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Optimizing and Exploring Product Design Teaching Strategies from a Semantic Perspective

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Abstracts: In today's rapidly evolving digital era, product design has gone beyond simple form and function to incorporate complex dimensions such as emotion, experience, and user needs. In such a context, introducing semantics into product design teaching has become a forward-looking strategy. Semantics can not only help students understand user feedback and needs more deeply but also guide them to innovative design thinking and create products with user orientation and emotional resonance. From the perspective of semantics, the article focuses on how to better meet the challenges and needs of modern product design education by optimizing teaching strategies.

Keywords: semantics; product design; teaching strategy

Introduction

In today's era of globalization and informatization, product design plays a crucial role as a link between people and technology, culture, and market. As society becomes more and more complex and changeable, users' demand for products has gradually evolved from pure functional satisfaction to higher-level pursuits such as emotional resonance and cultural identity. Therefore, how to better cultivate product design talents to meet the requirements of this era has become an urgent and complex task in the field of education. In this context, optimizing and exploring the teaching strategy of product design from the perspective of semantics can not only better guide students to pay attention to the deep semantic relationship between the product and the user, but also cultivate their innovative thinking and comprehensive ability in the face of increasingly diversified market demand.

1.Deficiencies in the current product Design teaching in colleges and universities

1.1 Teaching mode is backward

Part of the university product design teaching is still dependent on the traditional classroom teaching mode, This teacher-led teaching method limits the active participation of students and creative play, students passively accept the knowledge, and it is difficult to apply the content of what they have learned to the actual product design, hindering their cultivation and development in creative design. The current product design teaching should be fully integrated with modern technology means, such as computer-aided design software, virtual reality technology, etc., to better simulate the actual design environment (Zhou, 2020), to stimulate the students' interest in practice, however, some colleges and universities have not invested sufficiently in the product design courses, resulting in the difficulty of students adapting to the fast-changing design industry after graduation. In addition, product design involves a wide range of fields and requires the integration of multidisciplinary knowledge such as engineering, art, psychology, etc. However, under the traditional model, the connection between the various disciplines is weak, which makes it difficult for students to form comprehensive design thinking and restricts their innovative performance in the actual

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project.

1.2 Insufficient practicality of teaching content

Currently, some university product design courses focus on the communication of theoretical concepts and pay less attention to practical application, Students will learn various design principles, processes, and methods in the classroom, but lack analysis and operation of actual cases (Ren, 2020). The design industry is constantly evolving, and new technologies, materials, and trends are constantly emerging. However, the teaching materials and contents of product design courses in some colleges and universities have not been updated promptly, which leads to the fact that the knowledge learned by students may be outdated or not applicable to the current design environment, and the lack of a close connection with the industry makes the students' ability to practically apply the concepts and methods limited. In addition, product design needs to exercise students' design ability and problem-solving abilities through actual projects, however, some university product design courses lack the opportunity to cooperate with enterprises and society, making it difficult for students to get practical experience of real projects and unable to experience the whole process of design.(Li, 2019).

2. Application of semantics in product design

2.1 The role of semantic analysis in user requirements research

Semantics, as a discipline that studies the relationship between language and meaning, has an important application value in the teaching of product design, in which semantic analysis plays a key role in user needs research, through a deeper understanding of the meaning behind the language expressed by the user, the designer can more accurately capture the user's needs and emotions, to optimize the product design. First of all, when users express their needs, they do not always state them bluntly, but use some implied words, emotional colors, and metaphors. Through semantic analysis technology, designers can understand these implied messages more deeply and grasp the real demands of users (Zheng, 2020). For example, if users mention the need for "convenience and speed", semantic analysis can help to interpret their concerns about time efficiency and ease of use, to design in a more targeted manner. Secondly, users often have emotional experiences when using products, but these emotions are not easy to be expressed directly, through the semantic analysis of users' words, designers can analyze the emotional color revealed in their descriptions, to better understand their emotional needs. For example, when users use words such as "pleasant" and "rely on", these words imply that they are pursuing a pleasant experience and a sense of trust. In addition, the same word may have different meanings in different contexts, and semantic analysis can help designers identify the real intentions of users in different contexts, which is important for the diversity and personalized design of products, making the design better adapt to the needs of different user groups.

2.2 Semantic-based prototyping and user interface optimization

Through semantic analysis, designers can more deeply understand the user's expectations and needs for the product, and on this basis, the use of prototyping tools to quickly build a preliminary product prototype, these prototypes can more intuitively show the product's functionality and interface layout, and at the same time, designers can adjust the design promptly through the user testing and feedback, to avoid unnecessary modifications in the later stages of development, and improve the efficiency of product development. Product development efficiency. Users from different cultures have differences in language expression, and semantic analysis can help designers better understand the needs and emotions of users from different cultures, and incorporate semantic elements from different cultures into the design process, which can increase the acceptability of the product and user satisfaction in the global context.

2.3 Semantic-driven emotional design and brand communication

A brand is not only a logo or a name, but also a

collection of emotions and values. By deeply analyzing users' emotions and attitudes in brand-related linguistic expressions, designers can better understand users' cognitive and emotional responses to the brand, and in the product design, designers can use semantic information to shape product features and user experiences in line with the brand values, to achieve the consistency and Depth. By integrating brand-related emotional elements into the product, the designer can stimulate the emotional resonance of the user, so that the user feels the emotional value of the brand when using the product (Zhang, 2020), and this kind of emotional interaction not only enhances the user's emotional dependence on the product, but also helps the user's emotional connection with the brand, and enhances the user's loyalty and brand awareness.

2.4 Application of semantic feedback in design evaluation and iteration

Traditional user feedback is only an expression of words or numbers, and it is difficult to fully convey the user's emotions, needs, and experiences. Through semantic analysis, designers can more deeply understand the emotions and meanings embedded in the user's feedback, which helps them more accurately capture the user's experience and feelings. For example, if a user mentions "the interface is too crowded" in his feedback, semantic analysis can understand the user's concern about the simplicity of the interface so that the design can be optimized accordingly. In addition, traditional design evaluation mainly focuses on functionality and visual aesthetics, while semantic feedback can add more dimensions to the evaluation. By analyzing the semantic information in different dimensions, designers can have a more comprehensive understanding of the user's evaluation of different aspects, to comprehensively consider the optimization direction of the design.

3. Optimization and exploration of product design teaching strategy under the perspective of semantics

3.1 Introducing interdisciplinary teaching, integrating semantics and design thinking

In the curriculum, semantics, design thinking, user experience and other related fields of knowledge can be introduced, through the organic integration of theoretical knowledge in these fields, students can comprehensively understand the multiple dimensions of product design and cultivate comprehensive quality. At the same time, a special interdisciplinary course can also be set up to allow students to systematically learn how to apply the concept of semantics to product design. In the teaching process, case studies, group discussions, and other teaching methods can be used, for example, students can analyze real user feedback, use semantic analysis to extract user emotions and needs, and then optimize the design based on this information. Through practical operation, students can have a deeper understanding of the application of semantics in design and cultivate innovative thinking. In addition, it is possible to collaborate with teachers from other related disciplines to co-design courses and projects, so that knowledge from different disciplines can intersect and create an interdisciplinary learning atmosphere. In the project, multidisciplinary teams can be formed to allow students to work collaboratively from the perspectives of different fields, to cultivate the ability of teamwork and cross-disciplinary communication (Man & Zhou, 2023).

3.2 Project-based practical teaching, emphasizing the importance of semantic grounding

First of all, in the course, choose projects related to real industries or social issues, which can provide students with real situations and challenges. For example, a cell phone application or product interface design project can be chosen, and students are required to use semantic analysis techniques in the design process to ensure that the product can better satisfy users' emotions and needs. Second, in the project, students are guided to explore how to apply semantic knowledge to solve design challenges from a practical problem. Through the steps of posing problems, analyzing requirements, and performing semantic analysis, students can better

understand how to ground semantics in actual design and improve the user experience of products (Ye, 2019). At the same time, to provide students with sufficient mentor guidance, instructors should have a wealth of practical design experience and semantics knowledge, can guide students to deeply analyze user feedback, and semantic analysis, and then apply the results of the analysis to the product design, to ensure that the semantics in the design can be truly grounded.

3.3 Promote open exploration and cultivate students' semantic innovation ability

Introducing open-ended project tasks in the course encourages students to give free play to different semantic perspectives and come up with innovative product design concepts. For example, students are asked to rethink products in daily life and explore how to redefine their functions and forms from a semantic perspective. Provide students with rich and diverse learning resources, including information on semantics, design trends, cultural differences, etc. These resources can inspire students to find creative inspiration from different cultural, historical, and social contexts. In the classroom, students are guided to think from multiple perspectives without being confined to traditional design thinking patterns and are inspired to discover creative possibilities from different semantic associations through open-ended discussions and mind mapping. Regular creative workshops are organized to allow students to focus their time on brainstorming and ideation, and this focused creative time can help students explore semantic connections more deeply and cultivate an innovative mindset (Yin & Liu, 2022). Encourage students to put their ideas into practice and bring them to life through prototyping user testing, etc. Challenges and reflections during practice can further deepen their understanding of semantic innovation. Cultivate students' courage to face failures and encourage them to learn from failures and continuously improve their designs. Open-ended exploration is not only for successful innovation but also for accumulating experience and improving abilities in the process of exploration. Regularly assess students' creative works and provide targeted feedback, which should focus on the depth and uniqueness of semantic innovations to help students continuously improve their creativity and design capabilities.

3.4 Use technology tools to provide personalized learning support

First, choose appropriate teaching technology tools, teaching platforms, online resources, virtual labs, and other modern teaching technology tools that can be used for personalized learning support (Yin & Liu, 2022). For example, online learning platforms can be utilized to provide students with a variety of learning resources, such as textbooks, videos, case studies, etc., so that students can learn according to their progress and interests. Secondly, an intelligent learning system is used to recommend suitable learning contents and resources for students by analyzing their learning behaviors and performances, and at the same time, the system can adjust the learning plan according to the student's interests, learning progress, and comprehension level to provide more targeted learning support. Open a virtual practice environment to simulate real design scenarios and allow students to carry out actual design operations and experiments in a virtual environment, in which students can use semantic analysis techniques to design and optimize products, to gain experience in actual operations. In addition, promoting interaction and cooperation among students, whether online discussions, collaborative projects, or remote teamwork, can deepen students' understanding and promote knowledge sharing and innovation. Finally, personalized feedback and guidance are provided to students by analyzing their assignments, quizzes, and engagement to help them better adjust their learning strategies and enhance their learning outcomes.

Conclusion

Introducing interdisciplinary teaching and integrating semantics with design thinking, can stimulate students' diversified thinking and creative abilities. Project-based practical teaching emphasizes

semantics on the ground, enabling students to apply theories to actual design and cultivate practical operation and creative ability. Open-ended exploration helps motivate students to break through traditional thinking patterns and develop innovative design thinking. The use of technology to provide personalized learning support can meet students' diverse learning needs and cultivate adaptable design talents. These strategies are intertwined and together build a more forward-looking and practical product design teaching system, laying a solid foundation for the cultivation of future innovative design talents.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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