Product Design Education and Innovation in the Context of New Media

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Abstract—**Nowadays, with the rapid development of the new media era, industry change in the information era has impacted almost all fields. The development of science and technology, advancement of society and improvement of people's living standards make the modern product design more diversified, and the development direction of product design education is inevitably influenced directly by it. As the foundation of product design and education, how design innovation will develop in the new media era and how to integrate it with new technology have become a problem worthy of attention in product design education and innovation in the new era.**

Keywords—new media; product design education; design innovation

I. INTRODUCTION

With the constant development of science and technology, the close combination of product design and new media has brought product design education and innovation into a fresh experience and exploration. Product design is a comprehensive and interdisciplinary subject, and its education and teaching are developing towards diversification and multi-discipline. However, traditional product design education lays stress on the cultivation of students' basic knowledge and general professional knowledge rather than their comprehensive quality of product design innovation ability under the new media technology environment. Mr. Naoki Asakura, a famous Japanese educator, said that an excellent design artist needs a keen sense of beauty and rich creativity, but the most important thing for him is the innovative thinking. Creative thinking ability is an important part of the overall ability of the design subject and also an important pillar to build a good thinking quality. Based on traditional design art, modern product design specialty organically combines new media technology and product design art together, which requires the designer to possess strong industry foresight and creation awareness. Therefore, the goal of product design education is to cultivate students' innovation ability and help them integrate such ability into social practice while making full use of new media tools, so as to improve the comprehensive ability of product design.

II. NEW MEDIA TECHNOLOGY IS A BOOSTER FOR PRODUCT DESIGN EDUCATION AND INNOVATION

With the rapid rise of China's economic construction, new media technology is reconstructing our real world, bringing unprecedented impact to human life, behavior, perception and thought. Meanwhile, new media technology inevitably affects the development direction of product design and education. Therefore, the relationship between technological knowledge and design innovation in product design is very beneficial to the development of product design art education.

A. New Media Technology Provides Infinite Space for Design Innovation Education

Along with the development of science and technology and the arrival of the digital era, advanced science and technology are injected into product design innovation, expressing a new thinking with continuous development. It is an innovation in itself and needs to be developed continuously. "With the infinite and broad interface of the speed of light in time and the globalization in space, it provides human beings with the situation that they can give full play of their cognitive ability and creative ability. The way of thinking it brings and advanced tools it offers provide a strong material and spiritual basis for design innovation, which has an immeasurable direct impact on design and its education."[1] Traditional computing methods and operations are under unprecedented impact. In the traditional workflow, a computer replaces some manual behaviors. But in the field of product design, computers sweep the whole industry with their powerful energy. Like a magic wand, they are changing the status of traditional presentation tools and bringing endless surprises and happiness to designers. From plane space to multi-dimensional virtual space, it is deduced again with the help of computer technology. It can process a large amount of data information in the shortest time, and unexpected effects often are obtained in the process of design and drawing, which is also a source of inspiration for design creation. Therefore, innovative exploration of the field of technical presentation is also an indispensable link of product design innovation.

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[1] Luo Yunping, Thoughts on Digital Visual Communication Design and Its Educational Innovation. China Design Network, 2006.01.07

The popularization of new media teaching in product design education provides convenience for the new trend in professional and rich information in education and teaching. Designers can transmit text, sound, image and other information to any place and individual at any time and anywhere and also can communicate with people in other countries through network technology, thus realizing trans-regional and trans-national business and academic exchange activities. It brings the latest, fastest and most global information for design innovation, broadens the design horizon, and accelerates the development process of product design. What's more, computer technology has also promoted the progress of teaching methods and means, and new stereoscopic learning model of sight, hearing, touch and feeling makes teaching more vivid. In the new educational environment, students can learn more and gain a broader horizon. It stimulates students' creative inspiration, motivates students' innovative thinking, provides students with a new design creation space, and helps students to conduct design activities faster and better. The thinking mode and advanced operation mode in the new media era provide a brand-new creative platform for design innovation and help greatly to promote pro

B. Negative Effects of New Media Technology on Product Design Innovation Education

Excessive admiration of new media technology has broken the original characteristics of product design. With the rapid spread of new media technology, computer network technology is in a technological monopoly position in a certain period of time and has formed its unique form of expression and communication. In this way, design activities are easily limited to computers, program and other hardware framework, and it is difficult to truly achieve a breakthrough in design art innovation. From the design works and course assignments of students in recent years, it is not hard to see that students' dependence on computers is beyond our imagination. Many students believe that the most important thing to learn and engage in product design is to master computer knowledge and related professional software. They neglect the memory space of their own brains when comparing their computer memory size with others. While they are proud of their improvement in technology, they have to face the dilemma of lack of ideological connotation. Students pay little attention to the conception of early design concepts and finding breakthroughs in design languages during the creative process. They are even in no mood for making sketch design, but are obsessed with scraping together in data base. Their final assignments are more technical than conceptual, are formalistic but lack connotation, and lack originality and individuality.

Therefore, it is necessary to strengthen the cultivation of students' independent innovation ability and pay attention to original creation as well as product design innovation with rich cultural heritage.

III. INNOVATION IS THE SOUL OF PRODUCT DESIGN EDUCATION

Product design is a creative subject. As a special creative activity, creative subjects are required to possess super creative consciousness. Creative thinking ability is an important part of the overall ability, as well as an important pillar of constructing good thinking quality. Therefore, the purpose of product design education is to cultivate comprehensive art talents with innovative ability, and the focus of education and teaching is to cultivate students' ability to innovate independently.

A. The Importance of Innovation in Product Design Education

Innovation refers to people's transcendence of past experience or knowledge and constant creation. Innovation is the inherent requirement of art development and the soul of design art. However, innovation is not the abandonment of tradition, but the continuation and development of traditional human civilization, spirit and cultural essence. Therefore, it is necessary to continue to innovate the design concept, and develop rich design languages and advanced technology in the field of product design.

Above all, the innovation of design concept is the basis of product design innovation, as well as the core of solving design problems and conducting exchange of thoughts. The later design innovation including the innovation of design language and expression technique are made under the guidance of original design concept. Of course, it is also constantly providing feedback for the design concept, so as to better improve the transmission of product design concept. As a new design representation tool, new media technology has provided a new innovation mode for product design and creation, changed the knowledge structure of product design, and narrowed designers' gap in presentation skills. The field of design is therefore filled with so many similarities in expression form, so that the innovation of design concept is of decisive significance in product design activities. Innovation of design concept requires designers to possess extensive knowledge, long-term artistic accomplishment and accumulation of life experience, so as to continuously convey beneficial and unique design concept in the changing design field.

Then, the product design concept should be conveyed visually through the design language in an all-round way, which needs to be realized by combining new media technology. Language is the medium to convey information. Language is the key to convey accurate design ideas in product design innovation. Design language needs to be expressed in a direct, accurate and unique form in its transmission process. It plays an important role in people's thought, culture and information exchange. The audiences make confirmation through design language and their own experience, and ultimately understand the ideological and emotional connotation that the designer wishes to express. New media technology provides a new artistic style for the innovation of product design language, and it is another symbolic system that differs from the rational symbol system of language. Therefore, it is very necessary to conduct innovative research on computer technology, so that it can make design language more innovative and make it can convey the design concept more effectively and in place. The design language needs to be reflected through the combination of various design elements, such as materials, colors, shapes, functional use, etc. It is the

design elements that make design language more colorful. Therefore, it is necessary to carefully explore all possible elements in life, and enrich them into the innovation of design language by combining with technological innovation. Certainly, it can be able to make a beneficial graft on the existing forms of design language to achieve its innovation. As long as the innovative form of design language can accurately and uniquely elaborate the concept of product design, designers are required to re-create the design language.

Product design needs innovative design concepts, and this design ideas and design thoughts need a certain design language to convey it. "Thoughts live in language. To accurately express our thoughts, it is a must to choose the appropriate design language and expression method."[2]

B. The Practice of Innovation in Product Design Education

First, teachers should attach importance to the cultivation of students' independent innovation ability in educational activities. The cultivation of innovative ability is the center of product design education, and the development of students' vision is the basis of innovative thinking. A scholar believes that what students in art colleges and universities need to shape is not only the form, but also the thought. The teaching of product design is mainly to cultivate students' ability to find problems, analyze problems, seek ways of thinking for solutions, organize resources, and solve problems with originality, as well as the ability to combine science and art for design innovation, that is, a training process that runs through conception and idea, technology integration and comprehensive expression and application. In teaching, students should be exposed to various art forms, styles and schools. Different art forms bring different artistic feelings, and students' thoughts can be inspired. The main means of innovative thinking is to create an innovative learning environment and atmosphere for students, encourage students to participate in the practice of innovation, stimulate students' desire and passion for creation, and explore each student's potential creative ability.

Second, teachers should attach importance to the cultivation of students' independent innovation ability in teaching activities. Teachers should abandon the traditional "duck-stuffing" type of teaching and adopt more open teaching. Traditional "duck-stuffing" type of teaching not only greatly destroys students' initiative, but also hinders the cultivation of students' creative thinking. The so-called open teaching is to strengthen the interaction between teachers and students, form a learning atmosphere of discussion and exchange, and encourage students to participate in the learning process of their own free will. Teachers should impart knowledge, widen students' vision, enlighten students, and communicate with students in teaching. Meanwhile, teachers should guide students explore problems from multiple perspectives and wide fields, encourage students to participate in design practice to look for deficiencies in design practice, train students to find problems from multiple perspectives, and enable students to carry out design innovation voluntarily. Students should

develop a learning atmosphere of listening, reading, thinking, memorizing, practicing and speaking, and change the passive learning mode of only listening but not thinking, only memorizing but not practicing, and only seeing but not speaking. By injecting design innovation into design teaching, students can not only learn more and more solid professional knowledge and cultivate profound knowledge and theoretical accomplishment, but also master proficient practical operation ability. This will lay a good foundation for students to participate in social competition and further study in the pr

Finally, teachers should pay attention to guiding students to study with an innovative thinking in the practice of product design. Product design is a discipline with strong practicality. It comes from life and serves people. It exists to solve various problems that people encounter in life. There is a close relationship between product design innovation and market. Design innovation can realize its real value only after entering the market and being tested by the market. Therefore, the practical problem of school teaching and market practice in product design education has attracted more attention from people for a long time. Students majoring in product design cannot adapt to the requirements of design practice after entering the society. A lot of design concepts and thinking consciousness cannot fit in with the market the market. They despise the actual situation of the market, and it is difficult for them to accurately position themselves and design work. They often have ambiguous goals and are often in a self-complacent design state in the actual design operation. In terms of communication with people, students lack keen insight and good communication skills, and cannot timely and accurately translate customer requirements, market situation and their own knowledge and skills into the final goal. Therefore, to better realize the product design innovation education, it is necessary to create more social practice opportunities for students in teaching. This is conducive to broadening students' horizons and enriching their ideas, so that they can make good preparation for faster adaption to the market in the future, and open up another world for product design innovation.

IV. NEW MEDIA TECHNOLOGY AND INNOVATION COMPLEMENTS EACH OTHER IN PRODUCT DESIGN

Creative education is the key to creating outstanding talents in science, culture and art. "The goal of colleges and universities in art design is to train talents with comprehensive qualities of good scientific and cultural literacy, keen aesthetic ability, creative thinking method and skilled professional skills."[3]

A. Completing Product Design Innovation Education Based on New Media Technology

Product design education has strong characteristics of the times. Its development should depend on ever-accelerated new media technology in modern times, but should get out of the idea of using computer technology for creation. Students should be fully aware that design is the carrier of science, technology and art, neither the simple splicing, copying and

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[2]   Yang Hongze, The Native Language of Graphic Art Design, Arting365, 2004.12.3

[3]   Luo Yunping Thoughts on Digital Visual Communication Design and Its Educational Innovation. China Design Network 2006.01.07.

pasting of reality or fragments, nor the process of copying others' design results without thinking. Students should realize that they are the bridge to transform technology into reality, creative, thoughtful and dynamic individuals, and have unique creativity and distinct individual thought, which are the key to making students distinguished from others. Sole dependence on computer technology for design will make students' innovative personality gradually degenerate and turn product design into a simple physical labor. Therefore, to complete the ideological innovation education on the basis of technology is an issue that every educator engaged in product design should continuously explore in teaching.

B. Perfecting New Media Technology Education Under the Guidance of Product Design Innovation

As this article has repeatedly emphasized, the originator of product design innovation is the innovation of design concept. The first priority of product design education is to exercise students' ideas, make them love life, broaden their vision, and enable them to have unique cognitive ability and aesthetic vision. On this basis, innovative combination of design language and technology is conducted to achieve the innovation of the whole product design. The exploration of new media technology is also a realistic factor to be considered in product design innovation. Therefore, designers correctly understand and make full use of the advantages of computer technology and network communication, and constantly integrate science and art for product design practice, in order to constantly obtain creative inspiration in the change. Only by realizing the perfect unity of thought, language and mode of action can design innovation be achieved in the true sense. In teaching, teachers should also avoid leading students to blindly pursue the idea of innovation and should make them pay attention to the cultivation of practical ability, so that students can grow into an ideal person who is "lame". After all, the perfect combination of "words" and "action" can ultimately achieve product design ideas.

V. CONCLUSION

Einstein once said: people's imagination is more important than knowledge. Imagination is also creativity. Novel imagination, ingenious thoughts and flash inspiration have always tended to these people who are knowledgeable, skilled, open-minded, and full of interest and unique personality. An excellent product design practitioner not only needs to use the new media technology as the cornerstone, but also requires a passionate heart and an imaginative brain. Only by mastering advanced technology and endless creativity can he go farther and fly higher in the journey of product design. For a teacher who is engaged in product design education, it is not only necessary for him to explore the combination of technological innovation and design innovation. But more importantly, he should pass this method and the spirit of research to students, and strive to train and deliver qualified professionals in product design for the development of society.

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