

Teaching reform and practice exploration of prospective design course in digital economy era

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Abstract

This study explores curriculum reform in forward-looking design education within the digital economy era. It examines how the digital economy impacts design disciplines through conceptual frameworks, methodologies, and interdisciplinary integration, while highlighting the commercial and social value of forward-looking design in this context. The research underscores the critical role of curriculum innovation in cultivating innovative professionals. The reform objectives focus on developing students' creative thinking and digital competencies, as well as enhancing interdisciplinary integration capabilities. Key updates include strengthening cross-disciplinary knowledge synthesis and case analysis, introducing cutting-edge design theory and practice courses, and exploring innovative pedagogical approaches such as blended learning models and project-based learning with case studies. Through these comprehensive reforms, the study aims to nurture versatile design professionals equipped to meet digital economy demands, thereby driving advancements in both the design industry and societal development.

Keywords

Digital economy; forward-looking design curriculum; teaching reform; innovative talent cultivation; interdisciplinary integration.

1. The importance of prospective design in the era of digital economy

1.1. The impact of digital economy on the design industry

In the current era of booming digital economy, the design industry is undergoing unprecedented transformations. The digital economy, with its efficiency, convenience, and innovation, has injected new vitality into the design sector. In recent years, with the widespread application of technologies like big data and artificial intelligence, the industry's output value has continued to grow. This growth is not only reflected in the expansion of market scale, but also in the renewal of design concepts and innovation in design methodologies.

The digital economy's impact on the design industry manifests in three key dimensions. First, it drives conceptual innovation. With digital technologies, designers gain deeper insights into user needs and market trends, enabling them to create products that better meet expectations. For instance, big data analytics allows designers to accurately capture consumer behavior patterns and aesthetic preferences, providing robust support for product development. Second, it fosters methodological breakthroughs. Technologies like virtual reality and augmented reality enable designers to prototype and test products in virtual environments, significantly enhancing both efficiency and quality. Third, it facilitates cross-industry integration. By merging with fields like technology, culture, and art, the design sector continues to expand into new application domains and market opportunities.

Faced with the challenges and opportunities of the digital economy, the design industry must continuously innovate and advance. Designers need to constantly learn and master new digital

technologies and design methodologies to adapt to market changes and evolving demands. Meanwhile, the industry should strengthen collaboration and communication with other fields to jointly drive innovation and development. Driven by the digital economy, the design sector is evolving toward smarter, more personalized, and sustainable directions.

1.2. The Value of Proactive Design in the Digital Economy

In today's booming digital economy, forward-looking design has become increasingly vital as a bridge connecting technology and innovation. By anticipating future trends and integrating technology with design, it creates products and services that meet market demands and user expectations. The value of forward-looking design in the digital economy extends beyond commercial aspects, as it drives social progress. Through adopting cutting-edge design concepts and technologies, it leads industry innovation and propels industrial upgrading. Take new energy vehicles as an example: forward-looking design focuses not only on vehicle aesthetics and performance, but also emphasizes intelligence, environmental sustainability, and eco-friendliness. This design philosophy not only enhances the market competitiveness of new energy vehicles, but also promotes green development and sustainable growth across the entire automotive industry.

Furthermore, forward-looking design facilitates the integration and application of interdisciplinary knowledge. In the digital economy era, design transcends traditional disciplinary boundaries, requiring the convergence of computer science, artificial intelligence, psychology, and related fields. By incorporating interdisciplinary knowledge integration courses and case studies, forward-looking design equips students with cross-disciplinary expertise and problem-solving capabilities during their learning journey. This interdisciplinary integration capability is crucial for cultivating innovative talents and represents a new requirement for design professionals in the digital economy era.

1.3. The significance of curriculum reform for cultivating innovative talents

In the digital economy era, reforming forward-looking design curricula holds profound significance for cultivating innovative talents. With the rapid advancement of technology, the design industry is undergoing unprecedented transformations, shifting the demand for professionals from traditional skill-based roles to innovative capabilities. This reform in design education directly addresses these challenges, aiming to nurture a new generation of designers equipped with innovative thinking and digital expertise.

First, the curriculum reform introduces courses that integrate digital technology and design, enabling students to not only master traditional design skills but also learn the latest digital technologies and design tools. This interdisciplinary integration not only broadens students' knowledge horizons but also stimulates their innovative thinking.

Secondly, the curriculum reform strengthens the integration of interdisciplinary knowledge and case analysis, enabling students to apply multidisciplinary knowledge to solve complex problems in practice. The cultivation of this interdisciplinary integration ability helps students form a comprehensive knowledge system and improve their ability to deal with complex challenges.

In addition, the curriculum reform has added cutting-edge design theory and practice courses, enabling students to keep abreast of the latest design concepts and trends. This exposure to cutting-edge knowledge helps students develop keen insight and judgment, laying a solid foundation for their future career development.

In conclusion, reforming forward-looking design curricula in the digital economy era plays a vital role in cultivating innovative talents. By introducing integrated digital-technology and design modules, enhancing interdisciplinary knowledge integration and case studies, and adding cutting-edge design theory and practice courses, we can effectively boost students'

innovative thinking and practical skills. This approach will help nurture more design professionals with both creative vision and leadership capabilities.

2. Objectives of teaching reform of prospective design course

2.1. Developing students' innovative thinking and digital skills

In the digital economy era, one of the core objectives of forward-looking design curriculum reform is to cultivate students' innovative thinking and digital skills. With the rapid advancement of technology, the design industry is undergoing unprecedented transformations, placing higher demands on designers' creative capabilities and digital competencies. To address this challenge, we need to incorporate more innovative elements and digital technologies into the curriculum to stimulate students' creativity and imagination.

First, in terms of curriculum content, we have strengthened the integration of digital technology and design through enhanced course modules. By introducing cutting-edge design tools such as AI design software and 3D modeling software, students gain hands-on digital skills. Additionally, through case studies analyzing the application and impact of digital technology in design, we help students understand its profound influence on the design industry.

Secondly, in terms of teaching methodology, we prioritize cultivating students' innovative thinking. By introducing project-based learning and case studies, we enable students to identify and solve problems through practical application while proposing novel solutions. We also encourage interdisciplinary learning, integrating knowledge and skills from various fields to develop unique innovative perspectives. For instance, in an interdisciplinary design project, students must synthesize knowledge from marketing, psychology, and aesthetics to create market-responsive and innovative design solutions.

In the digital economy era, the teaching reform of forward-looking design courses needs to pay more attention to cultivating students' innovative thinking and digital skills. Only in this way can we cultivate more designers with innovative spirit and practical ability, and inject new vitality into the future development of the design industry.

2.2. Enhancing students' interdisciplinary integration ability

In the digital economy era, a key objective of forward-looking design curriculum reform is to enhance students' interdisciplinary integration capabilities. This skill requires not only mastery of professional knowledge and technical competencies, but also the ability to synthesize and innovatively apply cross-disciplinary knowledge. To achieve this, we have strengthened interdisciplinary knowledge integration and case analysis in our curriculum design. Through case studies, students gain insights into the roles and value of different disciplines within the design process. Additionally, we encourage participation in interdisciplinary projects such as smart product design and data visualization, allowing practical application to cultivate their cross-disciplinary integration skills.

To further enhance students' interdisciplinary integration capabilities, we have introduced project-based learning and case study teaching methods. By designing challenging interdisciplinary projects, students learn, explore, and innovate through hands-on practice. For instance, we collaborated with the School of Mechatronic Engineering to launch an interdisciplinary project titled "Smart Home Robot Design". In this initiative, design students worked alongside mechatronic engineering students to jointly design and develop a smart home robot product. Through this process, students not only learned to combine design thinking with programming skills, but also improved their teamwork and interdisciplinary integration abilities.

In addition, we also focus on cultivating students' innovative thinking by introducing innovative methods such as design thinking, which helps students think about problems from multiple

perspectives and propose innovative solutions. The cultivation of these abilities lays a solid foundation for students' future interdisciplinary integration ability.

3. Updating the teaching content of prospective design courses in the era of digital economy

3.1. Strengthening interdisciplinary knowledge integration and case analysis

In the digital economy era, enhancing interdisciplinary knowledge integration and case analysis has become crucial for updating teaching content in forward-looking design courses. With rapid technological advancements, design fields have moved beyond traditional aesthetic and functional considerations, requiring integration of multidisciplinary knowledge such as computer science, data science, and psychology. For instance, in intelligent product design courses, we introduce principles of Human-Computer Interaction (HCI) and use case studies to demonstrate how psychological theories can optimize user interface design, thereby fulfilling functional requirements of smart products. This interdisciplinary approach not only broadens students' perspectives but also enhances their problem-solving capabilities in real-world scenarios.

To enhance the application of case analysis in education, we have curated a series of representative design cases, including Tesla's innovative electric vehicle designs and Apple's user experience design. Through in-depth analysis of these cases, students not only learn design methodologies and techniques but also gain insights into the business logic and market strategies behind the designs. Additionally, we encourage students to independently research and analyze cases, fostering their independent thinking and critical thinking skills.

In our case analysis process, we employed various analytical models including SWOT analysis and user experience mapping to help students understand design challenges from multiple perspectives. We also invited industry experts and entrepreneurs to deliver lectures and engage in discussions on campus, sharing their design expertise and market insights to broaden students' horizons and provide deeper practical guidance. Through these measures, we successfully enhanced the integration of interdisciplinary knowledge and case analysis in forward-looking design courses, thereby improving teaching quality and student learning outcomes.

As renowned designer Philip Stark once said, "Design is not merely about aesthetics, but also about problem-solving." In the digital economy era, forward-looking design curricula should emphasize interdisciplinary knowledge integration and case analysis to cultivate students' comprehensive abilities and innovative thinking, enabling them to better adapt to the evolving demands of future society.

3.2. Add cutting-edge design theory and practice courses

In the digital economy era, the design field is undergoing rapid transformation, making the introduction of cutting-edge design theory and practice courses particularly crucial. These courses not only provide students with opportunities to engage with the latest design concepts and technologies, but also foster innovative thinking and enhance practical skills. By incorporating international design case studies such as Apple's product design philosophy and Google's user experience optimization strategies, students gain deep insights into industry trends and broaden their design perspectives. Furthermore, through the integration of modern design methodologies like data analysis and user research, the curriculum guides students to apply scientific design thinking in solving real-world problems, thereby improving the practicality and innovation of their design works.

In our teaching practice, we employ diverse methodologies including case studies, group discussions, and project-based learning to ensure students thoroughly grasp cutting-edge

design theories and practical applications. For instance, during case analysis sessions, we select award-winning international design projects from recent years. By breaking down their design philosophies, development processes, and final outcomes, we guide students to explore how to integrate these exemplary design elements and methodologies into their own creative work. In group discussions, students collaboratively explore specific design themes, sharing their innovative approaches and solutions. Through this interactive exchange, they continuously enhance their design capabilities and develop creative problem-solving skills.

Furthermore, we emphasize the organic integration of cutting-edge design theory and practical courses with other disciplines to establish an interdisciplinary teaching framework. By combining knowledge from computer science, marketing, psychology, and related fields, students gain deeper insights into design's essence and master cross-disciplinary methodologies. This integrated approach not only enhances students' comprehensive competencies and innovative thinking, but also lays a solid foundation for their future career development.

In summary, introducing cutting-edge design theory and practice courses stands as a pivotal initiative in design education reform for the digital economy era. By incorporating the latest design philosophies and technologies, adopting diverse teaching methodologies, and strengthening interdisciplinary integration, we can effectively cultivate students' innovative thinking and practical skills, thereby nurturing more outstanding talents for the future development of the design industry.

4. The innovation of teaching methods and means

4.1. Exploration of online and offline hybrid teaching mode

In the digital economy era, the exploration of blended online-offline teaching models in forward-looking design curriculum reform is particularly crucial. This approach not only leverages the advantages of digital technology but also provides students with a richer and more flexible learning experience through the organic integration of online and offline elements. In blended learning models, online platforms provide students with abundant resources including digital courses, e-textbooks, and interactive forums, enabling self-directed learning tailored to individual progress and interests. These platforms also feature data analytics tools that allow educators to monitor learning outcomes and deliver targeted instructional guidance based on student performance data.

Offline instruction emphasizes hands-on practice and interactive communication. By organizing group discussions, case studies, and project-based activities, teachers can guide students to apply online knowledge to real-world problems, fostering practical skills and innovative thinking. Moreover, in-person classes provide students with opportunities for face-to-face interactions with teachers and peers, enhancing the engagement and enjoyment of the learning process.

The exploration of blended teaching mode not only improves the teaching quality, but also provides students with a broader learning space. With the continuous development of digital technology, blended teaching mode will play an increasingly important role in the forward-looking design of curriculum teaching reform.

4.2. Introduction of Project-Based Learning and Case Studies

In the digital economy era, integrating project-based learning and case studies into forward-looking design curriculum reforms has become crucial. By simulating real-world design projects, this approach enables students to learn, explore, and innovate through hands-on experience, thereby mastering core knowledge and skills in forward-looking design. For instance, in the "Smart Home Design" project, students must integrate digital technologies like

IoT and big data to create smart home products that meet market demands and user habits. Through such project-based learning, students not only gain deep insights into the integration of digital technologies and design, but also enhance their interdisciplinary integration capabilities and practical application skills.

As a vital supplement to project-based learning, case studies provide students with rich practical experience and deep industry insights. By analyzing successful design cases, students can learn cutting-edge design concepts and methodologies while understanding industry trends and evolving market demands. For instance, examining user interface design cases from a renowned e-commerce platform helps students master user experience design principles to enhance user satisfaction and loyalty. Moreover, case studies cultivate critical thinking skills, fostering independent problem-solving abilities.

Introducing project-based learning and case study methodologies not only meets the demands of innovative talent in the digital economy era, but also enhances students' learning motivation and engagement. Research indicates that adopting project-based learning approaches can improve students' practical skills and innovation capabilities, while simultaneously boosting their academic interest and self-confidence. Therefore, in forward-looking curriculum reforms, we should actively explore effective integration methods of project-based learning and case studies to provide students with richer and more diverse learning experiences.

In the digital economy era, the reform of forward-looking design curriculum aims to stimulate students' creativity and innovative spirit, cultivating them into innovative talents with creative thinking and digital skills. By introducing project-based learning and case studies, we can provide students with broader learning spaces and richer practical opportunities, enabling them to learn through practice and grow through exploration.

5. Summary

The digital economy era presents both opportunities and challenges for forward-looking design education. We must continuously innovate and reform across multiple dimensions including teaching philosophies, curricula, methodologies, and resources. By consistently enhancing educational quality, we aim to cultivate more interdisciplinary talents with global vision, innovative thinking, and sustainable development awareness. This effort will contribute to advancing the design industry and driving societal progress.

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