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Research on Color Matching in Online Course Interface Design

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Abstract: With the rapid development of online education, the impact of interface design on learning experience has become increasingly prominent. Reasonable color matching can effectively improve learning efficiency, enhance user engagement, and improve visual experience. This paper analyzes the application of color matching in interface design, discusses the principle of color matching in online course interfaces, and puts forward some design strategies. It provides a practical reference for the interface design of an online education platform.

Keywords: Online course; Interface design; Color matching

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1. Introduction

In the tide of the digital age, online applications not only greatly facilitate people's lives, but also play a vital role in many fields such as business, education, entertainment, and so on [1]. With the intelligent development of society, people's spiritual and cultural level has also improved, and portable reading and efficient learning using fragmented time have become the trend pursued by the public. In recent years, online courses have become an important way of learning. Judging from the gradual maturity of online education, the current online teaching field has shown a vertical and professional development trend, improving the competitiveness of online education platforms on the Internet and enhancing users' experience.

As a bridge between users and course content, interface design directly affects the learning experience and effect. For interface design, especially for presentation layer and frame layer, visual cognition theory has great reference value and significance. Through the understanding and discussion of interface design, the relationship and approach between interface design and visual cognition theory are helpful for designers to understand the basic principles of interface design and optimize the visual structure of the interface, so as to improve the ornamental and operability of interface design. Among them, color matching, as a key element of interface design, plays an important role in attracting users' attention, transmitting information, and creating a learning atmosphere. Good color matching in interface design can not only leave a good impression on users

and improve trust in interface products, but also can bring different color perceptions and convey different color emotions through various colors [2]. Therefore, it is necessary to give users a new way of human-computer interaction according to the user's visual cognitive theory, mode, and information law, so as to achieve better interactive effects.

2. Importance of color matching in online course interface design

2.1. Concepts and processes of interface design

The interface includes the Web interface and the mobile phone interface. The user interface is a way to integrate the interface system, human-computer interaction, and operating system, which can make the operation more convenient, personalized, open, and better reflect the characteristics of the software. First of all, the user interface is a special carrier; it is an important tool for people to interact with the outside world, and can also reflect a variety of visual elements, colors, and so on. Secondly, the development of the user interface can complete the collection, output, and input of information, so that the information of the user interface can be reflected more intuitively.

The user interface design can be divided into five levels, namely strategic layer, presentation layer, scope layer, framework layer, and structural layer. The overall interface design adopts a bottom-up design approach. The strategic layer determines the user's product expectations, while the strategic layer of user experience is compatible with the user's strategic purpose and user's requirements, and is also the user's industry culture constraint in interface design. The presentation layer is carried out at the level of user perception, integrating aesthetics into the logical structure of interface content, unifying content, functionality, and aesthetics into one, thus providing users with a complete design. The scope layer refers to how an enterprise transforms its strategy and customer requirements into the functionality and content of its products, specifically reflected in how it builds products that meet the strategic requirements of the enterprise. The framework layer is a concrete manifestation of interface design elements, which determines the functional form of the interface, including the appearance, navigation, information, and other information to be displayed in the interface, as well as the corresponding platform interface structure. The structural layer is a layer that includes information structure and interaction design, focusing on the user's way of thinking and understanding when using. From the user's perspective, it integrates dispersed functional requirements into a conceptual whole, ensuring smooth operation of various functions.

2.2. Importance of color matching

Color, as a powerful visual element, has a profound impact on people's emotions, cognition, and even behavior [3]. An excellent interface design can effectively improve learning efficiency, help learners quickly find what they need, and reduce cognitive load. Colors play a significant role in human-computer interaction. While the distinction between effective and ineffective use of colors can be subtle, if used properly, colors can be a powerful tool to enhance the usefulness of a computer interface in a wide variety of areas [4]. Color is more than just a decorative element in design, it can also affect the user's behavior, emotions, and understanding of information.

The purpose of a website may also influence the selection of colors [5]. Different website types have different goals and user expectations, and for a learning website or online education platform, the choice of color is especially important because it needs to not only attract users but also create an environment conducive to learning. Learning sites should focus on creating an environment that is both professional and comfortable

when choosing colors, encouraging deep thinking and long stays. For example, some learning websites use green color, which has a soothing effect and helps relieve eye strain. It is suitable for reading or watching screens for long periods of time. Some learning websites use blue color, which is also a good color for learning platforms, as it promotes concentration and calmness.

3. Online course interface design strategy

3.1. Reasonable color matching and layout

The evaluation criterion of Web interface visual design emphasizes whether the color can correctly and completely convey the connotation of the main body of the Web page, whether it is targeted [6]. In the interface visual design of the online courses, the use of color is not simply the pursuit of quantity, but to see whether the color can effectively convey the core information and emotions of the Web page, whether it meets the needs of target users and brand tonality. Color can help establish visual layers and direct the user's attention. Through the combination of primary and secondary colors, the interface design can highlight important information and weaken secondary content.

The layout of the page should be carefully designed to ensure that the information is organized in order of importance and relevance. For example, using different font sizes, color contrast, and spacing to distinguish between headings, subheadings, and body text. Using elements such as icons, dividers, or background color changes to separate different parts of the content can further enhance the visual hierarchy, making the complex information structure easier to understand.

3.2. Strong interactivity

Our cognition of things comes from the perceptible nature of vision, hearing, and touch, which further creates the possibility of interaction. Interactivity plays a vital role in online education platforms. Paying attention to the perceptual interaction of online course interface design can attract students' participation and enthusiasm to learn, and can effectively improve the learning effect. When designing the online course interface, we can set up the course discussion scoring function, allowing students to evaluate and give feedback on the course, which can not only let the teacher understand the advantages and disadvantages of the course, but also provide a reference for the follow-up students, helping them choose the course that suits them best. In the process of learning, students need continuous motivation to maintain interest, deepen the memory of classroom knowledge, awaken students' desire to use, and enhance students' perception and recognition of their curriculum education.

In the interactive design, it is not only limited to the physiological aspect, but also pays attention to the psychological demands of students on the interface of the online education platform. In the traditional offline classroom teaching, a large number of students may be difficult for teachers to effectively follow up on the learning progress of each student. When designing the interface of the online education platform, by providing customized learning content and suggestions according to each student's learning progress, interests, and other factors, the online education platform can improve the quality of teaching and learning, not only does it make students feel that the content is tailored to them, but it also significantly increases their engagement and motivation. At the same time, ensuring that the platform interface is intuitive and easy to use allows students to easily find the information and resources they need. The personalization option allows students to customize the layout of the interface to suit their personal preferences.

3.3. Multimedia integration design

When designing the interface of online courses, multimedia integration design is a key factor, which can visualize abstract knowledge and show abstract concepts and rules to students in an intuitive way through multimedia elements such as images, sounds, and animations. Teachers can present teaching knowledge in vivid audio-visual effects and stimulate students' learning interest and curiosity by using an electronic whiteboard, multimedia software, and other tools in teaching. In addition, multimedia integration design also needs to pay attention to user experience. For example, ensuring the loading speed of video and audio, a long loading time may cause students to lose patience and affect the learning effect.

In order to accommodate students who are hard of hearing or who are learning when sound is not allowed, it is very helpful to provide subtitles and text. This not only increases the accessibility of information but also facilitates student review and revision. Intuitive playback control buttons allow students to pause, play back, or adjust progress at any time. At the same time, multimedia content should be closely integrated with the course objectives to avoid a too fancy design that interferes with learning. The interface is kept clear and easy to understand so students can focus on the content itself.

3.4. Multi-device adaptive design

As multi-device browsing becomes the norm, online course interface design needs to pay attention to the adaptability of different devices. Since some cross-device applications are based on distributed user interface design, the challenges of interface design are highly relevant to cross-device applications. When designing the interface, the user interface of multiple devices should be consistent, and the operation on one device must be reflected on all devices. In particular, mobile devices may join and leave the application at any time, and the application should be effective for these operations. The addition and departure of devices should be automatic; one device should not depend on another device, and the departure of any device should not affect the normal work of the application. In general, it makes sense to distribute functions asymmetrically between devices, so that each device can do what it is good at. The online course interface should be able to assign functions based on the current device ecosystem. For some of the most used mobile device models on the market, designers can create specialized interface versions to ensure the best user experience on these devices.

4. Color matching application of online course interface design

4.1. Application of contrasting colors

Contrasting colors refer to combinations of colors located in opposite positions on the color wheel, such as red and green, blue and orange. This color scheme can produce a strong visual impact, suitable for emphasizing important information or distinguishing different functional areas. When designing an online course interface, using contrasting colors in places that require the user's attention (such as notification pop-ups, limited-time offers) can make these elements stand out from the background and increase user engagement. For example, using orange as the button color for "Register" or "Submit job" on a blue-dominated interface can make these action options more visible and prevent users from clicking on them by mistake. Some online learning platforms chose blue as the theme color of their interface and used orange to mark course prices, which can effectively attract users' attention and guide them to discover and explore these resources according to their learning needs. While contrasting colors can produce a strong effect, overuse can cause visual fatigue or distract attention.

4.2. Application of adjacent colors

Adjacent colors are colors that are adjacent to each other on the color wheel, such as red and pink, yellow and orange. This color scheme usually gives people a harmonious, comfortable feeling, suitable for creating a unified and coherent visual experience. Some scholars have pointed out that in the visual color design of app interface, priority can be given to the selection of the same color system and the principle of similar color matching, so as to make the interface element design more harmonious, thus increasing the integrity and aesthetics of the interface design [7]. When designing the online course interface, a relatively elegant adjacent color can be chosen as the page background, such as light blue or lavender, which can provide users with a relaxed and comfortable reading environment. Although adjacent colors look very harmonious, using only a single range of tones can result in an interface that looks too bland. Adding a small number of contrasting colors as embellishments can add vitality to the interface.

5. Conclusion

The color matching of online course interface design is not only for the pursuit of visual beauty, but also for the consideration of functionality and user experience. Through reasonable color matching, the visual appeal of the interface can be enhanced, the learn efficiency of students can be improved, while strengthening the brand image. Using different colors to distinguish titles, body text, links, and other interactive elements in the design of the online course interface can help users quickly understand the page structure and reduce cognitive load. Designers should choose the right color scheme based on the course content, target audience, and brand tone, and constantly optimize the scheme to enhance the learning experience.

Disclosure statement

The authors declare no conflict of interest.

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