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Research on the Reform Strategy of Project based Experience Teaching in User Interface Design Courses

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Abstract. With the continuous development and progress of media forms, the curriculum system of art and design majors in universities is also undergoing changes. The UI interface design course, as an interdisciplinary subject centered around the principle of "user experience centered" design, aims to find a student-centered digital project-based practical teaching mode. It aims to construct teaching strategies such as "multi-dimensional situational experiential", quantitative standardization, and a hybrid online and offline approach, in order to quickly enhance and cultivate students' thinking patterns of problem-solving, problem analysis, and comprehensive problem-solving, as well as their innovative and entrepreneurial practical abilities. On the basis of analyzing the project-based experiential teaching mode of the "UI Interface Design" course, this article proposes a "learning by doing" and "doing by learning" classroom teaching method that integrates knowledge theory and design practice.

Keywords: User interface design project-based experiential teaching reform.

The UI Interface Design course is an interdisciplinary field that revolves around the principle of "user experience centered" design. It spans from art to the coordinated development of multiple disciplines including engineering, science, psychology, and management. Using APP development and design projects as carriers, the course uses multi-dimensional situational experiential teaching methods to focus on user research, interaction processes, interface design, information architecture, project management, and other content. This course aims to cultivate innovative, composite, and application-oriented talents with product thinking, design thinking, and practical problem-solving abilities by using project driven approach to guide students to learn while doing, combining theory with practice, mastering the basic concepts, working principles, project processes, design methods, and software usage in interface interaction design.

1. Explanation of innovative project-based experiential teaching methods in user interface design courses

Project based learning (PBL), as an important teaching strategy, helps students acquire in-depth knowledge while mastering practical success skills such as critical thinking, accurate logical analysis, collaboration with different partners, and creative problem-solving. [1] How to effectively integrate UI interface design courses with project-based learning, effectively improve the efficiency of interdisciplinary UI learning and students' comprehensive abilities, and break away from the current situation of just talking on paper?

Firstly, attempt to change the teaching sequence of teaching philosophy, shifting it from the traditional "teaching" to a "learning centered" teaching reform concept. Design can be said to be a process of solving problems. On this basis, using multi-dimensional situational experiential teaching and diversified thinking, the classroom teaching content is transformed into meaningful research questions. A multi-dimensional experiential teaching approach with practical projects as the path, online courses as the supplement, and offline courses as the main focus: using constructivist learning theory, student-centered, teacher led, and involving students in teaching, creating a harmonious and enjoyable interactive learning atmosphere to improve learning efficiency.

Secondly, in terms of teaching methods, the principle of "student-centered" should be followed to achieve sufficient communication between teachers and students; In teaching activities, group discussions and case studies are conducted to explain basic knowledge and skills, enabling students to fully understand their behavior, cognition, and other aspects. The main method is to use heuristic methods to teach according to the abilities of students, so that students can fully play their main role in the teaching process.

In addition, guide students to expand their understanding and design of extracurricular knowledge systems from classroom knowledge to practice, thereby further enriching their knowledge system. Finally, in the design and evaluation of courses, consideration should be given to the current industry situation, course characteristics, teacher level, and differences among students.

In summary, the UI interface design course aims to focus on core knowledge, understanding, and success literacy, optimize course design and content, build a full project learning framework, create an open sharing and rapid iteration classroom culture, collaborate and provide personalized guidance, evaluate student learning effectiveness, and have a project-based experience course strategy for project management. Design education reform is a new mode of interaction between teachers and students, which fully understands the needs of social groups, enables teaching objects to internalize absorption, explore and innovate in the process of practical experience, design and transform various practical software products, obtain diverse design innovation capabilities, and achieve the integration of professional skills and knowledge.

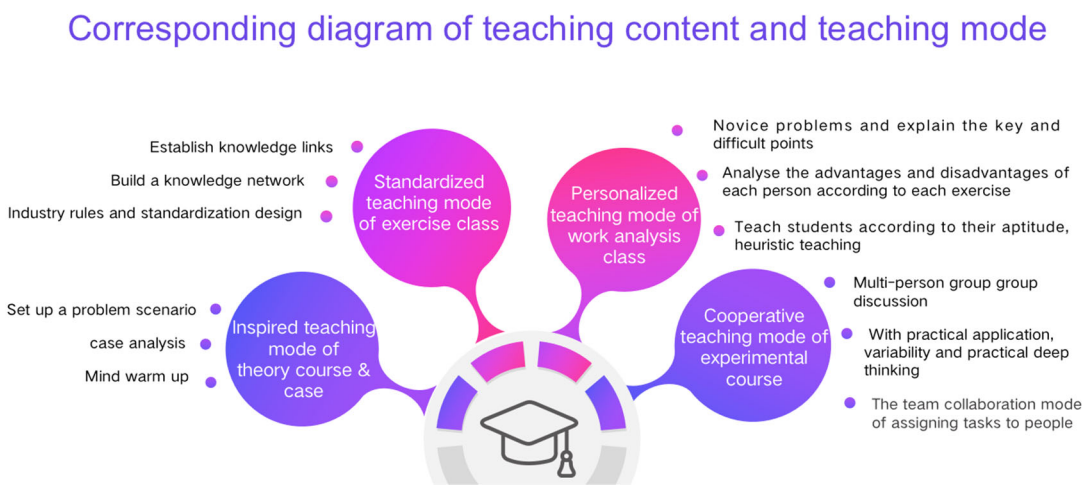

Figure 1. Corresponding diagram of teaching content and teaching mode for UI interface design (self drawn by the author)

2. Design ideas for experiential teaching in the user interface design process

Firstly, determine the project based on the teaching objectives outlined in the curriculum outline. On this basis, teachers must conduct a profound analysis and correct positioning of the curriculum in order to choose suitable practical themes. This course introduces the methods, specifications, and implementation methods of network interface design from simple to in-depth, based on the current mainstream website types. This project is based on the practical application of users, and after four stages of training, students will have basic skills in product design and interface design.

Secondly, create a multi-dimensional experiential learning environment. The course adopts methods such as anchor based teaching, case study, active construction experience, experimental research, and survey research, shifting from traditional theoretical teaching as the core to a practical project-based model. In practice, experiential teaching methods have been adopted, including team collaboration in the workplace and grouping students for experiential learning. During the teaching process, teachers guide students to observe and analyze the results of the project, master necessary knowledge, and solve the problems that need to be solved in the project. During the learning process, teachers guide

students to observe and analyze the effectiveness of projects, so that they can better grasp basic knowledge.

The course "UI Interface Design" focuses on user experience. Through preliminary market research and competitor analysis, the creative positioning, user profile, and core competitiveness of the APP are sorted out. Then, architecture diagrams, wireframes, design specifications, and renderings and interactions are designed. Finally, voice over commentary and interactive videos are output, and personal learning experiences are summarized and reviewed. The process of learning is a continuous process of cultivation. Complete the entire APP product design and benchmark the P6 level UI interface design for interactive demos. It is not only a complete methodology, but also an application practice of design thinking, logical thinking, and management thinking. What you see is what you get, and students will have a sense of achievement, which in turn will lead to a sense of identification with their UI course learning outcomes and future careers. According to the workflow of network designers in their career, each stage of the entire process, including project analysis, project implementation, result communication, project evaluation, etc., meets the job requirements, cultivates students' professional abilities, and improves their work abilities. Encourage students to collaborate and innovate in small groups, simulate real-life scenarios to strengthen project management, and achieve project physical examination teaching. The simulation and practical mode will truly "play" the UI interface design course.

3. Innovative strategies for project-based experiential teaching methods based on user interface design courses

(1) Teaching outline setting corresponding to the curriculum of strategic positioning layer

Craig M., a renowned scholar at the Cincinnati School of Design and Art in the United States Professor Vogel pointed out that at the level of product strategy, it consists of two factors: "user needs" and "goals". Taking the course of digital media user interface design as an example, its teaching outline comprehensively considers the needs of students. This course has reorganized the content of 9 chapters, aiming to cultivate talents in three categories: GUI (interface designer) ID (interaction designer) UX/UE (user experience designer). By learning the knowledge structure and skills that students have mastered, it is listed as a professional design course. This not only follows the design of information symbols and graphics, the construction and visualization of information, but also lays a good foundation for the logical structure and visual effects of the website. The purpose of course teaching should be based on the behavior and cognition of students, that is, to learn knowledge points in user research methods, user interface design methods, user experience design, information design, interaction design basics, and other aspects. By starting with simple interface concepts and analyzing the design elements and principles of each interface, students can have a comprehensive understanding of the development methods, prototype design process, and specific control methods of graphical user interfaces. They can effectively apply the five levels of user experience to the knowledge points such as framework diagrams, wireframes, and renderings that should be learned later, and have a clear design concept and program. At this point, the characteristics of the interface design course are very obvious, with a focus on interdisciplinary theoretical and practical research.

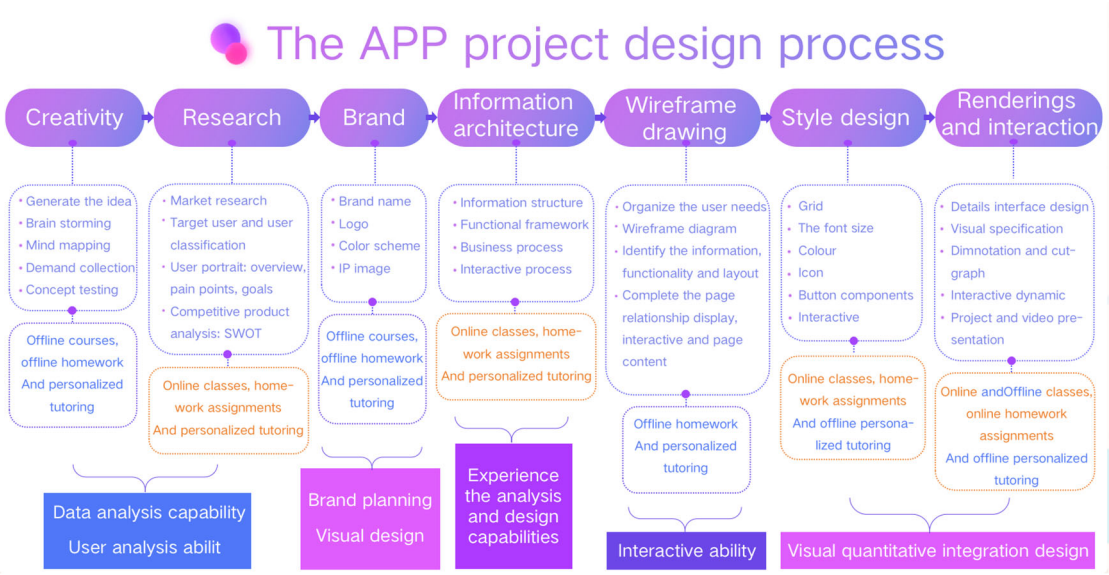

Figure 2. APP project design flowchart and corresponding knowledge points, teaching methods, and ability development (self drawn by the author)

(2) Specific implementation of teaching activities

The presentation layer is the perceptual experience in user experience, which acts on teaching activities, specifically the implementation of teaching methods. In problem-solving centered design practice, there is a disconnect between the theory and practice of the traditional "pre theory practice" teaching model. Therefore, it is necessary to consider the feelings of students. They cannot feel the impact of theoretical knowledge on them until they discover the problem. Therefore, there is no need to rush to impart theoretical knowledge. In addition, the field of interface design is also rapidly changing, from physical interfaces to graphical user interfaces, to now gesture based natural user interfaces, to wearable tactile interfaces, virtual space interfaces, and even biotechnology interfaces. The project task book was introduced into the teaching practice of interface design, and professional designer training teachers from Alibaba were invited to discuss "what design is" with students and relevant designers, guiding them to find the problems that need to be solved, determine design goals and positioning.

On this basis, based on the UCD method, analyze user needs and design corresponding practical projects. Through discussions, speeches, and other means, students are encouraged to think for themselves about who to design it for, when and under what circumstances, how to use it, and what users will receive. On this basis, this project will help students understand the basic principles of information visualization and functional construction, thereby understanding the construction of information design and interface interaction modes. The innovation of user experience based teaching methods advocates the innovation and implementation of interfaces based on the creative design of APP products, but more importantly, the introduction of "iterative" thinking aims to build a sustainable design teaching innovation method through user experience design, with student behavior and cognition as the core, and continuously improve and update in future teaching practices.

4. Design of teaching methods

Interactive interface design is a highly practical professional course that requires students to master theoretical knowledge and practical application abilities. Therefore, in the teaching process, we should not only focus on imparting theoretical knowledge, but also pay attention to practical operations. The practical part mainly focuses on computer-aided teaching, using relevant software such as Figma or Mockplus to design demonstrations. Under the demonstration of the teacher, students independently design and operate, apply the theoretical knowledge they have learned to practice, and form complete cases.

(1) The Application of User Experience Theory in Theoretical Teaching

As the center of interaction design, the biggest feature of user experience design is that it reflects the subjective feelings of users towards the product. The practical course of interface icon design is the focus of the user experience design course. When designing interfaces and icons, it is necessary to first study the user experience of the product and conduct targeted design from the perspective of user experience.

By changing roles, students can deepen the core teaching philosophy centered on user experience from their own experiences. In theoretical teaching, interactive experiences can be conducted with students, enabling them to have a deeper understanding of the concept and significance of user experience. Based on the characteristics of the student population, select a mobile application primarily targeting students, allowing them to use the application as users and experience various functions. Then, students can obtain the information and features they need from this application. In this process, each student will have their own psychological and usage experience, and this subjective feeling is the "user experience" in the course content. Through practical experience, students can have a more accurate and profound understanding of the concept of user experience, and understand the important role of user oriented design in interactive interface design. At the same time, students are also sharing their subjective experiences in the classroom, exploring the problems that arise in the application interface and interaction design, learning subsequent knowledge through these questions, and actively finding answers to relevant theories, so that students have a deeper and more intuitive understanding of the knowledge they have learned.

(2) Theoretical analysis based on actual situations

Interactive interface design is a highly specialized, continuous, and targeted discipline that requires a combination of industry and product characteristics, and has strong comprehensiveness. When faced with more complex product design, students often cannot think and design comprehensively from the beginning. Therefore, in the teaching process, showcasing a mature design case to students through provincial first-class course teaching videos can help them understand the entire design process and guide them to analyze different design cases. Through case analysis, students can have a clearer understanding of the design concept. Group discussions can be used to allow students to independently learn and analyze the knowledge they have learned, and to form a summary report in an appropriate format. This teaching method can enhance students' enthusiasm for learning, change their roles in the curriculum, take students as the main body, actively participate, and enable them to have a more comprehensive thinking mode in the process of completing the interactive interface. Meanwhile, due to the close relationship between interactive interface design and modern society, various factors in the market should be considered in the design process. By analyzing the current APP products in the market, students can quickly understand design trends and market demands. Through the analysis and research of various cases, the design level and aesthetic literacy of students have been improved, thereby enriching the form and content of classroom teaching, and achieving teaching goals and tasks. Using practical discussions and simulation models to complete market research and competitor analysis, to discover and analyze problems, achieve complementary content and form, and construct an operational teaching structure and program.

(3) Stimulating Students' Creativity in Practical Activities

On the basis of adopting teaching methods in theoretical teaching, each chapter is equipped with corresponding practical training sections, and examples are provided to demonstrate the content and teaching objectives of each chapter. In the production of interface design and information design, there is strong standardization. Therefore, when demonstrating operations, attention should be paid to explaining and demonstrating the procedures and corresponding standards, so that students can better understand the basic operating methods while observing the teacher's operations. After demonstrating the operation, the teacher assigns corresponding project design processes to students based on their different project contents, achieving true "learning by doing" and "doing by learning" Identify design issues. Enable students to focus on this issue, expand their thinking abilities, and

follow the teacher's operational standards. Then, apply the same interaction standards to create more creative and interesting designs. Under the personalized guidance of teachers, students can actively collect materials and complete relatively innovative designs through group discussions and divergent thinking. Finally, students will showcase and explain their works in class, encouraging them to pay attention to details while also emphasizing innovation. After reading the works of other students, they will discover their shortcomings, maximize their innovation ability, and promote each other in the learning process, enhancing the evolution of comprehensive problem-solving abilities.

(4) Building a blended learning model that combines online and offline teaching with student-centered approach

Reasonable use of the Internet and various mobile terminals can effectively expand limited teaching activities. A theoretical online course allows students to complete their own learning through the Internet before class, which saves class time and ensures student-centered classroom teaching. On this basis, it is divided into four modules: teacher teaching module, student self-directed learning module, teaching interaction module, characteristic practical training module, and corresponding content module. This article proposes a blended online and offline teaching method aimed at fully stimulating students' classroom learning enthusiasm and personalized tutoring during the project process, achieving good teaching results [6].

5. Conclusion

The user interface design course adopts a multi-dimensional situational experiential teaching method with a practical project-based approach as the core mode transformation, focusing more on case guidance and project practice, allowing students to truly achieve the "learning by doing" in project-based teaching. Taking "Cultural connotation "to" Design reconstruction "to" Art reproduction" as the path, we aim to enhance the inheritance and innovation of traditional culture. With advanced teaching guiding principles such as "professional ability cultivation as the core of the curriculum" and "integration of engineering and learning, and application of learning", we continuously update teaching concepts and innovate teaching methods, and cultivate innovative design talents with deep knowledge reserves, solid professional foundation, and excellent scientific research abilities. The UI interface design course is an innovation and entrepreneurship project centered on "Internet plus", which allows students to "use to learn" as the radius, find useful scenarios, and promote the learning of professional knowledge in the process of using. The combination of digital teaching and digital outcomes, expressed and presented in a learning dimension, brings about a series of changes in educational concepts and practices.

Acknowledgments

(1) The 2020 provincial first-class course "UI Interface Design" online and offline mix

No.: Zhejiang Education Office 2021195153.

(2) Exploration and practice of the training of master students in the design major of ordinary undergraduate universities, No.: 2022YJSJG16.

References

[1] Suzie Boss John La Project based Teaching: Creating Immersive Learning Experiences for Students Press: Renmin University of China Press, November 2020.

[2] Li Lutao. Exploration and Practice of Project Experiential Teaching Design Method: Taking the Course of Web Interface Design as an Example. Digital World, 2020 (4): 180.

[3] Li Chen. Innovative research on the teaching method of "Interactive Interface Design" course based on user experience theory. Fashion Design and Engineering, 2022 (1): 45-48.

[4] Ren Hongwei. Analyzing innovative practices in design teaching from the perspective of user experience: Taking interface design courses as an example. Grand Stage, 2015 (7): 184-185.

[5] Lv Jingxin. Interactive Design of Community Teaching Network Teaching Research Platform Shandong University: Shandong University, published in 2023.

[6] Zhou Yang. Exploration of Teaching Reform in the User Experience Design Course for Digital Media Majors. Education and Teaching Forum, 2022 (21): 89-92.

[7] Huang Yingyi. A text quantification design model for mobile interface based on information hierarchy. Decoration, ISSN0412-3662, total 310 issues.