Research and Practice of Digital Media Art Design Talent Training Mode Against the Background of "New Liberal Arts"
Taking Beijing Institute of Technology, Zhuhai as an Example

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Abstract. By analyzing the professional development characteristics of digital media design in the context of new liberal arts, this paper proposes the positioning and construction ideas of digital media art major. It also expounds the pace of reform in the construction of new liberal arts and the professional characteristics of digital media art, believing that it should conform to the inevitable requirements of the revolution of new science and technology and industrial transformation, so as to build a cross-development teaching system of the combination of art and industry that meets the needs of its own development in practical teaching. It is believed that the professional development of digital media art major should proceed from the actual situation of the school, and on the premise of giving full play to the comprehensive characteristics, actively promote reform and innovation, and adhere to the professional construction path of integrative development.

Keywords: New liberal arts · Digital media art · Interdiscipline · Talent cultivation

1   Introduction

The construction of new liberal arts is a kind of active exploration to build a powerful country in higher education. The new liberal arts construction focuses on building a higher liberal arts talent training system with Chinese characteristics, and comprehensively improving the quality of liberal arts talent training. The main core content is to adhere to problem orientation, carry out interdisciplinary research, optimize the curriculum system, and cultivate compound talents with interdisciplinary thinking and the ability to solve complex and complex problems.

The construction of the digital media art major of Zhuhai College of Beijing Institute of Technology fully considers the characteristics of the major and the development orientation of the school and other factors, and actively explores a new liberal arts construction path suitable for this major.

2 The Existing Characteristics of Digital Media Art Against the Background of New Liberal Arts

At the beginning of 2019, 13 departments including the Ministry of Education, the Ministry of Science and Technology, and the Ministry of Industry and Information Technology officially launched the "Six Excellence and One Brilliance" Plan 2.0, which fully opened the prelude to the construction of "new liberal arts". In November 2020, the New Liberal Arts Construction Work Conference hosted by the New Liberal Arts Construction Working Group of the Ministry of Education was held in Shandong University (Weihai), issuing the "Declaration on the Construction of New Liberal Arts", which made an overall deployment for the construction of new liberal arts and marked the overall start of the new liberal arts construction. The new liberal arts are the top-level design of building a liberal arts education system with Chinese characteristics. Since the start of the construction of new liberal arts, university academic circles and university administrators have conducted extensive discussions and put forward many constructive views. Many colleges and universities have successively held symposiums and introduced measures to actively explore the practical path of new liberal arts construction, aiming to cultivate more talents urgently needed by the country with an international view and can represent the position of China, so as to serve the great rejuvenation of the Chinese nation.

2.1 The Professional Development of Digital Media Art is the Requirement of the Times for Educational Reform and Development

Now the world is in the stage of the Fourth Industrial Revolution, namely Industry 4.0. This concept first appeared in Germany and was officially launched at the HANNOVER MESSE in 2013, corresponding to the "Made in China 2025" (National Action Programme) proposed by the Chinese government in 2015. Both are times of using information technology to promote industrial transformation. Industry 4.0 is an era of comprehensive popularization of digitalization and the future social division of labor requires a large number of diverse, innovative, and interdisciplinary digital media professionals.

Digital media art is an important part of the mid-term development plan for the next 15 years. On October 29, 2020, the Fifth Plenary Session of the 19th Central Committee of the Communist Party of China adopted the "Proposal of the Central Committee of the Communist Party of China on Formulating the Fourteenth Five-Year Plan for National Economic and Social Development and the Vision for 2035", demanding to accelerate the development of the digital economy, promote digital industrialization and industrial digitization, promote the deep integration of the digital economy and the real economy, improve the level of public cultural service, promote the in-depth integration of media, and promote the digital construction of public culture.

Digital media art education was first established by some foreign art colleges and engineering colleges in the mid-1990s. At present, the digital media major is one of the most popular majors in the design discipline. The development of traditional digital media art is inseparable from communication theory and the requirements of media development and changes. At this stage, it is mainly manifested in the integration of information technology and art. In the context of high-speed intelligence in the era of

Industry 4.0, the training mode of "design + technology" has become an important development approach. Therefore, the process of transforming traditional digital media design content to digital technology is faced with the problem of lack of computer technology education support, resulting in the ability of digital media major students to be unable to adapt to the needs of the development of new technologies. This will lead to a series of problems such as unclear professional construction training objectives and professional positioning, unclear school-running ideas, and inconsistent personnel cultivating plans, curriculum system construction and curriculum knowledge points. ("Fig. 1").

2.2 The Historic Opportunity for the Development of Design Discipline in Comprehensive Institutions

Professor Lin Jiayang believes that "design + technology" is an important development path for the future design discipline [1]. For example, the Royal College of Art in the United Kingdom is firmly ranked first in the QS World Professional Rankings and the achievements of the Royal College of Art are inseparable from the support of the Imperial College London next door. Their concept combines design education with science and technology. In today's era of science and technology, design education relies on "design + science" rather than "art + design". In teaching practice and academic exchanges, more and more college administrators have begun to emphasize the need to change the way of thinking, take the environment and ecology as the foundation, and explore new disciplines and new training systems that truly meet the needs of the development of the times. They have conducted extensive exchanges and in-depth discussions on the results and future directions of the integration of design and science from multiple dimensions. In the integration of disciplines, new development directions of humanities, social sciences, languages, arts and other disciplines will be sought. Constructivism holds that advanced mental activities are accomplished through social interaction and teaching should stimulate students' interest in collaborative and cooperative learning and communication skills.

2.3 Demand-Driven Development of Digital Art in Regional Economic Development

According to the "Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area" report, the rapid development and application of cutting-edge technologies represented by digital technology and the coordinated promotion of multi-dimensional digital technology application exploration from people's livelihood to economy in Guangdong, Hong Kong and Macao are substantially accelerating the integrated development of the Greater Bay Area. The transformation and upgrading of the large-scale traditional manufacturing industry has released huge demand potential, creating huge market momentum for the development of the digital industry and the advancement of digital technology. The Pearl River Delta is cultivating and accelerating the establishment of an integrated digital business, digital industry, digital infrastructure, digital society, digital government and digital science and technology innovation system. Digital media art is an important part of the digital economy in the Guangdong-Hong
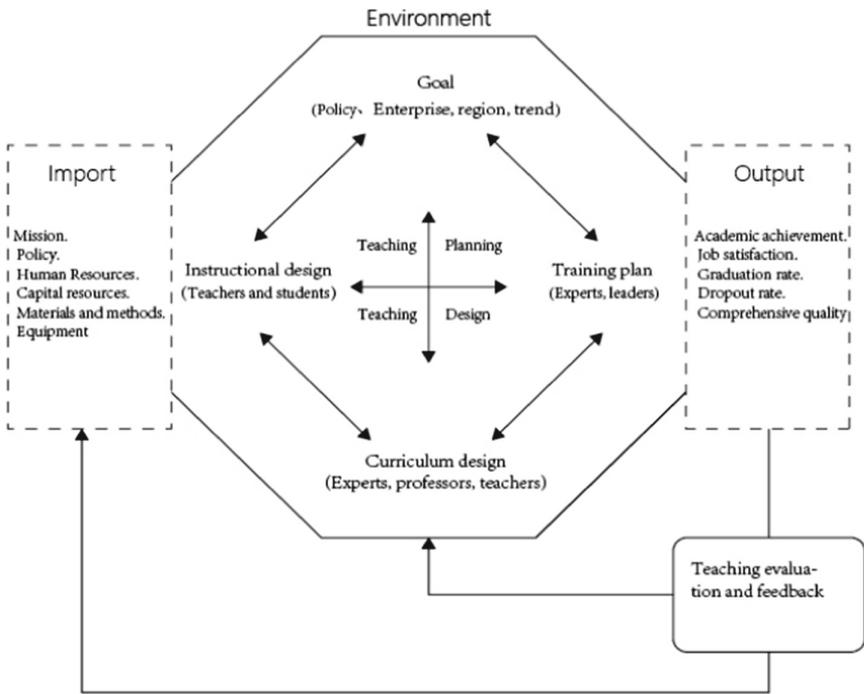
Fig. 1. Digital media art design teaching development model.

Kong-Macao Greater Bay Area. The education development strategy of "digital design + business service" is a supplement to the talent demand for the industrial development of the core cities of the Pearl River Estuary in the Greater Bay Area.

Beijing Institute of Technology, Zhuhai is located in Zhuhai, the core city on the west bank of the Pearl River Delta. It has practical teaching significance for the development of Zhuhai's tourist city in terms of serving local economic development. Specifically, it can include the practice of teaching content of digital media art to the tourist city of Zhuhai. Relevant teaching design can include: urban tourism, sports tourism, cultural tourism, rural tourism, hot spring tourism and other Zhuhai characteristic products; it can also include digital content services for special projects such as low-altitude flight, yacht tourism, health care, research travel, and ecotourism and so on.

3   The School-Running Orientation for the Cross-Integration of Digital Media Art Major

From a macro perspective, the digital media art major itself has the characteristics of a "new liberal arts" major that integrates interdiscipline, cross-media, and science and art. In terms of culture, it should have cultural characteristics and at the same time have the flavor of the times; it should have both traditional awareness and modern thinking. It is necessary to continue to inherit and carry forward the concept of moral education and

also need to have a critical spirit. At the same time, it is necessary to cultivate students' cultural awareness, international view and innovative thinking. At the micro level, it is necessary to be down-to-earth, be closely linked with reality, be based on facts, and size up the situation to explore and establish a development path in line with itself. Therefore, in the development of digital media art major, Beijing Institute of Technology, Zhuhai is also exploring a school-running and development model that suits itself.

Beijing Institute of Technology, Zhuhai takes Beijing Institute of Technology as its school-running subject. The school inherits the Yan'an Spirit and educational philosophy. Engineering majors have prominent characteristics and obvious advantages, and engineering, science, management, literature, economics, law, and art have developed in harmony. The professional construction of the school is based on the characteristics of the industrial structure of Guangdong Province, especially the Pearl River Delta region, and reflects the applicability, innovativeness and composite nature of the major. Therefore, the development of digital media art in the School of Design and Art has a unique engineering background and professional system planning requirements for the cultivation of applied talents.

3.1 Interdisciplinary Innovation Across the College

The development of this major can make full use of the characteristics of the school's engineering majors to explore the characteristic innovation path of digital media art. Relying on the school, information technology and computer technology majors, the cross-innovation of engineering technology and design creativity, and the talent training of "technology + art" combining art and industry can be realized.

In order to promote the cross-integration of the above-mentioned disciplines and majors, it is necessary to encourage and support the development of new courses and open interdisciplinary courses. Efforts should be made to open general courses with the characteristics of this major in the school, improve the overall cognition of this major in the construction of majors in the school, and enhance the understanding of the interdisciplinary classroom of art disciplines for students majoring in engineering. The purpose of the general course is to reorganize the teaching content, train students in various aspects, develop thinking ability, improve the ability to express ideas, judge and identify values, and thus promote the comprehensive development of students' emotion and reason.

The specific method is: in order to expand students' interdisciplinary vision, improve their interdisciplinary literacy, improve their interdisciplinary skills, and improve their interdisciplinary ability, it's needed to set up a number of interdisciplinary basic courses, a number of interdisciplinary theoretical courses, a number of interdisciplinary technical courses, and a number of interdisciplinary design courses, including courses such as "Artificial Intelligence Fundamentals", "Design and Humanities", "Information Technology", "Intelligent Design", "System Design", "Ecological Design" and other courses.

The measures to strengthen the network informationization construction of art courses are as follows. On the one hand, the high-quality courses of this major can support the course construction with the help of computer network technology to realize the construction of network resources in the design classroom. On the other hand, by

the method of flipped classroom, teachers can strengthen the re-learning of professional knowledge online, in order to guide students to complete extracurricular knowledge expansion learning through online learning, and enable them to learn to use the Internet to study reasonably and integrate into the Internet to develop learning scenarios.

3.2 Interdisciplinary Integration Within the College

Within the School of Design and Art, digital media art can serve as an important media bridge linking product design, costume design, visual communication design, and process design, and can well achieve a high degree of integration within the discipline.

For example: the design of objects in product design requires the use of interactive design and the use of virtual design to complete the relationship between products and users; in costume design, intelligent wearable devices, accessories and clothing will become important design and performance channels; in visual communication design, the visual design of information needs to be realized by means of the changing characteristics of the media; in the design of traditional arts and crafts, it is necessary to combine the core of traditional culture with modern technology to enhance the new form and attitude of cultural construction. From the development of the relationship between people to the relationship between people and virtual things, the development of multiple majors is integrated through an inclusive concept.

Workshop courses for the whole school should be set up to enhance the awareness of cross-learning and team management; at the same time, international workshops can be introduced to improve the international level of course design and cultivate students' international awareness. International workshop courses are generally closely integrated with Chinese industry needs with the latest resources and models, so that students can receive international art education at close range. They are also a positive response of the School of Design and Art in the transformation and development of the school to a high-level application-oriented university. Through the exchange of online and offline workshops, it can realize exchanges and learning with foreign universities and institutions, so as to broaden students' international horizons and enhance their ability to perceive life.

4 Ideas and Measures for the Construction of Digital Media Art Major

The digital media art major is guided by the national standards for teaching quality, pays attention to regional economy, industry development, personnel cultivating plans and course teaching, and is guided by the occupational demand of the development of the digital media industry in the Greater Bay Area, exploring the interdisciplinary integration development of professional construction ("Fig. 2").

4.1 Disciplinary System of Digital Media Art Based on Media Art

It can be defined that digital media art is a kind of media art in a broad sense, and is a new art form based on digital media. It is a typical interdisciplinary and practical
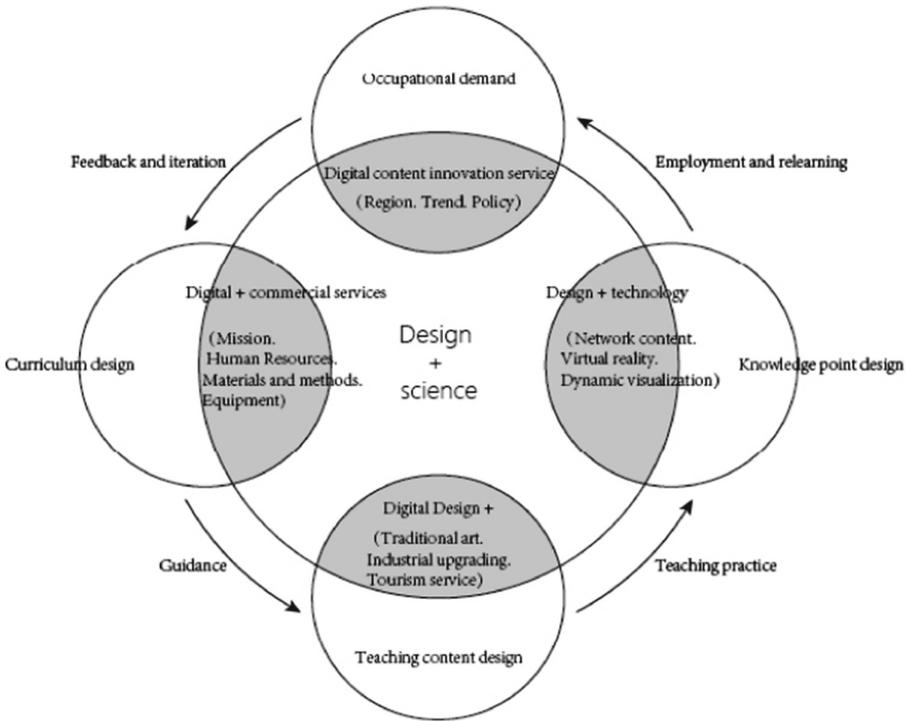
Fig. 2. Development model of digital media art course.

application discipline of "integration of art and industry" [2]. Its focus is to clarify the relationship between disciplines and employment and to reflect the systematicness and scientificity of the professional curriculum design [3]. It will explore and practice a new set of interdisciplinary curriculum that integrates the two disciplines. On the basis of the existing curriculum system, it transforms old courses, develops new courses, updates teaching content, and sets up interdisciplinary courses, in order to cultivate students' interdisciplinary professional knowledge integration ability. On the basis of deepening and improving the curriculum system, curriculum module, and teaching mode, the school takes the revision of the curriculum syllabus as an opportunity to focus on two things, transforming the old courses and developing new ones. And the transformation of the old courses is to update the teaching content according to the needs of the development of the times.

4.2 Building the Digital Media Art Curriculum Based on Subject Characteristics

Taking the construction of "new liberal arts" as an opportunity, cultivating professional talents combining art and industry It is necessary to take inheritance and innovation, intersection and integration, and collaboration and sharing as the main ways to promote the cross-integration of digital media art majors and professional courses such as product design, service design, traditional culture, media technology, and information

technology, so as to realize the collaborative education of teachers with multi-disciplinary backgrounds, and cultivate professionals combining art and industry. International workshops and academic lectures can be held to expand the international vision of teachers and students. Through multiple paths such as international workshops, academic lectures, and professional studios, professional construction and academic exchanges can be promoted, a good academic atmosphere can be created, an international perspective can be broadened, and teachers and students can be stimulated to deepen the depth of research and the enthusiasm of students to study.

4.3 Construction Design and Traditional Culture Innovation Course Based on Cultural Confidence

The construction of new liberal arts actively advocates enhancing the cultural connotation and enhancing the characteristics of Chinese culture. Modern design teaching requires the construction of cultural content on the basis of modern design theory as well as the mission of telling Chinese stories and spreading Chinese culture. It is necessary to have an international vision, but also to have Chinese feelings; there must be consciousness of problems and practical ability.

In the course of the development of the majors of the School of Design and Art, Beijing Institute of Technology, Zhuhai, it has experienced major planning and development as well as the update and adjustment of major settings; it still retains the traditional arts and crafts major in professional settings. After a certain period of exploration, the traditional cultural content in arts and crafts courses has become the cultural source of professional construction. The combination of traditional art carriers such as ceramic art and traditional lacquer art with digital media art allows traditional culture to present new artistic display characteristics.

4.4 Building an Interdisciplinary Industry-University-Research System Based on Regional Economic Characteristics

In the overall construction of the major, it complies with the policy requirements of the national education authorities. It actively participates in the project of the Higher Education Department of the Ministry of Education to organize relevant enterprises and support colleges and universities to jointly carry out industry-academy cooperation and collaborative education projects. In terms of serving local talent needs, based on the development characteristics of the economy and digital media industry in the Greater Bay Area, it attaches great importance to practical teaching in order to improve the quality of undergraduate talent training, deepen the integration of industry and education and school-enterprise cooperation, and actively introduce enterprise and social service projects. The product and service demand design of teaching practice projects tends to be a comprehensive design that integrates multidisciplinary technology. This supports students to complete knowledge integration and professional ability application, enhance their comprehensive competitiveness, and lay a foundation for employment and entrepreneurship.

4.5 Constructing an Interdisciplinary Professional Course Teaching Evaluation Mechanism Based on the Characteristics of School-Running

There is a need to manage the relationship between innovation and quality, not to innovate for the sake of innovation and thus neglect quality. High-quality innovation can best reflect the new requirements and high standards put forward by the new liberal arts concept for the construction of liberal arts. Therefore, the construction of new liberal arts must always take quality optimization as the guiding ideology for professional transformation and upgrading, and re-innovation. According to the above professional construction measures and approaches, attention should also be paid to the design of teaching evaluation and feedback mechanisms in professional construction. The establishment of talent demand and training indicators should fully consider the relationship between enterprises, students, teachers, classrooms and course content design, so as to establish a market-oriented talent evaluation model and training indicators. It is necessary to actively adjust the deficiencies in professional construction with an open spirit, appropriately introduce industry talent demand suggestions, and actively adapt to market changes.

5 Insufficiency of Professional Construction and Future Planning

5.1 Emphasizing Quality Construction and Improving Supporting System Construction

The construction of new liberal arts emphasizes integration and intersection, emphasizing wide caliber and profound foundation, and cultivating interdisciplinary talents. In the teaching operation, the content of students' learning is extensive and rich, but the proportion of professional courses will be relatively reduced. It is worth thinking about how to handle the relationship between generalist education and specialist education and how to enable students to not only learn professional knowledge well, but also devote more energy to expand their knowledge fields and enhance their ability and quality [4]. In teaching practice, teachers should explore teaching paths and methods that meet the comprehensive conditions of different schools. In this process, it is necessary to design the complete credit system, tutor system and other supporting systems to stimulate students' enthusiasm for learning and ensure the effective realization of teaching goals.

5.2 Building a Team of Teaching Staff that Meets the Professional Characteristics

In order to ensure the smooth opening of these interdisciplinary courses, the need for required course teachers is another key issue, especially for art colleges that focus on liberal arts. In terms of the construction of teaching staff, it's needed to strengthen the construction of teaching staff with backgrounds in other disciplines and strengthen the integration and innovation of professional construction.

The digital media art major of Beijing Institute of Technology, Zhuhai is currently dominated by young and middle-aged teachers. The requirements for the construction of the teaching staff should be the combination of art design, science and technology,

business, and human and communication science. Continuing education and re-learning should be encouraged to improve academic qualifications to support professional title levels and academic qualifications to be improved. It is necessary to build a high-level teaching staff with moderate scale, reasonable structure, complete gradient and excellent quality in the way of "introduction from outside and internal training". In terms of specific implementation, at present, the school mainly supports in-service teachers to gradually improve their educational level through doctoral study, thereby promoting the overall improvement of professional academic research and scientific research capabilities.

5.3 Improving the Level of Scientific Research, Teaching and Research in Interdisciplinary Construction

Similar to the situation in schools of the same type, young and middle-aged teachers have insufficient scientific research, teaching and research capabilities, and the number of achievements of high-quality projects is relatively small. The growth of teachers' professional positions requires teachers to strengthen their professional ability, and the participation in necessary teaching and research work has become a professional requirement. Teachers should pay attention to cutting-edge theoretical research, and the school management should provide policy support, actively cultivate interdisciplinary scientific research teams, and encourage application for high-grade and high-level scientific research, teaching and research projects. It is necessary to strengthen the compilation of textbooks and monographs, strengthen the construction of ideological and political courses, first-rate courses, excellent courses and excellent teaching reform courses, and comprehensively improve the overall scientific research ability and teaching level.

5.4 Paying Attention to the Changing Trend of International Technology and Iterating Professional Construction Ideas

In the era of network informationization, the efficiency of information dissemination has been greatly improved. Any design trends and technical features about professional changes can form an information storm in a very short period of time [5]. However, whether information can be transformed into practical and useful teaching content needs to be viewed from a dialectical point of view. In the process of professional setting, it needs to be discussed in the way of academic research. For example, the concept of the metaverse still exists in the form of a commercial concept in a very short period of time, and there is no way to implement it in teaching, but in the actual teaching process, it can be used as a teaching knowledge point to conduct case discussions.

At the application level, changes in hardware technology are also constantly changing. Compared with other liberal arts majors, digital media art has higher requirements for hardware basis and software. Therefore, in the professional construction, it's needed to closely follow the talent training needs of enterprises and the market, speed up and increase investment in a targeted manner, ensure the implementation of teaching, and improve the quality of teaching. In terms of solutions, through the collaborative education platform, the school can carry out industry-academy cooperation and collaborative education projects with high-tech enterprises, so as to launch interdisciplinary professional design research and practice. For example, the establishment of Huazhong University

of Science and Technology and NVIDIA Studio & Acer Digital Design Space Light and Shadow Interaction Laboratory has played a good demonstration role.

6   Conclusion

In the context of the construction of new liberal arts, the design education of art colleges should be combined with the school's actual situation, and on the premise of giving full play to the comprehensive characteristics, actively promote reform and innovation, and adhere to the road of integrated development. [6] Beijing Institute of Technology, Zhuhai has unique geographical advantages in terms of school-running characteristics. The school's school-running background has a disciplinary foundation that combines art and industry, and has practical and feasible objective conditions for professional construction in interdisciplinary professional construction. How should the digital media art major of Beijing Institute of Technology, Zhuhai innovate and develop? As an epoch topic of the times for higher art educators, educators need to be aware of changes in advance, actively respond to changes, and actively seek changes. Educators also have the need and confidence to build the digital media art major into a first-rate new liberal arts major with its own characteristics.

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