

The Crucial Role of Graphic Design in Shaping User Experience: A Study Case

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Abstract: This study explores the integral role of graphic design in shaping user experiences on digital platforms, particularly on Instagram. Using Peirce's semiotic method, the research combines analyses of icons, indexes, and signs within the Instagram interface on user engagement, usability, and emotional connection. Findings indicate that the intentional design of these elements significantly influences users' initial engagement and overall satisfaction. However, frequent and disruptive changes to the graphic design, especially layout modifications, can negatively impact the user experience by disorienting users, reducing efficiency, and creating frustration. The study underscores the importance of thoughtful and consistent graphic design in creating engaging and user-friendly digital platforms. By understanding the semiotic significance of design elements, designers and developers can enhance user experiences and improve the overall platform performance.

Keywords: digital platform; graphic design; study case; user experience; user interface

1 INTRODUCTION

In the ever-evolving digital era, the role of graphic design in shaping user experience has become a critical aspect that influences interactions across various platforms. Graphic design not only provides aesthetic elements but also significantly impacts how users interact with digital media. Graphic design includes the use of visual elements, such as color, typography, and images, which play an important role in conveying messages and creating a brand identity [1]. The definition of graphic design in this context is the art and practice of combining visual elements to create effective communication. With a focus on digital platforms, the media studied spans a wide range of forms, from websites to mobile applications, where graphic design serves as the primary means of conveying information and guiding users through their digital experience [2]. The media characteristics studied include various aspects, such as page layout, navigation, and design elements related to brand identity. Additionally, the design should be simple and easy to understand, with optimal readability and clear typography [3].

With the rapid development of digital technology, the use of various digital platforms is becoming increasingly widespread [4]. One of the most significant impacts of digital platforms has been on communication. Social media provide a convenient and accessible means of sharing information, expressing thoughts and opinions, and building and maintaining relationships. One of the most popular social media platforms is Instagram. It is a social media platform that primarily focuses on photo and video sharing. It has rapidly gained popularity due to its visually appealing interface and user-friendly design. Its ability to capture and share moments in a visually striking manner has resonated with millions of users worldwide. The platform's focus on high-quality images and videos has attracted a large number of users who appreciate the aesthetic appeal of visual storytelling. The ability to apply filters and editing tools has empowered users to create visually stunning content that stands out from the crowd. This has led to the emergence of a thriving community of photographers, artists, and influencers who use Instagram to showcase their work and connect with their audience. Instagram's combination of

visual appeal, user-friendly design, and social features has made it a popular and influential social media platform.

Amidst these dynamics, the role of graphic design in creating engaging and effective user experiences is increasingly important. However, graphic design is often overlooked in the digital product development process, even though well-designed visual elements can increase user engagement and increase interaction efficiency [5]. In analyzing the influence of graphic design on user experience, this research will answer the following main questions:

- 1) What is the crucial role of graphic design on Instagram in improving user experience in the digital world?
- 2) What errors or shortcomings in graphic design on Instagram can negatively impact the user experience?

Accordingly, this research aims to reveal and analyze the impact of graphic design on Instagram for improving user experience in digital environments. The influence of graphic design on user experience will be studied through an in-depth analysis of user interactions with these design elements to understand more deeply how graphic design contributes to user satisfaction, engagement, and efficiency in the context of digital media [6]. Through an in-depth understanding of the crucial role of graphic design in various forms of digital media, this research objective is to identify how these visual elements contribute to the level of user satisfaction, engagement, and efficiency. By drawing attention to the interactions between users and graphic design elements, this research is expected to provide more comprehensive insight into how graphic design influences the overall user experience in the digital realm. Consequently, it can help developers, designers, and other stakeholders to optimize graphic designs to achieve more positive and satisfying results in the use of digital media.

2 LITERATURE REVIEW

In an increasingly digitally connected world, graphic design is not just an aesthetic addition but the foundation that shapes the entire user experience [7]. Graphic design as a discipline involves the use of visual elements, including color, typography, and images, to create communication that

is not only effective but also engaging [8]. Graphic design theory provides an important foundation for practitioners and researchers to understand the basic principles that guide the process of creating attractive and functional interfaces. One of the central concepts in graphic design theory is visual hierarchy, which highlights the importance of arranging visual elements in such a way that the user's eyes naturally fall on the most relevant and significant information. In the context of user experience, visual hierarchy is key to guiding users through an interface in an intuitive way, thereby increasing understanding and engagement [9].

Moreover, the concept of usability underlines the importance of designs that can be used easily by users without significant problems. An easily accessible interface, with clear navigation and intuitive understanding, is key to creating a positive and efficient user experience. By detailing these principles, graphic design theory provides an in-depth look at how design can influence user interactions [10]. This combination of visual elements creates a form of communication that goes beyond words, creating a visual narrative that is evocative and empowering [11]. In the digital era, graphic designers and UX (User Experience) professionals have increasingly greater responsibilities. They not only create attractive interfaces but also consider the overall user experience. Users are taken through a visual journey, from color selection to carefully designed page layouts, shaping their perception of the digital platform or product.

The visual design of a digital platform or product plays a crucial role in shaping user perception and experience. From the initial color palette to the carefully crafted page layouts, every visual element contributes to the overall aesthetic and functionality of the interface. Color, as a key element in graphic design, plays a central role in shaping user experience in various digital environments [12]. The implementation of color psychology in digital settings includes the use of colors to achieve specific goals [13]. The appropriate implementation of color psychology can significantly increase user satisfaction and engagement in digital settings [14]. Choosing the right color can create an atmosphere that supports the intended use, increases visual appeal, and builds an emotional connection with users [15].

Using fonts that suit the context and purpose of the communication is also vital. The choice of font, size, and text arrangement is not just a technical aspect of graphic design; it is an art that plays an important role in shaping the user experience [16]. Typography is not just a tool for conveying information; it also creates a visual identity. It is a medium where messages are conveyed, accessibility is enhanced, and typographic aesthetics create an unforgettable brand identity [17]. Carefully chosen typography can improve accessibility, ensuring that information is accessible and understandable to a wide range of users [18]. Text size also plays an important role. In responsive design, text size must be adjusted to remain consistent and easy to read across devices. Choosing contrast between text and background colors also contributes to readability.

Furthermore, page layout is another essential aspect of visual design. The arrangement of elements on a page can significantly impact user experience [19]. A well-designed layout should be easy to navigate, with a clear visual

hierarchy and a logical flow of information. Designers should use white space effectively to create a sense of balance and avoid clutter. Visual design also plays a crucial role in user engagement. The use of high-quality images, illustrations, and animations can enhance the visual appeal of the interface and make it more engaging. However, it is important to ensure that visual elements are not overwhelming and do not detract from the core functionality of the platform [20].

In addition to aesthetics, visual design can also improve usability. Utilizing clear and consistent visual cues enables designers to improve users' understanding of how to engage with the interface effectively [21]. For example, the use of buttons, icons, and other visual elements can provide clear indications of functionality. A well-designed interface should be intuitive and easy to use, even for users who are not tech-savvy. Knowing content media enhanced the users' fantasies and reinstruction with pleasant feelings [22].

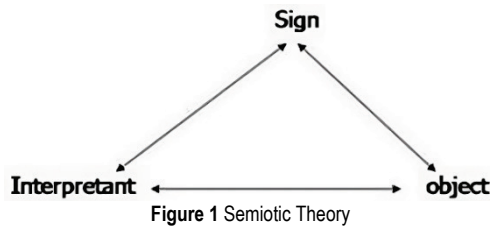
In this overall context, it is important to realize that graphic design is not just about aesthetics. Graphic design is a visual language that can strengthen messages, shape brand identity, and build emotional connections with users [23]. It is a tool that allows the transmission of information, ideas, and emotions through globally accessible media. A carefully planned combination of visual elements creates more than just an image but a visual narrative that speaks to the user through each carefully selected element. Therefore, an in-depth exploration of the impact of graphic design on user experience is not only relevant but also urgent to advance our understanding of the ever-evolving digital world.

3 METHODOLOGY

By using Peirce's semiotic theory, this research becomes very relevant when it is associated with the influence of graphic design on user experience. In this context, Pierce's semiotic approach allows research to describe in detail the graphic design elements involved, analyze the interactions between these elements, and interpret their impact on user experience [24]. This method allows researchers to detail every aspect of graphic design, such as the use of color, layout, typography, and other visual elements. An in-depth analysis of these factors provides a better understanding of how graphic design can influence user perception and response to a product or service. This research can also identify correlations between certain design choices and levels of user engagement, satisfaction, or even potential confusion. The analysis process provides deeper insight into how graphic design can contribute to creating a positive user experience or vice versa [25].

In addition, the interpretation stage in Pierce's semiotic theory allows researchers to interpret findings by assembling a broader context, including how graphic design can influence brand perception, company image, or even user attitudes toward a product or service. By connecting this descriptive approach to the impact of graphic design on user experience, this research provides a powerful tool for uncovering the complexity of interactions between design elements and user responses, providing a deeper understanding of how graphic design can be improved. The use of Pierce's semiotic theory in research regarding "the influence of graphic design on user experience" offers a

structured approach and allows systematic measurement of the variables involved [26].



The use of sign semiotics, according to Charles Sanders Peirce's theory in research regarding "the influence of graphic design on user experience", can provide in-depth insight into how visual elements in graphic design form meaning and influence user perceptions. The following is the implementation of sign semiotics in this context:

- a) **Icon.** An icon is a sign that has a physical or visual similarity to the object it represents. In the UI design, the camera button has a camera-shaped icon that depicts the physical object, then that is an example of an icon. These icons allow users to recognize the button's function quickly. For example, the use of a lock icon represents a security page in a banking application design. Users can quickly identify that the lock icon indicates a security-related area.
- b) **Symbol.** A symbol is a sign that has a conventional relationship or social agreement with the object it represents. Users generally identify the arrow symbol pointing to the right as a button to move to the next page. Although there is no physical resemblance to the concept of "next", social conventions make the symbol easy to understand. For instance, heart symbols indicate "favorites" or "likes" in social media platform designs. The heart symbol is universally recognized as a positive expression, creating a user's emotional connection to the content.
- c) **Index.** An index is a sign that has a cause-and-effect relationship or is directly related to the object it represents. For illustration, an index can be seen in the network signal indicator on the UI design of a mobile device. If it is in a full mark, it indicates a strong signal; meanwhile, if it is blank, it indicates a weak signal. A direct relationship between a sign and a network condition is an example of an index. Another example is a display of delivery status indicators (e.g., a checklist icon or loading animation) when a user sends a message, which provides real-time feedback regarding the status of the message delivery process.

4 RESULTS AND DISCUSSION

In this research, the Instagram application is used as an object of analysis. The analysis of UI/UX on Instagram according to Peirce's Semiotic theory is presented as follows:

4.1 Instagram's Icons

In Peirce's semiotics theory, an icon is a sign that physically resembles the object it represents. Within the

context of the Instagram app, icons play a pivotal role in guiding user interaction and facilitating seamless navigation. These visual signs include navigation and action icons, which assist in providing clear visual signs and streamlining the user experience.

a) Navigation Icons

Navigation icons are essential components of user interface design that guide users through digital environments. They play a crucial role in helping users navigate the app's various features and content. These icons are strategically placed throughout the Instagram interface, providing clear and intuitive pathways for users to explore and interact with the platform.

▪ Top navigation bar

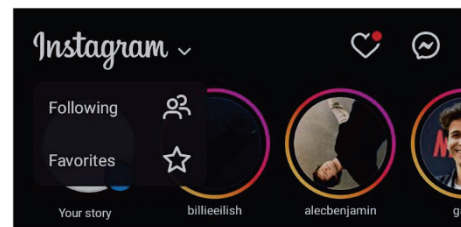


Figure 2 Icons in the top navigation bar

There are several icons at the top navigation bar. First, there is an arrow icon next to the Instagram logo. The arrow icon serves as a visual cue that guides users toward additional options or settings within the Instagram interface. In the context of the top navigation bar, this icon represents the action of switching between the "Following" and "Favorites" feeds. The arrow icon's simple and universally recognizable design contributes to its effectiveness. Its clear and concise representation of the underlying action ensures that users can quickly understand its purpose and utilize it without confusion. This icon suggests a sense of depth or expansion, implying that more options are available beyond the immediately visible content. The meaning assigned to this icon is intuitive; thus, it is easily understandable to the users. This, in turn, can lead to increased engagement and satisfaction with the platform [27].

Second, there is a heart icon. The heart icon is a universal symbol on social media platforms like Instagram. The heart icon in the top navigation bar functions as a notification feature. It notifies users when their posts receive additional likes, comments, or mentions. Its ability to convey positive emotions, foster social interaction, and provide notifications makes it an essential tool for connecting users and building a sense of community. Additionally, the design of the heart icon can evoke specific emotions and associations, influencing users' perceptions of the platform and its content [28]. Hence, the heart icon's design and functionality contribute to a more engaging and rewarding user experience on Instagram.

Third, there is a messenger icon. The messenger icon, a speech bubble with a horizontal lightning bolt inside, is a visual symbol that represents the platform's direct messaging feature. The speech bubble, a universally recognized symbol for communication, is an iconic representation that

immediately conveys the idea of messaging or conversation. On the other hand, the lightning bolt within the speech bubble adds a symbolic dimension that suggests speed, efficiency, and real-time communication. It allows users to share thoughts, ideas, and experiences in a private and intimate setting than in the platform's public sphere. This simple yet effective symbol represents the concept of communication and evokes associations with interpersonal interactions in the real world. This can lead to increased engagement with friends and followers, thereby fostering stronger social connections and enhancing the overall user experience.

- *Bottom navigation bar*

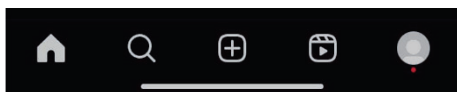


Figure 3 Icons in the bottom navigation bar

The bottom navigation bar has five icons. First, there is a home icon. This familiar symbol allows users to quickly identify and access the home page, where they can discover new content, interact with their feed, and explore the platform's various features. The feed is personalized to each user as it displays posts from accounts they follow. This allows users to stay updated on the latest activities of their chosen influencers and communities easily. Accordingly, it encourages users to engage with posts, leave comments, and share their own content, resulting in a more vibrant and dynamic social media environment. Therefore, the home icon contributes to a more intuitive and enjoyable user experience by providing a reliable and familiar point of reference within the app's interface.

Second, there is a magnifying glass icon. It is a universally recognized symbol of search and discovery. This icon represents the user's ability to actively seek out new content and trends beyond their personalized feed. The magnifying glass icon empowers users to expand their horizons and discover content they might not have encountered otherwise. Beyond its role in content discovery, the magnifying glass icon also functions as a search tool. Users can quickly find relevant posts, profiles, or reels by typing keywords or hashtags into the search bar. So, this streamlined search functionality enhances user experience by facilitating content discovery and fostering community engagement.

Third, there is a plus icon. The plus icon serves as Instagram's creative center, where users can create and share their content. By sharing their own photos, videos, and thoughts, users can connect with others, build their personal brand, and become part of an online community. It empowers users to share their unique perspectives, connect with like-minded individuals, and foster a sense of belonging. Therefore, the plus icon on the bottom navigation bar of Instagram significantly improves user experience by providing easy access to content creation tools, empowering users to share their content, and fostering community engagement.

Fourth, there is a reel video icon. The reel feature is a short vertical video of around 15 to 90 seconds within the app. The icon's design, a stylized film reel symbol, is easily recognized and understood by users. Through a reel video icon, users can express themselves in the form of video and engage with the platform's short-form video feature. The platform's algorithm would suggest reels based on the user's viewing history and preferences so each user would have a personalized and enjoyable experience [29]. Hence, the reel video icon plays a crucial role in the user experience by giving users a way to create and engage with interesting short-form video content.

Fifth, there is a profile icon. The profile picture icon serves as a visual basis for users' personal identities within the platform. Its strategic placement at the bottom right corner of the app interface provides easy access to a user's profile page, where they can view and manage their personal information, posts, and followers. They can showcase their content, interact with followers, and manage their account settings. Additionally, since users can have multiple Instagram accounts, this feature is particularly useful as it provides a convenient way to switch between different profiles. In conclusion, the profile picture icon enhances the user experience by providing a visual representation of the user's identity, facilitating easy navigation, and fostering a sense of personalization and ownership.

b) Action Icons

Action icons are small, symbolic images that represent specific actions or functions within the Instagram app. They are typically found under individual posts or user profiles, which allow users to interact with content directly.



Figure 4 Action icons below the Instagram post

There are four action icons at the bottom of Instagram's posts. First, there is a heart icon. Not only does it serve as a notification icon, but the heart icon also appears below the post as a means of appreciation or liking. Its stylized shape represents the concept of affection, care, and appreciation. This association with positive emotions makes the heart icon a natural choice for indicating the action of liking a post. The act of liking a post can be seen as a form of digital affirmation, a way of acknowledging the content and its creator. This can lead to a sense of belonging and connection, as users feel valued and appreciated by their peers.

Second, there is a comment icon. The comment icon serves as a gateway to social interaction on Instagram. This icon represents the concept of conversation, evoking associations with interpersonal communication in the real world. Users can instinctively understand that it is the means through which they can engage with the content and its creator by leaving a written comment. It allows users to share their thoughts, opinions, and reactions to posts, creating a space for dialogue and discussion. This can create a more interactive and educational experience for users, as they can learn from each other and expand their knowledge. Hence, it

provides users with a means of engaging in conversation and fostering community.

Third, there is a share icon. The share icon, a stylized paper airplane, serves as a symbol of dissemination and distribution on Instagram. This iconic image represents the user's ability to spread content beyond their immediate circle of followers. Users can use the icon to share the post with their friends, followers, or specific groups, effectively extending its reach and visibility. It empowers users to become active participants in the platform's content network. Therefore, the share icon plays a pivotal role in shaping the user experience by fostering community engagement and content discovery.

Fourth, there is a bookmark icon. The bookmark icon is a familiar symbol associated with saving and organizing information. This icon represents the user's ability to store content for future reference, ensuring that they do not miss out on interesting or important posts. This allows them to easily revisit the content at a later time without having to search for it again. Users can also create personalized collections that reflect their interests and preferences. This can help users stay organized, avoid information overload, and easily access relevant content when they need it. In conclusion, the bookmark icon is a valuable tool for Instagram users, providing a way to save and organize content for future reference.

4.2 Instagram's Index

Index in Peirce's semiotics theory refers to the direct or causal relationship between a sign and the object it represents. On Instagram, several elements can be considered indexical signs. First, there is a notification.

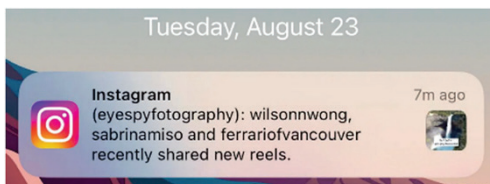


Figure 5 Index in the form of notification

Notifications on Instagram are a clear example of an index. They are directly linked to specific user actions or events, such as new posts, likes, comments, or direct messages. It helps users stay connected to their network and participate in conversations. Timely and relevant notifications encourage users to return to the platform, fostering a sense of community and belonging. They keep users informed about the latest activities of their friends and followers, enabling them to stay up to date with the platform's content. Additionally, Instagram's algorithm tailors notifications to individual users' interests and preferences, enhancing the relevance and value of the information presented [29]. Thus, Instagram notifications are critical for maintaining user engagement and connection.

Second, there is a location tag. This feature allows users to add a specific location to a post. This tag typically appears between the username and the post content and serves as a

direct connection between the content and a specific geographical location.

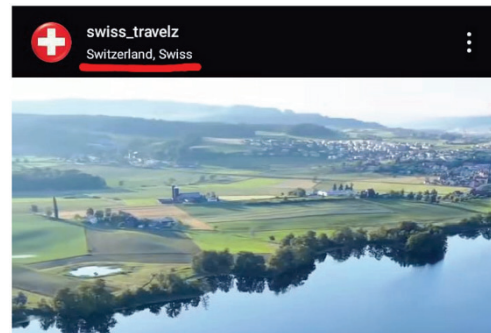


Figure 6 Index in the form of location tag

The location tag allows users to quickly identify where the post was taken and potentially explore other content from that location. This feature is particularly useful for travelers, locals seeking recommendations, or those interested in connecting with people in their community. Hence, location tags have become integral to the Instagram users' experience, significantly impacting user engagement and interaction.

Next, there is a timestamp. This time-based label is usually located below the post content and indicates when the post was published.

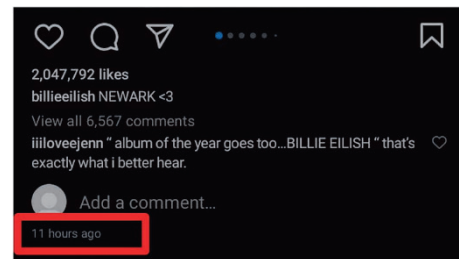


Figure 7 Index in the form of a timestamp

Timestamps provide a temporal context that helps users navigate the platform more effectively and engage with content in a meaningful way. It encourages engagement with the most recent content, fostering a sense of community and immediacy. Moreover, timestamps help users understand the relevance of content in relation to their own timeline. This also can build trust in the platform and its users, as it demonstrates a commitment to transparency and accuracy [30]. Thus, this personalized approach enhances the overall user experience by tailoring recommendations to individual preferences.

4.3 Instagram's Symbol

A symbol is a sign that has no direct relationship to the object it represents but derives its meaning from convention or agreement. This distinguishes it from an icon, which often has a direct visual resemblance to the thing it represents. Instagram hashtags are prime examples of symbols. They do not have any intrinsic connection to the content they tag but rather acquire meaning through their widespread use and understanding by the platform's users. It is symbolized by a

pound sign (#) that allows users to categorize and find content related to a specific topic. It can be found in several places within the Instagram app, such as post captions, comments, bios, and stories.

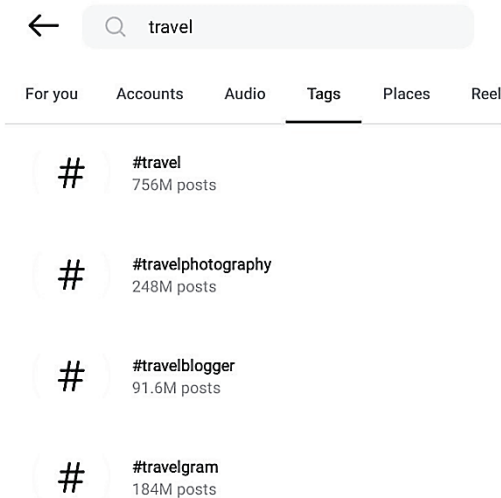


Figure 8 Hashtag symbol

Hashtags have a profound impact on Instagram's user experience. Hashtags on Instagram serve as powerful tools for discovery, categorization, and engagement. They allow users to tag their posts with relevant keywords, making them easily searchable by others who are interested in similar topics. This functionality enhances discoverability, as users can find content such as posts, reels, or stories that align with their interests without having to follow specific accounts. This feature empowers users to participate in conversations and connect with others who are interested in the same things. Therefore, Instagram hashtags serve as a powerful example of how symbols can be used to enhance user experience. Their ability to facilitate content discovery, categorization, and community building makes them an essential feature of the platform.

Hence, the Instagram UI design, characterized by its intuitive navigation and icons, significantly contributes to a positive user experience. The top and bottom navigation bars provide easy access to core features, while the index elements like the notification bar, location tag, and timestamps enhance interaction and context. Additionally, the hashtag symbol serves as a powerful tool for discovery and engagement. By carefully considering these elements, Instagram has created a user-friendly interface that facilitates seamless content exploration and interaction within the platform.

However, Instagram is also known for frequently updating its layout design, which makes many users complain about the frequent adaptation. It has undergone several UI design changes over the years, receiving mixed reactions from users. Some of these changes may result in some users finding the new interface difficult or uncomfortable [31]. Here are some examples and considerations:

1) **Additional Icon.** Instagram's continuous evolution involves introducing new features, such as Reels and shopping features. These changes result in modifications to the UI design. In this case, the reels and shopping buttons on Instagram were added to the bottom navigation bar.



Figure 9 Reels and shopping button

Placing the Reels and Shopping buttons prominently in the bottom navigation bar increases their visibility and accessibility, making them easier for users to discover and use. Nevertheless, adding these two new buttons to the bottom navigation bar may make the interface feel cluttered and less intuitive for some users, especially if they are accustomed to the previous navigation layout [32]. Consequently, the introduction of new features or buttons could disrupt the established workflows and potentially reduce the overall user experience.



Figure 10 Exchange of the DM button with the explore/ search button

2) **Layout Changes.** Apart from adding new icons, Instagram has also changed the location of the icons/buttons several times. For instance, the exchange of the DM button with the explore/search button.

The layout change may confuse users who are used to the previous design, leading to frustration and a less positive overall experience. It can also disrupt the established user flow since users develop mental models of how to navigate the platform, and when these models are disrupted, it can create cognitive dissonance and hinder efficient interaction.

Thus, Instagram's frequent UI design changes can lead to mixed reactions from users. While these updates aim to

improve the user experience, they can also disrupt established workflows and potentially cause confusion or frustration for those accustomed to the previous design [33]. As Instagram continues to evolve, it is essential to carefully consider the potential impact of UI changes on user satisfaction and ensure that updates are implemented in a way that minimizes disruption and enhances the overall user experience. Designers should carefully consider the potential impact of changes on existing users and strive to minimize disruption. Clear communication about updates and gradual changes can help mitigate user resistance and ensure a smooth transition to new designs. Regular user testing and continuous improvement through feedback help improve the quality of the experience [34].

Therefore, Instagram's strategic use of icons, indexes, and symbols significantly enhances user experience by fostering intuitive navigation and understanding. These visual cues streamline interactions, reducing cognitive load and allowing users to engage with the platform efficiently. However, while aiming to improve the user experience, the platform's frequent updates can sometimes disrupt the established familiarity, potentially leading to temporary confusion as users adapt to the new interface.

5 CONCLUSION

Graphic design is not just about visual aesthetics but also about how messages are conveyed and how users interact with information. The quality of user experience is greatly influenced by choosing the right colors, structured layout, and clear navigation. Design responsiveness to multiple devices is becoming increasingly important, given the variations in digital device usage. Additionally, designs that consider inclusivity and accessibility show concern for user diversity. The interactive responses and feedback provided to users help create an informative experience and guide users through the interaction process. Through regular user testing and continuous improvement, designers can continually improve their designs according to user feedback. The task-based approach also emphasizes the importance of design, which supports users in achieving their goals efficiently. Through this research, it can be concluded that there are six principles of UX design with a focus on users, namely understanding the target user, simplicity in layout, good readability, visual consistency, and responsiveness to various devices. By integrating these principles, designers can create graphic designs that are not only aesthetically attractive but also prioritize user comfort and usability in the context of digital technology. In an increasingly digitally connected world, understanding and applying these principles is key to creating satisfying user experiences and meeting the needs of users with diverse backgrounds and preferences.

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