developers to create dynamic, cause-and-effect-based behaviours for various scenarios. This system triggers methods associated with specific events, such as the collision of a ball with a racket or the destruction of an object.

Unity's multi-platform support facilitates the seamless deployment of games across different devices and operating systems. For example, a game developed once in Unity can be effortlessly published on Android, iOS, Windows, and macOS platforms. Additionally, the Unity Asset Store provides developers with ready-to-use graphics, sound effects, and scripts, expediting the game development process (Anderson, 2021).

With features such as an advanced physics engine, lighting effects, and AI integration, Unity makes game development more flexible, and user focused. Beyond the gaming industry, Unity is also used in fields such as animation, educational simulations, engineering, and medicine, showcasing its versatility and effectiveness (Unity, 2023).

For instance, in Unity, dynamically creating or removing objects based on player interactions or in-game events is a common practice. Examples include adding enemies to a scene in response to player actions, generating bullets when weapons are fired, or removing objects after an enemy is defeated. This approach allows for a more dynamic and interactive gaming experience (Dursun, 2024).

Godot Engine is an open-source and free game engine, particularly suitable for independent developers. Offering the capability to develop 2D and 3D games, Godot provides a user-friendly interface and a flexible programming environment (Anderson, 2021). CryEngine developed by Crytek, is a game engine known for its high-quality graphics and detailed environmental designs. It excels in open-world games and is

distinguished by its realistic physics engine (Smith, 2021).

Game engines such as Unreal Engine and Unity provide the technological infrastructure that makes it possible to visualize the illustration and apply it in the game. Unreal Engine's Lumen lighting system and Nanite micro-polygon technology support environmental elements and color vibrancy in games like Fortnite. In this way, the detail level of the illustration is increased, and realistic experience is provided to the player. Unity's user-focused tools and dynamic physics engine make stylized illustrations like Hollow Knight compatible with the game's mechanics. For example, the gothic atmosphere in Hollow Knight is strengthened with Unity's lighting features.

Game engines can be used not only for realistic designs, but also for stylized and artistic game designs. Games like Hollow Knight and Gris create unique aesthetics thanks to the flexible tools of their game engines. For example, Gris's watercolor style design was supported by Unity's visual editing tools. The comic-book aesthetic visuals, in line with the mythological story of Hades, were brought to life with the powerful 2D animation tools of Unreal Engine.

Illustration

Illustration is an artistic tool that visually expresses an idea, story, or theme. Created through the combination of drawing, color, and composition elements, illustration bridges aesthetics and functionality in design processes. Historically used in books, newspapers, magazines, and advertisements, illustration has found a broader application range with digitalization. Digital illustrations, produced using graphic tablets and digital design software, have become prominent in industries such as gaming, film, and animation.

In the gaming world, illustration goes beyond being a visual component and serves as a medium to convey the game's story and theme. For example, *The Legend of Zelda: Breath of the Wild* showcases impressive use of illustration in both character and environment design, offering players an unforgettable experience. Similarly, 2D games like *Hollow Knight* use line and color to create a strong emotional atmosphere. Within this context, illustration is undoubtedly a fundamental part of game worlds.

Environmental details such as trees, background elements and buildings that determine the atmosphere in the game world are within the scope of environmental illustration. For example, the watercolor-style backgrounds in *Gris* provide emotional depth to the player. In games such as *Cuphead*, the cartoon aesthetic of the 1930s was supported by hand-drawn animations. This is made possible with Unreal Engine's animation tools.

There are various types of illustrations, and this research discusses those relevant to the topic. For instance, pixel (raster)-based illustrations, commonly encountered in digital games, are representations of photographic images in digital environments that take the form of raster images. According to Dursun (2013), a pixel-based image refers to a visual document. A raster-based visual consists of pixels, with each pixel storing a unique grayscale value or color. This type of image is referred to as a pixel, raster, or bitmap image.

Color

Color is a visual property perceived as a result of light reflecting off objects. In illustration, color is a fundamental component of storytelling and visual communication.

It establishes visual hierarchy among design elements and directs the viewer's attention. Berger (1972) emphasizes that colors are not merely aesthetic elements but powerful tools that influence the viewer's emotional and cognitive perceptions. According to Zeegen (2012), color enhances the emotional impact, strengthens the message, and determines the visual appeal of an illustration. Karaman (2022) suggests that colors carry meanings and inherent contrasts. For example, blue evokes calmness and coolness, while red conveys intense emotions such as power, appetite, and danger. Green, on the other hand, is associated with nature, peace, and healing. Proper use of colors in design is crucial for conveying these meanings and emotions. Lathwell et al. (2012) state that color stands out in all areas of art for its ability to create atmosphere and evoke emotions. Its potential to capture attention, consciously or unconsciously, enhances the impact of a design.

Karaman (2022) argues that in modern digital game designs, colors should be chosen in alignment with the game's theme and target audience, enhancing the game's appeal and recognizability. Colors can effectively convey emotions, thoughts, and feelings to the target audience as a design element. The correct selection of the color palette in digital games plays a critical role in fostering players' engagement, creating an emotional connection with the content, and making them feel like part of the game.

In digital game designs, color is an important tool for conveying the emotions intended to be felt by players. Analysis of game design visuals shows that appropriate color choices successfully reflect the desired feeling. Thus, color emerges as a crucial design element, as important as characters, environments, and sound effects. The game design process should be considered holistically, with all design elements, particularly color usage, meticulously planned within this context (Karaman, 2022).

Character Design

Character design is a fundamental aspect of digital games, both visually and narratively. Characters enable players to connect with the game world and make emotional investments in the game. Additionally, the design of characters directly influences the atmosphere, thematic structure, and storyline of the game. According to Topbasan (2013), characters in digital games are virtual entities designed with unique personalities and backstories, often featuring interactive elements that engage players with the virtual environment. These characters' visual and personal traits are crafted to facilitate identification and foster an emotional bond between the player and the game.

Well-designed characters are embraced by players from a visual perception perspective and play a vital role in defining the target audience of the game. Uysal (2005) emphasizes that conceptual character design is one of the core elements of computer games. Characters that help players connect with the storyline and provide emotional depth are central to the gaming experience. The visual design of these characters, shaped by the narrative, is of great importance in supporting the player's identification process and enhancing their overall engagement with the game.

Environmental Design

In Communication and Graphic Design, Emre Becer explores the multidimensional role of illustration in graphic design and communication. Becer (2009) emphasizes that environmental design is a crucial aspect of illustration. Environmental illustrations are used to define the atmosphere of spaces and create an emotional impact on the audience. Design elements are typically tailored to the function, context, and target audience of the space "Spaces become more meaningful through the artistic and

functional power of illustration. Visual harmony with the environment shapes the intended perception in the audience” (Becer, 2009). Illustrations ensure visual cohesion by tying together different design elements, such as characters, environments, and interfaces. This holistic approach strengthens the narrative and enhances user experience by providing a seamless visual identity. In *Super Mario Odyssey*, the vibrant character designs, environments, and animations are harmoniously integrated to support the game’s adventurous narrative.

Narrative Illustration

One of the most powerful aspects of illustration is its ability to convey stories visually. Becer (2009) highlights that directly communicating a narrative through visuals is highly effective in establishing an emotional connection with the audience. This method is frequently utilized in book covers, animations, and digital games. “A visual can convey a story more quickly and memorably than written expressions. The power of illustration in storytelling increases when supported by metaphors and symbols” (Becer, 2009). Illustration serves as a medium to represent cultural, historical, or thematic contexts, enabling audiences to connect with the design on a deeper level. By incorporating culturally significant motifs or styles, illustrations can communicate identity and heritage effectively. *Cuphead* utilizes the animation style of 1930s cartoons to evoke nostalgia and ground its narrative in a specific historical aesthetic.

METHOD

This research has been conducted using a descriptive analysis method within the framework of the literature review. Descriptive analysis has been chosen to understand and clarify the artistic, design, and narrative dimensions of game illustrations. This method allows for a detailed examination of the illustration features of selected popular 2D and 3D digital games. During the research process, visual elements, character designs, color schemes, environmental details, and general stylistic features have been analysed through examples such as *Minecraft*, *Fortnite*, *Animal Crossing: New Horizons*, *Super Mario Odyssey*, *Hollow Knight*, *Cuphead*, *Gris*, *Hades*, and *Undertale*.

FINDINGS

The games analysed in this study were selected based on their popularity and prominence in the realm of illustrations. Attention was paid to include a diverse range of games in addition to their widespread playability. The illustrations in the analysed digital games were examined in terms of style, color, and character design.

Unreal Engine is based on the C++ language and offers developers extensive customization capabilities. Additionally, with its "Blueprint" visual programming system, even users without coding knowledge can develop projects. This feature makes Unreal Engine an accessible platform for both professionals and amateur developers (Johnson and Carter, 2020).



Figure 5. Minecraft, 2024

Source: (Minecraft, 2024)

Despite its simple block-based graphics, Minecraft allows players to create their own illustrations and artistic structures. It has a vast global player base and is particularly popular among children. According to Karaman (2023), Minecraft is also highly popular within the Metaverse and resembles a sandbox-style open-world game. This game offers players the opportunity to create their own virtual worlds, positioning itself as a platform that fosters user creativity. Karaman (2023) also predicts that in the future, a virtual environment could emerge where users of Minecraft, Fortnite, and Roblox can interact through a multi-platform system.

In this context the Minecraft illustration in Figure 5, analysed in terms of illustration style, color, and character design, demonstrates a simple yet effective visual style. The block-based design makes it easier for users to explore their creativity, elevating the game's aesthetic perception to a nostalgic and retro level. Minecraft's three-dimensional design approach is entirely block-based. Its environmental elements, particularly natural features such as trees, flowers, and background details, offer a simple, comprehensible, and functional structure. Minecraft characters, aligned with the game's world, are minimalist and blocky in design. For instance, characters like "Steve" and "Alex" are designed with simple rectangular prism shapes and prominent geometric lines. Minecraft's color palette stands out with vibrant colors and pastel tones. Natural elements are represented by bright greens, blue skies, and earthy tones.

Art Style and Illustration Features: The minimalist and block-based design provides players with the freedom to create open-ended worlds. Minecraft's simple geometric forms and natural color palette allow users to craft their own narratives within the game.

Alignment with Narrative: Rather than focusing on a fixed storyline or scenario, Minecraft emphasizes the player's creativity, supported by its minimalist design. As Zeegen (2012) notes, minimalism in illustration "eliminates excess to encourage creative thinking."



Figure 6. Fortnite, 2018

Source: (TheNewEconomy, 2018)

When analysed in terms of illustration style, color, and character design, Fortnite's illustration features a vibrant color palette and cartoonish graphics, making it very popular among children and teenagers. The illustration style of Fortnite, with its unique character and world designs, is dynamic and visually engaging. The game combines cartoon aesthetics with modern graphics to offer a stylized rather than realistic visual appeal. Characters are detailed and vibrant, with each character's outfits, accessories, and expressions reflecting unique stories. The color palette consists of bright and vibrant tones. The blue tones of the sky, greenery in the environment, and vivid colors used for characters create an enjoyable experience for players. The three-dimensional design enables players to interactively construct environmental elements. Fortnite's visual world encourages both creativity and strategic interaction, balancing the level of detail with the game's action-oriented dynamics.

Art Style and Illustration Features: The vibrant color palette and cartoon-like aesthetic present its action-focused structure in an engaging and visually appealing manner. Fortnite's illustration style, combined with dynamic animations, draws players into an active and interactive narrative.

Alignment with Narrative: The fast-paced gameplay dynamics are supported by the vibrant and energetic visuals. This approach exemplifies the "power of colors to visually activate and emotionally connect with the audience" (Berger, 1972).



Figure 7. Animal Crossing: New Horizons, 2024

Source: (Nintendo, 2024)

Analysed in terms of illustration style, color, and character design, Animal

Crossing: New Horizons is recognized for its colorful and charming illustrations that allow users to personalize their islands and express creativity. This makes it an ideal gaming experience for both children and adults. The illustration style of Animal Crossing: New Horizons is shaped by a simple and cute aesthetic approach. The characters' style, characterized by rounded shapes and minimal details, provides a friendly and warm visual language, particularly appealing to children and younger players. Facial expressions and movements of the characters foster an emotional connection with the users. The color palette consists of a harmonious blend of pastel and vibrant tones. While greens, blues, and earthy colors representing nature create a calming atmosphere, bright colors in details like balloons and fireworks add a dynamic energy to the game. The game is built on a three-dimensional design. Locations, characters, and interactive elements are detailed through three-dimensional modelling techniques. The use of small, simple geometric shapes in environmental details creates a comfortable and familiar world for players. The sincere and unique illustrations give the game world a strong aesthetic and emotional appeal.

Art Style and Illustration Features: Animal Crossing New Horizons adopts a charming and minimalist art style characterized by pastel colors and soft, rounded designs. The simplicity of the illustrations creates a welcoming and serene environment that appeals to players of all ages.

Alignment with Narrative: The art style aligns perfectly with the game's theme of personal creativity and community building. The soothing visuals foster a relaxing atmosphere, encouraging players to engage in leisurely activities and immerse themselves in the game's tranquil world.



Figure 8. Super Mario Odyssey, 2024

Source: (Vice, 2024)

Super Mario Odyssey, analysed in terms of illustration style, color, and character design, is a globally popular Mario game adorned with colorful and fun illustrations. It has become a significant hit among children and young players. The game's three-dimensional design and vibrant illustration style offer an energetic atmosphere. While the character designs retain iconic and recognizable elements unique to the Mario universe, they also include innovative touches that bring a modern visual appeal. For example, characters like Mario and Peach exhibit a cute aesthetic with rounded shapes and smooth color transitions.

The color palette predominantly features warm tones like red, blue, yellow, and green, adapted cohesively to various thematic levels, such as desert, city, or tropical settings. Each thematic world is supported by a corresponding color palette. The visuals are enriched with detailed textures and 3D modelling techniques. Super Mario Odyssey offers players not just a game but a visually impressive and exploratory experience. The fluid and detailed illustrations support the storytelling while playing a key role in

immersing the player in this fantastical world.

Art Style and Illustration Features: Super Mario Odyssey features a vibrant and energetic illustration style supported by high-resolution character models and dynamic animations. The use of bold, primary colors and varied environmental themes brings the game's adventurous spirit to life.

Alignment with Narrative: The lively art style matches the game's upbeat and exploratory narrative. Each level's distinct visual theme enhances the sense of discovery, while the iconic character designs maintain a strong connection to the Mario franchise's legacy.



Figure 9. Hollow Knight, 2023
Source: (EuroGamer, 2023)



Figure 10. Hollow Knight, 2018
Source: (GamingBold, 2018)

Hollow Knight stands out with its hand-drawn cartoon style graphics and dark gothic aesthetic. Its detailed character and environmental illustrations captivate players. The illustration style of Hollow Knight reflects a dark and gothic aesthetic, offering a distinctive visual identity. The game has a two-dimensional design enriched with detailed drawings. The illustration style predominantly features black, blue, and grey tones, contributing to the game's melancholic atmosphere. Minimal use of vibrant colors directs the player's attention to the characters and environmental details.

The character designs are highly minimalistic yet visually impactful. The main character, for instance, is designed with simplicity yet is striking, featuring rounded shapes and a prominent black-and-white contrast. Other characters and creatures are also stylized to align with the dark and mysterious atmosphere of the game. Environmental illustrations include intricate details that add depth and complexity to the settings. Hollow Knight's illustration style strengthens the thematic structure and narrative of the game, providing players with both a visual feast and a sense of discovery while establishing an emotional connection with the dark atmosphere.

Art Style and Illustration Features: The black-and-white contrast and gothic aesthetic are seamlessly integrated with a dark narrative. Detailed environmental designs further enhance the game's themes of exploration and mystery.

Alignment with Narrative: The sombre tone of the story aligns with the minimalist yet emotionally intense illustrations, creating a cohesive and immersive experience for the player.



Figure 11. Cuphead, 2024

Source: (Amazon, 2024)

Cuphead's illustration style offers a unique retro aesthetic inspired by 1930s classic American cartoons. The game has a two-dimensional design and is notable for its hand-drawn animation frames. Its illustration style emphasizes rounded shapes, exaggerated expressions, and dynamic lines. These features provide a nostalgic experience while supporting the game's overall theme. The color palette mainly consists of warm and pastel tones, with vibrant colors like red, yellow, and blue being dominant. Softer and more natural tones are preferred in the backgrounds, ensuring the characters and action scenes stand out more. The character designs are cute yet chaotic, inspired by anthropomorphic animals and objects commonly seen in cartoons of that era. Combined with the cartoon aesthetic, these designs give the game a fun and dynamic atmosphere. Additionally, the environmental illustrations reflect a detailed yet stylized world, enhancing the visual richness of the game.

Art Style and Illustration Features: The game combines the cartoon aesthetic of the 1930s with modern animation techniques. Rounded shapes, exaggerated expressions, and a retro color palette create a nostalgic experience for players.

Alignment with Narrative: Cuphead's playful yet challenging storyline aligns perfectly with its energetic and visually intense illustrations. As Juul (2011) states, "historical illustration styles can be used to recreate the aesthetics of specific eras," a principle that Cuphead exemplifies throughout its design.



Figure 12. Gris, 2024

Source: (Xbox, 2024)

Gris is a visually elegant 2D platform game with an artistic illustration style. The game's overall aesthetic is shaped by soft and fluid watercolor-like drawings. The character designs are minimalist and stylized, prioritizing emotional intensity and elegance over detail. The main character stands out with a simple yet striking design that creates a fragile and emotional atmosphere. The color palette is dominated by pastel tones such as blue, pink, and gray, which enhance the melancholic atmosphere of the game.

Transitions between these colors are smooth and visually appealing. Light and color are used as tools to reinforce emotional storytelling. The backgrounds are abstract and layered, with each scene detailed like a painting, providing players with a serene visual experience.

Art Style and Illustration Features: The soft color transitions of the watercolor style align seamlessly with the game's emotional themes. Pastel tones create a melancholic and introspective atmosphere, reinforcing the game's artistic vision.

Alignment with Narrative: Gris's narrative explores themes of loss and emotional healing, which are visually supported by its illustrations. As Lathwell (2012) emphasizes, "colors play a unique role in creating atmosphere," a concept exemplified throughout the game's design.



Figure 13. Hades, 2024

Source: (Ohmyfacts, 2024)

Hades is designed with an impressive two-dimensional illustration style that resembles dynamic comic book aesthetics. The illustration style features prominent linework, vibrant colors, and strong contrasts. The character designs are detailed and stylized, aligning with the game's mythological theme while incorporating a modern touch. The originality of the characters stems from their design's harmonious blend of mythological context and contemporary elements. The color palette is rich, combining warm and cool tones. Striking colors such as neon green, orange, and red emphasize the dark and mystical atmosphere, balanced by softer tones in the backgrounds. The choice of colors directs players' attention to characters and action-oriented details. While the two-dimensional design strengthens the game's stylized art, each scene resembles a painting. Environmental details are enriched with mythological elements, and compositions create a sense of depth, contributing to both aesthetic experience and storytelling.

Art Style and Illustration Features: The comic book aesthetic and neon color palette present a mythological story through a modern visual lens. Detailed character designs and striking backgrounds enhance the game's action-focused nature, creating a visually dynamic experience.

Alignment with Narrative: By narrating a mythological story with contemporary aesthetics, *Hades* offers players an experience that is both familiar and innovative. As Marshall and Rossman (2014) note, "the comic book aesthetic serves as a powerful tool for dramatic storytelling," a concept that *Hades* effectively exemplifies.



Figure 14. Undertale, 2018

Source: (Variety, 2018)

Undertale has a two-dimensional (2D) illustration style and is notable for its minimalist pixel graphics. Its illustration style adopts a nostalgic approach, reinterpreting the aesthetic of the 8-bit era in a modern context. The simplicity and retro look aim to establish an emotional connection with players. The character designs are unique, with each character easily distinguishable by a prominent silhouette. Despite the low pixel resolution, the facial expressions and movements of the characters support emotional storytelling. The simplicity of the character designs allows the game to focus on its deep narrative and emotional bond with the player. The color palette consists of warm tones and pastel shades. The colors used in the environment harmonize with the overall atmosphere, offering a relaxing experience to players. For example, tones like orange, yellow, and brown in rooms and environmental elements create a warm and friendly atmosphere. The fictional world is constructed with simple geometric shapes, and environmental details are created using low-resolution pixel aesthetics.

Art Style and Illustration Features: Undertale employs a nostalgic 8-bit pixel art style, reflecting simplicity while emphasizing emotional depth. The minimalist approach highlights the characters' distinctive silhouettes and expressive animations, which contribute to the game's unique aesthetic.

Alignment with Narrative: The retro-inspired art style complements the game's emotionally charged narrative, creating a strong sense of nostalgia and intimacy. The simplicity of the visuals allows players to focus on the underlying story and character interactions.



illustrations in shades of black and blue are rendered impressively with the support of Unity's advanced lighting features. Cuphead successfully translates the 1930s cartoon aesthetic into a digital medium using Unreal Engine's animation tools. The seamless integration of hand-drawn frames into gameplay mechanics is enabled by the robust performance of Unreal Engine. Undertale employs pixel graphics and a nostalgic 8-bit aesthetic to deliver a minimalist approach that supports its storytelling. The character designs are simple yet impactful, crafted to foster an emotional connection with players. Animal Crossing: New Horizons, Nintendo's proprietary game engine provides an environment that supports players in creating their personalized islands through pastel colors and minimalist designs. The visual simplicity enhances the user experience by fostering a relaxing and soothing atmosphere.

In conclusion illustrations in digital games go beyond being mere aesthetic elements, offering players artistic, emotional, and interactive experiences. This central role of illustration in game design creates an interdisciplinary synergy between art and technology. It is anticipated that future game illustrations will become more personal, interactive, and creative, continuing to transform the digital gaming world.

Ethical Issues

No ethical board approval is required for this study.

Contribution Rate of the Researchers

The study was prepared by a single author.

Statement of Conflict of Interest

There are no personal or financial conflicts of interest related to this study.

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