THE EXPLORATION OF PEDAGOGICAL MODEL REFORM OF DIGITAL MEDIA ART DESIGN MAJOR IN CHINESE HIGHER VOCATIONAL INSTITUTIONS：TAKING COLLEGE G AS A CASE

ZIHUI SUN

A THESIS SUBMITTED IN PARTIAL FULFILLMENT
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Degree of Doctor of Philosophy in Education and Society

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ABSTRACT

This study examines the training model of digital media art designers in Chinese higher vocational education, focusing on integrating theoretical knowledge and practical skills. The study adopts a qualitative approach, utilizing case studies to examine real-world examples of digital media art design programs in Chinese higher vocational education institutions. The selected cases encompass a range of pedagogical methodologies, curriculum structures, and industry partnerships. Through in-depth analysis and comparison of different cases, the study identifies common patterns, effective practices, and areas for improvement in the training of digital media art designers in today's China. The findings provide insights for educators, curriculum designers, and policymakers to optimize the training process and produce well-rounded, highly skilled designers to support China's high-tech-driven industrialization, thereby contributing to the growth of the innovation sector.

Keywords: Higher Vocational Education, Digital Media Art and Design, Professional Education, Pedagogical Model, Case Studies

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INTRODUCTION

1.1 Background and Rationale

1.1.1 With the Rapid Development of Higher Vocational Education in China, the Sustainable Development Channels of Applied Skills Talents are Smooth

China's higher education system has undergone a historic transformation from massification to universalization, becoming the world's largest. According to Martin Trow's research, the development of higher education can be divided into three stages: "elite," "mass," and "universal." The universalization stage is reached when the gross enrollment rate in higher education exceeds 15%. In 2019, China's gross enrollment rate in higher education surpassed 50%, marking the achievement of universalization in higher education. People's ideas about talent cultivation have also shifted from an elite orientation to a focus on mass education, with quality as the primary focus (Yang, 2012).

Higher vocational education aims to adapt to social and economic development and meet the demand for talent by focusing on the cultivation of vocational skills. In China's higher education system, higher vocational education accounts for a significant share. As of 2022, there are a total of 1,521 vocational undergraduate and college (specialized) schools in China, accounting for 50.2% of the total number of higher education institutions nationwide. In 2022, the total enrollment of regular and vocational undergraduate and college students reached 10.1454 million, with vocational undergraduate enrollment at 76,300, an 84.39% increase compared to the previous year. Enrollment in higher vocational education totaled 5.3898 million, with an additional 542,900 students transferring from five-year vocational colleges to

colleges. Enrollment in higher vocational education accounted for 59.2% of total enrollment (Source: People's Daily).

Higher vocational education is one of the key development areas for the Ministry of Education, and its development and application in China have gained widespread recognition and support. At this stage, China's vocational education has experienced rapid growth, with the number of students in higher vocational education approaching that of regular higher education, providing a sustainable channel for the development of applied skills professionals.

1.1.2 Cultivate the Skilled Talents Needed by the Society

A vocational qualification certificate is an objective, fair, scientific, and standardized assessment and appraisal of a worker's skill level, in accordance with the relevant provisions of the Labor Law and the Vocational Education Law. It demonstrates that the worker possesses the knowledge and skills required for a specific profession. According to the data from the Ministry of Human Resources, in 2021, 18.8 million people in China participated in the professional and technical personnel qualification examination, marking a 15.7% year-on-year increase. However, the number of individuals obtaining qualification certificates decreased by 2% from the previous year, to 3.47 million. In 2019, the growth rate of various professional and technical personnel qualification certificates was 11.0%, while in 2020 and 2021, it slowed down to 10.9% and 9.7%, respectively. This suggests that, despite the growing number of people pursuing vocational education in China, there remains a shortage of highly skilled professionals (Data Source: Ministry of Human Resources and Social Security of China).

In 2021, the State Council issued the "Opinions on Promoting the High-Quality Development of Modern Vocational Education" (No. 30 of 2021), proposing that by 2025, vocational education should exhibit more distinct characteristics, establish a basic modern vocational education system, and make comprehensive progress in the

construction of a skill-oriented society. By 2035, the overall level of vocational education should be at the forefront globally, and the foundation of a skill-oriented society should be firmly established (Data Source: State Council of China). With economic development and changes in China's economic structure, demand for skilled talent continues to increase. The nation has set higher standards for schools in cultivating high-quality, skilled talent. Therefore, the cultivation of skilled talent that meets societal demands is the research background of this study.

1.1.3 The Digital Transformation and Enhanced Industry-Education Integration in Vocational Education for Cultural and Arts Majors

In 2022, the Chinese Ministry of Culture and Tourism, along with the Ministry of Education, jointly issued the "Guiding Opinions on Promoting the High-Quality Development of Cultural and Arts Vocational Education in the New Era" (Fa, 2022), explicitly stating the need for "digital transformation of cultural and arts majors, integration with information technology, and enhancement of industry-education integration."

In terms of strengthening industry-education integration, "school-enterprise cooperation" has become a popular talent development approach in China. This approach involves collaboration between universities and enterprises to train talent, with the university taking the lead in providing applied training, and the enterprise offering training facilities, practical training teachers, and jointly developing pedagogical resources. This model promotes seamless transitions for students from school to the workplace by facilitating talent sharing between academic institutions and businesses. However, challenges exist in implementing cultural and arts majors, including imbalances in interests between schools and enterprises, insufficient depth of professional cooperation, and insufficient attention to school-enterprise collaboration, which impact the digital transformation and the enhancement of industry-education integration in cultural and arts vocational education.

Digital Media Art Design is listed under the Arts Design category in the "2021 Catalog of Higher Vocational Education (Specialized) Majors in Regular Higher Education Institutions." It is a crucial major within the cultural and arts field, playing a significant role in the digital transformation and enhancement of industry-education integration in cultural and arts vocational education.

Table 1.1 Digital Media Art and Design in the List of Occupational Specialties Issued by the Ministry of Education in 2021

2021 Vocational Major directory of the Ministry of Education			
Subject category	**first-level discipline**	**name of major**	**remarks**
55 Culture and art categories	5501 Art and design category	550103 Digital Media Art Design	Art degree

With economic development and societal progress, digital media art design, as an emerging art form, has garnered increasing attention. By examining the application scope of professional skill certificates from the Ministry of Human Resources and Social Security (see Table 2), we can see that the application fields of digital media art design are expanding, especially as demand for highly skilled talent in areas such as gaming and interactive design increases. However, the pedagogical model of digital media art design faces various challenges.

Table 1.2 Certificate of Digital Media Art Design Professional Skills (in part)

Animation production	Animation production technician animator Animation director
Game development class	Game programmer game art designer game planner
Interactive design class	Digital Media Interactive Designer Multimedia Designer Multimedia Designer Web designer
Film and television later class	Film and television post production technician film and television post production division program packaging division film and television editor
Advertising design	Advertising designer Advertising producer Advertising creative director
Graphic design class	Illustrator graphic designer digital art artist

Firstly, with the rapid development of digital media technology, industry demands and technical requirements are constantly changing. Traditional pedagogical models struggle to adapt quickly to these changes, leading to a significant gap between what students learn and industry needs.

Secondly, digital media art design is a comprehensive discipline that requires students to possess diverse skills and knowledge. However, traditional pedagogical models often emphasize theoretical pedagogy, lacking practical components and project-based experiences, which hinder the development of students' practical skills and teamwork abilities.

Additionally, the pedagogical model for digital media art design faces issues such as an unbalanced teacher structure and insufficient pedagogical resources. Some vocational colleges lack teachers with practical experience and industry backgrounds, making it difficult to provide the professional guidance and practical opportunities students need. Simultaneously, the scarcity of pedagogical resources limits the reform and innovation of pedagogical models.

Lastly, the pedagogical model for digital media art design also suffers from an imperfect evaluation system. Traditional evaluation systems focus heavily on students' mastery of theoretical knowledge and exam scores, neglecting their practical

abilities and innovative awareness. This imbalance is not conducive to students' comprehensive development or to their adaptation to industry needs.

In the educational field of digital media art design, it is essential to study the characteristics of vocational education at this stage, the professional skills stipulated by the country, the characteristics of learners in this stage, and the market development requirements. Efforts should be made to find a talent development model suitable for this stage of education. This project will start by exploring the characteristics of higher vocational and technical education and by investigating the talent development model for professional skills in digital media art design.

1.2 Research Questions

Question 1: How do teachers' collaboration (teacher and corporate teacher) improve students' art design, talent, and technology learning?

Chinese General Secretary Xi Jinping has emphasized, "Education is a national priority," highlighting its crucial role in the rejuvenation of the nation and societal progress. The development of vocational education is closely tied to the local economy. With the continuous advancement of technologies such as big data, artificial intelligence, and blockchain, the scale of the vocational education market is expanding. According to data from iResearch Consulting, the global scale of vocational education has risen from 2016 to 2026, and it is estimated that by 2026, the national vocational education market will exceed 800 billion USD. (Data Source: iResearch Consulting)

Despite having a large workforce, China faces a significant shortage of skilled talent. According to data from the All-China Federation of Trade Unions, as of 2021, China had over 200 million skilled workers, of whom more than 60 million were highly skilled. However, skilled laborers constitute only 26% of the total employed population, and highly skilled talent accounts for only 7.8%. (Data Source: China

News). At this stage, China urgently needs a pool of highly qualified talent to meet current demands.

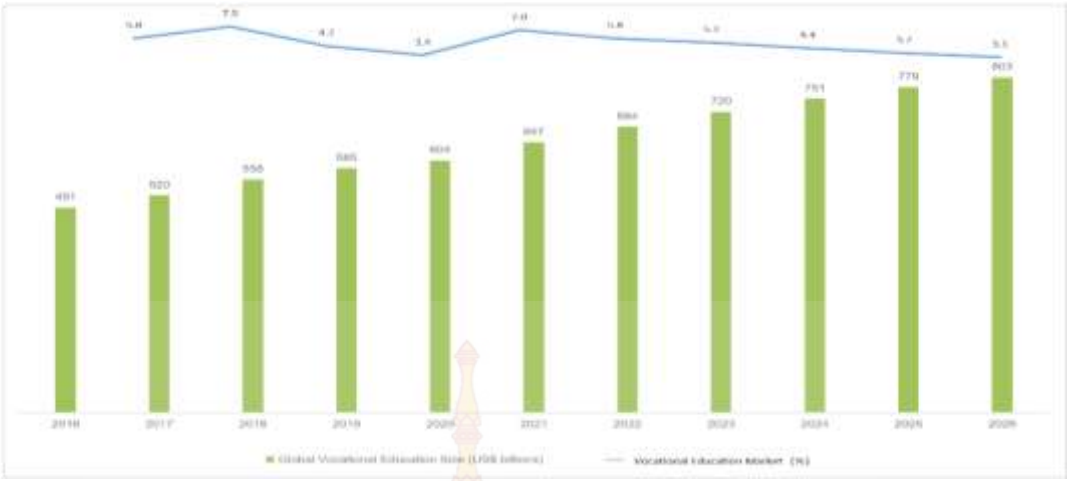

Figure 1.1 Size and Growth Rate of the Global Vocational Education Market from 2016 to 2026

In this macro context, “How to enhance students’ vocational skills?” and “How can skills be aligned with the rapidly evolving market demands?” are questions worthy of our investigation. The pedagogical models of countries with relatively mature vocational education systems can offer valuable insights for China’s vocational education. Examining how to draw lessons from other countries’ experiences, specifically in terms of “How can collaboration between teachers (educators and industry professionals) enhance students’ learning in artistic design, talent development, and technical skills?” is an aspect that merits research in this project.

Question 2: How does the school teacher learn their teaching strategy during his/her collaborative teaching with an industry teacher?

Influenced by the Chinese philosophy of “emphasis on academic education over vocational education,” technical education has historically been considered inferior to academic education. Most Chinese families tend to choose academic education, leading to lower market recognition for vocational education students

compared to their academic counterparts. The channels for cultivating highly skilled technical talents in China still need further development. Professor Yuan Xiyang pointed out in the “Research on the Development Process of Chinese Art and Design Education”: “While the teaching scale is rapidly expanding, if the pedagogical model, methods, and curriculum structure remain unchanged, its development is bound to be unsustainable” (Yuan, 2003).

Although the scale of vocational education is increasing annually, pedagogical models, methods, and curricula continue to emulate academic education. This hinders the flexibility of vocational education and makes it challenging to improve the quality of talent cultivation. Yuan (2003) also highlighted the contradiction between quantity and quality in the development of art and design education, suggesting the need to explore diverse educational models and curriculum structures to meet students’ diverse needs. Higher vocational education represents a distinct educational model from traditional higher professional education, raising the crucial question of how to design courses that reflect different educational natures and training objectives (Yuan, 2003).

In contrast to engineering education, art and design education face a more pronounced contradiction between “quality” and “quantity.” Addressing this issue is a significant challenge for vocational education in art and design. Modern vocational education models attempt to integrate school-enterprise resources, but in collaborative teaching with industry professionals, how can school teachers improve their teaching strategies? Exploring issues such as how school teachers can integrate enterprise resources into their teaching, formulate diverse talent development goals, and construct an optional talent development curriculum structure requires further research.

Question 3: How did the students learn their art, talent, and technology through teacher collaboration?

In the past two years, Artificial Intelligence and Computer Graphics (AIGC) have experienced rapid development. Through continuous iterations, ChatGPT has passed the Turing test, demonstrating the ability to understand images and achieve professional and academic benchmarks at a human level. As model sizes continue to grow, multimodal learning and the integration of artificial intelligence are poised to expand into more application scenarios. According to a survey conducted by the DT Research Institute, AI-generated content is expected to have a significant short-term impact on various industries, with the cultural and media category ranking fourth at 18.1%. In terms of long-term impact, the cultural and media category ranks first at 64.6% (Data Source: DT Research Institute). This indicates that technological advancements have a substantial impact on the employment landscape, especially for disciplines at the intersection of art and technology, such as digital media arts.

In this context, how students effectively learn art, talent, and technology through teacher collaboration becomes crucial. The teaching reform in this project addresses practical issues, specifically the fast pace of technological iterations and the mismatch between talent cultivation and societal demands. This research, conducted in vocational colleges, offers a valuable and practical reference for enhancing students' comprehensive qualities and preparing them for future workplace demands.

1.3 Research Objectives

1.3.1 Exploring the Dialectical Relationship Theory between Art and Technology and the Vocational Education System

This study aims to conduct an in-depth examination of the dialectical relationship theory between art and technology and mature vocational education systems internationally. It seeks to analyze the characteristics of current learners in digital media art and design in higher vocational education. Additionally, the study will

provide an overview of the current status, development trends, and prospects of vocational education in digital media art and design. Furthermore, the research will explore vocational skill development models in digital media art and design, aiming to investigate how to cultivate professional skills aligned with the demands of the new technological revolution. The findings of this research have significant practical implications for guiding technological innovation in the design industry and for developing professional skills in this field.

1.3.2 Drawing on Proven Experience Abroad

This study aims to reform and revitalize China's vocational education model by drawing on mature international models, such as the "Modern Apprenticeship Education Model," the "Dual System Vocational Education Model," and the "Industry-Academia Collaboration Model." The proposed solutions are intended to meet the demand for skilled talent cultivation in China. The experiences drawn from these international models have practical value for the reform and development of vocational education in China.

1.3.3 Proposing an Approach Suitable for the Cultivation of Digital Media Art and Design Talents in Higher Education

This study focuses on developing a pedagogical model to cultivate talent in digital media art and design within higher vocational education. Through practical teaching experiences, the study aims to identify methods well-suited to this level of education. G College, recognized as a high-level higher vocational institution with distinctive characteristics in China, is selected as the case study for this research. The study delves into reforming the pedagogical model for the Digital Media Art and Design major at G College to explore the optimal approach to vocational skill development in this field. Simultaneously, given the timely, location-specific, and student-oriented nature of vocational education, the study provides specific, detailed recommendations for reforming the curriculum system in vocational colleges.

1.4 Scope and Limitation

1.4.1 Research Category

The research on “Pedagogical Model Reform for Digital Media Art and Design Majors in Chinese Higher Vocational Colleges” primarily involves the following core concepts: “Higher Vocational Skills Education,” “Higher Vocational Education in Digital Media Art and Design,” “Pedagogical Model Reform,” and “Case Study.” Talent cultivation in the digital media art and design major at higher vocational colleges has long been entrenched in the educational philosophy of artistic disciplines. This study seeks to break free from this framework, approaching art and design education theory from a technological perspective. It emphasizes the integration of information technology and industry-academia collaboration. Leveraging the characteristics of vocational education in China, and combining practical teaching with case analysis, the study aims to explore a talent cultivation model for digital media art and design majors in higher vocational education that emphasizes comprehensive competence and innovative capabilities.

1.4.2 Pay Attention to the Crossover of Practical Research and Research Scope

This research, building on the clarification of design education theory, places a significant emphasis on practical implementation. Through continuous adjustments in practice, it seeks to refine the pedagogical model for talent cultivation in digital media art and design at higher vocational colleges. The aim is to break away from a singular, school-centric pedagogical model and delve deeper into exploring talent cultivation approaches that better align with market demands, fully leveraging the technical aspects of vocational education. The study proposes a talent cultivation pedagogical model, centered on market demands: the “Self-Planning” model. In the practical implementation of the “Self-Planning” talent cultivation pedagogical model, the interdisciplinary research characteristics become more pronounced. Therefore,

research outcomes derived from practical experience are adaptable across different disciplines.

1.4.3 The Topic Selection is Ordinary but Highly Targeted

This study addresses the practical issues in the development of higher education in China, focusing on a group that is well known but often overlooked. Higher vocational education not only imparts specialized knowledge and skills but also plays a crucial role in maintaining social stability and, to some extent, enhancing practitioners' quality. Particularly in the current environment, vocational and technical education is highly valued. The research zeroes in on the pedagogical model of the Digital Media Art and Design major in higher vocational education. The theoretical framework and practical approaches developed in this study hold reference value for cultivating skills among digital media art and design professionals in higher vocational education.

1.4.4 Delimitations of the Subject Research

This study has limitations as it relies on G College as a case study. G College is a specific case of the reform of the pedagogical model for the Digital Media Art and Design major at a certain higher vocational college in China. The choice of this college as the research subject is based on several reasons:

Firstly, G College has accumulated experience and achievements in teaching the Digital Media Art and Design major. The college has made various attempts and explorations to reform pedagogical models, yielding valuable experiences and outcomes. Therefore, selecting G College as a case for analysis can yield valuable insights and lessons.

Secondly, G College's Digital Media Art and Design major holds a certain influence in the region. The quality and level of teaching in this major at the college are relatively high, producing a group of outstanding graduates. Analyzing G College's

pedagogical model reform provides insight into the current state of reform in the Digital Media Art and Design field in the region.

However, using G College as a case study has its limitations. Firstly, G College is just one specific case among the numerous higher vocational colleges in China, and its experiences and outcomes in pedagogical model reform may not be universally applicable to other institutions. Secondly, due to time and resource constraints, this study cannot conduct comprehensive research and analysis of the Digital Media Art and Design majors in other higher vocational colleges, making it challenging to provide universally applicable suggestions for pedagogical model reforms in Chinese higher vocational colleges.

Despite these limitations, using G College as a case study can offer practical insights and lessons on reforming pedagogical models for the Digital Media Art and Design major. These insights can serve as references for pedagogical model reforms in other higher vocational colleges. Additionally, this study provides ideas and directions for future research on reforming pedagogical models for the Digital Media Art and Design major in Chinese higher vocational colleges.

1.5 Research Framework

This research project is divided into five parts:

Part 1: Research Questions and Framework

In this section, the research defines key concepts, including “higher vocational education,” “digital media art and design in higher vocational education,” “talent development models,” and “teaching reform.” The focus is on specific issues in higher vocational education, such as “How does collaboration between teachers (academic and industry instructors) enhance students’ learning in art, talent, and technology?” The section explores the impact of teacher collaboration on student

learning, how school teachers improve their teaching strategies in collaboration, and how students learn art and technology through collaboration. Based on an analysis of the current state of higher vocational education, the section establishes research goals, significance, research content, technical approach, innovation points, and research methodology.

Part 2: Literature Review

This part involves a dialectical analysis of relevant concepts. It begins with a dialectical analysis of "vocational technical education," summarizing mature vocational education models like "dual-system," "modern apprenticeship," and "industry-oriented colleges." Next, it analyzes the "pedagogical model reform for digital media art and design majors," covering teaching reform methods and outcomes in higher vocational colleges in China and other countries. Through these explorations, the section deduces research goals from a theoretical perspective, determines research methods, establishes a theoretical model, lays the theoretical foundation for the study, and supports subsequent practical teaching.

This research is grounded in constructivist theory, curriculum and instruction theory, and the learning disciplines theory. It constructs the theoretical framework for the "self-planning" pedagogical model in higher vocational digital media art and design majors—a student-centered dual-cycle pedagogical model. This pedagogical model, based on national and societal demands for talents in digital media art and design, aligns with the school's positioning of talent development with a focus on this major. It identifies specific goals and core competencies, proposing corresponding implementation steps and procedures for training, teaching, learning, and evaluation. The result is a systematic, student-centered pedagogical model's theoretical framework.

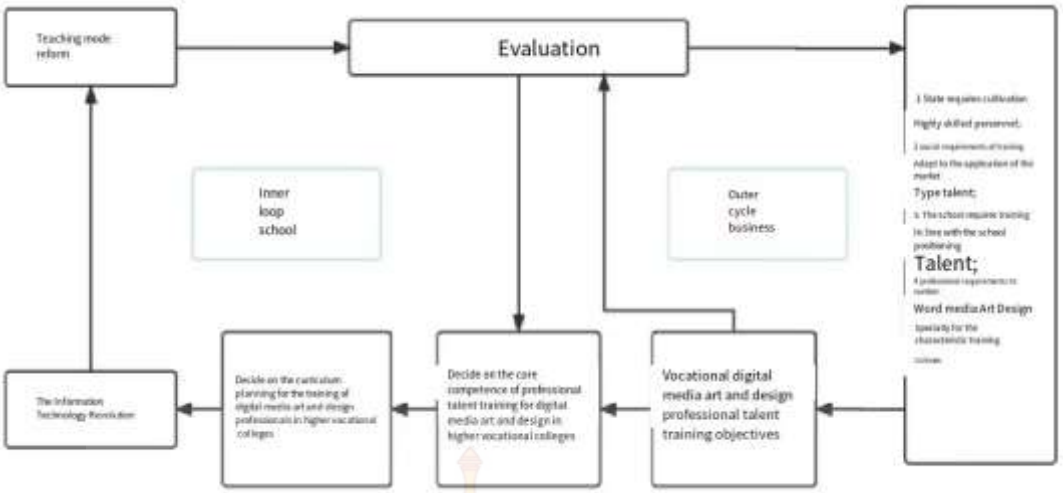

Figure 1.2 Theoretical Framework of Pedagogical Model Reform of Digital Media Art and Design Major in Higher Vocational Colleges

Part 3: Research Method

This research employs qualitative research using the “indicating methods” approach, incorporating “case study,” "literature review,” and “interviews” as research methods. G College is chosen as the research subject for an in-depth study of the pedagogical model reform in its digital media art and design major. Three research methods— “Classroom observation notes & Documents,” “Face-to-face interviews,” and “Focus group discussions”—are triangulated to achieve a comprehensive understanding of the research subject. Based on the case study, a comprehensive set of action plans is designed and implemented to assess the feasibility of the proposed system.

Part 4: Data Analysis and Results Discussion

In this section, the data collected during the research, including interviews and classroom records, are analyzed, and the results are discussed. Classroom record data analysis is used to understand the case’s teaching effectiveness. Through interviews, the thoughts, opinions, and suggestions of teachers and student groups are gathered. The analysis addresses the challenges faced by the pedagogical model reform

in “self-planning” talent development and proposes solutions and strategies. Case analysis provides specific practical references, offering insights and inspiration for the pedagogical model reform in digital media art and design majors at other higher vocational colleges.

Part 5: Conclusion

The final section summarizes the “pedagogical model Reform in Chinese Higher Vocational Colleges’ Digital Media Art and Design Majors.” Based on an analysis of the pedagogical model reform in digital media art and design majors, a teaching reform model is formulated to cultivate talent in line with contemporary requirements for higher vocational education.

1.6 Definition of Key Terms

1.6.1 Higher Vocational Education

Higher vocational education aims to provide students with practical skills and knowledge in specific professions or industries, making it a part of higher education. The key features of higher vocational education include an employment orientation and an emphasis on practical and applied learning. The forms of higher vocational education are diverse. They may include higher vocational colleges, specialized higher vocational schools, and higher vocational technical colleges. The curriculum of these institutions primarily covers vocational skills, professional ethics, and vocational literacy, aiming to cultivate highly skilled technical talent with specific vocational competencies to meet society’s demand for various technical professionals.

The development of higher vocational education is crucial for promoting economic and social development, enhancing workforce quality and employability, and driving industrial upgrading and transformation. Simultaneously, higher vocational education needs to adapt to changes in socio-economic development and occupational

demands continually, consistently improve education quality and teaching standards to better serve society and economic development.

The latest version of the International Standard Classification of Education (ISCED) is ISCED 2011, developed by the United Nations Educational, Scientific, and Cultural Organization (UNESCO). It provides a framework for the international classification and comparison of education systems and qualifications.

According to Table 3, higher vocational education falls under ISCED levels 5 and 6, the first level of higher education. This level of education primarily aims to cultivate students with specific vocational skills and vocational literacy, focusing on the goal of preparing applied, skill-based talent to adapt to socio-economic development and occupational demands. It combines the universality, systematic nature, and scientific principles of higher education with the practicality, flexibility, and adaptability of vocational education. The purpose of higher vocational education is to cultivate individuals with a solid theoretical foundation and practical skills, capable of adapting to the needs of socio-economic development, with strong vocational literacy and innovative capabilities. The typical duration of higher vocational technical education is 3 or 4 years, and graduates can enter the workforce directly or pursue further education.

Table 1.3 The International Standard Classification of Education (2011)

Rank	Content
Early Childhood Education (Levels 0 and 1)	This category covers educational programs for children below the age of compulsory education. Level 0 refers to early childhood education for children under three years old. In contrast, Level 1 encompasses pre-primary education for children aged 3 to 5 or 6.
Primary and Lower Secondary Education (Levels 2 and 3)	This category includes primary education (Level 2) for children typically aged six to eleven or twelve, and lower secondary education (Level 3) for students aged twelve to fourteen or fifteen.
Upper Secondary and Post-Secondary Non-Tertiary Education (Levels 4 and 5)	This category comprises general and vocational education. Level 4 covers general programs at the upper secondary level, usually targeting students aged fifteen to seventeen or eighteen. Level 5 includes post-secondary non-tertiary programs that provide further education and training beyond the upper secondary level.
Tertiary Education (Levels 6, 7, and 8)	This category covers higher education, including bachelor's degree programs (Level 6), master's or equivalent programs (Level 7), and doctoral or equivalent programs (Level 8).
Short-Cycle Tertiary Education (Level 5A)	This category refers to short-cycle tertiary programs that are distinct from other levels of tertiary education.

High vocational colleges in China possess several distinctive features:

Career Orientation: The teaching content and curriculum in high vocational colleges emphasize cultivating students' practical operational abilities and vocational skills. Students undergo a certain proportion of practical training and internships during their studies to enhance their competitiveness in the workplace.

Practical Teaching: High vocational colleges prioritize practical teaching, focusing on developing students' practical operational abilities. Students engage in various practical projects and experiments, applying theoretical knowledge and skills through hands-on experience.

Career Mentor System: High vocational colleges typically establish a career mentor system where each student is assigned a mentor to guide their academic and career development. Career mentors provide vocational planning and employment guidance based on students' interests and abilities.

Industry-Academia Collaboration: High vocational colleges maintain close collaboration with industry. Collaboration includes two-way training and industry-academia cooperation projects, enabling students to better understand industry demands, gain early exposure to professional environments, and create more employment opportunities.

High Employment Rate: Due to the emphasis on cultivating vocational skills and practical abilities, graduates from high vocational colleges are more competitive in the job market. The employment rates of high vocational college graduates are generally high, and they can find satisfactory jobs more quickly.

In summary, high vocational colleges play a crucial role in China's education system, contributing significantly to the development of a large number of highly skilled technical talents. In reforming the pedagogical model in digital media art and design, high vocational colleges should actively explore pedagogical models that align with their characteristics, prioritize practical teaching and industry-academia collaboration, and enhance students' vocational literacy and practical skills to meet the development needs of the digital media industry.

1.6.2 Higher Vocational Education, Digital Media Art and Design Professional Education

The digital media art and design major is a comprehensive discipline that involves various fields such as computer technology, art design, and media theory. This major focuses on providing students with an educational program and initiatives that equip them with the technical skills, creative processes, and critical thinking required for careers in digital media art and design. It encompasses a range of disciplines,

including digital design, animation, video production, graphic arts, interactive media, and more. Education in digital media art and design integrates technology, artistic expression, and communication. Its development dates back to the 1980s. With the rapid advancement of computer technology and the widespread use of the Internet, digital media art and design gradually evolved into an independent discipline.

Table 1.4 Development History of Digital Media Art and Design

Time	Content
The early 1980s	Computer graphics and digital audio technologies began to be applied in fields such as movies, television, and games. The application of these technologies laid the foundation for the development of digital media art.
In 1982	The University of California, San Diego, established the first computer art major, marking the birth of the digital media art major.
In the 1990s	With the continuous development of computer technology and the popularization of the Internet, digital media art is entering a period of rapid development.
In 1995	New York University, in the United States, established the world's first Digital Media Art major. Later, more and more universities began offering a major in digital media art.
In the 2000s	Digital media art entered a mature phase as computer and Internet technologies continued to develop. The application of digital media art is increasingly widespread, including film and television, games, advertising, animation, and virtual reality. At the same time, digital media art has begun to merge with other disciplines, such as interactive design, human-computer interaction, and data visualization.
In the 2010s	Digital media art entered an era of innovation with the emergence of technologies such as artificial intelligence, the Internet, and blockchain. At the same time, digital media art began to explore new application areas and innovative directions. It began to pay attention to social responsibility and sustainable development, including environmental protection and social welfare.

The development of the digital media art and design major emphasizes a deep integration with industry technologies. Throughout their learning journey, students will proficiently master industry-standard software applications and technologies, such as Adobe Creative Suite, 3D modeling software, video editing tools, and web development tools. As we enter the era of strong artificial intelligence, education in digital media art and design should possess the following characteristics:

Creative and Artistic Expression: Encouraging students to explore their creative potential and express themselves through various forms of digital media and learning principles of design, composition, color theory, storytelling, and visual communication to create compelling and impactful digital media projects, and developing their artistic vision and learning how to convey ideas and information through digital media effectively.

Interdisciplinary Approach: Utilizing a multidisciplinary approach, integrating various disciplines such as art, design, technology, and communication, and exposing students to a range of creative and technical skills, enabling them to cross different media and collaborate with professionals from diverse backgrounds.

Project-Based Learning: Emphasizing project-based learning, where students work on real-world projects or create their own digital media content. Through hands-on experience, students learn to conceptualize, plan, execute, and deliver digital media projects, fostering problem-solving skills, teamwork, and the ability to meet deadlines in a creative, collaborative environment.

Industry Exposure and Networking: Providing opportunities for students to interact with industry professionals and gain exposure to the digital media industry. Including initiatives such as industry mentorship programs, workshops, internships, off-campus training, and participation in industry events and competitions. Such experiences help students understand industry trends, build professional networks, and gain practical insights into the demands of the digital media field.

Ethical and Critical Thinking: Emphasizing ethical considerations and critical thinking skills in digital media art and design education and teaching students to critically analyze and evaluate digital media content, considering factors such as cultural diversity, representation, intellectual property, and ethical considerations in the digital realm and deepening students' understanding of the societal impact of their creative content and exploring how to create responsible and meaningful digital media content.

The core objective of the pedagogical model for the Digital Media Art Design major is to cultivate students' creativity and practical abilities. In this pedagogical model, teachers should prioritize developing students' creative thinking and innovation capabilities, encouraging them to engage in independent learning and practical exploration. The teaching content should be closely aligned with real-world applications, integrating theory and practice to enable students to apply acquired knowledge to actual projects and solve real-world problems.

Regarding teaching methods, the pedagogical model for the Digital Media Art Design major should emphasize flexible, diverse instructional approaches, including lectures, case analyses, practical exercises, and group discussions. By combining various teaching methods, it can stimulate students' interest in learning and enhance overall learning effectiveness. Additionally, the pedagogical model for the Digital Media Art Design major should prioritize scientific and comprehensive assessment of teaching. Teachers should employ a variety of assessment methods, including assignments, project assessments, and exams, to comprehensively evaluate students' learning outcomes and skill development.

The reform of the pedagogical model for the Digital Media Art Design major aims to align with the industry's development needs, cultivating high-quality talent with creativity and practical skills. By establishing reasonable teaching objectives, scientific teaching content, flexible and diverse teaching methods, and comprehensive,

scientifically grounded teaching assessments, it can enhance students' learning outcomes and skill development, fostering continuous improvement in the education of the Digital Media Art Design major.

This research explores vocational education in digital media art design within higher vocational institutions, using "Vocational Education for Digital Media Art Design in Higher Vocational Institutions" as a conceptual term for discussion, primarily to clarify the scope of this research. Within the framework of "Integration of Art and Technology," we discuss how to develop a model for cultivating talent in digital media art design.

1.6.3 Talent Training Model

Talent cultivation refers to the process of educating individuals. The talent cultivation model in higher vocational education refers to the educational approach adopted by universities, aiming to cultivate individuals with high-quality, innovative, and practical capabilities. The professional talent cultivation model serves as the teaching guideline for a specific discipline, encompassing teaching objectives, content, methods, and evaluation systems, all of which must align with the talent cultivation plan.

Mr. Pan Maoyuan, the founder of disciplines in Chinese higher education, once stated, "Education must adapt to social development." Education must meet specific economic, cultural, and political requirements. To enhance the quality of talent cultivation in higher vocational schools, it is necessary to increase their relevance to society. Therefore, when the existing talent cultivation model fails to adequately meet the demands of societal development, it should be innovated and reformed. This follows the external relationship laws of education.

The internal relationship laws of education pertain to the inherent principles of education itself. Mr. Pan Maoyuan expressed that "socialist education must cultivate well-rounded individuals through moral education, intellectual education,

physical education, and aesthetic education." In other words, higher vocational education needs to optimize the structure of qualities, promote comprehensive development, and cultivate highly skilled individuals with an innovative spirit and creative abilities. This encompasses China's educational policies and the general requirements for higher education development and specifications.

It can be observed that the formulation and development of the talent cultivation pedagogical model must comply with both internal and external relationships in education. For higher vocational schools, the reform of talent cultivation pedagogical models should include two aspects: Firstly, following the laws of external educational relationships, using societal needs as a reference point, adjusting the school's major offerings, as well as the goals and specifications of professional cultivation, to better align talent cultivation with the requirements of economic and societal development, and secondly, following the laws of internal educational relationships, starting from the students' academic situation, adjusting the professional cultivation plans and pathways, making the various elements in the talent cultivation model more coordinated, and improving the alignment between talent cultivation quality and goals.

1.6.4 Reform of Pedagogical Model

Pedagogical model reform is a crucial topic in education, and its theoretical foundations primarily include constructing a student-centered pedagogical model, promoting active student learning, and integrating information technology into the pedagogical model.

Firstly, the construction of a student-centered pedagogical model is a key theoretical foundation for reforming pedagogical models. Traditional education models often place the teacher at the center, where the teacher leads the instructional process, and students passively receive knowledge. However, a student-centered pedagogical model emphasizes the student's central role, focusing on fostering students' autonomy

in learning and innovative thinking. Through collaboration between industry mentors and school teachers, an instructional environment aligned with market demands and professional requirements is constructed. Project-based teaching is employed to promote students' comprehensive development.

Secondly, the pedagogical model emphasizing active student learning is another important theoretical foundation for reform. In contrast to traditional pedagogical models that may emphasize the teacher's central role, this approach encourages students to actively participate in classroom activities, ask questions, solve problems, and express their opinions. The pedagogical model that promotes active student learning cultivates students' inquiry spirit and critical thinking, stimulating their interest and creativity, thereby enhancing their learning outcomes and capabilities.

Lastly, the pedagogical model integrating information technology provides a significant theoretical foundation for reform. The rapid development and widespread application of information technology present new opportunities and challenges for educational practices. The integration of information technology in the pedagogical model underscores the use of IT tools and resources to provide diverse learning methods and instructional materials, expanding students' learning spaces and channels. By offering personalized learning environments and support, this pedagogical model harnesses students' interest and innovative potential, elevating their learning outcomes and capabilities.

In summary, constructing a student-centered pedagogical model, promoting active student learning, and integrating information technology into it are crucial theoretical foundations for reforming the model. The application and promotion of these theoretical foundations will improve teaching quality, nurture students' overall qualities and innovative abilities, and drive the sustainable development of education and instruction.

1.6.5 Constructivism

Constructivism is a branch of cognitive psychology. It is a learning theory in cognitive psychology and education that emphasizes learners actively constructing knowledge and understanding to build new concepts and meanings. It views learning as an interactive process between the individual and the environment, in which individuals actively engage and explore to build their own knowledge structures.

The core principles of constructivist theory include the following aspects:

Active Construction of Knowledge: Constructivism holds that learners actively construct knowledge during the learning process rather than passively receive information. Through interaction with the environment and accumulation of experiences, learners build new concepts and meanings.

Importance of Social Interaction: Constructivism emphasizes the significance of social interaction in learning. Learners construct knowledge through collaboration, communication, and sharing experiences with others, fostering knowledge through social interaction.

Influence of Culture and Background: Constructivism acknowledges the impact of culture and background on learning. Learners' cultural and social backgrounds influence their understanding of the world and the process of knowledge construction.

Active Exploration and Problem Solving: Constructivism encourages learners to construct knowledge through active exploration and problem-solving. Learners need to engage in real situations, developing cognitive abilities through practical experience and problem-solving.

In educational practice, constructivism offers educators a range of teaching strategies and methods. For instance, problem-based learning encourages students to explore and solve problems to construct knowledge actively. Cooperative learning

emphasizes the importance of social interaction in learning. In contrast, project-based learning provides a platform for integrating practical experience and problem-solving.

Constructivist theory highlights the learner's active participation, social interaction, and the process of knowledge construction. It offers a theoretical foundation in education, guiding teachers to adopt teaching methods aligned with constructivist principles to promote deep learning and meaning-making among students.

CHAPTER II
LITERATURE REVIEW

2.1 Related Theories

This research aims to understand the current status of teaching modes in the cultivation of talent in digital media art and design majors at Chinese higher vocational colleges. It delves into the main issues of teaching modes in the specific professional development process of vocational colleges and proposes practical suggestions to address them. Therefore, the first step is to clarify the development context of teaching modes in Chinese higher vocational colleges. Next, it involves reviewing vocational education teaching modes domestically and internationally, summarizing the problems in the teaching modes of higher vocational education in China, and presenting targeted recommendations from scholars, particularly for digital media art and design majors. Finally, the research aims to summarize the progress and deficiencies in this field and to provide a theoretical basis for subsequent studies.

2.1.1 Theoretical Perspectives

The teaching mode refers to a structured method or strategy used in education to organize and implement instructional activities. There is diversity in teaching modes, including different designs and implementation approaches, as well as teaching principles and methods. A search on the China National Knowledge Infrastructure (CNKI) using the keyword “teaching mode reform” in Chinese core journals and Peking University core journals from 2013 to 2023 yielded a total of 399 documents. According to the literature trend chart, teaching mode reform is a critical research area, and numerous scholars have conducted in-depth studies on this topic.

Figure 2.1 Literature Trend of the Chinese Core "Pedagogical Model Reform" in 2013-2023

In her paper "Research on Chemistry Concept Learning Patterns under the New Curriculum Educational Concept," scholar Guo Lingfang emphasizes that the reform of teaching modes should be based on a people-oriented educational philosophy that prioritizes learners' knowledge construction. She explores the teaching mode in chemistry and constructs the basic model of concept learning (Guo Lingfang, 2005). Scholar Du Peng proposes the "3+1" teaching reform model, dividing teaching into basic and specialized stages. Basic teaching cultivates students' basic skills, while specialized teaching focuses on skill-oriented and applied professional training (Du Peng, 2010).

Scholar Hu Lihua, in her paper "Research and Application of Classroom Teaching Mode Reform," suggests integrating network multimedia technology with traditional teaching to enhance teaching effectiveness and contribute to reforming classroom teaching modes (Hu Lihua, 2010). Ying Lifei, in "Practice and Reflection on Case Teaching Method in Management Studies," adopts a case study approach based on constructivist theory to practice teaching methods in management studies, highlighting the guiding role of constructivism in teaching reform (Ying Lifei, 2010).

Other research perspectives include “modern means” (Chen Xiangzhou, 2018), “participatory action learning and research teaching mode” (Sun Chenglin, 2017), “classroom teaching modes” (Fu Changzhao, 2015), and more. Analyzing these keywords helps researchers quickly understand the core features of the chosen topic and provides a theoretical basis for subsequent research.

Table 2.1 Ten Theme Words of “Pedagogical Model Reform”

Serial number	Subject Words	Heat
1	Teaching mode	133
2	Reform	43
3	Teaching reform	42
4	Reform of teaching mode	18
5	Higher vocational colleges	12
6	Classroom teaching mode	11
7	Colleges	11
8	constructivism	8
9	College English	7
10	Teaching	6

The topic words represent the main content and viewpoints of the paper. Analyzing the distribution and evolution of these topic words can help researchers quickly understand the core features of the chosen topic and facilitate their reuse in future research, providing a basis for breakthroughs in studies.

An analysis of the top ten topic words for the theme “Teaching Mode Reform” reveals that Vocational Colleges”, “Teaching Modes”, “Constructivism”, "Talent Cultivation Modes", "Information Technology", "Curriculum Reform”, and

"School-Enterprise Cooperation" are the most frequently occurring terms. The research focus is mainly on "Vocational Colleges," "Teaching Modes," "Constructivism," and "Curriculum Reform." Additionally, some scholars have researched "Information Technology" and "School-Enterprise Cooperation." Therefore, this study will be guided by constructivism as a theoretical framework, focusing on exploring the applied aspects in the professional field, including learning methods, curriculum content, teaching methods, and industry-education integration.

Table 2.2 Distribution of Main Journal Subject Terms for the Topic "Teaching Mode Reform"

Serial number	Journal name	Main subject words
–	Education and Careers	Higher vocational colleges; College students; College; Vocational education; Higher vocational education; Higher vocational education; Countermeasures; Ideological and political education; Teaching reform; School-enterprise cooperation;
2	Vocational and technical education	Higher vocational schools: Vocational education: Higher vocational education; School-enterprise cooperation: Curriculum system: Personnel training mode: Secondary vocational schools: secondary vocational education
3	Vocational and technical education in China	Vocational education: business vocational colleges; Higher vocational education; School-enterprise cooperation; Higher vocational colleges; Vocational colleges; Personnel training; Higher vocational education; Personnel training mode: integration of production and education:
4	Vocational Education Forum	Vocational education: Higher Vocational Colleges: Higher Vocational education: school-enterprise cooperation: Countermeasures: Higher vocational education: Vocational colleges: Personnel training: Personnel training mode:
5	Chinese Journal of Education	Curriculum Reform: Quality Education; Basic education; Teachers: classroom teaching; Teacher professional development: compulsory education; Primary and secondary schools; Education reform; Teaching model:
6	Research on higher education in Heilongjiang	College students; Higher education; Countermeasures; Ideological and political education; Innovation: Personnel training: colleges and universities: Teaching reform: reform
7	Adult Education	Adult education; Vocational education; Continuing education; Adult higher education; Lifelong education; Community education; Countermeasures; Higher vocational colleges; Higher vocational education: Questions:
8	Distance education in China	Distance education: Open education: Open University; Online learning; Online Education: Information Technology: Teaching Model: Lifelong Learning: Online Courses: Instructional Design:
9	University teaching in China	Personnel Training: Teaching Reform: Practical teaching: Teaching method: Curriculum system; Teaching mode: Innovation: Course construction: Teaching: Training mode:
10	Higher Education Exploration	Higher education: College students; United States: University: Bilingual Teaching: Inspiration; Countermeasures; Colleges and universities; Influencing factors:

In the same research topic, different articles exhibit distinct research styles, and each journal also has its own unique style. The statistical analysis of the distribution of subject terms in different journals reveals the research focuses and emphases within this research topic. Through the study of the distribution of subject terms related to the topic of "Teaching Mode Reform" in relevant journals, it was found that "Vocational Colleges," "Teaching Modes," "Constructivism," "Talent Cultivation Modes," "Information Technology," "Curriculum Reform," and "School-Enterprise Cooperation" are the most frequently appearing terms.

It can be observed that the current research on "Teaching Mode Reform" is gradually shifting towards specific professional and practical aspects. The core focus of this research centers on "Vocational Colleges," "Teaching Modes," "Constructivism," and "Curriculum Reform." At the same time, some scholars also conduct in-depth studies of "Information Technology" and "School-Enterprise Cooperation." Therefore, this study, guided by constructivism as a theoretical framework, will concentrate on applied research at the professional level, involving in-depth discussions on learning methods, curriculum content, teaching methods, and industry-education integration.

2.1.2 Higher Vocational Education

2.1.2.1 Development Course of Higher Vocational Education

From the perspective of the history of vocational education, it can be traced back to ancient civilizations. In ancient civilizations such as Egypt, Greece, and Rome, vocational education mainly focused on training individuals in specific crafts and industries. The apprenticeship system was widespread during that time, where young people learned a skill through hands-on experience with skilled masters. This system persisted into the medieval period in Europe, where guilds played a crucial role in organizing and managing vocational training. Similarly, ancient Chinese craft workshops also followed this system, relying on masters to pass down their skills to apprentices.

The industrial revolution in the 18th and 19th centuries brought significant changes to vocational education. The rise of factories and mass production created a demand for skilled workers, leading to the emergence of technical schools and trade schools. Vocational education began to formalize, incorporating curriculum development and standardized teaching practices. Education began integrating practical and theoretical learning, emphasizing the importance of both. This marked the birth of modern higher vocational and technical education.

With continuous technological development, vocational high schools were established in the 20th century. After World War II, as economies worldwide gradually recovered, maintaining peace and promoting economic development became the prevailing themes. This era witnessed the first golden period of development for higher vocational education. Countries began establishing new institutions or renovating existing ones dedicated to higher vocational education. For instance, the United States passed the National Vocational Education Act in 1963, which helped establish vocational schools, community colleges, and technical colleges.

At the end of the 20th century, the term “vocational education” was replaced by “Career and Technical Education” (CTE). CTE programs integrate academic and technical instruction, providing students with practical skills, industry certifications, and college preparation. CTE courses aim to equip students with the necessary knowledge, skills, and practical experience to enter the job market or pursue higher education in their chosen fields. CTE emphasizes career exploration and development, helping students identify their interests, abilities, and goals. Essentially, CTE represents a single-track education model that integrates general and vocational education, offering a personalized, free-choice vocational education program.

In the 21st century, higher vocational education has undergone significant changes and adjustments to meet the evolving job market and technological advancements. It emphasizes practical technology, aligning with industry needs, and

values blended and online education. It encourages students to pursue entrepreneurship and innovation. In an increasingly interconnected world, vocational education emphasizes a global perspective and cross-cultural understanding. Institutions offer international exchange programs, internship opportunities, and collaborations with overseas partners, enabling students to experience diverse cultures, practices, and work environments. Overall, 21st-century higher vocational education is industry-centered and adapts to technological progress. Its purpose is to cultivate skilled professionals capable of meeting the demands of a rapidly evolving job market and making effective contributions to the workforce.

Table 2.3 Development Course of Vocational Education

Time	Content
Ancient	Apprenticeships and informal, specific craft and industry training in ancient Egyptian civilizations, such as Greece and Rome
Middle Ages	The Guild organizes and standardizes vocational training.
The 18th-19th centuries	During the Industrial Revolution, technical schools and trade schools emerged, focusing on professional training in mechanical engineering and textile manufacturing.
In the early 20th century	The rise of establishing vocational high schools that combine academic and practical training, and agricultural schools targeting agricultural technology and rural occupations
After World War II	The first golden period, such as the passage of the National Vocational Education Act (1963), federal funding for vocational education programs, and the expansion of vocational school community colleges and technical colleges
At the end of the 20th century	Transition from “Vocational Education” to “Vocational and Technical Education” (CTE), the integration of academic and technical teaching in CTE programs
The 21st century	Modernization of vocational education, including technical and digital skills training, focusing on entrepreneurship and innovation, as well as cooperation between educational institutions and industries. Higher vocational education, including higher vocational education.

As the number and scale of higher vocational institutions continue to expand globally, countries have developed different vocational education models tailored to their practical situations, and management models have gradually matured. Examples include the “competency-based” model in the United States and the “dual system” in Germany. These mature management models exhibit the most prominent characteristic of “cross-disciplinarity,” closely intertwined with vocational education and industry. This topic briefly outlines the characteristics and advantages of the talent development models in higher vocational education internationally, using Germany and the United States as examples. Learning from these countries’ experiences can provide valuable insights.

2.1.2.2 Talent Training Model

The concept of “talent cultivation model” refers to the overall process of talent education carried out under the guidance of modern educational theories and educational ideologies, with specific training goals and talent specifications. It involves relatively stable teaching content, curriculum, management, and evaluation methods. Many Chinese scholars have provided definitions of the concept. In 1998, during the first national conference on general university teaching organized by the Ministry of Education, then Vice Minister of Education, Comrade Zhou Yuanqing, stated that the talent cultivation model consists of training goals, specifications, and the means to achieve them. The talent cultivation model serves as the criterion and basis for formulating pedagogical models. Therefore, to establish a pedagogical model suitable for the digital media art and design major in higher vocational education, it is necessary first to clarify its talent cultivation model.

In the field of higher vocational education, developed countries have always been at the forefront of exploring talent cultivation models. They have practiced and discussed vocational and technical education. Examples such as the dual system learning model in Germany, the Competency-Based Education (CBE) model in the

United States, and Japan's industrial college pedagogical model are relatively mature and worth learning from in vocational education. There has been in-depth research on borrowing relatively mature international vocational education experiences, as seen in Li Mengqing's "The International Development Status and Enlightenment of Higher Vocational Education in Germany, the United States, and Japan" (China Vocational and Technical Education, 2019). According to Li (2018), "Germany, the United States, and Japan, developed countries, have constructed internationalized higher vocational education systems that meet their own development needs through education system reforms, internationalized talent cultivation, faculty team construction, international curriculum development, and support from social forces." These mature vocational education models have guiding significance for the future development of vocational education in China. Especially in Germany, the United Kingdom, Japan, and other countries, vocational education is relatively mature, providing valuable experience for China's vocational education.

"Learning by doing" has always been one of the important paths for vocational education reform. Therefore, research results in this area are also abundant. For example, Shu Weiping from the Institute of Vocational and Technical Education at East China Normal University conducted a comparative study titled "International Comparison of Vocational Course Reform," which compared vocational education curriculum and teaching reforms in various countries worldwide, focusing on competency-based education and enhancing students' future adaptability (Shu, 2019). In "International Comparison of Higher Vocational Education Curricula," he further elaborated on the basic framework and methodology for international comparative analysis of higher vocational education curricula (Shu, 2010).

Pang Shijun from the Vocational and Technical Education Research Institute of Hebei Province conducted a study titled "Comparative Analysis of Comprehensive Vocational Competencies in the United States, the United Kingdom,

Germany, and Australia." This research reviewed and highlighted the differences and commonalities in comprehensive vocational competencies, suggesting in-depth research and analysis of specific vocational scenarios to provide a scientific and reasonable interpretation of vocational competency for curriculum and teaching reform practices in vocational education in China (Pang, 2009). Similar studies abound, and these research findings on the study and application of vocational education models in developed countries have valuable implications for vocational education reform in China.

Germany's dual system is one of the earliest models for cultivating talent in vocational education. It is widely regarded as a paradigm in the field. The dual system emphasizes the integration of school education and practical experience. Students not only learn theoretical knowledge in schools but also gain practical experience through internships or work in companies. This model aims to cultivate students' practical skills, professional competence, and adaptability to the workplace. In "Analyzing Germany's Skill Formation Regime: Apprenticeship Training and Modernization," Powell, J. J. W. points out that the "dual" refers to vocational schools, and the other "dual" refers to companies. Students receive cultural and basic technical theoretical education in schools and vocational skills training in companies. The combination of these two elements accomplishes the educational tasks, hence the term "dual system."

The German dual system is a high-quality model for cultivating talent that has developed over the long term within Germany's unique economic development pattern and historical and cultural background. This system combines theoretical classroom teaching with practical on-the-job training. By integrating academic knowledge with practical experience in various industries, the system prepares students for their professional development. Germany places significant emphasis on vocational education and training within its education system. Vocational schools provide specialized training for specific industries and professions, enabling students to acquire

practical skills and knowledge relevant to their chosen career paths. The German education system employs early tracking and differentiation methods, placing students in different educational tracks based on their academic performance and abilities. The purpose of this system is to tailor education to individual strengths and career aspirations.

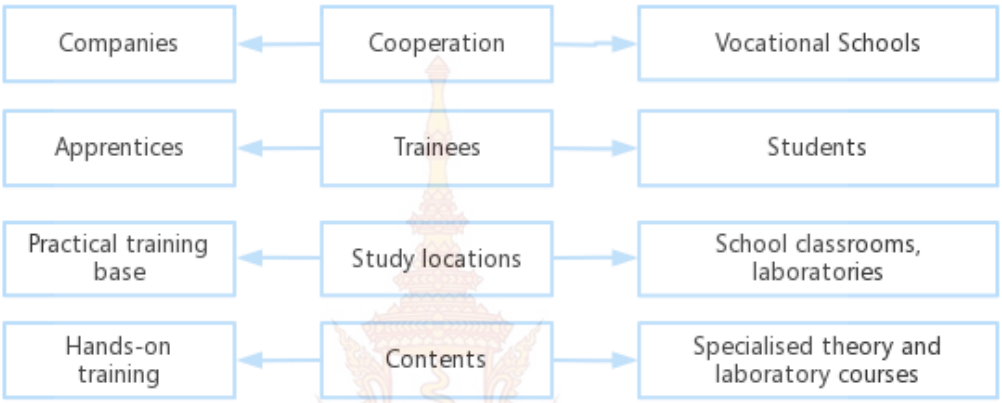

Figure 2.2 Duplex System Pedagogical Model

Under the government's strong promotion, various forms of education are developing side by side in an interconnected manner, and the mutual conversion between them is highly accessible. After completing basic education, students can easily enter the schools of their choice. It is entirely up to the students to transition from regular schools to vocational schools. Students who have obtained qualifications for admission to regular universities can also undergo dual-system vocational training from the beginning. Those who have undergone dual-system vocational training can also enter higher education institutions; however, they may need to undergo some supplementary cultural courses. Under this system, an increasing number of individuals with certain vocational and work experience are choosing to pursue university education.

Figures 2.3 and 2.4 clearly illustrate the interweaving and mutual conversion of various types of education within the vocational education system.

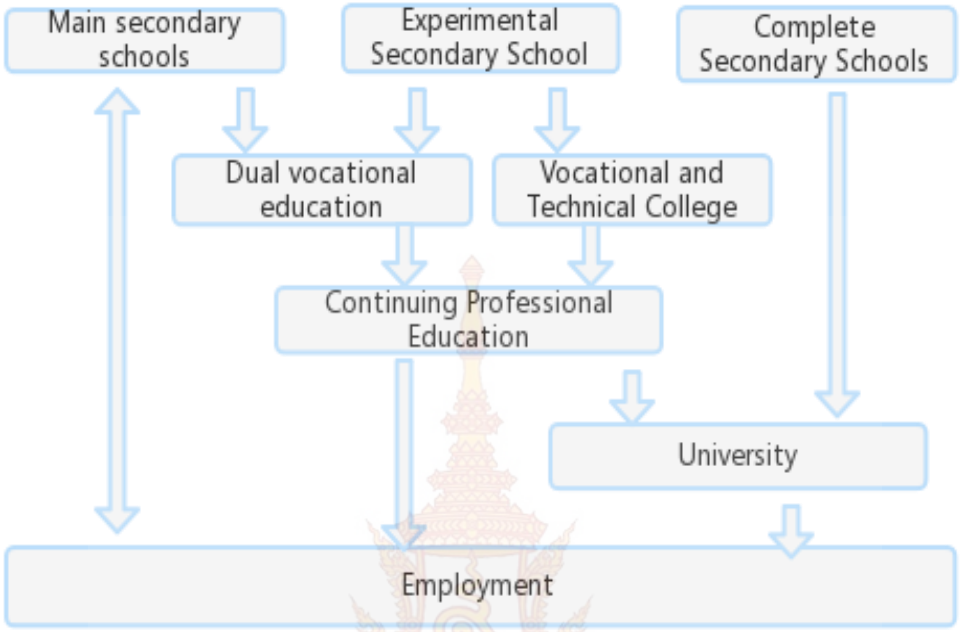

Figure 2.3 Framework Diagram of German Vocational Education

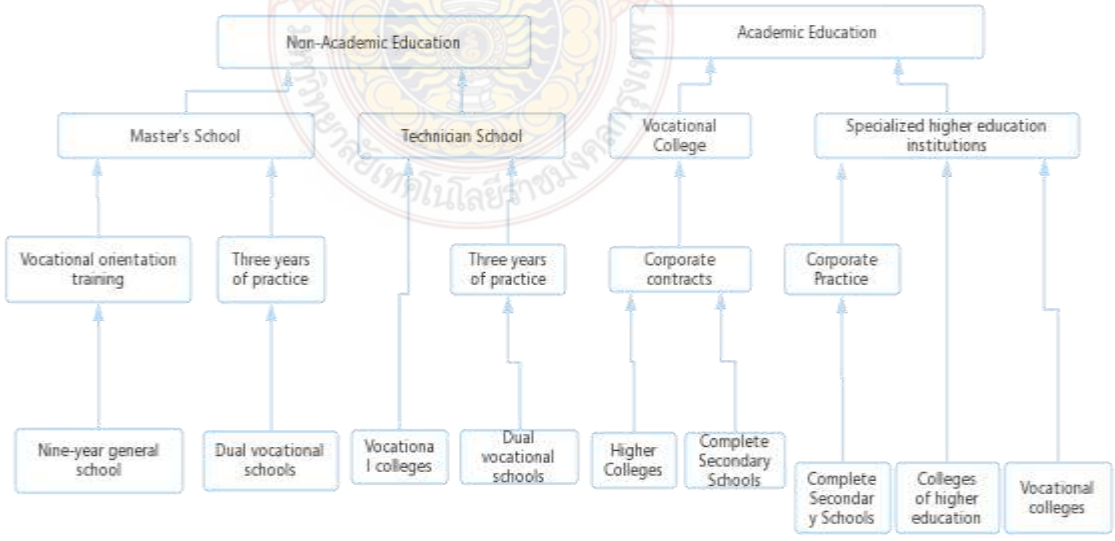

Figure 2.4 Framework Diagram of German Vocational Education

Germany's dual system has had a profound impact on vocational education in China. As Peng Liang noted in "A Perspective on German Vocational Education Models from the Angle of Art Design," the German dual system has influenced the talent cultivation model for art and design in Chinese higher vocational education. This impact is primarily seen in the clear distinction between university types, which fundamentally establishes the status of higher vocational and technical education and thereby promotes its development (Peng, 2009).

In China, the classification of vocational education at the secondary level includes vocational junior high school, vocational high school, technical schools, and secondary vocational schools. At the higher level, it includes vocational colleges and vocational bachelor's degrees. Postgraduate and higher-level vocational education has not yet fully formed and is gradually being perfected. Compared with the international standard classification of education, current vocational education in digital media art and design in China is mainly offered by higher vocational and technical colleges and some applied universities.

Competence-Based Vocational Education (CBVE) is a standard model in higher vocational education in the United States, with its core being Competence-Based Education (CBE). It emphasizes measuring students' mastery of specific competencies rather than solely relying on traditional metrics such as seat time or credits. The CBE model underscores student-centered learning, personalized teaching, and the development of real-world skills.

In the CBE model, vocational competencies serve as the foundation, educational objectives, and evaluation criteria. Comprehensive competencies determined through occupational analysis are utilized as learning subjects, and teaching is arranged from easy to difficult based on the specialized competencies listed in the occupational competency analysis table.

The CBE model is outcomes-oriented, able to define clear learning outcomes that describe what students should know and be able to do. These competencies are concrete, measurable, and consistent with industry or academic standards.

The CBE model features flexible progression arrangements. Students are allowed to set task schedules at their own pace, moving on to the next task once they demonstrate mastery of the current competency. This flexibility enables students to tackle challenging tasks according to their own circumstances, facilitating the rapid acquisition of necessary skills.

Personalized learning pathways can be developed in the CBE model. Recognizing that students have different learning styles, interests, and prior knowledge, personalized learning pathways are designed to meet individual student needs, supporting their unique strengths and growth areas. This involves personalized teaching, adaptive learning technologies, and tailored assignments.

Assessment in the CBE model is competency-based, focusing on determining the extent to which students have mastered specific competencies. Unlike traditional exams, which often rely on performance-based assessments, the CBE model allows students to showcase their skills as the primary means of assessment.

The CBE model emphasizes continuous feedback and support to help students identify their strengths and areas for improvement. Teachers, mentors, and advisors play a crucial role in providing personalized guidance, coaching, and support to help students succeed.

The CBE model utilizes qualification certification and transcripts to record student performance. It often employs alternative methods of certification and transcript recording to document students' mastery of competencies, replacing traditional grades and credits.

Overall, the CBE model is student-centered. It emphasizes student self-learning and self-assessment, with teachers serving as managers and guides in teaching. Instruction is organized around students, with teachers responsible for providing learning resources based on the competencies listed in the occupational competency analysis, creating modular "learning packages" and "study guides," and establishing centralized learning information centers. Students are accountable for their own learning, following study guides to develop personalized learning plans based on their actual circumstances. After completing their studies, they first conduct self-assessments and, if they believe they meet the requirements, are then assessed by teachers.

Table 2.4 Differences between the CBE Model and the Traditional Vocational Education Model

Project	Traditional Model	CBE Model
Training Objectives	General	Specific
Training Standards	Curriculum	Objective assessment by teachers and students together
Learning Time	Schooling duration, fixed time	Actual performance
Training Foundation	Discipline, knowledge	Development of skills
Teaching Basis	Textbooks	Modules, multimedia, materials
Teaching Methods	Mainly teacher lectures with some demonstrations	Mainly teacher-guided student practice
Teaching Progress	Group-based	Individual mastery
Teaching Venue	Classroom	Practical training classrooms, on-site
Teaching Feedback	Delayed	Timely
Teaching Effect	Exam scores	Competency assessment

The Japanese model of industry-academia collaboration in education, commonly known as "IUC," is a collaborative framework that fosters partnerships

between academic institutions (universities and vocational schools) and industries. This model aims to bridge the gap between theoretical education and the practical skills required by industry, enhance research and development, and promote innovation and economic growth. The development of the Japanese industry-academia collaboration education model has evolved.

The Japanese industry-academia collaboration education model integrates resources from schools, enterprises, and the government to cultivate professionals who meet market demands through collaborative efforts. Some key characteristics of this model include:

Collaboration in Curriculum Development: Industry-academia collaboration involves close cooperation between academic institutions and industries in curriculum and project development. Industry representatives provide input on the skills and knowledge required in the job market, ensuring that educational programs align with industry needs. This collaboration helps students acquire relevant and up-to-date knowledge and skills.

Internships and Cooperative Education: The Japanese model emphasizes internships and cooperative education programs, providing students with practical experience in real-world settings. Academic institutions collaborate with industries to offer structured internships and cooperative education opportunities, allowing students to apply their theoretical knowledge in practical settings. This practical experience helps students develop industry-specific skills and gain insights into workplace dynamics.

Joint Research and Development (R&D): Collaboration between academic institutions and industries extends beyond education and includes joint research and development projects. Partnerships between industry and universities facilitate the sharing of expertise, resources, and facilities for research and innovation. These

collaborations often focus on addressing industry challenges, developing new technologies, and advancing specific sectors.

Industry Experts as Lecturers and Guest Speakers: The Japanese model encourages industry experts to serve as guest lecturers or speakers. Industry experts share their practical knowledge, experience, and insights with students, providing real-world perspectives and industry-specific expertise. This interaction helps students understand industry trends, challenges, and opportunities.

The Japanese industry-academia collaboration education model drives innovation, technological advancement, and economic growth. By bridging academia and industry, this collaborative framework ensures that educational programs align with industry needs, enhance students' practical skills, and promote research and development that contribute to industry competitiveness.

Table 2.5 Comparison of the Dual System in Germany, the Industry-Academia Collaboration Model in Japan, and the Competence-Based Education (CBE) Model in the United States

Feature	Dual System (Germany)	Industry-Academia Collaboration Model (Japan)	Competency-Based Education (CBE) Model (United States)
Advantages	Combines theoretical lea rning and practical traini ng, providing students w ith rich practical experie nce.	Emphasizes collaboration with industries, exposing st udents to the latest technol ogies and industry trends. Fosters students' innovatio n and practical skills, facili tating the cultivation of co mpetitive graduates. Offers various internships and pr actical opportunities, assist ing students in smooth emp loyment.	Personalized learning path ways tailored to students' abilities and interests. Em phasizes students' actual a bilities and skills, not just credits or hours. More clos ely aligned with real-world occupational deman ds, helping students better cope with workplace chall enges.

Feature	Dual System (Germany)	Industry-Academia Collaboration Model (Japan)	Competency-Based Education (CBE) Model (United States)
Disadvantages	Requires the establishment of a sound collaboration mechanism between industries and schools, which may face management challenges. May encounter continuously evolving technologies and industry trends during the learning process, necessitating flexible course adjustments and updates	May encounter conflicts of interest between industries and academia, necessitating the establishment of effective collaboration mechanisms. Some students may lack a comprehensive theoretical foundation, requiring a balance in teaching.	Requires the establishment of a comprehensive assessment system to ensure accurate assessment of student abilities. Imposes higher demands on both teachers and students, necessitating more support and resources for implementation.

Although the Dual System in Germany, the Industry-Academia Collaboration Model in Japan, and the Competency-Based Education (CBE) Model in the United States differ in implementation, they all emphasize common features such as practicality, vocational orientation, personalized learning, and industry collaboration. For China to cultivate skill-oriented talents suitable for the market, it is necessary to enhance cooperation between schools and enterprises. In the process of talent cultivation, it is important to prioritize students and to reform the selection criteria, teaching standards, teaching content, teaching methods, learning approaches, and evaluation systems.

2.2 Pedagogical Model Reform

2.2.1 Constructivism

Constructivist theory is a branch of cognitive psychology. According to Wen Pengnian in “Constructivist Theory and Educational Reform - Overview of Constructivist Learning Theory,” constructivism has gradually developed into a

distinctive learning theory through long-term theoretical exploration and teaching practice. Many viewpoints and propositions of constructivist learning theory are considered reasonable and have implications for educational reform practices (Pengnian, 2002). Key representatives of constructivist theory include J. Piaget, O. Kernberg, R.J. Sternberg, and D. Katz.

J. Piaget introduced the "cognitive structure theory," suggesting that cognitive structures are gradually constructed through the processes of assimilation and accommodation. These structures evolve continuously in the cycle of "balance - imbalance - new balance." O. Kernberg further studied the nature and development conditions of cognitive structures based on J. Piaget's theory. Kernberg advocated for learners to construct knowledge through exploration, discovery, and problem-solving. He believed that through self-directed learning, individuals could better understand and apply the knowledge they acquired, fostering creative thinking and problem-solving skills. Kernberg's constructivist research emphasizes the importance of individual active participation, cognitive construction, balance and imbalance, developmental stages, self-directed learning, and social interaction.

R.J. Sternberg and D. Katz also emphasized the key role of individual initiative in the process of constructing cognitive structures. They explored how individual agency plays a crucial role in cognitive processes.

The core of constructivist theory can be summarized as putting students at the center, emphasizing students' active exploration, discovery, and the construction of meaning from learned knowledge. Simultaneously, teachers are required to shift from being transmitters and indoctrinators of knowledge to facilitators and promoters of students' active construction of knowledge.

Constructivist theory provides many teaching strategies and methods, such as problem-based learning, cooperative learning, and project-driven learning. The pedagogical model is a stable structural form of teaching activities that unfolds in a

specific environment under certain ideas, teaching concepts, and learning theories. Constructivism emphasizes that knowledge is not an absolute representation of the real world, nor is it a dogma applicable to all situations. Knowledge is in constant development and must be reconstructed across different contexts (Chen, 1998). A constructivist learning environment includes four key elements: "situation," "collaboration," "conversation," and "meaning construction." In constructivist teaching, teachers serve as guides and supporters, creating challenging learning environments that incorporate situational, collaborative, and conversational elements to promote learners' active participation and autonomous learning (Yu, 2000).

Currently, there are three relatively mature constructivist teaching methods: "Scaffolding Instruction," "Anchored Instruction," and "Random Access Instruction." The teaching process for "Scaffolding Instruction" includes scaffolding, entering the scenario, independent exploration, collaborative learning, and performance evaluation. The process for "Anchored Instruction" involves setting the scenario, defining the problem, engaging in self-directed learning, fostering collaborative learning, and evaluating performance. "Random Access Instruction" consists of presenting the basic scenario, random entry into learning, cognitive development training, group collaborative learning, and learning performance evaluation.

It can be seen that, although constructivist teaching methods take different forms, they share standard features. Their teaching processes all involve "scenario creation," "collaborative learning," and "performance evaluation."

Therefore, adopting constructivism as a teaching philosophy contributes to establishing a "student-centered" pedagogical model. Reforming pedagogical models using project-based learning and scenario-based teaching helps students engage in the learning process by constructing their knowledge and understanding. By constructing an informational environment, active participation, collaborative learning, and project-

based learning can be applied to foster students' self-directed learning, creative thinking, and problem-solving skills in the teaching of digital media arts and design.

Additionally, the constructivist learning theory highlights the importance of social interaction and collaborative learning. Collaboration between schools and enterprises can help students create scenarios more effectively. School teachers and industry professionals can collaboratively construct knowledge, experiences, and professional skills, promoting students' learning and the development of their professional capabilities through collaborative projects and practical environments.

2.2.2 A Student-Centered Pedagogical Model

Pedagogical models can be defined as relatively stable frameworks and activity procedures for teaching, established within specific teaching theories or thought. As a structural framework, they highlight a macroscopic understanding of overall teaching activities and the internal relationships and functions among the various elements of the pedagogical model. As an activity, they underscore the pedagogical model's orderliness and operability.

The reform of instructional approaches is an important topic in education, and its theoretical foundations include the development of student-centered instructional models, the promotion of active student learning, and the integration of information technology.

Firstly, the development of a student-centered instructional model is an important theoretical foundation for reforming instructional approaches. Zhou Yaping proposed in "Constructing a Student-Centered Bilingual Pedagogical Model" that a student-centered instructional model should target learners' characteristics when setting instructional goals, selecting instructional strategies, and determining evaluation measures. Traditional education models often center on teachers, with teachers leading the instructional process and students passively receiving knowledge. Traditional instructional design concepts mostly revolve around "teaching," with few

considerations for “learning.” Therefore, in classroom teaching, students have fewer opportunities to participate in instructional activities, spending most of their time in a passive receiving state, making it challenging to unleash students’ initiative and enthusiasm.

A student-centered instructional model emphasizes the student’s central position, focusing on cultivating students’ self-directed learning ability and innovative spirit. When setting instructional goals, designing instructional strategies, and constructing an evaluation system, due consideration should be given to the student’s central position and to mobilizing students’ subjective initiative.

Secondly, a discipline-based approach is an important theoretical foundation for reforming instructional approaches. Research on constructing student-centered instructional models in China has been conducted primarily within general instructional models, with very few studies starting from a disciplinary model. Li Fang noted in “General Instructional Models and Disciplinary Instructional Models” that, although China has made fruitful achievements in the research of instructional models, many problems remain. A prominent issue is the disconnection between the research on instructional models and the actual practice of disciplinary instruction. The research on disciplinary instructional models is a new topic. The essential characteristic of disciplinary instructional models lies in their “disciplinary nature,” which can be classified into different types according to various criteria. Disciplinary instructional models are based on the characteristics of different disciplines, taking students’ learning needs and market demands as the starting point and focus of instruction.

Sun Chenglin proposed the participatory action-learning and instructional model within the disciplinary instructional model. He believes that in the “participatory action learning and instructional” model, the traditional “three fixed” transforms into the “three autonomous before class, three interactions during class, and three learning after class” instructional model. The traditional lecture-style instruction shifts to a

“participation, practice, innovation” three-combined autonomous teaching method, and traditional quantitative evaluation transforms into a process-oriented evaluation that highlights the level of development. Teachers shift from traditional “monologuers” to embodying “six-sided individuals” in the information age, achieving effective development and utilization of course resources.

Furthermore, Chen Xiangzhou also proposed a mobile micro-course instructional model reform practice in “Research on the Reform Practice of Mobile Micro-Course Instructional Model in Higher Vocational Colleges — Taking ‘Momo Cloud Classroom’ + Higher Vocational Management Accounting Courses as an Example.” By focusing instructional steps on a cloud-based platform, the traditional classroom is transformed into an “Internet + mobile” education practice, enabling instant classroom interaction and stimulating students’ interest in autonomous learning using mobile phones. She also emphasized that this model places high demands on teachers, the content they teach, student participation, and school hardware.

2.2.3 School-Enterprise Cooperation in the Pedagogical Model

School-enterprise cooperation refers to a collaborative model established between educational institutions and businesses. In the current highly competitive society, including the field of education, vocational education institutions such as colleges and universities seek their own development by fostering educational quality. They do this through targeted cooperation with enterprises, emphasizing the practicality and effectiveness of talent development. School-enterprise cooperation is a “win-win” model that focuses on cultivating quality, blending academic learning with practical experience, and sharing resources and information between educational institutions and businesses. This innovative concept, combining practice with theory, brings a new perspective to the development of the education industry. On October 18, 2017, Comrade Xi Jinping emphasized in the 19th National Congress report the priority development of the education sector, the improvement of vocational education and

training systems, the deepening of the integration of industry and education, and school-enterprise cooperation. The report also highlighted the need for more people to receive higher education after completing high school.

Firstly, school-enterprise cooperation in higher vocational colleges tends to favor educational collaboration. According to Du Yunying, the intensity of school-enterprise cooperation in Chinese universities is generally weak, with educational cooperation being even weaker. Relatively speaking, “Double First-Class” construction universities have the highest average score in school-enterprise cooperation, showing a clear preference for scientific research cooperation. Vocational colleges rank third, showing a distinct preference for educational cooperation (Du, 2022). School-enterprise cooperation in higher vocational education differs from that in regular universities. Cooperation in higher vocational colleges primarily focuses on educational rather than scientific research, indicating that vocational colleges should pay attention to market matching and the collaboration of educational resources when engaging with enterprises. Project-based learning organizes course content into projects with practical and comprehensive elements. The introduction of project-based courses by enterprises enables students to understand better and apply their knowledge, thereby enhancing their practical and problem-solving abilities. This aligns with the country’s requirements for higher vocational colleges to cultivate professional and skilled talents.

Secondly, school-enterprise cooperation integrates enterprise resources with school resources into the teaching process. Zheng Yongjin pointed out in “Investigation of School-Enterprise Cooperation in Demonstrative (Key) Higher Vocational Colleges—Voices from Over 1400 Cooperative Enterprises” that positive school-enterprise cooperation expects the active participation of various social entities and the cultivation and creation of a social culture of school-enterprise cooperation (Zheng, 2017). Tang Guohua also stated in “An Empirical Study on the Dependence of Enterprises on School Resources in School-Enterprise Cooperation” that higher

vocational colleges must strive to increase enterprises' dependence on the school's human, technical, and information resources. This establishes a reliable foundation for cooperation between schools and enterprises, encouraging businesses to participate in deep-level school-enterprise cooperation (Tang, 2012).

In school-enterprise cooperation, enterprises can provide schools with resources such as workforce, technology, and information. Zhao Zhiqun pointed out in "Apprenticeship Creation in Vocational Education in China—History, Current Situation, and Prospects" that modern apprenticeship systems are returning to the national institutional category and becoming a crucial strategy for human resource development in many countries, especially developed ones. In the practical implementation of school-enterprise cooperation, the dual-mentor system can be incorporated into China's vocational education talent development (Zhao, 2013). An increasing number of vocational colleges in China encourage the hiring of enterprise mentors to teach various disciplines. However, most enterprise mentors participate only in practical training courses, and very few teach core professional courses.

2.3 Digital Media Art Design

The focus of this study is to discuss pedagogical models. It approaches talent development in digital media art design within the field of vocational education, particularly addressing the technical issues in the curriculum. Due to the "cross-disciplinary" nature of design, the backdrop for discussing the curriculum setting in higher vocational digital media art design is the "fusion of art and technology." The interaction between art and technology applies to all design-related professions. The exploration of cultural core, artistic presentation forms, and digital tools directly influences the effectiveness of design in digital media art design. Therefore, this integration is significant.

The theoretical aspect of the “fusion of art and technology” has been well-researched, with the most typical representation being the study of the Bauhaus design philosophy. Bauhaus marks the beginning of modern design, and its advocacy for the “unity of art and technology” and related research still has a significant impact on the methodology of vocational education. Studies on Bauhaus, such as Wang Jianjun’s “Bauhaus, Ropex, Vector Field of Art and Technology” (New Fine Arts, 2017), Guo Zhigang’s “Re-examining Art Design Education—Exploring the 21st Century Chinese Art Design Education from the Bauhaus Design Education Philosophy” (Journal of Three Gorges University, 2001), Qiu Zhitao’s “Bauhaus pedagogical model and Current Design Education Reform” (Art Observation, 2003), and Jiang Yan’s “Bauhaus Workshop Training and Modern Handicraft Teaching” (Journal of Nanjing University of the Arts, 2009), have explored Bauhaus’s development, the educational philosophy of the “unity of art and technology,” and teaching methods. They have investigated how Bauhaus's ideas influence current reform in design education.

Dr. Xu Haobo analyzed the teaching system of the Ulm School of Design in his doctoral thesis, “Research on the Educational Thought of Ulm School of Design” (Central Academy of Fine Arts, 2010). The thesis delves into the inheritance, critique, revision, and reflection on the discourse of “art” and “science” in Ulm’s design system, analyzing its exploration and experimentation within the modernist design trend. Ulm School of Design, also known as the “New Bauhaus,” continues the Bauhaus’s teaching philosophy by establishing connections among art, logic, and engineering. Under its influence, modern design has decisively shifted from oscillating between art and technology to being firmly rooted in science and technology (Xu Haobo, 2010).

Chinese scholars have actively applied the Bauhaus concept of the “unity of art and technology” to art and design education in China. For example, Dr. Wu Yi traced and summarized the historical changes from the separation to the integration of art design disciplines and experimental teaching in his doctoral thesis, “Research on the

Experimental Teaching System of Contemporary Art Design Discipline in China" (China Academy of Art, 2011). The thesis revealed two major laws in art design education: the "unity of art and technology" and the "unity of theoretical teaching and experimental teaching." Drawing on the case of the China Academy of Art, Wu Yi proposed reforms in art design experimental education and explored an experimental education system for cultivating innovative talents in China's contemporary art design discipline (Wu, 2011).

In addition to the aforementioned studies, a search using the keywords "art and technology" in the past five years on the CNKI database yielded over 2606 papers discussing the dialectical relationship or unity of "art and technology." The search results are summarized in the table below:

Table 2.6 Number of Papers Searched by the Keywords "Art and Technology"

Time	Theme	Quantity
2022	Art and Technology	643
2021	Art and Technology	801
2020	Art and Technology	818
2019	Art and Technology	1005
2018	Art and Technology	979

This indicates that many scholars have conducted in-depth research on this theory. For example, Zhu Shiyuan proposed the construction of innovative teaching methods using virtual reality technology in the research on the application of virtual reality technology in digital media art education (Zhu, 2012). Ji Zhang suggested increasing the research and innovation efforts on the application of VR technology in the construction process of digital media art majors (Ji, 2018). These studies illustrate that digital technology is gradually being applied to art education in China. Each technological innovation has, to some extent, changed the creation and education of art. The success of these studies in applying digital media art design to talent cultivation,

especially in alignment with market demands and the Chinese context, requires further refinement and localization.

2.3.1 Technology Promotes the Development of the Art Discipline

In modern times, the convergence of new information technologies such as big data, the Internet, cloud computing, blockchain, and artificial intelligence has propelled productivity to achieve a qualitative leap, driving the development of the first, second, and third industries. The integration of these new information technologies facilitates the collection, transmission, analysis, management, and application of massive amounts of big data, breaking down information silos. It leads to the direct socialization of big data collection, transmission, analysis, management, and application, promoting a qualitative leap in productivity.

When discussing vocational and technical education, technology is an inevitable topic. The definition of technology is also a subject of ongoing discussion in academic circles. In 1974, UNESCO recommended “Technical and Vocational Education” as a comprehensive term for a category of education. This term is synonymous with China’s vocational and technical education, including pre-service and in-service education at all levels, as well as vocational education in general education. It primarily focuses on vocational education for training technical workers, technical personnel, and skilled talent, and adapts to various continuing education opportunities for post-employment training and career transition, as well as craft education and general education vocational courses. Looking at vocational and technical education globally, the main objective is to master practical skills, with a strong emphasis on the acquisition of theoretical knowledge and strong applied practical abilities in a specific profession.

Different professions have varying requirements for talent development, and the rationality, foresight, and practicality of curriculum design to a certain extent determine the realization of talent development goals. The curriculum design in

vocational and technical education mainly aligns with the experiential, substantial, and knowledge-based elements of technology. It increases the proportion of technical courses alongside general education courses, incorporates a significant number of practical and training courses, and invites experienced industry mentors to teach.

The relationship between art and technology has been intertwined throughout history, mutually influencing and shaping each other. Technological advancements often provide artists with new tools and media to express their creativity. At the same time, art pushes the boundaries of technology and inspires innovation.

2.3.2 Bauhaus' Design Education View of "New Unity of Art and Technology"

Bauhaus, short for "Staatliches Bauhaus" in Weimar, Germany, later renamed "Hochschule für Gestaltung," is commonly referred to as Bauhaus. After the reunification of Germany, the design school located in Weimar was renamed Bauhaus-Universität Weimar.

The establishment of Bauhaus marked the birth of modern design education and had a profound impact on the development of modern design worldwide. Bauhaus is recognized as the world's first institution entirely dedicated to the development of modern design education. The "Bauhaus Manifesto" was published on the day of Bauhaus's founding, advocating that all artists turn to practical arts, with the practicalization of sculpture and painting in the context of architectural decoration. According to this manifesto, architecture is the synthesis of all arts, unifying them into a cohesive whole. Bauhaus offered courses in graphic, color, and three-dimensional composition, and in design teaching guided by practicality. The entire design education system followed at universities today has evolved from the principles established by the Bauhaus.

By analyzing points, lines, surfaces, colors, volumes, and spaces through its three main components, Bauhaus liberated modern design from the non-standardized

production processes of traditional artists and artisans, marking the shift from expressionism to rationalism. It played a crucial role in shaping the basic forms of modernist architecture and industrial design.

Bauhaus represents a modern, reality-oriented design trend that embraces modern industrial production. It advocates the unity of technology and art, designing for people, and adhering to the laws of nature and objectivity. These design principles have become the soul of modern design, permeating the consciousness of everyone involved in or consuming design and becoming a consensus. With the dissemination of this consensus globally, the Bauhaus style also became popular worldwide. The establishment and popularity of this design trend owes much to the Bauhaus School's leaders.

Since the Industrial Revolution, there has been a standoff between “technology and art” in large-scale industrial production. In response to this situation, Walter Gropius proposed the slogan of “New Unity of Art and Technology,” advocating designs that are both artistic and scientific, both aesthetic and practical. As the founder and first director of Bauhaus Design School, he emphasized the integration of functionality, economy, and design. His theory gradually became the core of Bauhaus educational philosophy. At the same time, Bauhaus’s dual-track teaching system successfully cultivated a new generation of designers who possessed a modern artistic foundation and mastery of mechanical production and processing technologies. Additionally, to implement the teaching system, the school set up relevant factories for practical training in various courses, serving as both classrooms and workshops. This reflects Bauhaus’s emphasis on cultivating students’ comprehensive creative abilities and design qualities.

In 1926, after relocating to Dessau, Bauhaus added a subtitle to its name, becoming known as Bauhaus Design School. This was the first time that Bauhaus explicitly linked “design school” with its name. The institution summarized its past

years of design education practice, enriched its faculty, changed the title of instructors from “mentors” to “professors,” completely abandoned the dual-track system, adjusted the teaching system, formulated new teaching plans, and clearly divided courses into compulsory foundational courses, auxiliary foundational courses, craft and technology foundational courses, specialized topics, theoretical courses, and specialized engineering courses related to architecture. Bauhaus’s foundational courses have influenced contemporary design education, making a significant contribution worldwide. Bauhaus entered a mature stage in its development.

Bauhaus, as the “cradle of modern design,” has had a profound impact on design education, with its teaching methods forming the foundation for many schools worldwide. Bauhaus explored the combination of art and technology in design education. Founder Walter Gropius believed that “essentially, art and craft (technology) are not two different activities but two different classifications of one activity.” This philosophy extends to the integration of technology into artistic disciplines, enhancing the learning experience and allowing individuals to unleash their creative potential. In digital media art design, besides creative design, achieving that creativity requires means such as drawing, photography, interactive design, and 3D design, all of which are closely related to technology. Therefore, technological innovation often drives artistic transformation.

Roy Ascott elucidated the differences between art education and science education. Art education, while integrating technology, must also consider the thoughts and schools of artists, starting from the core of regional culture, and achieve depth in artistic creation. Returning to the field of digital media art design, there has long been debate over whether the discipline should prioritize art or technology. The reason for this is that digital media art design involves multiple fields, including computer technology, art design, media theory, and related areas, and is primarily offered in art schools. Fundamental training in digital media art design often draws on the skills that

fine arts students should possess, and the curriculum in vocational digital media art design programs is often adapted from the teaching system of general higher education. Although in recent years, domestic universities have begun to draw on mature foreign experiences, advocating practical teaching, the use of work-study exchange pedagogical models in digital media art design programs still faces some challenges. As a result, most courses in digital media art design are completed within closed school environments, lacking vocational characteristics.

2.4 Digital Media Art Design Professional Education in the Higher Vocational College

The research in the field of vocational education on the theory and practice of higher vocational education has reached a certain depth. Notable studies include Pan Maoyuan's "Discussion on Establishing an Independent System of Higher Vocational Education" (Education Research, 2005), "Elite Education in the Massification Stage" (Higher Education Research, 2003), and "Basic Laws of Education and Their Mutual Relationships" (Higher Education Research, 1988). Jiang Dayuan's works such as "Systematic Design of Higher Vocational Education Courses: Interpretation of Systematic Course Development in Work Processes" (Chinese Higher Education Research, 2009) and "Systematic Course Development in Work Processes for Higher Vocational Education" (Journal of Xuzhou Institute of Architectural Technology, 2010), as well as Hong Zhenyin's "Several Issues and Reflections on the In-Depth Cooperation between Higher Vocational Education and Enterprises" (Higher Education Research, 2010), and Tao Shuzhong's "Exploration and Practice of the 'Double-Teacher' Teacher Team Construction" (Heilongjiang Higher Education Research, 2006) have contributed to the formation of research results in vocational education theory.

Studies by researchers like Pan Haisheng, “Analysis of the Current Situation and Influencing Factors of School-Enterprise Cooperation in Chinese Higher Vocational Education” (Research on Higher Engineering Education, 2013); Du Qiping, “Bottlenecks and Countermeasures in the Implementation of Modern Apprenticeship in Higher Vocational Education” (Higher Education Exploration, 2015); and Li Jianping, “Practical Issues and Development Logic of the ‘Three Integration’ Reform in Higher Vocational Education” (Education Research, 2023), signify that China’s vocational education reform has moved beyond the surface and entered in-depth research. In this stage of reform, the primary focus is on solving the development issues of vocational education after the formation of vocational education theory. Curriculum reform emphasizes the integration of industry and education, the fusion of science and education, and collaborative innovation. The shift from general educational theory research to specific curriculum system reform research signals a deeper level of vocational education reform. However, the overall focus of this round of curriculum reform research remains more on vocational education models, and there is limited research on curriculum systems and corresponding teaching methodologies for specific majors.

The profession of digital media art design itself is a multidisciplinary mix of art, technology, humanities, and business. Designers need to possess diversified knowledge. Therefore, for the cultivation of talent in higher vocational digital media art design, there is a need for learning and training that combine art and technology. While there is abundant macro-level theoretical research on higher vocational education, there is limited research on specific majors, such as talent cultivation models for professionals in digital media design. The existing educational theories, when directly applied to the cultivation of specific professional talents, have a particular gap with the talent positioning in vocational education.

A search in the China National Knowledge Infrastructure (CNKI) full-text database using the keywords “higher vocational digital media major” within the last five years yielded the following results in the table below:

Table 2.7 Number of Keyword Papers Retrieved in “Higher Vocational Digital Media Major”

Time	Keyword	Number of Papers
2022	Higher vocational college digital media major	62
2021	Higher vocational college digital media major	67
2020	Higher vocational college digital media major	95
2019	Higher vocational college digital media major	92
2018	Higher vocational college digital media major	45

Quantitatively, there is a positive trend with 304 papers focusing on the development of higher vocational digital media majors, talent cultivation, and relevant research on teaching mode and curriculum reform. This is an encouraging number. However, a deeper investigation reveals that many of these papers primarily focus on teaching modes, with limited research on the specific content and structure of the digital media major. There is an emphasis on exploring current domestic models. However, it lacks in-depth analysis and references to mature foreign models. The professional orientation is comprehensive, but specific teaching methods are singular. The vocational positioning is precise, but there is a shortage of detailed discussion of specific measures.

2.4.1 Positioning of Digital Media Art Design Education in "Classification of International Education Standards"

Vocational higher education emphasizes the cultivation of practical skills directly applicable to the workforce. In China, it includes diploma, undergraduate, and graduate levels. The curriculum of vocational higher education aims to provide individuals with extensive technical skills and semi-skilled vocational preparation. The primary objective is to equip students with the skills and abilities necessary for success in a specific profession or industry. The teaching methods in vocational higher education are typically hands-on and practical. Students receive training in workshops, laboratories, or simulated work environments that resemble real-world workplaces. The focus is on developing technical skills, problem-solving abilities, and industry-specific knowledge. Assessment methods in vocational education often include practical evaluations, skills demonstrations, industry projects, and internships. These assessments aim to evaluate students' capabilities and their level of preparedness for the workplace.

The latest version of the International Standard Classification of Education (ISCED) is ISCED 2011. Developed by the United Nations Educational, Scientific, and Cultural Organization (UNESCO), it provides a framework for classifying and comparing education systems and qualifications internationally. In the current Chinese vocational higher education system, higher vocational education falls under ISCED levels 5 and 6, representing diploma and undergraduate levels.

To determine the positioning of digital media art and design education, it is essential to understand the current status of vocational education in China. Chinese vocational education at the secondary level includes vocational junior high schools, vocational high schools, technical schools, and vocational technical colleges. At the higher level, vocational education comprises vocational colleges and undergraduate programs. Graduate and higher-level vocational education is still in the process of

gradual improvement and development. Compared with international standards, current vocational education in digital media art and design in China is primarily offered by higher vocational and technical colleges and some applied universities.

Table 2.8 Corresponding Position of Chinese Higher Vocational Digital Media Art and Design Education in ISCED-2011

Grade	The Classification of International Educational Standards	Grade	Chinese Higher Digital Media Art and Design Education
	Early Childhood Education	Nursery School	
	Elementary Education	Primary School	
	Primary Secondary Education (General / Occupational)	Junior Middle School	(General / occupation)
	Higher Secondary Education (General / Occupational)	Senior Middle School	(General / occupation)
	Post-secondary Non-Higher Education (general/vocational)		
	Short-term Higher Education (General / Occupational)	Junior College Education	(Vocational) Higher Vocational and Technical Education
	Bachelor's or Equivalent (academic/professional)	Undergraduate Course	(Vocational) Higher Vocational and Technical Education
	Master's Level or Equivalent Level (academic/professional)	Postgraduate	
	PhD or Equivalent Level (academic/professional)		
	It is not classified elsewhere.		

From Table 2.7, it is evident that vocational education in digital media art and design in China aligns with the 5th level of the "International Standard Classification of Education" under "Short-cycle Higher Education" and corresponds to the 6th level, which is equivalent to a bachelor's degree. The first batch of undergraduate vocational universities in China was established only in June 2019. As of June 2023, there are only 33 such universities in the country.

This indicates that China's vocational higher education is still in its early stages, with most vocational education concentrated at the diploma level. The training of talent is primarily based on academic disciplines, and there is still a considerable distance to go before providing specialized, professional education. The pathway for cultivating high-skilled talent aligned with societal needs is not yet well established. The field of vocational education in digital media art and design also faces similar challenges. It is not entirely self-sufficient in addressing these issues.

2.4.2 The Development Course of Digital Media Art and Design Education in Higher Vocational Colleges in China

Digital media art and design in China differ from traditional art and design disciplines and have a relatively short history. The precursor to the undergraduate major in digital media art dates back to 1999, when the China Academy of Art launched the Multimedia and Web Design program. In 2002, the Communication University of China established the first officially approved undergraduate major in digital media art. According to the notice issued by the Ministry of Education of the People's Republic of China in 2015, the Computer Art Design major, Multimedia Design and Production, Digital Space Art, Interactive Media Design, and Digital Media Design and Production were merged to form the major of Digital Media Art and Design (major code: 650104) for higher vocational education. This officially marked the establishment of the higher vocational education program in digital media art and design in China.

This major has evolved from computer art and computer art design to digital media art and design within the higher education framework. According to the talent training requirements set by the Ministry of Education in China, the basic duration of study for the Digital Media Art and Design major is three years. The program aims to cultivate individuals who possess fundamental principles, production processes, and methods for the application-oriented creation of digital media content, art, and design. Graduates are expected to engage in creative planning for digital media

products or applications, as well as to be proficient in digital graphic design, three-dimensional static and dynamic media, interactive creative design, and expression production. They should also demonstrate proficiency in prototype production and in creating two- and three-dimensional digital media content, making them highly skilled technical professionals qualified for digital media content art and design management. This major aligns with undergraduate majors in digital media art and visual communication design.

As of now, the talent training model for the higher vocational education program in digital media art and design in China largely imitates that of undergraduate programs in digital media art, lacking distinctive features specific to higher vocational education.

2.5 Related Studies

This study explores the primary issues in teaching modes during the specific professional development process in vocational colleges and proposes rational recommendations to address these problems. To achieve this, the author analyzed the research methods used in Chinese core journal articles (CSSI journals and Peking University core journals) retrieved from China National Knowledge Infrastructure (CNKI) using the keyword “teaching mode reform” from 2013 to 2023.

The author used the Connected Papers tool to categorize, organize, and analyze the literature. Connected Papers is a knowledge graph tool for academic papers that helps researchers identify related, high-quality literature, view references, and explore subsequent papers. It visualizes relationships among papers, helping researchers explore the content and connections among different pieces of literature.

Research methods are systematic approaches used to study social phenomena and human behavior scientifically. They are crucial for scientific research,

serving as both a hallmark of scientific inquiry and an effective means to enhance research quality. Using Connected Papers, the author identified and extracted the research methods used in the literature. The top 10 methods included “Questionnaire Survey,” “In-Depth Interviews,” “Case Study,” “Text Analysis,” and “Discourse Analysis.”

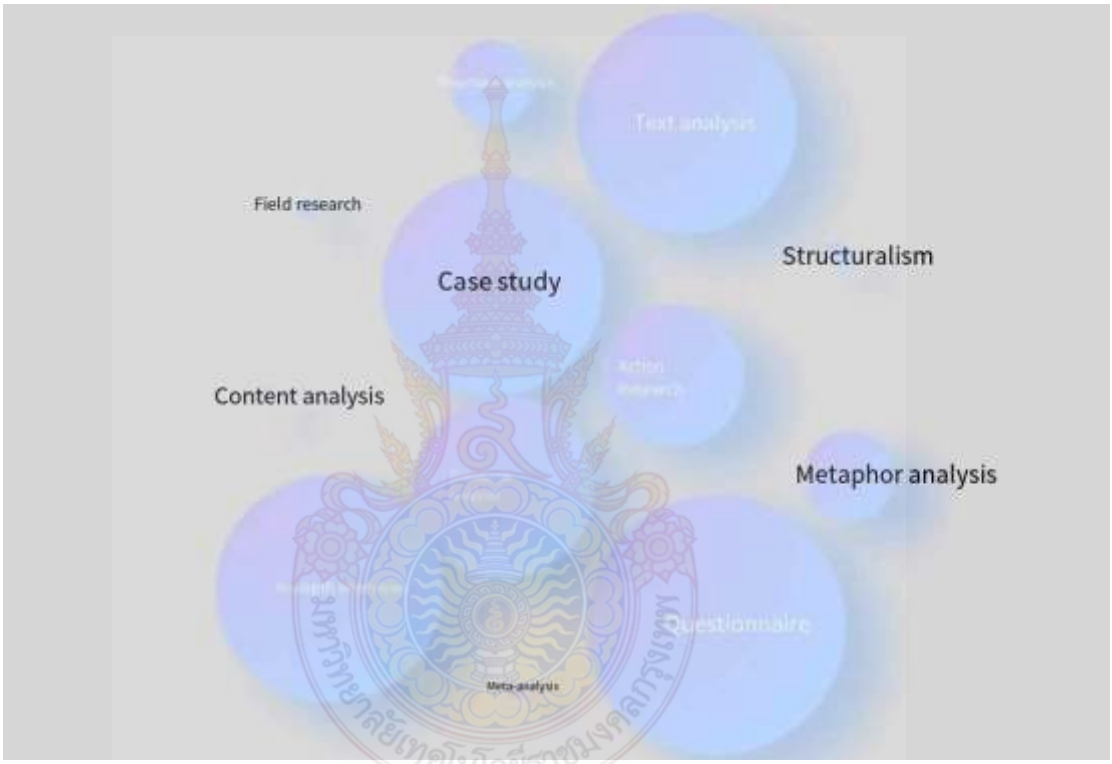

Figure 2.5 Distribution Diagram of the Research Method of “Pedagogical Model Reform”

Scholars have conducted comparatively systematic research on the topic of “teaching mode reform”. The literature reveals a variety of research methods employed by different researchers. Some notable methods include "Questionnaire Survey” used by Zhao Ying in 2017, “Case Study” implemented by Zhu Yumei in 2006, “Text Analysis” applied by Cao Yuxin in 2022, “In-Depth Interviews” conducted by Li Manli in 2022, and “Action Research” utilized by Zhang Shaogang in 2004. The literature

also incorporates various case studies, such as “Changsha University of Science and Technology” studied by Li Ping in 2005, “Tongren Vocational and Technical College” examined by Zhang Yong in 2012, “Hulunbuir College” explored by Gong Shaohua in 2015, and “Tarim University” investigated by Kang Shunguang in 2016.

Although these studies have advanced the research on “teaching mode reform,” there is still significant room for expansion in this area. Based on the above analysis, this study aims to provide a more in-depth exploration from a complementary perspective. The primary research methods employed will be “Case Study” and “Interviews”.

2.6 Summary

The major in Digital Media Art Design is a field that integrates the latest technology and artistic creativity, requiring practitioners to continually update their technological skills. Within a constructivist learning environment, the reform of pedagogical models should prioritize a “student-centered” approach that fully recognizes students’ central role. In this perspective, students are active constructors of their learning, with teachers playing a supportive and facilitative role in their constructive process. Particularly in higher vocational education aimed at cultivating skilled professionals, empowering students’ subjective initiative and self-constructing knowledge systems can better prepare them to meet the rapidly changing demands of the market.

In such a scenario, adhering to traditional pedagogical models for vocational students would be inappropriate. Therefore, the author adopts a constructivist pedagogical philosophy, considering the characteristics of the Digital Media Art Design profession and the evolving market demand in which technology and art are gradually merging. The approach completely discards the teacher-centered

model, emphasizing knowledge transmission and treating students as passive recipients of information. Instead, it embraces a “self-planning” pedagogical model centered around students, integrating well-established talent development patterns. This model relies on school-enterprise cooperation as its foundation, with both educational institutions and businesses collaboratively planning talent cultivation. The teaching process involves reforming teachers, students, textbooks, and information tools, creating a stable structural framework in which these four elements interact and connect.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Research Design

This study adopteda qualitative research approach. Based on national requirements for cultivating high-skilled talent, societal demands for nurturing market-oriented applied talent, and the school and program's emphasis on cultivating talent in Digital Media Art Design, the research establishes the goals for talent development in the vocational Digital Media Art Design major. The core competencies were determined based on these development goals. The knowledge structure and training methods were then defined in accordance with the requirements for cultivating these core competencies. Subsequently, reforms were implemented in the curriculum, faculty, teaching methods, learning approaches, and evaluation systems guided by the knowledge structure and training methods. The ultimate aim was to achieve the established goals.

The reform of the pedagogical model was grounded in a discipline-oriented approach, intended to avoid the pitfalls of vague training objectives, subject-based knowledge structures, one-sided competency development, and knowledge-oriented curriculum design. By introducing a school-enterprise cooperation model in which industry mentors actively participated in the entire teaching process, the reform is guided by market demands. The approach centered on students, emphasizes practical components, and reconstructs the curriculum.

This study was mainly based on the following questions:

(1) How do teachers' collaboration (teacher and corporate teacher) improve students' art design, talent, and technology learning?

(2) How do school teachers improve their teaching strategies during collaborative teaching with an industry teacher?

(3) How did the students learn their art, talent, and technology from their teacher collaboration?

3.1.1 Student-Centered Approach

This study was based on the constructivist theory and designed a "self-planning" pedagogical model with a student-centric approach, fully leveraging students' subjective initiative, aiming to help students understand "why they are learning" while ensuring that teachers are clear about "what to teach."

The Digital Media Art Design major was interdisciplinary, covering three main categories: design, media, and computer science. The breadth of professional learning was extensive, but the depth may be insufficient. Therefore, this pedagogical model allowed students to choose a specific professional direction within the broader field of Digital Media Art Design. In the first semester, students studied foundational courses to gain a basic understanding of the major. Starting in the second semester, students began the first specialization, in which they autonomously choose their preferred professional direction. In the third semester, students undergo a second specialization round, allowing them to change their professional direction if desired. From the fourth to the sixth semester, students continued with their chosen specialization, further refining their learning.

Given the highly applied nature of the Digital Media Art Design major, the "self-planning" pedagogical reform model involved active business participation throughout the teaching process. In the first semester, businesses contribute to the compilation of teaching content and deliver a small number of courses. In the second semester, a credit exchange system was employed to replace some of the school's practical training courses with business courses. In the third semester, a similar credit exchange was used to replace both school practical training courses and some core

professional courses with business courses. This credit exchange ran from the fourth to the sixth semesters, replacing school-practical training courses and some core professional courses with business courses.

Table 3.1 "Self-Planning" Talent Training Process Table

Professional Refinement Time	Core Content	Enterprise Participation
Semester 1	No direction basic course study: basic course study	Enterprises participate in the compilation of a small amount of teaching content.
Semester 2	The first professional direction refinement: choose the professional direction	Credit exchange - enterprise courses replace some practical training courses.
Semester 3	The second professional direction refinement: independent choice of a specialized direction	Credit exchange - practical training courses and some professional core courses are replaced by enterprise courses.
Semester 4-6	Continue the selected professional direction, with a detailed study	Credit exchange - practical training courses and some professional core courses are replaced by enterprise courses

3.1.2 Strengthen Practical Links

To cultivate high-quality, skilled professionals, it was essential to emphasize practical components in the teaching process. The "New Vocational Education Law" encouraged active corporate involvement in vocational education, advocating the joint establishment of vocational schools by schools and enterprises and the utilization of various elements, such as capital, technology, knowledge, facilities, and equipment. The "Self-Planning" pedagogical model fully leveraged the advantages of enterprises, establishing a teaching staff composed of both school and industry experts.

Regarding the curriculum, enterprise mentors and school teachers jointly formulated "project modules" and "case modules," collaborating to develop modular teaching materials and course standards. In terms of teaching, schools and enterprises jointly established on-campus and off-campus training bases that use information technology to simulate real working environments for students. Both enterprise and school mentors employed project-based teaching methods. Regarding learning methods, platforms such as Chaoxing and Cloud Classroom supported students' studies. The evaluation system breaks away from traditional exam-centric approaches, adopting a combination of classroom performance evaluation, stage assessment, and project evaluation to ensure a layered, graded assessment.

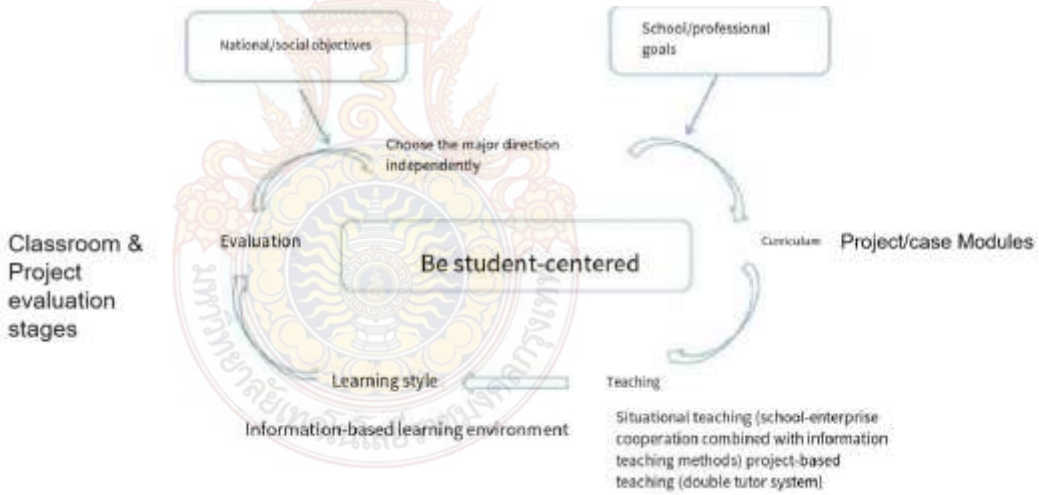

Figure 3.1 Implementation of the "Self-Planning" Pedagogical Model

3.1.3 Rebuilding of the Curriculum System

The digital media art design major was highly applied. Vocational education emphasized the quality of "output," which refers to the cognition, attitudes, and behaviors students exhibit throughout the learning process—in simple terms, what they have learned and what they can do. To achieve this goal, working backward from

the results and emphasizing the cultivation of core competencies, curriculum planning needs reform.

The "Self-Planning" pedagogical model designed in this study proposes a curriculum system based on the theory that the digital media art design major's courses are strong in theory but lack practical application, update at a slow pace, and are out of sync with the market. This model established a curriculum system through school-enterprise cooperation.

The curriculum was divided into four main parts. The first part focused on collaborative talent cultivation, splitting the six semesters into four stages with a "1+1+1+3" teaching system; utilizing enterprise resources to train dual-qualified in-house teachers. The second part involved collaborative curriculum construction, with the school primarily responsible for foundational courses and enterprises mainly responsible for practical professional courses. The third part focused on collaborative faculty building, with in-house subject experts and enterprise engineers working together. The fourth part involved collaborative facility construction, with the school establishing on-campus labs, such as virtual simulation labs, and enterprises setting up off-campus training bases, such as live broadcasting centers. Through the reconstruction of these four parts, the aim was to create a curriculum system for the development of skilled professionals, nurturing individuals with solid theoretical foundations, strong practical capabilities, and applicability to enterprise needs, thereby better serving regional development.

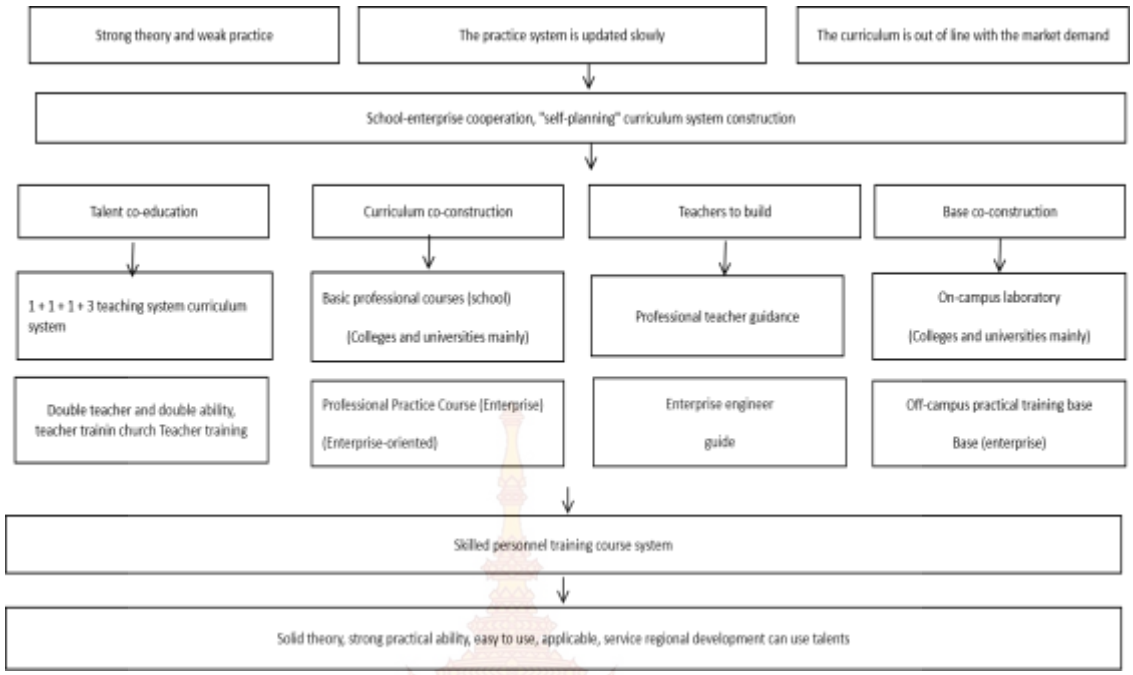

Figure 3.2 Curriculum System of the "Self-Planning" Pedagogical Model

3.2 Research Population and Samples

3.2.1 Population

This research focused on the talent development model within the context of integrating art and technology; therefore, the selected case must provide practical examples in the specific research field of this paper. The chosen case for this study was G College, founded in 1958, which is a comprehensive higher vocational institution with a focus on engineering specialties. It was one of the second batch of higher vocational institutions included in China's "Double High Plan." The college was a high-level higher vocational institution construction unit in Guangdong Province, a demonstrative higher vocational institution in Guangdong Province, and a unit nurtured by the national demonstrative vocational education group (alliance). It was also one of the first modern apprenticeship pilot institutions designated by the Ministry of

Education, the secretariat unit of the National Modern Apprenticeship Research Center, and the first batch of 1+X certificate system pilot institutions nationwide.

G College is recognized as a "Green School" in Guangdong Province, a Guangdong Province Red Cross Standard School, a pilot unit for Guangdong Province's "Three-All-Round" education system mechanism construction, and a national "Double-Teacher" training base for the construction of teachers in the architectural engineering technology major. It was the first batch of demonstration schools for innovation and entrepreneurship education for college students in Guangdong Province and a national exemplary experience university for graduate employment. Additionally, the Digital Media Art Design major at G College is part of the provincial-level "Double-High" professional group in Environmental Art. Therefore, this study took the Digital Media Art Design major at Guangdong Engineering Vocational College as a research subject, which is considered to have a certain level of representativeness.

In the context of Chinese higher vocational institutions, the "Double High Plan" referred to an initiative to build high-level vocational schools and specialized programs. At the school level, a "Double High" university signified a better-quality institution. In contrast, at the professional level, a "Double High" professional group signified a better-quality specialty.

3.2.2 Case Analysis Method

The case analysis method is a scientific analytical approach that involves an in-depth and meticulous study of representative events to gain a comprehensive understanding. The scope of case studies can range from a small group within a class to an entire school, and the elements of case studies can be approached from perspectives such as educational background, abilities, relationships, and events.

The steps involved in case analysis are as follows:

(1) Define the analysis purpose and select a representative research subject.

(2) Collect comprehensive data about the selected subject, including both direct and indirect information.

(3) Systematically organize the collected data, categorizing it based on the content of the analysis project.

(4) Analyze and study each aspect of the required analysis content (e.g., characteristics, attributes, relationships).

(5) Synthesize the results of each analysis to understand overall patterns and regularities.

In this study on the talent development model of "self-planning" through the integration of art and technology, the research effects were evaluated through on-site investigations at G College. The process involved recording and analyzing the teaching processes of both students and teachers. Primary data were obtained through teacher and student interviews. The collected information was then systematically analyzed and researched. The study concluded by summarizing issues, consolidating recommendations, conducting further validation, and ultimately formulating a framework. This framework serves as a foundational reference for constructing the talent development model in vocational and technical education (Li, 1999).

3.2.3 Samples

In this research, the investigator conducted a study of the students in the Digital Media Art Design major, Class 1, for the 2022 academic year at G College. The observation period spanned three months, during which two courses with dual mentors were selected for recording at least four class sessions. Additionally, in-depth interviews were conducted with four teachers and six students.

The specific class under consideration consisted of 29 students. This class was chosen for the research as it had been undergoing talent development using the "self-planning" model for one year, reaching the "third semester - second specialization

refinement" stage. This class was deemed suitable for investigating the effectiveness of the talent development model.

Background of the Interviewed Teachers

The interviewed teachers had diverse academic backgrounds, spanning both science and humanities, including arts and social sciences. One of them served as the head of the academic research department in the relevant discipline. The respondents held various positions, including managerial roles, school teaching, and corporate mentorship. This diversity of roles and perspectives enabled a comprehensive understanding of the research question from multiple angles.

Table 3.2 Information Table of the Proposed Interviewees

No	Name	Position	Education Background	Year of Education	Location of Interview	Duration of Interview
1	Ms. C	Head of Teaching and Research	Associate Professor of Fine Arts / National Level 2 Colourist / Senior Lecturer in New Media Operations	20	A-512, G College	30 min
2	Ms. S	Lecturers	Master of Fine Arts/ Doctor of Industrial Design	18	A-512, G College	30 min
3	Ms. L	Corporate Mentor	MA in Design Art	5	A-512, G College	30 min
	Mr. H	Corporate Mentor	Bachelor of Computer Science	2	A-512, G College	30 min

Ms. C is the head of the research department and the academic leader of the Digital Media Art Design program at G College. Her research focuses on color theory, color coordination design, brand planning design, and font design. With 20 years of experience in vocational education, she possesses profound insights into its characteristics, systems, and development, particularly in the construction of artistic

vocational education. Ms. C primarily analyzes the talent development plan, teacher team construction, and curriculum system reform from a manager's perspective.

Ms. S is a full-time teacher in the Digital Media Art Design program at G College with 18 years of vocational education experience. Her research interests include visual design and product design. Exploring fashion design education theories in Guangdong-Hong Kong-Macao Greater Bay Area universities from the perspective of the Guangdong Provincial Education Scientific Research "13th Five-Year Plan" project (2018GXJK010) and publishing a monograph titled "Research on the Application of Traditional Auspicious Culture in Contemporary Design," she brings a wealth of experience in artistic vocational education, particularly in visual courses. Ms. S analyzes the course architecture, teaching methods, and interactive approaches with students within the "self-planning" talent development model, primarily from the perspective of a curriculum builder.

Ms. L is an industry mentor in the Digital Media Art Design program at G College, specializing in design, brand image, and logo design. She teaches courses such as "Logo Design," "Book Binding Design," "Visual Culture and Creative Design," and "AI Design." In the "self-planning" talent development model, enterprise mentors serve as knowledge disseminators and evaluators, focusing on imparting industry knowledge and guiding practical experiences. Ms. L, as a course participant, provides an industry (art) perspective analysis of the course structure, teaching methods, and the guiding role of industry mentors in students' professional development.

Mr. H, another industry mentor in the Digital Media Art Design program at G College, specializes in computer science and teaches courses like "Interaction Design," "Application of Virtual Reality Technology," and "Application of 3D Technology." He predominantly imparts technical content to support artistic, creative design. Mr. H analyzes the course structure, teaching methods, and the guiding role of

industry mentors from the perspective of an industry (technology) participant in the talent development model.

Interviewed Students

In the Digital Media Art Design program under study, six students from the 2022 cohort were selected for interviews. These students were chosen based on their academic performance, representing a range of ranking positions in the class: 1st, 10th, 15th, 20th, 25th, and 29th. The intention behind selecting students with varying academic standings is to gain insights into the impact of the "self-planning" talent development model on students with different learning levels. The goal of the interviews is to understand how training under this model has influenced their professional skills and market recognition, while accounting for the initial differences in their academic standing upon admission.

Table 3.3 Information Sheet of the Interviewed Students

No	Name	Age	Level/ Year	Major	Location of Interview	Duration of Interviews
1	Mr. W	20	2nd year	Digital Media Art and Design	Tencent Conference	15 min
2	Miss. C	18	2nd year	Digital Media Art and Design	Tencent Conference	15 min
3	Miss. C	19	2nd year	Digital Media Art and Design	Tencent Conference	15 min
4	Miss. W	19	2nd year	Digital Media Art and Design	Tencent Conference	15 min
5	Mr. L	20	2nd year	Digital Media Art and Design	Tencent Conference	15 min
6	Mr. F	19	2nd year	Digital Media Art and Design	Tencent Conference	15 min

Course observation:

Constructivist theory's five elements include "situation," "construction," "focus," "community," and "ability." Therefore, the course observations in this study

were based on these five elements, examining whether students improved their quality, knowledge, and skills throughout their studies.

Table 3.4 Development Elements of the Course Observation Table

	Quality	Knowledge	Technical Ability
Circumstances Construct Concentrate one's attention on Community Ability			

3.3 Data Collection

In this study, data collection primarily involved two methods: face-to-face interviews and focus group interviews. Before conducting interviews, participants were informed of the research's purpose. After obtaining consent from all participants, the interviews commenced. Throughout the research process, reflective records were maintained.

Face-to-Face Interview

Compared to other data collection methods, interviews provided a better understanding of the internal logic underlying observed phenomena. Face-to-face interviews involved researchers interviewing each participant individually. This method built trust with participants and enabled a more in-depth understanding of their experiences, reflecting a deeper level of comprehension.

Focus Group Interview

Focus group interviews involved researchers conducting interviews with a group of people to collect data. In focus group interviews, researchers can encourage participants to debate, supplement, and engage appropriately, aiding students in better analyzing their situations and deriving effective data.

In this study, the case study method was primarily used to validate the application of the new talent development model. Face-to-face interviews and focus group interviews were considered the most suitable methods.

The interview process in this study included the following steps:

(1) Collecting original documents such as course schedules and outlines for the case study subjects.

(2) Conducting face-to-face interviews with each of the four teachers, lasting 30-60 minutes each.

(3) Observing two classes taught by each of the four teachers (a total of 2 classes), with a focus on the interaction between teachers and students and the entire learning process.

(4) Conducting two group interviews with each of the six students, with each interview lasting 30-60 minutes.

3.3.1 Outline Design of Case Teacher Interview

Focusing on the question of whether the "new teaching mode helped enhance students' professional abilities and increase market competitiveness," based on existing research, in-depth interviews were conducted with four teaching professors. The primary focus was on the following seven questions:

(1) What is your opinion on the "self-planning" teaching mode? How do you think it differs from traditional teaching methods?

(2) Do you think it is meaningful for students to self-select specialized directions within a broader major background?

(3) Can the two rounds of specialization help students identify employment directions?

(4) Do you believe that industry mentors' involvement helps students enhance their professional skills?

(5) What changes do you think the inclusion of industry mentors has brought to the curriculum?

(6) In the implementation process, what challenges do you perceive?

(7) Do you have any suggestions for the current training methods?

3.3.2 Outline Design of the Case Student Interview

Focusing on the question of "the help of self-selection of specialized directions and dual mentors in courses (industry mentors and school professors teaching simultaneously)," and drawing on existing research, in-depth interviews were conducted with six students. The main focus was on the following six questions:

(1) Do you think being able to choose your own specialized direction is helpful for your studies?

(2) In the third semester, did you change your specialized direction? What were the reasons?

(3) Do you feel that you now know what kind of work you can do after graduation? Are there any specific skills you still need to learn?

(4) In what ways do you find the courses taught by dual mentors (industry mentors and school professors) different from regular courses?

(5) How do you think the inclusion of industry mentors in the courses has helped your learning?

(6) Do you have any suggestions for the current training methods?

3.4 Research Instrument

This research, after determining the research direction and specific research questions, took the first step by searching through various databases, including the China National Knowledge Infrastructure (CNKI), CNKI Excellent Doctoral Dissertations Database, EBSCO Full Text Database, Textile Technology Complete

Academic Database (TTC), Springer Full Text Database, and Google Scholar. For domestic literature, the initial search was conducted on CNKI using the keyword "Teaching Mode Reform" for the period 2013 to 2023. A total of 338 journal articles, theses, and core papers were selected, and a systematic classification, sorting, and analysis of the literature was carried out.

For international literature, the Connected Papers tool was employed. The keyword "Higher vocational skills education" was used, and a visual analysis was conducted with "Talent Development Model" as the central theme. Connected Papers is a knowledge graph tool that helps researchers explore related excellent literature, view its references, and subsequent papers. It visualizes relationships in the literature and helps researchers study the content and connections between papers.

Building on the research framework, the study first adopted a constructivist theoretical foundation. It proposed a "self-planning" pedagogical model based on the dual-loop model, taking into account the characteristics of the digital media art design major.

Next, through literature review and relevant materials, an analysis and selection of the constitutive elements of higher vocational education were conducted. An initial outline for interviews with different participants was created, and feedback from mentors was sought to refine and finalize it. Once the interview outline was confirmed, contact was made with the interviewees, and on-site observations and interviews were conducted at vocational colleges. Classroom observations focused on dual-mentor teaching, student-mentor interactions during classes, students' reactions, and post-class performance. This aimed to understand the impact of this method on talent cultivation in higher vocational digital media art design and analyze the perspectives and opinions of the interviewees through in-depth interviews.

Finally, based on the case analysis results, the "self-planning" pedagogical model was refined to better align with the needs of talent cultivation in higher vocational digital media art design.

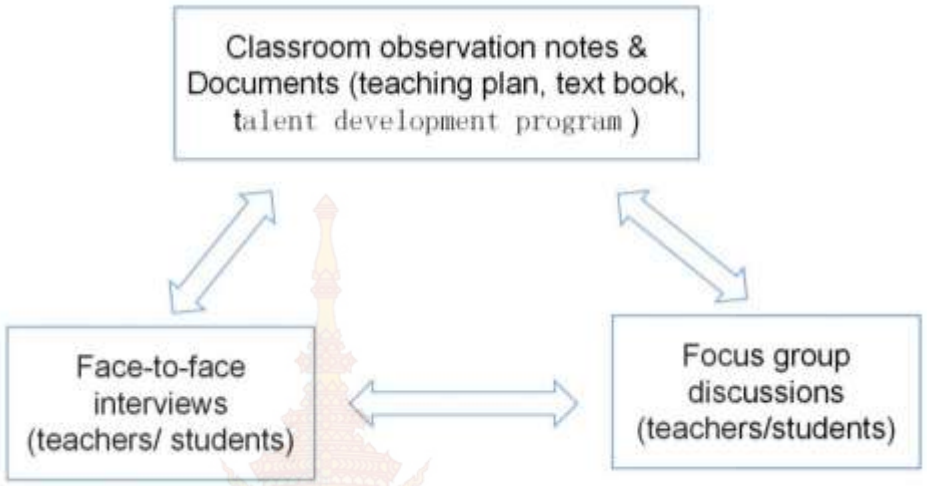

Figure 3.3 Indicating the Methods of Data Generation Used

3.5 Content Validity and Reliability

This study adopted a qualitative research method. Qualitative and quantitative research are two different approaches in research methodology, differing in objectives, methods, data collection, and analysis techniques. In terms of objectives, quantitative research aimed to measure and quantify variables, relationships, and patterns, primarily by analyzing large amounts of data. On the other hand, qualitative research sought to explore and understand phenomena, behaviors, and experiences in-depth. It emphasized generating rich, descriptive data to gain insight into people's perspectives and the meaning they attribute to experiences. Quantitative research tends to focus on the macro level, while qualitative research emphasizes the micro level.

Regarding methods, quantitative research often employs structured approaches such as surveys, experiments, and statistical models to collect and analyze

numerical data. In contrast, qualitative research typically uses methods such as interviews, focus groups, observations, and case studies to collect data, allowing researchers to explore complex relationships and phenomena and to capture subjective experiences.

In terms of data collection, quantitative research gathers numeric data through structured questionnaires, measurements, or observations, emphasizing large sample sizes to achieve statistical significance. Qualitative research collects non-numeric data, such as narratives, opinions, observations, and text materials, with a focus on capturing participants' backgrounds and subtle differences in experiences.

Regarding analysis methods, quantitative data analysis involved statistical procedures to summarize, analyze, and interpret data. Researchers used statistical techniques such as regression, correlation, and hypothesis testing to draw conclusions and make generalizations. Qualitative research organizes, categorizes, and interprets textual or visual data to identify patterns, themes, and meanings. Techniques such as coding, thematic analysis, and narrative analysis are commonly used.

In case studies, qualitative research is often the preferred method. Case studies aim to provide a deep understanding of a specific individual, group, organization, or situation. Qualitative research methods, such as interviews, observations, and detailed records, enable researchers to explore the intricate and unique aspects of the case under investigation. Qualitative research methods provide flexibility to adjust research designs and data collection techniques based on new insights, allowing for method adjustments when new questions arise in case studies.

This study's case analysis employed a semi-structured interview method. The semi-structured interview was a commonly used data collection method in qualitative research, involving researcher visits, observations, and communication. Depending on the researcher's control over the interview structure, it can be classified as structured, unstructured, or semi-structured.

In semi-structured interviews, the researcher prepared a predetermined set of questions or topics to guide the interview; however, it allowed for detailed answers from the interviewees. Researchers identifed key topics or themes relevant to their research objectives and develop a question list to explore these areas. Semi-structured interviews were flexible, allowing researchers to explore participants' responses further during the interview. Researchers can pose follow-up questions for clarification, explore different perspectives, or delve deeper into specific areas of interest. Semi-structured interviews prioritized participants' experiences and viewpoints, placing participants at the center. Semi-structured interviews yielded qualitative data, including narratives, opinions, and detailed descriptions. This data can be analyzed using qualitative analysis techniques such as coding, thematic analysis, or narrative analysis, enabling researchers to derive meaning and patterns from the responses.

3.6 Data Analysis

Compared to quantitative research, qualitative research primarily involves collecting data through methods such as observation, field notes, transcribed interviews, videos, and audio recordings. Therefore, data analysis in qualitative research is a process of classification, comparison, and comprehensive judgment. In this study, the central focus is on collecting data on two main themes: teachers and students, using the triangulation method to analyze data and ensure its accuracy.

The triangulation method in educational science involves using different research methods to study the same phenomenon and draw conclusions through mutual validation. Triangulation can involve different research methods, data sources, theoretical assumptions, and time frames (Yu, 2005). The triangulation method is widely used in education to enhance research validity and reliability, eliminating interference from subjective biases.

To better obtain data, the researcher divided the experimental process into several stages:

First Stage: Collect teaching materials from teachers, such as syllabi, teaching slides, etc. Collect students' periodic course assignments. Analyze the teaching characteristics of teachers and the students' grasp of the content.

Second Stage: Conduct two class observations for each of the two courses. Regarding teachers, record the teaching methods, interaction, and the use of information technology for both enterprise mentors and school teachers. Regarding students, focus on recording their classroom performance.

Third Stage: Conduct face-to-face interviews with teachers. Before the interview, communicate the purpose and perspective to the interviewees. During the interview, guide the interviewees to answer the outlined questions and to expand on other aspects as needed. After the interview, transcribe and organize the interview content.

Fourth Stage: Conduct focus group interviews with students. Divide the interviews into two groups and inform the interviewees of the investigation's purpose, content, and outline before each interview. Maintain a relaxed interview atmosphere during the process to ensure that interviewees speak freely.

Fifth Stage: Data organization and analysis. Analyze, test, and refine viewpoints based on the obtained data.

To ensure the authenticity and completeness of the data, participants are informed of the experiment, and their identities are kept confidential. Throughout the experiment, reflective records are maintained to strive for data accuracy.

CHAPTER IV
ANALYSIS RESULT

4.1 Pedagogical Model Design of “Self-Planning”

This study establishes the theoretical framework of the “self-planning” pedagogical model - a student-centered dual-cycle pedagogical model, along with its implementation system. Taking into account the requirements of the nation, society, school, and the profession, the study proposes methods and implementation strategies for the key steps in the model. Using G College as a case study, and supplementing with suggestions from frontline teachers and students, a research group organizes discussions on the model. It initiates the implementation and refinement of the “self-planning” pedagogical model.

The implementation is divided into three stages:

1) Preparation Stage: This initial phase focuses on providing detailed designs for each aspect of the “self-planning” pedagogical model. Research design includes the “overall objectives,” “curriculum system,” “teaching,” and “evaluation system” of the “self-planning” pedagogical model.

2) Implementation Stage: Teachers and students implement the “self-planning” pedagogical model, applying the outlined plan to the teaching of digital media art and design at G College. The author records and describes the main aspects of the implementation process.

3) Reflection Stage: This phase involves the author’s analysis and reflection on the practice, using recorded data, interviews, teaching materials, etc. The aim is to summarize the strengths and weaknesses of the “self-planning” pedagogical model as demonstrated by this implementation.

The study follows a systematic approach, emphasizing careful preparation, practical implementation, and critical reflection to refine the “self-planning” pedagogical model.

4.1.1 The Overall Goal of the “Self-Planning” Pedagogical Model

In line with the overall goals and key specifications for talent cultivation in digital media art design, the emphasis is on promoting the professional learning and development of vocational school students. The focus is particularly on enhancing students’ proactive learning in digital media art design through constructing a conducive working environment. The key specifications for talent cultivation in digital media art design primarily involve three aspects:

(1) Qualitative Objectives:

Moral and ethical qualities

Comprehensive abilities

Professional competence

(2) Knowledge Objectives:

Application of professional technical skills

Research and analysis

Innovation, creativity, and self-improvement

(3) Skill Objectives:

Design project planning and management

Communication and coordination abilities

These specifications are designed to guide the cultivation of talent in digital media art design, focusing on the aforementioned dimensions of qualities, knowledge, and skills.

Table 4.1 Key Points of Digital Media Art and Design Talent Training Specifications

Support the Talent Training Specifications	**Support the Talent Training Specifications and Index Points**
1. Ideological and moral qualities	1-1: Love the motherland, firmly establish the correct world outlook, outlook on life, and socialist core values.
	1-2: Have good moral cultivation.
	1-3: Have a high sense of social responsibility.
	1-4: Have the correct labor consciousness and professional dedication spirit.
2. Comprehensive quality and ability	2-1: Have the ability to consult literature and obtain information by various means.
	2-2: The ability to communicate with foreign language tools.
	2-3: Good ability of innovation and entrepreneurship.
	2-4: Have a healthy body and good psychological quality, and have a strong self-adjustment ability when facing environmental pressure.
3. Professional quality and ability	3-1: Understand the fundamental theories and knowledge of digital media art.
	3-2: Master the basic skills and expression techniques of digital media art, and develop a specific art appreciation ability.
4. Professional technology application ability	4-1: Have good professional computer software application ability.
	4-2: Be able to master the basic knowledge of professional computer software and independently operate the mainstream digital media art software, and be able to independently solve the relevant problems in the professional field through specific technical means.
5. Research and analysis ability	5-1: Independent design and research ability.
	5-2: Be able to make full use of modern information technology to consult and search data and literature, and test and evaluate data retrieval, research, and design experiments to judge their rationality.
6. Innovative creation and self-improvement ability	6-1: Have the spirit of innovation and entrepreneurial consciousness, and master the

Support the Talent Training Specifications	Support the Talent Training Specifications and Index Points
	fundamental innovation and entrepreneurship methods. 6-2: Have the ability to create independently by using the theoretical knowledge of digital media art. 6-3: Ability to improve their own ability through independent learning. Have the practical ability to work to meet the needs of the industry for employees.
7. Design and project planning and management ability	7-1: Familiar with design procedures and methods, and have a particular ability to plan and organize digital media art design projects. 7-2: Competent in the planning, creativity, implementation, and organizational management of related design projects in the professional field.
8. Communication and collaboration skills	8-1: Good interpersonal communication and teamwork skills. 8-2: Be able to effectively communicate with industry peers and the public on the issues of digital film and television production and network interactive product design, including writing reports and design documents, presentations, and clearly expressing or responding to instructions. 8-3: Good foreign language communication skills, able to communicate in an interdisciplinary background.

Based on Table 16, the pedagogical model centers on the core competency of the “self-planning” talent cultivation model, which involves interactions among “professional knowledge,” “professional qualities,” and “professional skills.” The breakdown of these components is as follows:

(1) Professional Knowledge:

Mastering both the vertical and horizontal aspects of knowledge structure.

Establishing connections between courses at different levels to form a cohesive knowledge framework.

Creating knowledge modules (project modules, case modules) to prevent fragmented knowledge.

(2) Professional Qualities:

Acquiring the emotional, attitudinal, belief, and value aspects necessary for the profession.

Attaining the spirit of craftsmanship, model worker spirit, and work ethic as advocated in vocational education.

(3) Professional Skills:

Acquiring the technical skills and capabilities required for the profession. The pedagogical model is designed to integrate these three aspects – professional knowledge, professional qualities, and professional skills – fostering a synergistic relationship that forms the core competency of the "self-planning" talent cultivation model.

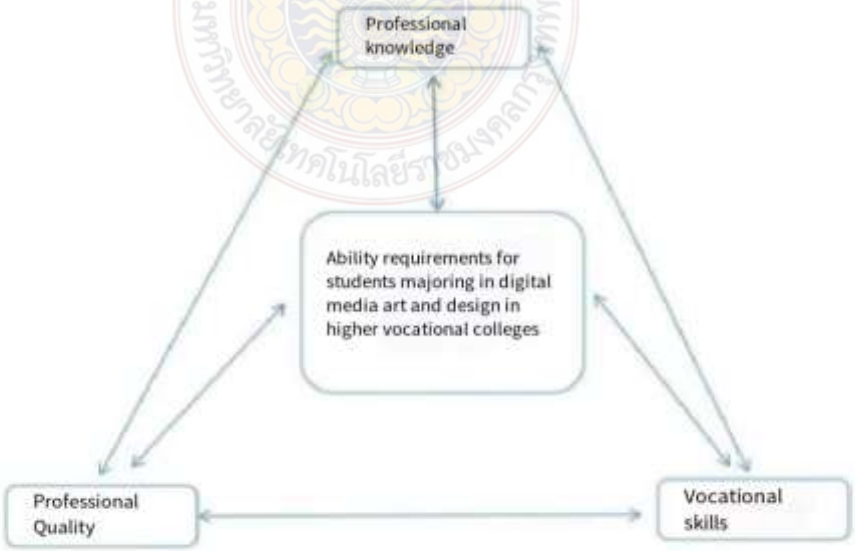

Figure 4.1 Core Competencies of the "Self-Planning" Pedagogical Model

4.1.2 The Curriculum System of the "Self-Planning" Pedagogical Model

4.1.2.1 School-Enterprise Talent Co-Education "1 + 1 + 1 + 3" Teaching System

The Digital Media Art Design program at G College is part of a high-level professional group. The national positioning for this professional group is to cultivate skilled talent that meets market demands and aligns with regional economic development requirements. Therefore, the curriculum system construction should explicitly define the knowledge, skills, and qualities required of the professional group (Yang, 2022). In formulating the curriculum, the Digital Media Art Design program is guided by job demands and collaborates with enterprises to strengthen students' knowledge, skills, and qualities in digital media art design.

Based on thorough research, the Digital Media Art Design program optimizes its curriculum by adopting a "1+1+1+3" teaching model. In the first semester, students complete foundational course studies. In the second semester, they delve into specialized studies, focusing on professional standard foundation courses. In the third semester, students further specialize, beginning their studies of core professional courses. From the fourth to the sixth semesters, students refine their professional direction through core professional courses, specialized practical courses, and courses in innovation and entrepreneurship.

The curriculum of the Digital Media Art Design program includes elective public courses, compulsory public courses, platform courses for the professional group, foundational courses, core professional courses, comprehensive practice courses, and courses related to innovation and entrepreneurship. The total teaching hours for a three-year undergraduate program should be within 2500-2590, with total credits ranging from 130-135. Practical teaching accounts for 55%-65% of total teaching hours, and

elective courses related to innovation and entrepreneurship account for more than 10% of those hours.

Table 4.2 Digital Media Art Design Curriculum Project

The Type of Course	Course Nature	In Theory Class	Practice Class	Credit
Public courses	Obligatory	324	348	35
Public courses	Take as an elective course	146	6	9
Professional group platform class	Obligatory	78	198	11
Major basic courses	Obligatory	208	260	26
Professional core course	Obligatory	144	216	20
Comprehensive practice course	Obligatory	0	532	19
Mass entrepreneurship and innovation expansion class	Take as an elective course	40	68	6

4.1.2.2 "Double Cycle" Model System of School-Enterprise Curriculum Construction

The dual-loop model is an outcome-oriented talent cultivation approach that focuses on what students "learn." This model is centered on the expected "output" of results, facilitating continuous improvement in course development through reflective feedback on outcomes and processes. Before teaching, a detailed description of the course objectives is provided, with clear, preset expectations for the knowledge, skills, and qualities to be achieved.

The dual-loop model constructs course quality assurance through the "outer loop" and "inner loop." The inner loop primarily ensures the basic knowledge,

skills, and qualities necessary for students to graduate, encompassing internal systems and professional arrangements. The outer loop considers external factors, such as societal and economic factors, ensuring alignment between course objectives and the development of the economy and society, in line with national and societal needs. Through the analysis of students' learning outcomes in the outer loop, course objectives are adjusted, re-entering the inner loop for further refinement. This cyclic process continues to ensure continuous improvement and alignment with evolving educational and societal requirements.

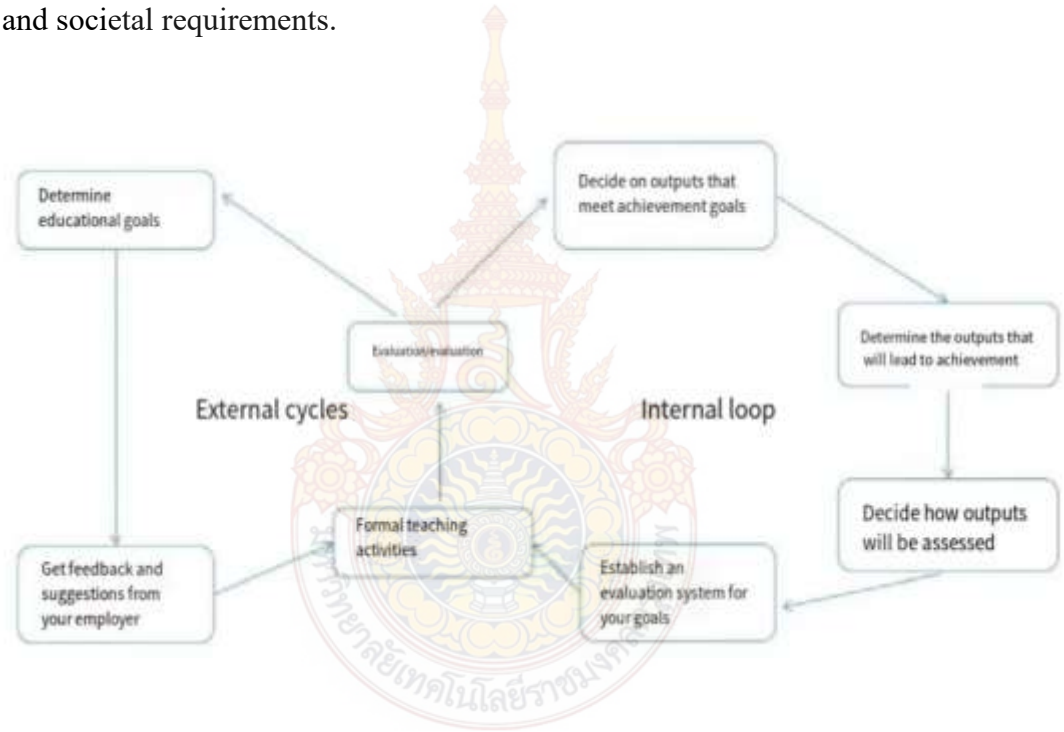

Figure 4.2 JohuV. The Err Double-Cycle Model

Based on Johu V. Earr's dual-loop model, like in Graph 12, this study, in conjunction with G College's curriculum system, has formulated the curriculum structure. The inner loop is school-centric, while the outer loop is enterprise-centric. In the inner loop, the school primarily provides compulsory public courses, elective public courses, platform courses for the professional group, and foundational courses, aiming to cultivate students' foundational knowledge, skills, and qualities. The outer loop

involves the enterprise offering training in dual-creation and expansion courses, broadening students' industry awareness.

Through credit exchange, the school and enterprise collaborate to develop core professional courses and comprehensive practice courses, fostering the professional skills and competencies students need. This integration of the inner and outer loops ensures a comprehensive curriculum system that combines academic knowledge and practical industry experience, enhancing students' overall capabilities and readiness for the workforce.

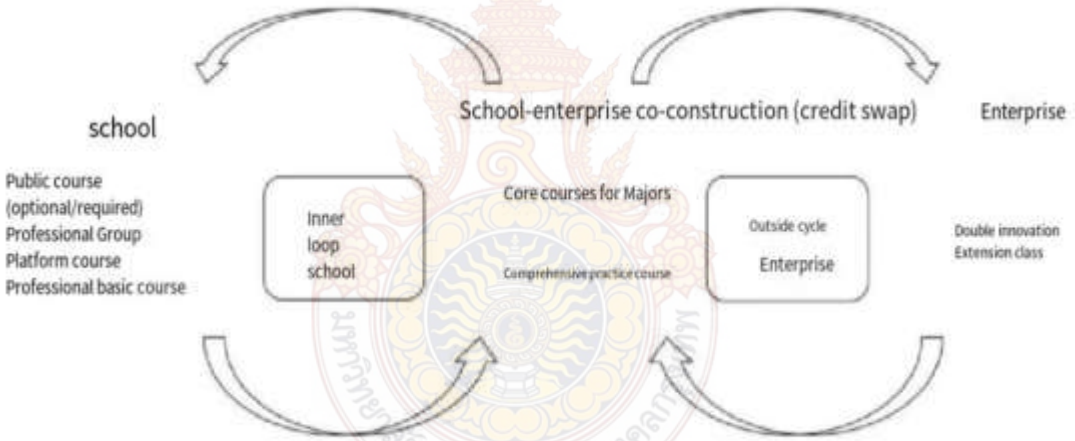

Figure 4.3 Double-Cycle Curriculum System of "Self-Planning" Pedagogical Model

The school's public courses (elective/compulsory) are taught in the first and second semesters. These courses include military-related courses, moral and legal education, the theoretical framework of core socialist values, fundamentals of information technology, vocational English, mental health for college students, guidance on employment and entrepreneurship, and basics of innovation and entrepreneurship.

The platform courses for the professional group are taught by the school, mainly in the second and third semesters. These courses include Introduction to Design, Design Methods, UI Design, Interaction Design, Data Analysis and Applications, Psychology of Communication, and New Retail Business Space Design. The course design aims to cultivate students' foundational knowledge in the field, interdisciplinary application abilities, and humanistic and artistic literacy.

Table 4.3 Digital Media Art and Design Professional Group Platform Course

Course Title	Course Nature	In Theory Class	Practice Class	Credit
Introduction to design	Obligatory	12	6	1
design technique	Obligatory	12	6	1
UI design	Obligatory	12	24	2
interaction design ID	Obligatory	12	24	2
Data analysis and application	Obligatory	12	24	2
Communication psychology	Obligatory	6	12	1
New retail commercial space design	Obligatory	12	24	2

The school teaches foundational courses in Digital Media Art Design and primarily concentrates on the second, third, and fourth semesters. These courses encompass professional, design-related, and new media foundational courses. Here is an overview of these courses:

Professional Foundational Courses:

- Color Matching Design
- Digital Layout Design
- Audio-visual Language

- Digital Painting

Design-related Foundational Courses:

- Digital Technology Design 1 (Photoshop, AI)

Visualization Design

- Graphic Creative Design

- Brand IP Image Design

New Media Foundational Courses:

- Digital Design Technology 2 (AE, PR)

- Digital Image Technology

- Animation Motion Principles

These courses are designed to provide students with a solid foundation in various aspects of digital media art design, covering both traditional and emerging technologies. The coursework aims to equip students with the skills and knowledge to excel in digital media art design.

Table 4.4 Basic Courses of Digital Media Art and Design Major

The Type of Course	Course Title	Course Nature	In the Theory Class	Practice Class	Credit
Professional foundation curriculum	Colour collocation design	Obligatory	16	20	2
	Digital layout design	Obligatory	20	25	2.5
	Audio-visual language	Obligatory	24	12	2
	Digital painting	Obligatory	16	20	2
Design class foundation course	Digital design technique 1	Obligatory	20	34	3
	Information visualization design	Obligatory	16	20	2
	Brand IP image design	Obligatory	20	25	2.5
	Graphic creative	Obligatory	20	25	2.5

The Type of Course	Course Title	Course Nature	In the Theory Class	Practice Class	Credit
New media foundation course	design Digital design technique 2	Obligatory	20	34	3
	Digital imaging technology	Obligatory	16	20	2
	Animation movement rules	Obligatory	20	25	2.5

The core courses for the specialization are jointly taught by the school and enterprises, primarily concentrated in the third, fourth, and fifth semesters. The courses include:

3D Animation Design and Production

Digital Project Synthesis

Digital Creative Product Design (Lingnan Culture)

New Media Presentation Design

Film and Television Post-Production Editing

Virtual Reality Content Design and Production

These courses are designed to provide students with in-depth knowledge and practical skills in key areas of digital media art design. The collaboration between the school and enterprises ensures that the curriculum is aligned with industry needs and prepares students for real-world challenges in their chosen fields. The focus on the third to fifth semesters allows students to build advanced competencies as they progress through their academic journey.

Table 4.5 Core Courses of Digital Media Art and Design Major

Course Title	Course Nature	In Theory Class	Practice Class	Credit
3D animation design and production	Obligatory	54	20	3
Digital project synthesis	Obligatory	54	20	3
Digital Creative Product Design (Lingnan Culture)	Obligatory	54	20	3
New media display design	Obligatory	54	20	3
Film and television later editing	Obligatory	72	32	4
Virtual reality content design and production	Obligatory	72	32	4

The comprehensive practice courses are co-taught by the school and enterprises, primarily led by industry mentors with support from school instructors. These courses are concentrated in the fifth and sixth semesters and include:

1) Social Practice: Involves students engaging in practical experiences related to the societal aspects of digital media art design.

2) Graduation Comprehensive Project: Encompasses a culminating project that integrates various aspects of students' learning and skills acquired throughout their academic journey.

3) On-the-Job Internship: Provides students with practical work experience in a professional setting, bridging the gap between academic learning and real-world application.

The collaborative approach between the school and enterprises, with a focus on industry mentorship, enhances students' workplace readiness and ensures the practical relevance of their education to industry standards. The fifth and sixth semesters are strategically chosen for these courses to allow students to apply their accumulated knowledge and skills comprehensively before graduation.

Table 4.6 Integrated Practice Course of Digital Media Art and Design

Course Title	Course Nature	In Theory Class	Practice Class	Credit
Social practice	Obligatory	0	56	2
Graduation comprehensive program or graduation project (thesis)	Obligatory	0	56	2
Post internship	Obligatory	0	420	15

The dual-creation expansion courses for the Digital Media Art Design program are taught by enterprises, with a focus primarily in the fifth semester. These courses include:

1) Chinese Traditional Art: Explores the principles and techniques of traditional Chinese art within the context of digital media.

2) New Media Advertising Design: Focuses on the principles and practices of designing advertisements for new media.

The courses are conducted mainly at off-campus training bases, providing students with a real-world environment for learning and applying their skills. The emphasis on industry-led courses in the fifth semester enables students to gain insights into contemporary trends and practices in digital media art, design, and advertising.

Table 4.7 Entrepreneurship and Development Program of Digital Media Art Design (elective)

Course Title	Course Nature	In Theory Class	Practice Class	Credit
Traditional Chinese art	Take as an elective course	20	34	3
New media advertising design	Take as an elective course	20	34	3

The faculty for the jointly built courses by the school and enterprises follows a “Dual Mentor” system, with both school and industry mentors sharing responsibilities. In this collaborative curriculum, school instructors primarily handle organization, guidance, and regulation. At the same time, industry mentors focus on disseminating new knowledge, skills, and insights related to emerging positions.

The “Dual Mentor” system aims to create synergy in which both educators and industry professionals contribute their expertise to students’ learning experience. School and industry mentors collaborate to develop work scenarios for students through on-campus and off-campus practical training. This approach ensures that students receive a well-rounded education that combines academic knowledge with valuable insights and skills relevant to the industry’s evolving needs.

4.1.3 “Self-Planning” Pedagogical Model Teaching

The teaching strategies for the “self-planning” instructional model in the Digital Media Art Design program primarily involve scenario- and project-based instruction.

1) Scenario-Based Teaching Strategy:

The school establishes on-campus practical training bases, and enterprises set up off-campus practical training bases. This creates a work environment for students that helps them build the necessary knowledge framework.

2) Project-Based Teaching Strategy:

This approach involves utilizing textbooks, teaching resources, and information technology to facilitate project-based learning for students.

By combining these two strategies, the program aims to provide students with hands-on experience in real-world settings, enabling them to apply their knowledge and skills in practical contexts. The scenario-based approach immerses students in a work environment. In contrast, the project-based approach enhances their

ability to work on real-world projects. It fosters a more proactive, self-directed approach to learning.

4.1.3.1 Scenario Teaching

The "self-planning" instructional model's scenario-based teaching strategy is primarily implemented through the use of "textbooks," "teaching resources," and "information technology," thereby constructing a contextualized teaching environment.

Textbooks

The program involves collaborative development of teaching resources by both the school and enterprises to solidify professional knowledge and broaden students' perspectives. This includes the use of materials aligned with the "14th Five-Year Plan" and the joint creation of loose-leaf materials by the school and enterprises. The latter incorporates industry-new designs, technologies, and standards, enabling students to grasp the latest developments and firsthand information in the field.

Figure 4.4 Project-Based Teaching and Teaching Resources

Teaching Resources

The collaborative effort between the school and enterprises extends to the development of teaching resources. Utilizing resources such as "1+X" certifications, national quality courses, the National Vocational Education Resource Platform, the Superstar Learning Platform, and the Cloud Classroom Platform optimizes the

integration of both online and offline teaching resources. This approach aims to facilitate a seamless learning experience for students and enhance the effectiveness of the instructional process.

G Collage's Digital Media Art Design program has established an on-campus virtual simulation laboratory and a photography and videography training room. The Virtual Simulation Laboratory aims to provide students with a realistic experience of applying digital technology, animation, and gaming concepts by constructing scenario-based environments. The Photography and Videography Training Room is designed to help students simulate tasks related to photography, videography, and live streaming.

Figure 4.5 Training Based on Campus

Additionally, the program has off-campus training bases established by enterprises. These include the Metaverse Training Base, Motion Capture Training Base, and Design and Processing Training Base. These external training bases, linked to the program's specialization, are set up by companies and provide students with training facilities and equipment. Apart from regular courses held at these training bases,

teachers may also lead students to engage in comprehensive practical activities during winter and summer breaks, enhancing their hands-on experience and practical skills.

Figure 4.6 Off-Campus Training Based

Information Technology Means

Teaching entirely leverages the advantages of enterprise resources, based on the “Two Highs and One Challenge” educational reform, focusing on each student and implementing a teaching approach tailored to individual learning needs. The curriculum incorporates technologies such as Augmented Reality (AR), Virtual Reality (VR), motion capture, and AI-generated digital characters, providing students with a higher-level classroom experience.

The “Two Highs and One Challenge” model, proposed by Wu Yan, the Director of the Higher Education Division of the Chinese Ministry of Education, refers to the dual aspects of high-level thinking and creativity (Two Highs) and the challenging nature of the curriculum (One Challenge). This reform emphasizes the integration of knowledge, skills, and qualities, requiring teachers to invest time in cognitive preparation and in mastering information technology teaching methods.

Figure 4.6 Project-Type Information Technology Means

4.1.3.2 Project-Based Teaching

The purpose of project-based teaching is to design a series of practical projects that integrate knowledge points and skills, enabling students to learn and master them through hands-on experience. Compared to traditional isolated lectures on knowledge points, project-based teaching emphasizes students' practical skills and application.

In project-based teaching, students are required to practice and apply the knowledge and skills they have learned by completing specific project tasks. Each project represents a real-life scenario in which students must face authentic problems, analyze them, and solve them, thereby cultivating critical thinking and problem-solving abilities. Knowledge points are integrated at various stages of the projects, allowing students to encounter and learn relevant information as the projects progress naturally.

The advantages of project-based teaching lie in its ability to enhance students' motivation and interest in learning, thereby sparking enthusiasm. Through practical projects, students can better understand the real-world applications of knowledge while developing problem-solving skills. Additionally, project-based

teaching fosters collaboration and communication among students, cultivating teamwork and communication skills.

4.1.4 Evaluation System of "Self-Planning" Pedagogical Model

The evaluation system for the "self-planning" instructional model is established through effective project assessment to understand the impact of the teaching approach. The evaluation indicators are tailored to the developmental characteristics of undergraduate students majoring in Digital Media Art Design. The establishment of this system is advantageous for ensuring the smooth implementation of the study, enhancing its quality, and further promoting student-centered research-oriented pedagogical model reform. The evaluation system primarily includes three components: classroom performance, stage assessments, and project evaluations.

4.1.4.1 Evaluation of Classroom Performance

During the teaching process, teachers often ponder questions such as: What learning experiences can the course provide to students? In the initial class, teachers describe the course plan, expected outcomes, and teaching arrangements, encouraging active student participation in teaching activities. Therefore, classroom performance reflects students' understanding of course objectives and mastery of knowledge points.

The evaluation of classroom performance in the "self-planning" instructional model is based on five constructivist elements: "situation," "construction," "focus," "community," and "capability." This evaluation aligns with students' knowledge, qualities, and skill abilities. A course observation record sheet is designed based on this evaluation criterion.

The observation record sheet collects information about students' learning performance and development, as well as the teacher's teaching situation. This observation tool supports a more robust assessment of student learning outcomes and the effectiveness of course design. It helps adjust and supplement subsequent courses and objectives based on the observed results.

4.1.4.2 Evaluation Stage

The phased evaluation in the “self-planning” instructional model focuses on students’ learning processes and knowledge construction, going beyond mere scrutiny of learning outcomes. Evaluation should be a continuous process to understand students’ progress and development throughout the learning journey, helping teachers and students assess learning situations, adjust teaching strategies, and encourage independent learning and critical thinking. The primary aspects of evaluation include:

(1) Learning Process and Strategies:

The evaluation should focus on how students construct knowledge and the strategies they use to solve problems. Observing students’ learning notes, assignments, and group discussions helps gauge their learning progress and strategy.

(2) Inquiry and Problem-Solving:

The assessment should assess students’ ability to inquire and solve problems during the learning process. Observing students’ thought processes, questions, and attempts to solve problems provides insights into these skills.

(3) Learning Outcomes and Presentations:

While constructivism emphasizes the learning process, evaluating learning outcomes is also crucial. Students can showcase their constructed knowledge and understanding through presentations, verbal expressions, project reports, etc.

(4) Collaboration and Communication:

Constructivism emphasizes cooperation and communication among students. The assessment should focus on students’ participation, contributions, group collaboration, and knowledge sharing.

(5) Learning Motivation and Attitudes:

Evaluation should not only consider students’ academic achievements but also delve into their learning motivation and attitudes. Students’ interests, autonomy, and attitudes toward learning significantly impact learning outcomes.

(6) Independent Learning and Reflection:

Assessment should encourage students to engage in independent learning and reflection. Students can document their learning experiences and reflections through learning journals and reflective assignments.

(7) Adaptability and Flexibility:

Evaluation should ascertain whether students can flexibly apply knowledge and adapt to new situations and challenges during their learning journey.

By considering these aspects comprehensively, phased evaluation helps teachers gain a better understanding of students' learning processes and growth. It facilitates personalized guidance and support for students, fostering more holistic development within the constructivist teaching environment.

4.1.4.3 Project Evaluation

Project evaluation is based on classroom performance, stage evaluations, and final project outcomes. While the final project outcome is an essential reference, even more crucial is the students' learning and growth throughout the project. Project evaluation mainly focuses on the following points:

(1) Active Learning and Autonomous Exploration:

The evaluation should focus on whether students exhibit an attitude of active learning and the ability to engage in autonomous exploration during the project. Are students actively and proactively participating in the project, posing questions, and exploring solutions on their own?

(2) Problem Solving and Creative Thinking:

Constructivism encourages students to apply knowledge and thinking tools to solve problems. The assessment should consider students' problem-solving abilities and creative thinking during the project, as well as how they use existing knowledge to construct new understandings.

(3) Collaboration and Communication:

Constructivism emphasizes collaboration and communication among students. The evaluation should focus on students' collaboration skills within project teams and on how they communicate and share their constructed outcomes within the group.

(4) Learning Process and Strategies:

Evaluation should consider students' learning processes and strategies during the project. Can students consciously plan their learning processes and adjust learning strategies to meet the project's requirements?

(5) Learning Motivation and Attitudes:

The assessment should not only focus on project outcomes but also on students' learning motivation and attitudes during the project. Students' interest in learning, autonomy, and their attitude toward the project significantly impact the quality of project outcomes.

(6) Adaptability and Flexibility:

The assessment should determine whether students can flexibly apply their knowledge and adapt to new situations and challenges during the project.

(7) Reflection and Growth:

Assessment should encourage students to reflect on their projects upon completion. Students can record their learning gains and growth throughout the project through reflective assignments, project summaries, and other activities.

4.2 Implementation of the Pedagogical Model of "Self-Planning"

The implementation of the "self-planning" instructional model centers on how the "double mentors" collaborate to fulfill teachers' course tasks. At the same time, students focus on constructing their knowledge base within the framework of "self-

planning" learning processes. Implementation unfolds through the organization and execution of teaching activities, the implementation of specific courses, and student learning. The teaching implementation highlights students' initiative and autonomy in the learning process, emphasizing their increased ability to choose learning directions and courses.

4.2.1 Teaching Organization

The school teachers and enterprise mentors collaboratively design and participate in teaching activities. The Digital Media Art Design major at G College collaborates with G Digital Design Company in Guangzhou for industry-academia cooperation. Students are encouraged to construct their knowledge and understanding through self-directed learning and practical experiences.

In the "self-planning" instructional model, students study foundational courses in the first semester, choose specialized directions and study foundational courses in the second semester, modify specialized directions and study core courses in the third semester, and focus on selected directions for further study in the fourth to sixth semesters. This phased planning allows students to explore various directions initially and gradually concentrate on areas of interest, fostering enthusiasm and motivation.

Furthermore, the industry-academia cooperation model adds value to the "self-planning" instructional model. The collaboration between the school and the enterprise ensures the practicality and vocational orientation of the learning. This cooperative model immerses students in a real working environment, helping them better adapt to future career development and enhancing the close connection between the school and industry.

First Semester

Learning Objectives: Provide students with an overall understanding of the Digital Media Art Design major and establish a disciplinary foundation.

Learning Tasks: Students take general courses covering art design, computer basics, and digital media basics.

Second Semester

Learning Objectives: Allow students to gain a preliminary understanding of design and new media directions, and choose a specialized direction of interest.

Learning Tasks: Students learn foundational knowledge in design and new media through specialized platform courses. At this stage, students begin to participate in school-enterprise cooperation activities, engaging with and understanding the practical applications of various directions.

Third Semester

Learning Objectives: Help students further clarify their learning direction and prepare to choose specialized foundational courses.

Learning Tasks: Students study specialized foundational courses in design and new media, as well as platform courses. During this phase, students can modify their specialized direction based on their interests and actual circumstances, choosing relevant specialized foundational courses.

Fourth Semester

Learning Objectives: Deepen the study of specialized foundational knowledge in the chosen direction, preparing for subsequent specialized core courses.

Learning Tasks: Students take specialized foundational courses, selecting them based on their specialization. They engage in discussions with enterprise teachers to understand industry demands and trends.

Fifth Semester

Learning Objectives: In-depth learning of specialized core knowledge in the chosen direction, participation in practical projects, completion of double-creation expansion courses, cultivation of valuable skills, and enhancement of innovative abilities.

Learning Tasks: Students study specialized core courses, with both school and enterprise teachers jointly teaching in a dual-mentor system. They participate in comprehensive practical courses, collaborate with enterprises on projects, and hone practical skills.

Sixth Semester

Learning Objectives: Completion of on-the-job internship and graduation design.

Learning Tasks: Students participate in more advanced practical projects, collaborate with enterprises on innovative practices, undertake on-the-job internship courses, and complete graduation designs, gaining exposure to entrepreneurship and industry development.

Please note that the translation provided is based on the information you provided and might require further refinement based on the specific terminology and context used in your educational institution or region.

Implementation Status:

During the first specialization refinement, among the 29 students, 12 chose the design direction, and 17 chose the new media direction. In the second specialization selection, 29 students were included: 14 chose the design direction, 15 chose the new media direction, 2 shifted from the design direction to the new media direction, and 4 shifted from the new media direction to the design direction.

In the executed teaching plan, students, after gaining a broad understanding of different directions in the early stages, gradually chose specialized directions aligned with their interests and strengths. This approach cultivates digital media art design talents with enhanced innovative and practical capabilities. The school-enterprise cooperation model has provided students with richer practical opportunities and a vocational-oriented learning experience. Additionally, through the collaborative efforts

of the school and enterprises, theoretical knowledge is closely integrated with practical applications, laying a solid foundation for students' career development.

4.2.2 Implementation of Pedagogical Model

"Self-Planning" Teaching Reform has been implemented across the curriculum, teaching methods, learning processes, and evaluation systems. Taking the course "Digital Creative Product Design (Lingnan Culture)" as a case study, the course implementation is presented as follows:

Case Introduction: "Digital Creative Product Design (Lingnan Culture)" is a core course in the Digital Media Art Design major with cultural creativity at its core. The course focuses on cultural and creative design related to Lingnan culture. The target audience is 21st-grade Class A students majoring in Digital Media Art Design, totaling 29 students, all from an art background. Prior to this course, students had studied color-matching design, design methods, and Digital Design Technology 1, thereby acquiring a certain level of design skills.

Based on the analysis of students' pre-course learning situations and the portrait of post-2000 vocational college sophomores, they exhibit characteristics of "two lights and two heavies": "light" in terms of tedious theoretical knowledge and a single evaluation method, and "heavy" emphasis on the experiential aspects of the learning process with a strong focus on evaluation, driven by a competitive spirit.

The course is co-taught by the school teacher, Ms. S, and the industry mentor, Ms. L.

4.2.2.1 Course Content

The course "Digital Creative Product Design (Lingnan Culture)" is aligned with the development of cultural and creative entrepreneurship in the regional context. It meets the competency requirements for professional design positions. It aligns with the curriculum standards for talent cultivation in the Digital Media Art Design major. Additionally, it connects with national events such as the National College Students

Advertising Art Competition and the China Packaging Creative Design Competition. It integrates with the “1+X” Cultural and Creative Product Digital Design Vocational Skills Level Certificate.

Project Modules

The course consists of 48 class hours and is organized into project modules focused on “Intangible Cultural Heritage Creative Product Development.” The course is divided into three projects: Exhibition Hall Category for Intangible Cultural Heritage Creative Products, Tourism Category for Intangible Cultural Heritage Creative Products, and Folklore Category for Intangible Cultural Heritage Creative Products. Each project includes four tasks and eight sub-tasks.

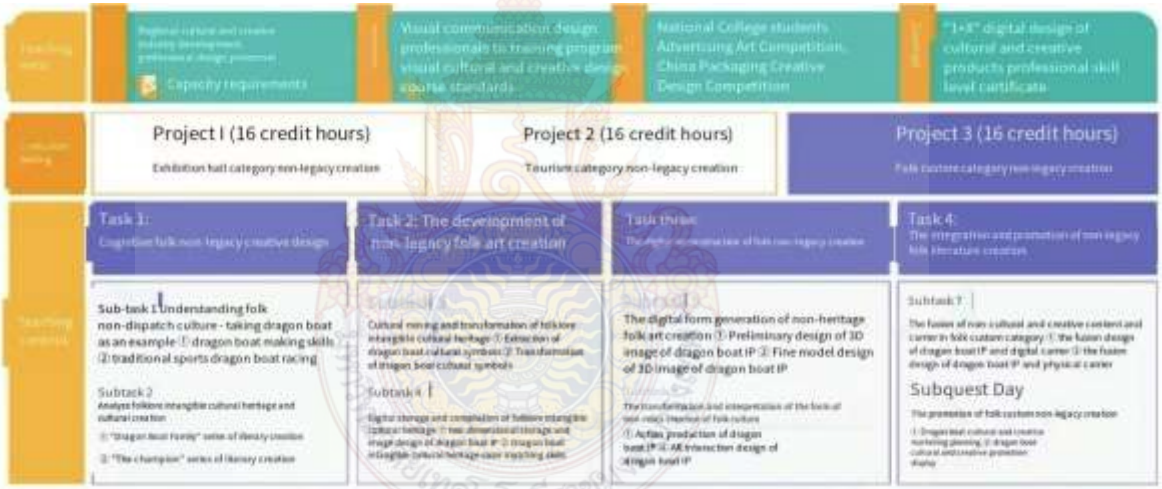

Figure 4.7 Teaching Content of Digital Creative Product Design (Lingnan Culture) Course

The students were divided into four groups, collaborating to complete project tasks. For Project One, focusing on the Exhibition Hall category of Intangible Cultural Heritage Creative Products, the task was to design the UI for an app to showcase a cultural museum’s intangible cultural heritage. The four groups each chose a different cultural heritage theme:

(1) Group One: Non-material Cultural Heritage - Five Goats Legend

Design Concept: Developed a UI design for a music streaming app inspired by the legend.

(2) Group Two: Non-material Cultural Heritage - Lion Dance

Design Concept: Created a UI design for an e-commerce app inspired by the Lion Dance.

(3) Group Three: Non-material Cultural Heritage - Cantonese Opera

Design Concept: Developed a UI design for a food ordering app inspired by Cantonese Opera.

(4) Group Four: Qing Dynasty's Phoenix Crown

Design Concept: Created a UI design for a music app inspired by the Qing Dynasty's Phoenix Crown.

In Project Two, focusing on the Tourism category of Intangible Cultural Heritage Creative Products, the project involved incorporating knowledge points from folk songs into an audio-visual course. This approach aimed to enhance students' motivation and interest in learning by enabling them to directly experience, participate in, and create within the practical project.

Project Three, in the Intangible Cultural Heritage Creative Products: Folklore category, focused on interactive design for dragon boat-themed projects.

Figure 4.8 Digital Creative Product Design (Lingnan Culture) Project 1 Student's Work Case Module

In the course, the term “case module” refers to practice and exploration based on actual cases, targeting specific themes or domains. In the course “Digital Creative Product Design (Lingnan Culture),” the content is divided into three case modules, each centered on a specific case for teaching.

Project One: Exhibition Hall Intangible Cultural Heritage Creative Products

Actual Case: UI design inspired by the intangible cultural heritage of a cultural museum, such as Cantonese Opera, Lion Dance, Ao Fish Dance, etc.

Student Practice Content: Based on the case, students conduct research, plan, extract design inspiration, and perform UI design for an app.

Project Two: Tourism Intangible Cultural Heritage Creative Products

Actual Case: An animated case of She folk songs, selecting one from the She historical legend song series, She moral song series, She love song series, and She miscellaneous song series.

Student Practice Content: Building on the case, students explore the characteristics, connotations, and presentation forms of She folk songs, emphasizing digital presentation and promotion.

Project Three: Folklore Intangible Cultural Heritage Creative Products

Actual Case: Dragon boat as a folklore intangible cultural heritage project, used as a case for practice and design.

Student Practice Content: Based on the case, students engage in digital design for dragon boats, including design research, digital reconstruction, storage and compilation, digital form generation, and digital form transformation and interpretation. The outcome is presented and promoted.

By dividing the course content into different case modules, students can systematically learn and master knowledge and skills in cultural and creative product design in various domains. Each case provides real-world context and challenges,

allowing students to improve and expand their design abilities through practical experience.

4.2.2.2 Teaching Content

Contextualized Teaching

Teaching strategy involves teachers flexibly employing a range of teaching methods and approaches based on educational objectives and student characteristics, aiming to achieve a student-centric, all-encompassing education. In line with the concepts of moral and intellectual development, it strives for comprehensive, continuous, and inclusive education for all.

(1) Teaching Materials

The course "Digital Creative Product Design (Lingnan Culture)" uses the "14th Five-Year Plan" textbook, namely "Cultural Innovation Design," a national textbook developed by the Chinese Ministry of Education during the 14th Five-Year Plan. This textbook is authoritative, cutting-edge, and original, representing a high-standard approach to curriculum planning.

In addition, a collaboratively crafted loose-leaf textbook titled "Cultural Creative Design Guide" is used, which stands out for its project-oriented focus, emphasizing projects over isolated knowledge points. It resembles a project operations manual and includes instructional videos accessible via QR codes, allowing students to learn specific project steps independently.

"Craftsmanship Encyclopedia" serves as a supplementary tool and reference book for students, covering craftsmanship techniques and practical applications in cultural and creative product design, thereby enriching students' design knowledge and skills.

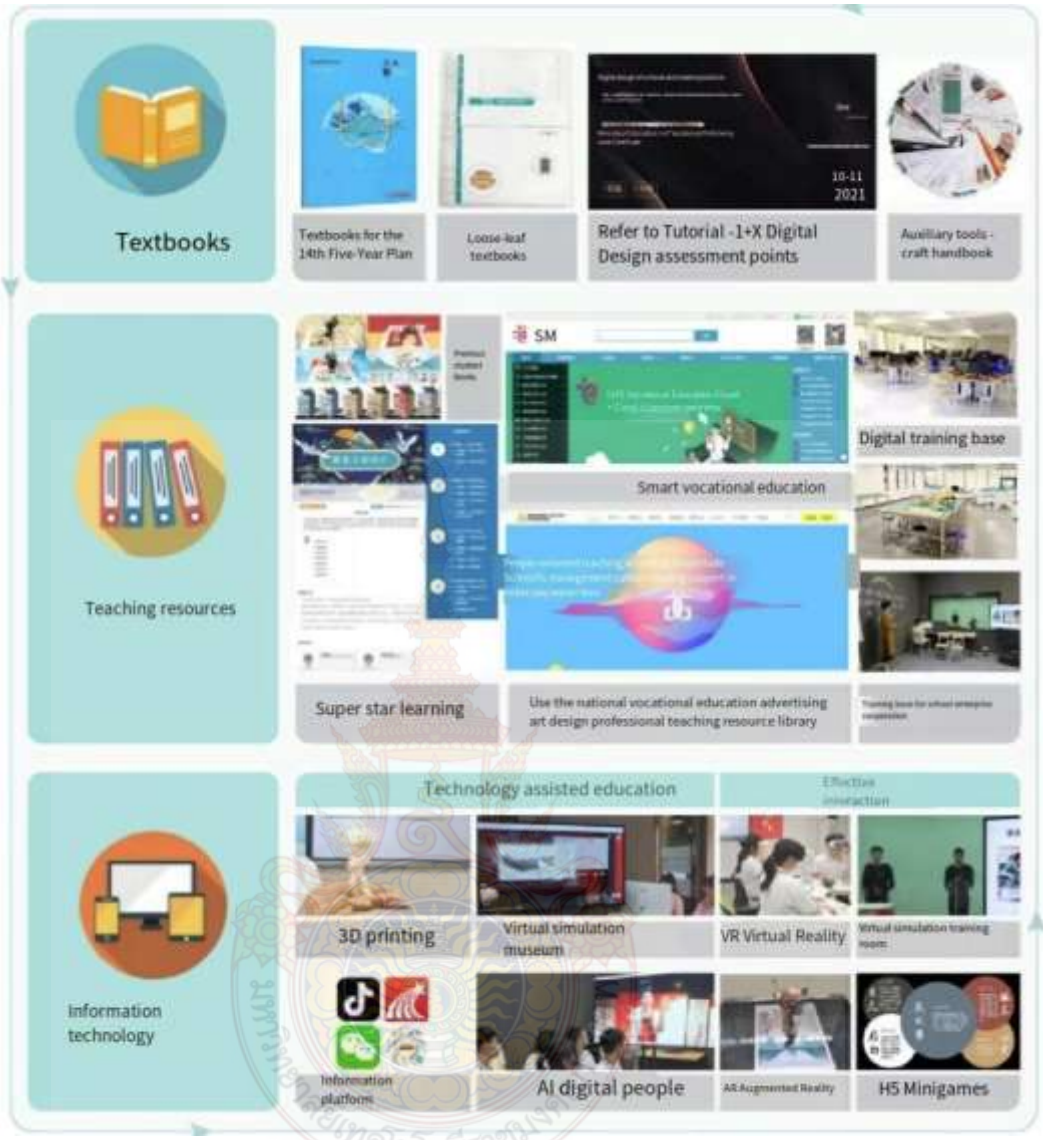

Figure 4.9 Course Teaching Materials of Digital Creative Product Design (Lingnan Culture)

(2) Teaching Resources

The teaching resources for the course “Digital Creative Product Design (Lingnan Culture)” include the online learning platform - “Smart Vocational Education,” the teaching resource library for Chinese vocational education in advertising art design, Superstar Learning, and the archives of past student works and training bases. By building both online and offline teaching resources, a learning environment is created for students to engage in self-directed learning. The collaboration between the school

and industry helps develop teaching resources closely aligned with the curriculum, including case analyses, industry information, and practical projects, helping students better understand industry developments and practical applications.

Teaching venues include exhibition halls, on-campus training rooms, and off-campus training bases. Students can engage in hands-on operations and presentations in different settings, deepening their understanding of cultural and creative product design and enhancing their practical skills.

Figure 4.10 Students Teach in the Off-Campus Training Base

(3) Information Technology Means

The course “Digital Creative Product Design (Lingnan Culture)” incorporates various information technology tools, such as 3D printing, virtual simulation museums, VR, AR, AI digital figures, information platforms, and H5 games. Teaching platforms and resource libraries provide students with learning materials, online teaching resources, and communication platforms. Online learning and communication tools support remote teaching, discussions, and interactions between students and teachers.

Ms. S, a school teacher, mentioned during an interview, “In the teaching process, the industry has provided many new teaching methods. For example, the use

of AI digital figures, which I used for the first time this year. During the class, it served as a teaching assistant, helping me answer students' questions. The responses it provided were comprehensive and constructive."

The integration of industry resources addresses the slow update of school teaching resources. Teachers can incorporate the latest teaching methods into their lessons, helping students apply them in practice.

Project-Based Teaching Strategy

Based on the visual design workflow, the course assignments align with the requirements of "Post, Course, Competition, and Certificate" (job demand, curriculum standards, learning through competition, and vocational certificates) proposed in China. The teaching process revolves around "measurement, form, tailoring, and clothing," employing methods such as project- and problem-driven approaches, self-directed learning, and group exploration. This enhances students' capabilities in digital cultural and creative design and marketing.

"Measurement": Define tasks based on the learning situation and conduct pre-class previews.

"Form": Focus on students and tailor teaching to their needs, adopting a flipped classroom approach.

"Tailoring": Evaluate in a layered and graded manner, promote group collaboration, and set basic and elective thematic tasks.

"Clothing": Organize teaching outcomes, accumulate excellent student works, optimize curriculum development, and enhance the quality of talent cultivation.

method	Interactive participation (investigation method, discussion method) Game fun (practical method, role-playing method) Course ideological and political discourse (lecture method, case analysis method)	All-round education
design	Adopt a three-stage progressive education rescue model of "three modernizations + three assessments"	Whole process education
team	Full-time teacher, business mentor, design mentor	Educate everyone
model	Classroom implementation adopts a "tailor-made" ability training model	third-order progression
Task	Realization of Dragon Boat IP digitalization	On-the-job course competition certificate
resource	"1+X" certification, national quality courses, school-level online course videos, virtual simulation training promotion, AI digital personnel, and corporate WeChat communication group.	Online and offline teaching resources.

Figure 4.11 Teaching Strategy of Digital Creative Product Design (Lingnan Culture)

The course adopts a dual-mentor system, where each project's students will have both school teachers and industry mentors serving as their dual mentors. School teachers are responsible for imparting theoretical knowledge and professional skills. At the same time, industry mentors provide real-world cases and practical guidance, helping students integrate theory with practice.

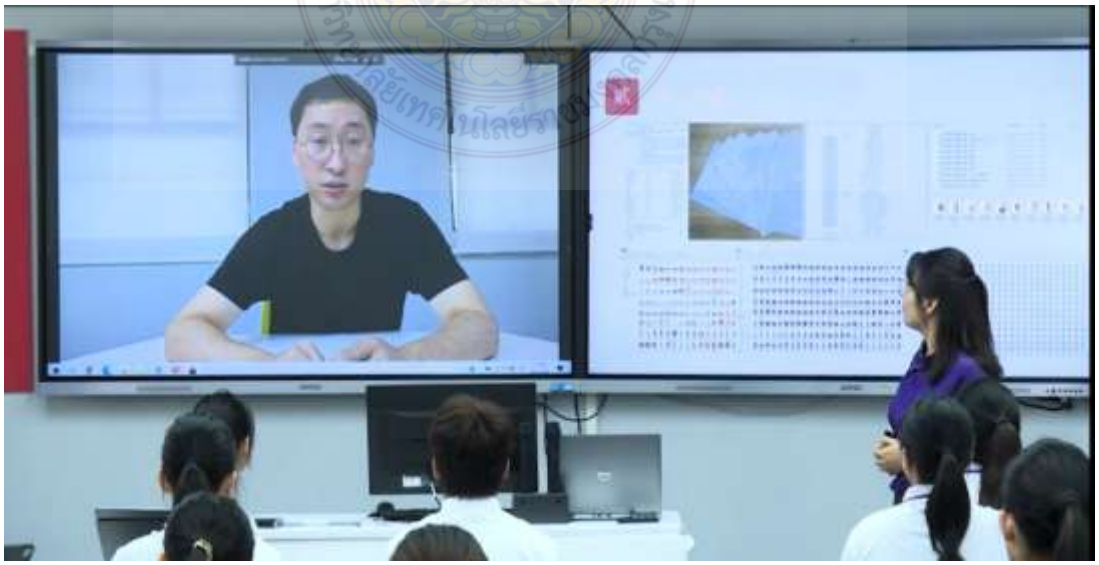

Figure 4.12 Comments of Enterprise Mentors in Digital Creative Product Design (Lingnan Culture)

The implementation of the teaching content reform aims to create a more practical and career-oriented learning environment for students. They will have the autonomy to choose their learning directions and receive comprehensive learning support and guidance. Additionally, integrating the school-enterprise cooperation model combines theoretical knowledge with practical applications, laying a solid foundation for students' career development.

4.2.2.3 Learning Style

Learning modes refer to the methods students acquire knowledge and skills in a course. The course "Digital Creative Product Design (Lingnan Culture)" guides students through project-oriented, practical learning and independent inquiry, and utilizes diverse learning resources. The following is an example using Project Three: Dragon Boat Design:

Pre-Class Self-Study for "Digital Creative Product Design (Lingnan Culture)"

Course:

Student Activities: Independent learning – watching the teacher's instructional materials on the "Superstar Learning Platform" and taking a pre-class test.

Teacher Activities: Task assignment – uploading course resources and pre-class tests on the "Superstar Learning Platform," correcting and providing feedback on pre-class tests.

Digital Integration: Online course platform.

In-Class Guided Learning for "Digital Creative Product Design (Lingnan Culture)" Course:

Student Activities:

Reviewing previous knowledge – students provide feedback on pre-learning content and the task introduction.

Showcasing results – group representatives analyze learning outcomes, group discussions and critiques.

Scenario-based learning – designing projects based on competition or certification requirements.

Brainstorming – group discussions on exploring and transforming dragon boat culture.

Group competition – designing dragon boat IPs with Chinese color schemes and styles.

Practical exercise – development of dragon boat-themed cultural and creative products.

Task refinement – refining tasks based on student suggestions and feedback from school and industry mentors.

Teacher Activities:

Reviewing Q&A – revisiting key points and answering test-related questions.

Result evaluation – summarizing and refining key points.

Project introduction – introducing cases according to the "1+X" certification requirements, guiding students in project training.

Guided explanation – digital reconstruction of dragon boat cultural and creative themes.

Guidance completion – one-on-one guidance by school teachers, helping students complete projects.

Guided explanation – development of dragon boat-themed cultural and creative projects.

Inspiring thought – inspiring further thinking through industry mentor comments.

Digital Integration:

Superstar task grouping, big data dashboard, virtual simulation training room, AI digital assistants, Superstar scoring and evaluation, NetEase Youdao AICG content generation, Douyin.

Post-Class Extension for “Digital Creative Product Design (Lingnan Culture)” Course:

Student Activities: Extension training – coordinating with other positions within the company to complete the final product.

Teacher Activities: Guided evaluation – providing teaching guidance through the “three transformations.” The three transformations include: interactive participation, gamification, and course-based ideological and political education.

Digital Integration: Enterprise WeChat communication group.

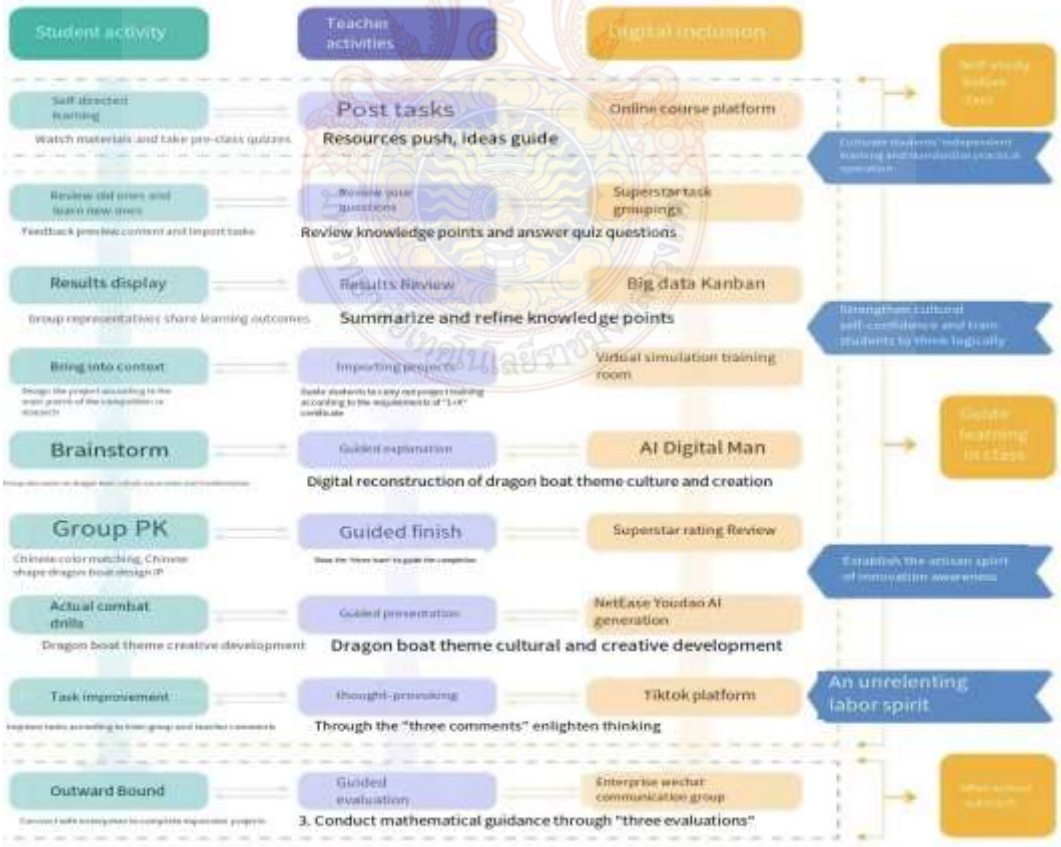

Figure 4.13 Course Learning Method of Digital Creative Product Design (Lingnan Culture)

A student, Mr. W, when interviewed about the learning approach, said, “Before each class, the teacher asks us to study online. Our group gathers to analyze, conduct visits, and brainstorm. During class, the teacher has us showcase our projects, and classmates provide excellent suggestions. Both the teacher and industry mentors provide us with one-on-one guidance to help us continually improve. I think this method is effective in helping us practice and understand how to execute specific projects.”

An analysis of the “student activities,” “teacher activities,” and “integration of digital tools” in the course reveals that this learning approach helps cultivate students’ self-directed learning and standardized practical skills. It helps strengthen cultural confidence, trains students’ logical thinking, fosters an innovative spirit with a craftsman’s mindset, and promotes a persistent work ethic.

4.2.2.4 Evaluation System

The evaluation for “Digital Creative Product Design (Lingnan Culture)” consists of both formative and summative assessments. The formative assessment accounts for 60% of the total score, while the summative assessment, specifically project evaluation, accounts for the remaining 40%.

The formative assessment is divided into pre-class, in-class, and post-class evaluations. The pre-class evaluation includes pre-class self-study (5%) and pre-class tasks (5%), primarily assessed by teachers. The in-class evaluation involves attendance (6%), task-specific assessments (25%), qualitative assessments (9%), teacher evaluations, group peer assessments, student self-assessments, and participation from industry partners. The post-class evaluation includes post-class extension activities (10%) and is assessed by teachers and industry partners.

Project evaluation consists of knowledge assessment (10%) and skill assessment (30%), primarily evaluated by teachers.

evaluation process	Evaluation process (60%)						Formative assessment (40%)	
	Before class		in class			After class	Final assessment	
Evaluation method	Self-study before class (5%)	Pre-class tasks (5%)	Attendance (5%)	Evaluate tasks (25%)	Quality evaluation (10%)	After-school development (10%)	Knowledge assessment (20%)	Skills assessment (20%)
Evaluation subject	Teacher comments			Teacher comments, group mutual evaluation, student self-evaluation, enterprise evaluation		Teacher comments, company participation	Teacher comments	Company reviews

Figure 4.14 Curriculum Evaluation System of Digital Creative Product Design (Lingnan Culture)

In Project Three, teacher Ms. S provided feedback on Subtask One for the fourth group: “The ‘White Tiger’ group’s research report on ‘We Are All Descendants of the Dragon’ not only elaborately explains the rules and significance of the intangible cultural heritage – dragon boat racing, but also conceptualizes the design proposal for the upcoming cultural and creative product. The use of motion capture in the presentation can be considered a bold technical effort. However, the results are not perfect, with instances of model penetration. The main issue lies in the compatibility between the existing model and the motions. Your group should pay attention to this when working on the 3D modeling of the IP image in the future.”

The course “Digital Creative Product Design (Lingnan Culture)” sets evaluation criteria for cultural element extraction, digital reconstruction, digital form generation, and final effects and promotion. It employs multidimensional assessment to encourage students’ teamwork and innovative spirit.

Table 4.8 Curriculum Evaluation Criteria of Digital Creative Product Design (Lingnan Culture)

Course Title	**Digital Creative Product Design (Lingnan Culture)**			**Course Nature**	**Professional Core Courses**
Classes and grades in school	Digital Media Art Design 2021-1			Time	
Question number	Question types	Value	Evaluation requirements	Key points of evaluation: knowledge description	
1	Cultural element extraction	20	accuracy	Story integrity With the universal value of humanistic care The accurate extraction of the cultural elements The icon design is refined.	
2	Digital reconstruction	30	Visual impact, relevance	Have a visual impact There are innovative elements. Restorative Application of digital technology	
3	Digital form generation	20	uniqueness	Present the unique cultural characteristics The generation of the digital form is complete. Prospective and unique	
4	Final effect and promotion	30	Original, dissemination	No imitation or plagiarism, no infringement of copyright Have the ability to [tell stories] and news value Sales and promotions are available through communication and marketing methods.	

4.3 Evaluation and Reflection of the Pedagogical Model of "Self-Planning"

The author analyzes and reflects on the practice by recording materials, interviews, and teaching materials, and summarizes the advantages and disadvantages of the "self-planning" pedagogical model.

4.3.1 In Practice, after Adjustment and Optimization, the Pedagogical Model of "Self-Planning" Has Shown a Good System and Has Achieved Some Teaching Results

In the implementation of the pedagogical model reform, the author and the teachers are introduced to the constructivist concept in curriculum teaching. According to the constructivism theory, the "1 + 1 + 1 + 3" teaching system, the curriculum system jointly built by schools and enterprises, the teaching team of school teachers and enterprise mentors, the campus laboratory and the off-campus training base are designed, realizing the "talent co-education", "curriculum co-construction", "teacher co-construction" and "base co-construction".

(1) The pedagogical model of "self-planning" helps students to clarify their job positioning and professional direction.

The school teacher, Ms. C, in the interview mentioned that "the self-planning pedagogical model is different from the traditional pedagogical model, which helps students to find their professional positioning. Digital media art design is a major that covers a wide range of subjects, and students need to learn a lot of material. Through the subdivision of majors in the second semester and the third semester, it will help students to understand their major and clarify their job positioning."

A student, Miss C, mentioned in the interview, "*I chose the design direction, and I studied the courses of UI design and graphic design. After I knew my industry direction, I am interested in 3D, so I did not change my major direction."*

Miss. H, a student, mentioned in the interview that "*I chose the design direction at the beginning, and later I took special courses related to design. We took professional basic courses together with other direction students. In the audio-visual language class, I found I preferred the new media direction, so I changed to it again. "Whether there is a problem with the professional study after changing the direction, Miss H mentioned in the interview, "After choosing the direction of the courses, most*

courses are still taken together, and only one course is separated. The enterprise's teachers will tell us what the whole market is. I am not a technical talent, but I still want to develop in the direction of media operations."

During practice in the third semester, two students changed from design to the new media direction, and four students changed from the new media direction to design. Students have completed introductory professional courses and have an understanding of major segmentation, helping them better position themselves for careers and match job needs.

(2) The pedagogical model of "self-planning" has a significant role in promoting students' learning skills to match the market.

The school teacher, Ms. S, mentioned in the interview that "compared with the traditional pedagogical model, it will be more connected with the market, which makes up for some disadvantages of the lag of education. Especially in the market post-ability, the traditional pedagogical model may have a certain lag. By introducing enterprise mentors for the students to connect with a project of the enterprise side directly, they will try their best to make up for the lag compared with the traditional education model."

Student Miss. In the interview, W mentioned that "the cases in the leaflet textbooks written by teachers themselves are updated compared with the cases in the textbooks sent by schools, and many of them are their own projects."

During the implementation of teaching, enterprise tutors and school tutors jointly reconstruct the curriculum, teaching methods, learning methods, and evaluation system. The curriculum is modular, divided into project modules and case modules; compile leaflet textbooks, and construct situational and project-based teaching with the help of on-campus experimental bases and off-campus training bases.

The "self-planning" pedagogical model provides firm support and guarantees for students to learn skills that match market demand by promoting

personalized learning paths, practical learning, market-oriented teaching, independent learning, interdisciplinary and comprehensive practice, and integration with enterprise practice. This pedagogical model can help students better adapt to and meet the market's actual needs, thereby improving their competitiveness and employment opportunities in the workplace.

(3) The pedagogical model of "self-planning" helps students to build the learning style of independent learning

Through classroom observation, it was found that teachers serve as guides and organizers in the "self-planning" pedagogical model. Through information technology, teachers can provide students with rich teaching resources and learning materials, including electronic courseware, online teaching videos, and electronic books, to help students deeply understand the course content. Teachers can also organize online discussions and exchanges through the network platform to stimulate students' interest and participation in learning.

In the "self-planning" pedagogical model, students are encouraged to actively participate in developing the learning plan and managing the learning process. Students need to complete project practice and comprehensive practical training, which may involve collaboration with other positions in the enterprise.

In terms of learning methods, the pedagogical model of "self-planning" uses information means to support students' and teachers' activities, enabling teachers to guide and organize, and for students to engage in self-exploration and practical training, and to complete projects in enterprises.

4.3.2 In the Implementation System of "Self-Planning" Pedagogical Model, the Design of Each Main Link is Highly Feasible, and These Links are Closely Connected and Support Each Other, Forming a Coordinated and Orderly Overall Teaching Framework

The pedagogical model of "self-planning" is based on the national demand for cultivating highly skilled talent, society's need to cultivate talent suited to the market, and schools' and majors' requirements for distinctive training for digital media art design majors. Based on the professional's independent choice of direction, the pedagogical model, teaching and learning model, and evaluation system support one another, forming a student-centered, self-constructed pedagogical model.

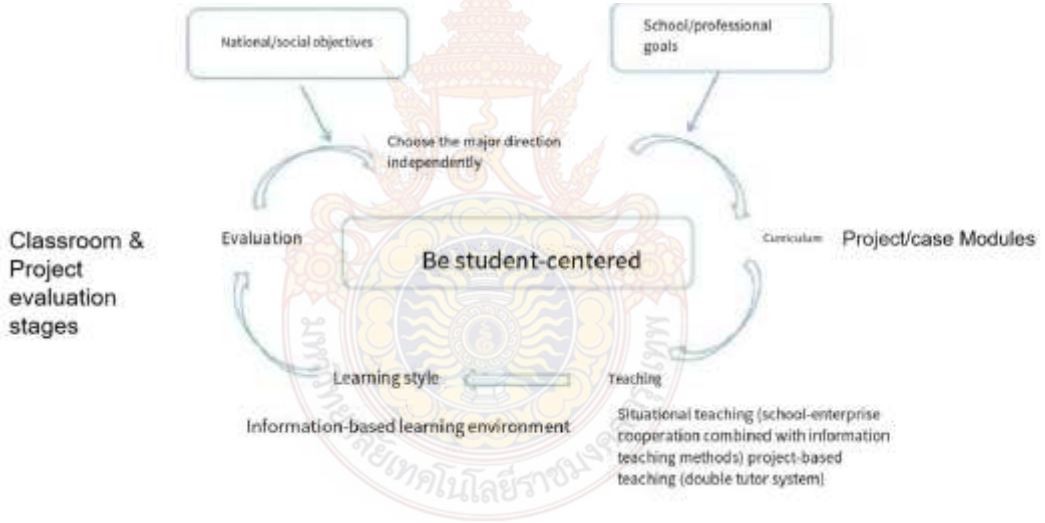

Figure 4.15 Implementation of the System of "Self-Planning" Pedagogical Model

(1) Course: In the pedagogical model of "self-planning", the course is the core of the teaching activities, including the project module and the case module. The project module enables students to engage in project-based practical training, thereby cultivating their practical working skills and comprehensive accomplishments. The case module is based on practical cases to help students understand how professional knowledge applies in real-world situations. The course design takes into account students' and market needs, enabling them to better self-plan their learning.

(2) Teaching: The pedagogical model of “self-planning” focuses on situational teaching and project-based teaching. Through real-situation simulation, situational teaching stimulates students’ interest and motivation in learning and helps them better understand and master knowledge. Project-based teaching enables students to learn through practical projects and be guided by corporate mentors, helping them better cope with the challenges of practical work. The design of the teaching link helps cultivate students’ practical and innovative abilities.

(3) Learning style: In the pedagogical model of “self-planning”, students’ learning model has high autonomy and individuation. Students can choose the learning content and path based on their learning needs and interests. At the same time, the application of information means makes learning more flexible and convenient. Students can access learning resources through the online learning platform and learn anytime, anywhere.

(4) Evaluation system: The evaluation system is an essential part of the pedagogical model of “self-planning”. It uses a comprehensive evaluation method that not only assesses students’ academic performance but also their practical, innovative, and teamwork abilities. The evaluation system’s design is consistent with the teaching objectives, encouraging holistic student development and aligning evaluation results more closely with students’ actual abilities and market needs.

4.3.3 The Joining of Enterprises Has a Significant Role in Promoting the Pedagogical Model of “Self-Planning”, Especially the Implementation of the Dual Tutor System

In the “self-planning” and pedagogical model, G College also actively introduces industry resources and professional tutors. Enterprises adopting the “self-planning” pedagogical model help focus on practical needs. As actual participants in the industry, enterprises can better understand the market’s needs and trends. Through cooperation with enterprises, teaching content and projects can be more consistent with

reality, enabling students to encounter real industry problems and projects in their learning and to cultivate practical abilities better aligned with market requirements. Corporate Mentor, Mr. H, mentioned in the interview that "*corporate mentors have a very high degree of connection with the market. In teaching, we can inform students about the market's future development, what the market needs, and the changes it will undergo. In addition to guiding students in employment and entrepreneurship, corporate mentors will add some practical homework in the teaching process, which is helpful for students to improve their professional skills.*"

G Collage at least 25% of the digital Media Art design programs are taught by corporate tutors. Core professional courses such as 3D Animation Design and Production, Digital Project Composition, Digital Creative Product Design (Lingnan Culture), and New Media Display and Design, as well as comprehensive practice courses such as Social Practice and Post Practice, are jointly taught by enterprise tutors and school tutors. The mass entrepreneurship, innovation, and expansion courses for "Traditional Chinese Art" and "New Media Advertising Design" are taught by enterprise mentors.

Adding enterprise resources to the pedagogical model helps expand the resources. Enterprises can provide rich resources, including industry-specific professional knowledge, practical cases, advanced technology, and equipment. These resources can enrich students' learning content and enhance their learning experience, enabling them to apply what they learn more effectively.

The pedagogical model implements the dual-tutor system to provide students with more comprehensive guidance and support. School teachers have advantages in professional knowledge and teaching experience. At the same time, corporate mentors can provide practical work experience and practical advice. Such a cooperation model enables students to receive more comprehensive guidance and training throughout the learning process and to better adapt to the market's actual needs.

4.3.4 In the Implementation of the "Self-Planning" Pedagogical Model, Students' Professional Knowledge, Professional Skills, and Professional Quality Have Been Improved to Some Extent

Students generally have a positive attitude towards reforming the pedagogical model. They believe that the traditional pedagogical model pays too much attention to the indoctrination of theoretical knowledge and lacks the cultivation of practice and practical operation. Digital media art design primarily needs practical operational ability and creative thinking. The pedagogical model of "self-planning" emphasizes practical cultivation and offers many beneficial courses and project-based practice, thereby better enabling students to exercise their practical operational and problem-solving skills. Student Mr. F, in the interview, proposed that "*to choose the direction of new media is to learn the latter aspects of film and television, such as editing, photography, etc. "Digital Image technology" course just taught this knowledge, in the course I learned how to shoot people, scenery, still life, etc., as well as post-processing software.* Student Mr. In the interview, L proposed that "*the current training method has helped me learn a lot of design knowledge. I did the game character modeling drawing during the Digital Painting course. The teacher talked about the role of the King of Glory in the drawing. I think it is a very good exercise for my skills.*"

At the same time, students can also adopt the "self-planning" pedagogical model, which emphasizes teamwork and communication, as digital media art design often requires collaboration among many people. Teamwork ability is also an essential quality for future employment. Professional and practical courses in the pedagogical model of "self-planning" are delivered through group cooperation. Students need to cooperate with their groupmates and collaborate with other positions within the enterprise. Miss. W mentioned in the interview that "*when the teacher arranged our group to do the UI design of the APP, after the design is completed, we should*

communicate with the programmers of the enterprise, and finally, it can be actually used. At the beginning, we were afraid to communicate. After many attempts, we found a way to communicate with programmers. Also, we understood the design and development positions, as well as how to cooperate."

4.3.5 Reflections on the Implementation of the "Self-Planning" Pedagogical Model

While analyzing the implementation of the "self-planning" pedagogical model and the role of each link, the author reflects on the model's design and overall implementation, serving as the designer, action promoter, and observer.

(1) Lack of design of the management system

During the implementation of the pedagogical model of "self-planning", it was found that the docking mechanism between schools and enterprises is not perfect. Ms. C in the interview "*""irst, the school learning style and enterprise management model, enterprise mentor education way is the need and school teaching way, then the school learning time is fixed, may with the enterprise mentor training students' time will have conflict, so the implementation of the project needs to find a both sides can convenient a point*." Therefore, in addition to signing cooperation agreements, schools and enterprises also need to establish communication channels to facilitate the timely exchange of information, such as teaching plans, resource needs, and project progress. Schools and enterprises need to hold regular school-enterprise cooperation meetings to evaluate the effectiveness of the cooperation, identify problems, and address them on time.

At the same time, the enterprise mentor's management mechanism is not complete enough. Corporate mentors play a vital role in guiding and supporting the pedagogical model of "self-planning"; thus, their management is also essential. Ms. In the interview, S proposed that "*it is difficult to determine whether the enterprise tutor can highly match the teaching objectives of this course. There are some problems with*

the selection of corporate mentors, as they are not as good as those who mainly teach for the project they are engaged in. In this case, the needs of the enterprise mentor and the enterprise he represents may deviate somewhat from our talent training program. This error value may lead to some difficulties encountered in the implementation of the teaching process."

Schools need to provide pre-job training for corporate mentors to help them understand their pedagogical models and student training goals, and to improve their teaching ability and guidance. Schools should regularly evaluate corporate mentors to appreciate their guidance and gather student feedback, identify problems on time, and make improvements promptly. Together with enterprise mentors, develop students' guidance plan, clarify students' training goals, and define practical tasks. Through these management measures, we ensure the effective implementation of the "self-planning" pedagogical model, providing more substantial support and guidance for students' personal development and career planning.

(2) Add learning resources to build learning methods

In the implementation of the pedagogical model of "self-planning", the author reflects on the learning model of students, especially about the construction of learning resources. In reflection, we realize that learning resources are crucial to students' learning experience and outcomes, so we should strengthen their construction and provision.

In the interview, Ms. L pointed out, "Now, there are a lot of online learning materials, but when vocational education students are in the lower grades, very few students are willing to find the required learning materials through the Internet independently. Therefore, the establishment of online learning resources for this major will help students in vocational education to better self-learning."

Therefore, the construction of students' learning styles should provide learning materials for digital media art and design majors that align with the teaching

objectives and the learning characteristics of students in vocational education. The data should be accurate and comprehensive, and should help students understand and master the knowledge. At the same time, the presentation methods of learning materials should also be diversified to meet the learning habits and needs of different students.

(3) The evaluation system adds value-added evaluation and achievement evaluation

In implementing the pedagogical model of "self-planning", the author found that, in addition to periodic and project evaluations, teachers also used value-added and achievement evaluations, encouraging students to participate in the "1 + X" certificate and various discipline competitions after class. The author improves the evaluation system by expanding value-added and achievement evaluations to assess students' learning situations and development outcomes more comprehensively.

Value-added evaluation focuses on students' progress and growth during the learning process. By evaluating students' learning performance at different stages, we can identify their learning progress and areas for improvement. The focus of value-added evaluation lies in the students' learning process, including the cultivation of a learning attitude, learning methods, and independent learning ability. For example, we can evaluate their value added through their study notes, study logs, homework completion, and other activities.

Achievement evaluation focuses on students' actual achievements and learning achievements during the learning process. These results can include students' project work, design work, research results, etc. Through the results evaluation, we can understand students' learning outcomes and practical application abilities. For example, we can evaluate students' projects based on completion, actual results, innovation, and so on.

Value-added and achievement evaluations will be combined with the original stage and project evaluations to form a more comprehensive and detailed

evaluation system. Such an evaluation system can better reflect students' learning situations and learning outcomes, and provide more valuable references and guidance for students' personal growth and career planning. At the same time, the improvement of the evaluation system also helps to promote the effective implementation of the "self-planning" pedagogical model, and improve the teaching quality and the development level of students.

CHAPTER V
CONCLUSION

5.1 Discussion

5.1.1 Introduction

In Chapter Four, the author provides a detailed discussion of the practical data on the implementation of the "self-directed learning" talent development pedagogical model at G Vocational College. This chapter provides an overview of the study, a discussion of key findings, an acknowledgment of the research's limitations, an exploration of future research possibilities, and recommendations.

The paper is divided into five chapters in total:

Chapter One introduces the background, research questions, objectives, scope, framework, and definitions of key terms of the study.

Chapter Two reviews relevant literature on pedagogical models and on reforms to the constructivist pedagogical model. This chapter examines pedagogical models in vocational education both domestically and internationally, clarifies the development trajectory of pedagogical models in Chinese higher vocational education, summarizes issues in Chinese higher vocational education, and scholars' targeted recommendations. It also introduces the theoretical framework of the study, namely the "student-centered" "self-directed learning" talent development pedagogical model for digital media arts and design.

Chapter Three discusses and interprets the study. The research, conducted as a qualitative study, focuses on G Vocational College as a case study. The triangulation method is employed, involving curriculum materials and classroom observations, face-to-face interviews, and focus group interviews. The discussion revolves around the following questions:

(1) How does collaboration among teachers (academic and industry teachers) enhance students' learning of artistic design, talent, and technology?

(2) In collaborative teaching with industry teachers, how do school teachers improve their teaching strategies?

(3) How do students learn their art, talent, and technology from teacher collaboration?

Chapter Four presents and discusses the research results. This chapter emphasizes the implementation of the theoretical framework of the "self-directed learning" pedagogical model – a student-centered dual-cycle pedagogical model. The implementation is divided into three stages: preparation, implementation, and reflection. The preparation stage outlines the specific design elements of the "self-directed learning" pedagogical model, including overall objectives, curriculum structure, teaching, and assessment systems. The implementation stage involves teachers and students implementing the model's framework in the teaching of digital media arts and design at G College, with the author documenting and describing the main environmental factors during this phase. The reflection stage involves analyzing and reflecting on the practice through recorded data, interviews, and teaching materials, summarizing the strengths and weaknesses of the "self-directed learning" pedagogical model.

Chapter Five concludes the study with discussions, conclusions, and recommendations.

5.1.2 Research Discussion

5.1.2.1 Research Review

In this study, we explored the reform of the pedagogical model in the digital media arts and design program at Chinese higher vocational colleges, conducting a comprehensive analysis using G College as a case. Upon reviewing the research results, several noteworthy points emerged:

(1) Reform of Pedagogical Models:

By reviewing the reform of the pedagogical model of the digital media arts and design program at G College, improvements in curriculum structure, teaching methods, and student participation were observed. These reforms, such as the transition to a "1+1+1+3" teaching system through collaboration with industry partners, are likely to improve students' learning outcomes and skill development. The study suggests that vocational students focus more on professional skills learning, and thus adjusting the curriculum by increasing the weight of professional courses and introducing industry-related courses to cultivate practical skills is an effective measure. This aligns with the viewpoint of scholar Zhu Yumei in "Reform of University English pedagogical models," advocating for adjusting curriculum settings based on student characteristics to enhance applied and self-directed learning abilities (Zhu, 2006).

The research indicates that G College instructors have adopted project-driven, situational, and case-based teaching methods, guiding students to solve real-world problems through practical projects. Students are also more involved in team collaboration and interdisciplinary cooperation. These teaching method reforms not only enhance student engagement and practical skills but also foster innovative thinking and problem-solving abilities. Professor Xu Guoqing's emphasis on practice-oriented education and task-driven pedagogical models in "Research on Practice-Oriented Vocational Education Curriculum" aligns with the discussed teaching reforms. This teaching approach integrates theory with practice, focusing on practical tasks to help students apply knowledge and skills, enhancing enthusiasm, initiative, and learning effectiveness (Xu, 2004).

Transformation in Students' Participation

Compared to traditional teacher-centered approaches, G College has shifted towards encouraging active student participation and collaboration. Teachers are no longer just knowledge providers but facilitators who promote student

engagement and teamwork. This transformation leads to the adoption of innovative teaching methods such as group discussions, role-playing, and project collaborations, motivating students to learn actively. This shift enhances students' collaborative abilities and overall qualities while fostering habits of independent and lifelong learning.

In "Research on Optimizing University English Classroom Teaching in the Network Environment," Sui Xiaobing (2014) used various research methods to reform English courses at Heilongjiang Jiamusi University. The study found that reforms focusing on student autonomous learning, improving teacher development, constructing hardware platforms, and providing personalized teaching resources positively impact students' learning outcomes.

In the paper "Application of DSL pedagogical model Based on Constructivist Theory in Adult Nursing Education," Yu (2023) introduced the DSL pedagogical model. Yu (2023) found that this teaching approach improves students' learning outcomes and professional practical abilities.

The results of these studies align with the findings of this research. The transformation in student participation positively impacts learning outcomes and overall qualities, cultivating collaborative skills and encouraging students to develop habits of independent and lifelong learning. However, for better results, further in-depth research and practical exploration are needed to explore student participation methods suitable for different disciplines and professions.

(2) Impact of School-Enterprise Collaboration:

In addition to reforming pedagogical models, we conducted an in-depth study and analysis of the impact of school-enterprise collaboration. The survey results indicate that school-enterprise collaboration plays a crucial role in the new pedagogical model.

Specifically:

Transformation of the Role of Industry Mentors:

In this study, there was an inevitable shift in teachers' roles within the new pedagogical model. Industry mentors and school teachers are not merely knowledge providers; they also need to act as guides and project managers. They must pay more attention to students' practical needs and the cultivation of practical skills. This transformation not only enhances students' overall qualities and practical skills but also strengthens the collaborative relationship between schools and enterprises. Cai Tianjiao (2019) proposed in "Research on Curriculum Construction in Higher Vocational Education under the Background of Modern Apprenticeship - A Case Study of the First Batch of Modern Apprenticeship Pilot Schools in Hubei Province" that in higher vocational education under the background of modern apprenticeship, the presence and involvement of industry mentors are crucial. They play an important role in guiding and supporting students in curriculum construction and practical activities, and in assisting students with practical operations and project tasks. This suggests that industry mentors play a more proactive role in this context, focusing not only on knowledge transfer but also on cultivating practical skills.

Although the perspectives and focuses of the two studies differ, both involve the participation and role transformation of industry mentors. This indicates that, under the new pedagogical model, the roles of teachers and industry mentors need to shift from traditional knowledge providers to more comprehensive guides and practical project managers, better enabling students to cultivate their practical skills and overall qualities.

Alignment of Teaching Content with Practical Needs:

Despite progress in pedagogical model reform, we identified shortcomings in collaboration between schools and enterprises. Specifically, there remains a gap between teaching content and actual occupational demands. Therefore, there is a need

for better collaboration between schools and enterprises to ensure that teaching content closely aligns with practical occupational needs.

(3) Benefits and Challenges for Students

To gain a deeper understanding of students' perspectives and the benefits they derived from the pedagogical model reform, we conducted interviews and surveys with a selected group of students. The results indicate:

Enhancement of Practical Skills:

The majority of interviewed students reported that the new pedagogical model provided them with more practical opportunities, thereby elevating their skills and practical abilities. These skills are deemed crucial for their future career development.

Improvement in Team Collaboration Skills:

Through activities such as group discussions and project collaborations, students learned how to collaborate with others, communicate effectively, and solve problems. This enhancement in teamwork skills is deemed highly significant for their future professional careers.

Increase in Learning Workload:

Despite the numerous benefits of the new pedagogical model, some students also reported challenges adapting to new teaching methods and an increased workload. This highlights the need for future teaching to better account for students' learning burdens and implement corresponding measures to improve learning.

In summary, through the case analysis of G College and findings from other research, we have drawn important conclusions regarding the reform of the pedagogical model in Chinese higher vocational colleges, specifically in the digital media arts and design program. These findings provide valuable insights and recommendations for educational reform in higher vocational colleges. However, we also recognize that there are still challenges to overcome in practice, such as aligning teaching content with

actual occupational needs and addressing students' learning workload. Addressing these challenges will require continued in-depth exploration and corresponding measures to improve future research and practice.

5.1.2.2 Comparison with Existing Literature

Compared with the existing literature, our research results both support and extend understanding in related fields. Here are some comparisons between our research findings and the literature:

(1) Reforming the "Student-Centered" pedagogical model contributes to practical talent development in Chinese vocational colleges:

Li (2020) noted in their study that the development of vocational education in China is relatively short, and it is currently at a stage of learning from mature international vocational education pedagogical models. In domestic teaching practices, there is an emphasis on a societal approach with less focus on the student's central position. Similarly, our study found that there is limited research on pedagogical models specific to professions, and the "student-centered" pedagogical model reform contributes to the cultivation of vocational talents.

Wang (2019) emphasized in their study that teaching method reform centers on reforming classroom pedagogical models. Our research corroborates this by showing that changes in teaching methods, learning approaches, and evaluation systems within the curriculum lead to improvements in students' vocational abilities, enabling them to achieve higher-level accomplishments, such as patents and competition awards.

(2) School-enterprise collaboration, especially the dual-mentor system, enhances students' market competitiveness:

Kou (2020) emphasized in their research that through collaborative teaching reform between schools and enterprises, students in higher education can actively participate in the integration of production and education. This not only increases employment opportunities but also enhances students' sense of achievement

and self-worth. Our research further supports this, finding that industry partners' involvement helps students in the digital media arts and design program gain knowledge from diverse fields, thereby enhancing their innovation capabilities.

According to Wen's study (2017), deep collaboration between schools and enterprises in the education process can build dual bases and implement the dual-mentor system, leveraging enterprise talent resources to achieve shared access to high-quality education resources. Our research indicates that the dual-mentor system is more effective at enhancing students' practical skills in the digital media arts and design program. However, it is crucial to note that schools and enterprises have different organizational structures, and there are variations in the management methods, incentive systems, and resources of school and industry mentors. Establishing standardized procedures is necessary to ensure the effective implementation of the dual-mentor system.

(3) Self-selected Specialization in the Major Contributes to Enhancing Students' Core Professional Competencies:

Zhang (2018) proposed that dividing specializations by profession enhances students' professional abilities. Other scholars have expressed similar views, such as Zhao (2020) in "Exploration of the '1+1+1' Talent Training Model in the Context of Expanding Enrollment in Higher Vocational Colleges", Lu (2020) in "Construction of High-level Professional Groups in Vocational Colleges Aimed at Technological Innovation", and Yan (2018) in "Strategic Research on Talent Training Mode Reform in Higher Vocational Colleges from the Perspective of High School-College Articulation. In line with these perspectives, our research also found that through the selection and adjustment of specialized directions, students' professional knowledge and practical skills were significantly improved. In student interviews, there was widespread positive feedback on the new pedagogical model, with students recognizing its contribution to better preparing them for future career development.

In conclusion, our study's results corroborate relevant literature, providing mutual confirmation of the reform's effectiveness in the pedagogical model for the digital media arts and design program. Additionally, our research expands the existing literature's understanding, emphasizing the importance of reforms to student-centered, collaborative pedagogical models with industry partners.

5.1.2.3 Research Conclusions

The "self-directed learning" teaching model summarizes the characteristics of the dual system in Germany, the Competency-Based Education (CBE) model in the United States, and the industry-academia-research model in Japan. The "self-directed learning" teaching model is student-centered, in which students autonomously choose their learning paths. It constructs a self-directed learning environment through curriculum, teaching methods, learning approaches, and assessment, aiming to assist students in mastering professional knowledge.

Table 5.1 Comparison of the Dual System in Germany, Competency-Based Education (CBE) Model in the United States, Industry-Academia Research Model in Japan, and Self-Planned Learning Model

Feature	**Dual System**	**Industry-Academia Collaboration**	**Competency-Based Education (CBE)**	**"Self-Planning" Model**
Advantages	- Combines theoretical learning and practical training, providing students with rich practical experience.	- Emphasizes collaboration with industries, exposing students to the latest technologies and industry	- Personalized learning pathways tailored to students' abilities and interests. - Emphasizes students' actual	- Emphasizes the combination of theory and practice: allowing students to gain experience in practice and

Feature	Dual System	Industry-Academia Collaboration	Competency-Based Education (CBE)	"Self-Planning" Model
	- Closely integrated with industries, enhancing graduates' employability and employment rates. - Tight linkage between vocational education and higher education, providing students with diverse career development paths.	trends. - Fosters students' innovation and practical skills, facilitating the cultivation of competitive graduates. - Provides various internship and practical opportunities, assisting students in smooth employment.	abilities and skills, not just credits or hours. - More closely aligned with real-world occupational demands, helping students better cope with workplace challenges.	apply theoretical knowledge to practical work. - Personalized learning pathways through curriculum, teaching, learning methods, and assessment.
Disadvantages	- Requires the establishment of a sound collaboration mechanism between industries and schools, which may face management challenges. - May	- May encounter conflicts of interest between industries and academia, necessitating the establishment of effective collaboration mechanisms.	- Requires the establishment of a comprehensive assessment system to ensure accurate assessment of student abilities. - Imposes higher demands on both teachers and students,	- Real-time understanding of students' dynamics is needed in the implementation process. - Requires the establishment of a sound enterprise management system.

Feature	Dual System	Industry-Academia Collaboration	Competency-Based Education (CBE)	"Self-Planning" Model
	encounter continuously evolving technologies and industry trends during the learning process, necessitating flexible course adjustments and updates.	- Some students may lack a comprehensive theoretical foundation, requiring a balance in teaching.	necessitating more support and resources for implementation.	
Effects on China	- Emphasizes practical skills development and promotes educational reform and innovation. In terms of practical skills development, Chinese universities have begun to introduce similar collaboration models, bringing students closer to actual job	- Firstly, it promotes close cooperation between industry and universities, helping students better integrate into practical work environments and enhance employability. Secondly, it stimulates demand for Chinese universities to strengthen their research and innovation capabilities, driving	- Firstly, it emphasizes students' abilities and skills, rather than traditional credit systems, promoting comprehensive assessment and the cultivation of students' actual abilities. Secondly, it encourages educational personalization and flexibility, inspiring momentum for reforming Chinese higher vocational	- Establishes a dual-cycle system from the perspectives of curriculum, teaching, learning, and assessment, promoting the teaching reform of art majors, especially the teaching reform of digital media art design majors.

Feature	Dual System	Industry-Academia Collaboration	Competency-Based Education (CBE)	"Self-Planning" Model
	requirements. Meanwhile, drawing on German experience has also propelled reform and innovation in Chinese higher vocational education, enhancing educational quality and standards.	educational reform and transformation.	education and promoting innovation in teaching methods and assessment systems.	

After a round of research, the author believes that the "self-planning" talent training pedagogical model needs to be supported through institutional design, the creation of a harmonious policy environment, and the provision of necessary human, financial, and material resources to facilitate its effectiveness in the teaching of the digital media arts and design program.

(1) With the advancement of technology, design has become a vast industry system, necessitating the establishment of a "self-planning" talent training pedagogical model based on constructivist theory. This model, centered around students, allows them to autonomously choose their learning direction, establishing a dual-loop system across four dimensions: curriculum, teaching, learning, and assessment.

Curriculum: Given the interdisciplinary nature of the digital media arts and design program, incorporating cross-disciplinary modules is essential. These modules,

such as interaction design, information design, and data analysis, integrate “design art + technical knowledge,” cultivating students’ comprehensive qualities and interdisciplinary abilities. The incorporation of these courses ensures that interdisciplinary modules seamlessly integrate knowledge and skills from various disciplines, enabling students to apply what they have learned in real projects flexibly.

Teaching: Collaborating with industry resources and corporate mentors to jointly establish teaching designs becomes crucial. Teaching design encompasses teaching methods, the establishment of teaching resources, and mechanism design. This approach allows students to better engage with real projects, understand industry demands, and gain practical work experience early on. It is crucial to balance the academic and practical aspects of teaching design to prevent it from becoming merely industry skills training.

During the implementation phase, the collaboration between companies and schools mainly focuses on curriculum design, building a teaching team, and providing teaching resources. In the subsequent stages, a comprehensive policy framework should deepen collaboration between companies and schools. Simultaneously, an assessment system needs to be established to regulate collaboration among units within companies and schools.

Improving the design of learning methods, enriching learning resources, and establishing an information-based learning environment are essential to further strengthen the acquisition of learning outcomes.

From an assessment perspective, developing learning outcomes is a lengthy process. Therefore, it is crucial to enrich assessment methods and develop a comprehensive tracking assessment system. The revised assessment system can better reflect students’ overall qualities and abilities, including stage assessments, project assessments, classroom performance, value-added assessments, and outcome assessments.

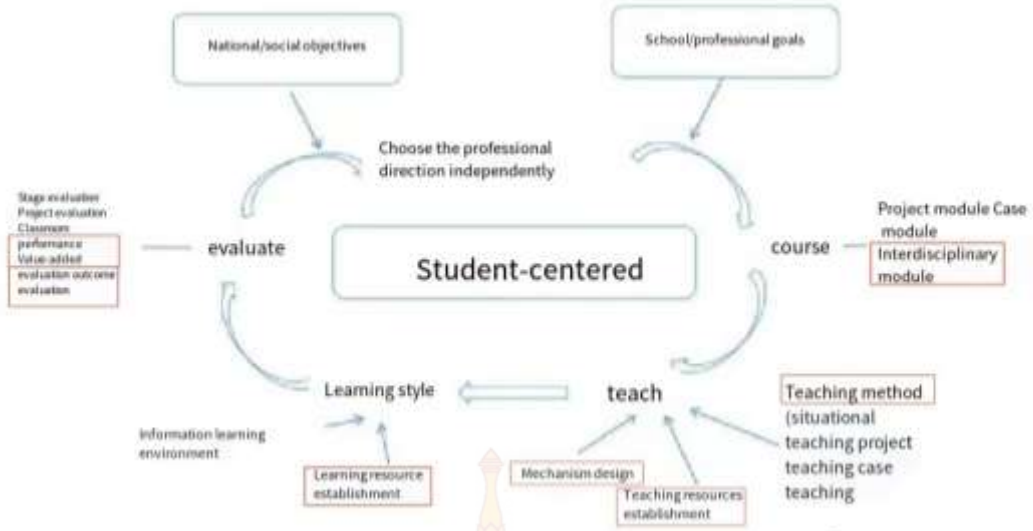

Figure 5.1 Conceptual Illustration of the Implementation System of the "Self-Guided" Pedagogical Model

(2) The "self-planning" talent training pedagogical model can help students in the digital media arts and design program at higher vocational colleges better understand their professional direction, choose their specialization, and acquire professional knowledge, thereby enhancing their market recognition.

Throughout the implementation process, students have demonstrated a high level of initiative, enthusiasm, and creativity in the classroom. In addition to completing coursework, students have achieved significant accomplishments and results at a higher level, including competition awards, creative works, patents, participation in company projects, and the attainment of "1+X" certificates.

Moreover, the pedagogical model has made remarkable progress in students' self-awareness. Through interviews with students, we found that they gradually discovered their interests, strengths, and development directions through practical experience. They could better understand their career goals and formulate more specific development plans. This improvement in self-awareness not only helps

them study more purposefully but also lays a solid foundation for their future career planning and development.

In summary, the “self-planning” talent training pedagogical model, when implemented in the digital media arts and design program at higher vocational colleges, provides comprehensive support and development opportunities for students’ skill learning, market competitiveness, and career planning capabilities through in-depth exploration of professional directions, practical project experiences, and enhanced self-awareness. The innovative nature and practical effects of this model inject new vitality and prospects into the education reform of the digital media arts and design program.

(3) One of the core concepts of the “self-planning” talent training pedagogical model emphasizes the close collaboration between schools and enterprises. By fully leveraging industry resources and professional expertise, schools and enterprises jointly plan courses to provide students with education content better aligned with market demands, thereby enhancing students’ market competitiveness.

In terms of curriculum planning, collaboration between schools and enterprises is evident in the integration of industry demands and educational objectives. Through the joint planning of enterprise mentors and school teachers, courses can be more closely aligned with actual projects and industry trends. For example, a company with rich experience and forward-looking perspectives in digital media design ensures that course content aligns more closely with practical applications, enabling students to apply what they have learned in the workplace.

Furthermore, faculty support is also a crucial component of collaboration. The dual guidance from school teachers and enterprise mentors allows students to receive professional guidance and advice from different perspectives. School teachers bring extensive educational experience and disciplinary knowledge, while enterprise mentors provide the latest industry trends and practical cases. This multifaceted faculty

support enables students to integrate theory and practice better, cultivating more comprehensive and professional talents.

In terms of resource sharing, collaboration between schools and enterprises allows the sharing of resources from both sides. Enterprises provide practical projects, industry information, and other resources, offering students a broader range of practical opportunities. Simultaneously, schools open up teaching resources to enterprise mentors, enabling them to understand students' learning progress and needs better and to provide feedback for course adjustments and optimization.

The collaboration between schools and enterprises in the "self-planning" talent training pedagogical model integrates knowledge and practical application, providing students with a more comprehensive professional education. Through collaborative course planning, faculty support, and resource sharing, this model not only enhances the quality of education but also develops students' ability to adapt to market demands, enabling them to have more competitive career development opportunities in the field of digital media arts and design.

Through this research, we have derived important results regarding the education reform of the digital media arts and design program in Chinese higher vocational colleges. These results offer valuable insights and suggestions for reforming higher vocational education. However, we also acknowledge that there are still challenges in practice that need to be overcome, requiring further in-depth research and exploration.

5.1.3 Research Significance

In the article "On the 'Student-Centered' Approach," Professor Liu Xianjun from Huazhong University of Science and Technology points out that with the continuous development of information technology, psychology, and educational science, and the advancement of the massification of higher education, there is a renewed focus on the concept of "student-centered" education. He emphasizes the need

to shift from a “teaching-centered” to a “learning-centered” approach to enhance the quality of students’ learning, thereby facilitating comprehensive improvements in their knowledge, skills, and qualities (Liu, 2021). Similarly, Professor Li (2008) from the University of Macau has expressed similar views, suggesting that the “student-centered” approach aligns with the inherent laws of education, especially guiding the reform and practice of higher education.

The “self-planning” talent training pedagogical model in this study, rooted in the “student-centered” philosophy, focuses on students’ professional development, with students’ specialized knowledge at its core. It encompasses four dimensions: curriculum, teaching, learning, and evaluation, forming a supportive dual-cycle system. This model aims to promote students’ autonomous learning, innovative thinking, and career development. Its innovation lies in its comprehensiveness and specificity, providing students with a more flexible and personalized learning environment.

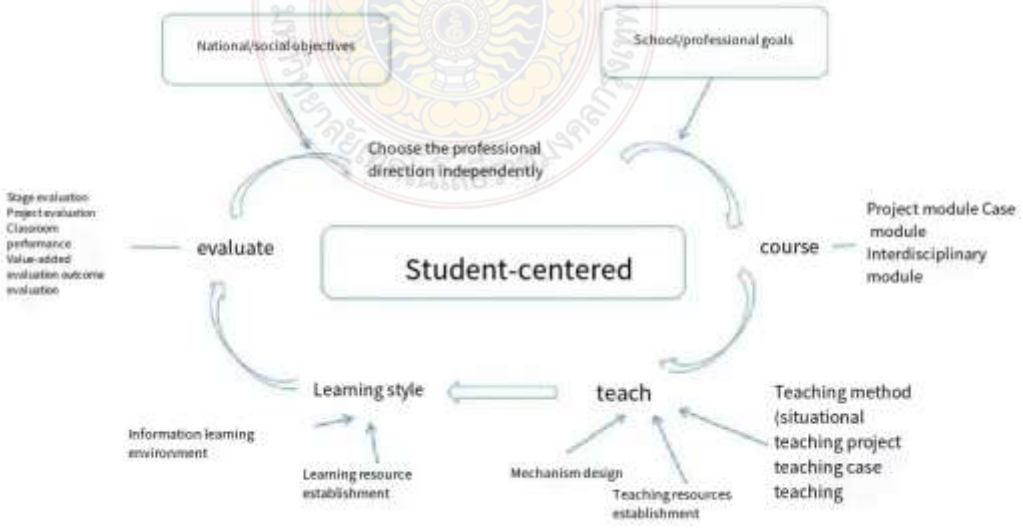

Figure 5.2 Implementation System of the “Self-Planning” Pedagogical Model

(1) Introduction of a New Pedagogical Model

The core innovation of the “self-planning” talent training pedagogical model lies in the introduction of a groundbreaking teaching philosophy. Compared with the traditional teacher-centered approach, this model places students at the center of learning, emphasizing their autonomy in choosing professional directions, engaging in course studies, and participating in practical projects. Through this model, students can more flexibly plan their learning paths, selectively choose courses and projects based on their interests and goals, thereby cultivating more personalized professional capabilities.

(2) Innovation in School-Enterprise Collaboration

The innovation of this model in school-enterprise collaboration is evident in the joint planning of courses and projects by enterprise mentors and school teachers. The involvement of enterprise mentors ensures that teaching content aligns closely with real-world projects and industry demands. Enterprise mentors not only provide insights into the latest industry trends and case studies but also offer students opportunities to engage in real projects. This collaborative model enables students to hone their skills in a real-world environment, fostering career-readiness and enhancing their competitiveness in the job market.

(3) Establishment of a Multidimensional Evaluation System

To more accurately assess students’ practical abilities, this model introduces a multidimensional evaluation system. Traditional single-mode evaluation often struggles to reflect students’ overall qualities comprehensively. Through stage evaluations, project assessments, classroom performances, value-added evaluations, and outcome assessments across various dimensions, students’ diverse abilities receive thorough consideration. This not only encourages active participation in the classroom but also provides students with more opportunities to showcase their growth and development in practical projects.

5.2 Recommendation

5.2.1 Limitations of the Study

As theoretical research and practical implementation progress, the author, in conjunction with the background of this study, has continuously reflected on the research process. In this course of reflection, certain shortcomings in the research have been identified, primarily manifested in two aspects:

(1) While this study delved into the various stages of implementation at G Vocational and Technical College, due to time constraints, only one implementation cycle was conducted. This limitation in the sample data affects the generalizability of the research findings. To enhance the universality of the study, future research could broaden its scope by including diverse samples, expanding the geographical range, or conducting the study in more colleges to assess the results comprehensively.

(2) The effective integration of corporate resources into the educational system relies on the prerequisite support of relevant education policies. Although this study addressed this aspect, it lacked a systematic exploration of the relevant education policies. For a more comprehensive understanding of the conditions that facilitate the fusion of corporate resources and the educational system, future research could delve deeper into pertinent education policies to explore how systemic policy support can better facilitate this integration.

5.2.2 Future Research Directions

On May 1, 2022, the new version of the “Vocational Education Law” was issued, formally establishing, for the first time, the principle of “mutual integration of vocational education and general education” in law. The promulgation of this regulation implies that more students will choose to enter the vocational education system for learning in the future. According to 2021 data, enrollment in higher vocational schools reached 5.5672 million, with 16.0303 million students enrolled, accounting for 55.60% and 45.85% of the total enrollment and students in national undergraduate and

vocational colleges, respectively. This indicates that the ratio of vocational education to general undergraduate and vocational schools is roughly “5:5.”

Although vocational education has shown outstanding performance in the employment rates of secondary vocational and higher vocational graduates, exceeding 95% and 90%, respectively, and the employment rate matching the major has stabilized at over 70%, vocational education has so far failed to gain widespread societal recognition and struggles to be on par with general education.

Therefore, how to fully leverage the advantages of vocational education, primarily how to utilize corporate resources and establish pedagogical models that align with market demands, becomes a direction that requires in-depth research. Focusing on the characteristics of the digital media art and design major in higher vocational education, aspects such as integrating teaching resources through enterprise cooperation, reforming teaching methods, utilizing modern technology to build resource platforms, and refining implementation systems offer new research directions and content for future studies.

In subsequent research, we will primarily focus on the following aspects:

(1) Research on teaching methods in the “self-planning” talent cultivation pedagogical model. This model involves cooperation between both enterprises and schools. Exploring how to expand collaboration between school teachers and enterprise mentors to ensure students benefit maximally from the courses and cultivate advanced learning abilities is worthy of in-depth research.

(2) Research on institutional design in the “self-planning” talent cultivation pedagogical model. In the implementation process, the design and establishment of institutions are crucial. Institutional research needs to cover all aspects of the implementation process, ensuring the smooth implementation of teaching, evaluation, and other processes. Sound institutional research in the implementation system will explore how to ensure practical cooperation between schools and

enterprises, formulate corresponding regulations to guarantee teaching quality, and facilitate smooth collaboration.

(3) Research on evaluation methods in the “self-planning” talent cultivation pedagogical model. Due to time constraints, this study mainly adopted short-term evaluation methods. At the same time, subsequent research can establish long-term tracking evaluations. This approach can more accurately measure students’ learning outcomes development in the “self-planning” pedagogical model and simultaneously detect and improve its implementation.

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APPENDICES

Appendix A

Teaching Process Arrangement of "Digital Creative Product Design (Lingnan Culture)"

Order Number	Circumference Times	Week	Main teaching content (Including practical training program)	Study Time	Teaching Method	Homework and Requirements	Place of Class
1	2	four	Project 1: Non-heritage and creation of an exhibition hall Task 1: Creation of a cognitive exhibition hall Sub-task 1: Understand the exhibition hall- take the cultural center as an example 1. Historical and cultural series of cultural centers 2. Natural Resources Series of the Cultural Center 3. Traditional medicine series of the cultural center Sub-task 2: Analysis of intangible cultural heritage and cultural creation 1. Historical and cultural creation and cultural creation series of cultural centers 2. Cultural resources series of cultural centers 3 Cultural center of traditional medicine series of cultural creation	4	method of lecture, Visit the teaching method	Exhibition hall type of non-heritage cultural creation research ask: Submit corresponding research materials in SuperStar Learning.	exhibition building
2	3	four	Task 2: Digital reconstruction of non-heritage cultural creation in the exhibition hall	4	method of lecture, exercise method	Digital reconstruction of non-heritage cultural creation	Solid-5302

Order Number	Circumference Times	Week	Main teaching content (Including practical training program)	Study Time	Teaching Method	Homework and Requirements	Place of Class
			Sub-task 3: Cultural mining and transformation of intangible cultural heritage in exhibition halls 1. Arrangement of the intangible cultural heritage contents of the cultural center 2. Extraction of the core culture of the history and culture series of the cultural centers Sub-task 4: Digital storage and compilation of the intangible cultural heritage in the exhibition hall 1. Construction of the small program module of the cultural center 2. Transformation of historical and cultural series graphics of cultural centers			in the exhibition hall ask: Complete the small program module, combining an icon design in the SuperStar Learning pass.	
3	4	four	Task 3: Creation and development of the exhibition hall Sub-task 5: the digital form generation of non-heritage creation in the exhibition hall 1. Prototype design of the small cultural and creative program of the cultural center 2. High-fidelity design of a cultural creation small program Sub-task 6: Form transformation and interpretation of non-heritage creation in the exhibition hall	4	method of lecture, exercise method, Field teaching method	Exhibition hall is a type of non-heritage cultural creation and development ask: Cultural and creative applet prototype, interaction design, submit homework in the SuperStar learning pass.	Off-campus training base

Order Number	Circumference Times	Week	Main teaching content (Including practical training program)	Study Time	Teaching Method	Homework and Requirements	Place of Class
			1. Interactive display of cultural and creative small programs of cultural centers 2. Digital IP presentation of the cultural and creative small program of the Cultural Center				
4	5	four	Task 4: Integration and promotion of non-heritage cultural creation in the exhibition hall Sub-task 7: The integration of non-heritage creation content and carrier in the exhibition hall 1. Digital media courseware making 2. Dual carrier of digital exhibition hall and financial media Sub-task 8: Promotion of non-heritage cultural and creative products in the exhibition hall 1. Online promotion of social media and WeChat public accounts 2. Word promotion of cultural centers	4	Task drive method, Independent learning method	Integration and promotion of intangible cultural creation in the exhibition hall ask: Public account promotion plan and publicity material design, according to the format requirements, for upload to the learning platform.	Solid-5302
5	6	four	Project 2: Tourism non-heritage and creation Task 1: Cogize the creative design of tourism Sub-task 1: Understand the intangible cultural heritage of tourism -take the She folk songs as an example	4	method of lecture, Visit the teaching method Task-driven method	Tourism non-heritage cultural creation design research ask: Submit corresponding research materials	Solid-5302

Order Number	Circumference Times	Week	Main teaching content (Including practical training program)	Study Time	Teaching Method	Homework and Requirements	Place of Class
			1. She is a national historical legend. 2. She People Persuade Song series 3. She loves the nationality love song series 4. Series of She minority songs Sub-task 2: Analysis of tourism intangible cultural heritage and cultural creation 1. A series of historical legend songs of the She nationality 2. She people encourage the world song series 3. Cultural creation of the She ethnic love songs 4. Series of her minority songs			in SuperStar Learning.	
6	7	four	Task 2: Digital reconstruction of tourism non-heritage creation Sub-task 3: Cultural mining and transformation of tourism intangible cultural heritage 1. Organizing the contents of the minority folk songs 2. Extracting the core culture of the She folk songs Sub-task 4: digital storage and compilation of tourism intangible cultural heritage 1. Video and video collection of the She minority folk songs	4	method of lecture, exercise method,	Digital reconstruction of tourism non-heritage creation ask: Organize the positioning of tourism intangible cultural heritage, brainstorming, and other materials, and upload the mind map to learning.	Solid-5302

Order Number	Circumference Times	Week	Main teaching content (Including practical training program)	Study Time	Teaching Method	Homework and Requirements	Place of Class
			2. She wrote a folk song story and script design				
7	8	four	Task 3: Creation and development of tourism intangible heritage Sub-task 5: the digital form generation of tourism non-heritage creation 1. Animation art design of the She folk songs 2. Animation modeling, scene, props, and action style design of the She folk songs Sub-task 6: Form transformation and interpretation of tourism non-heritage creation 1. Original action animation painting design of the She folk songs 2. Animation sound and dubbing design of the She folk songs	4	method of lecture, discussion method, Field teaching method	The original painting design and animation production of the tourism category ask: It should conform to the characteristics of the She minority and fully engage in communication and cooperation with enterprise mentors.	Off-campus training base
8	9	four	Task 4: Integration and promotion of tourism non-heritage creation Sub-task 7: The integration of the creative content and carrier of tourism intangible heritage 1. Special effects production of the She folk songs 2. Visual synthesis of the animation of the She folk songs	4	Task-driven method, autonomous learning method	Tourism non-heritage creation design, complete the digital map and scenic spot activity planning ask: In the SuperStar Learning pass, submit the visual design effect of the main KV of scenic spot activities.	Solid-5302

Order Number	Circumference Times	Week	Main teaching content (Including practical training program)	Study Time	Teaching Method	Homework and Requirements	Place of Class
			Sub-task 8: the promotion of tourism intangible heritage creation 1. Route planning and digital map design 2. Scenic spot activity planning -main KV visual design				
9	10	four	Project 3: Folk custom non-heritage and creation Task 1: Cognitive folk customs and creative design of non-heritage works Sub-task 1: Understand the folk customs and intangible cultural heritage -Take the dragon boat as an example 1. Dragon-boat-making skills 2. Traditional sports: dragon-boat racing Sub-task 2: analyze folk intangible cultural heritage and cultural creation 1. “Dragon Boat Family” series of cultural creation 2. “Leading the top” series of cultural creation	4	discussion method, Task-driven method	Folk Heritage Cultural Design Research ask: Submit corresponding research materials to the SuperStar Learning.	Off-campus training base
10	11	four	Task 2: Creation and development of folk intangible heritage Sub-task 3: Cultural excavation and transformation of folk custom intangible cultural heritage 1. Extraction of dragon-boat cultural symbols	4	Method of lecture, exercise method	Folk custom intangible heritage creation and development ask: Complete the dragon boat culture symbol extraction and innovative	Solid-5302

Order Number	Circumference Times	Week	Main teaching content (Including practical training program)	Study Time	Teaching Method	Homework and Requirements	Place of Class
			2. Innovative graphic transformation of dragon boat cultural symbols Sub-task 4: digital storage and compilation of folk custom intangible cultural heritage 1. Two-dimensional storage and image design of the dragon boat IP 2. Dragon boat intangible cultural heritage color matching skills			graphic transformation in Super Star Learning Pass.	
11	12	four	Task 3: Digital reconstruction of folk non-heritage creation Sub-task 5: the digital form generation of folk non-heritage creation 1 . Preliminary design of 3D image of dragon boat IP 2. Three-dimensional image precision mold design of the dragon boat IP Sub-task 6: the form transformation and interpretation of folk non-heritage creation 1. Action production of the dragon boat IP 2. AR interaction design of the dragon boat IP	4	Method of lecture, Field teaching method, Independent learning method	Digital reconstruction of folk intangible heritage creation ask: Complete the production of the dragon boat 3D IP image, and submit it to Super Star Learning Pass.	Off-campus training base
12	13	four	Task 4: Integration and promotion of folk non-heritage creation	4	Field teaching method,	Integration and promotion of folk non-heritage creation ask:	Library exhibition hall

Order Number	Circumference Times	Week	Main teaching content (Including practical training program)	Study Time	Teaching Method	Homework and Requirements	Place of Class
			Sub-task 7: the integration of folk heritage content and carrier 1 . Fusion design of dragon boat IP and digital carrier 2 . Fusion design of dragon boat IP and physical carrier Sub-task 8: the promotion of folk custom non-heritage text creation 1. Dragon boat cultural and creative marketing planning 2. Dragon boat cultural creation promotion and display		Independent learning method	Submit the marketing planning proposal PPT and the display panel renderings in the Super Star Learning Pass (pay attention to the submission format requirements)	

Appendix B

Interview

Teacher's Name :

Interview Location :

Interview Time :

Questions:

(1) What is your opinion on the "self-planning" pedagogical model? What do you think is the difference between it and the traditional pedagogical model?

(2) Do you think it is meaningful for students to choose their majors in the context of a big major direction?

(3) Can the two major directions help students find their employment direction?

(4) Do you think corporate mentors' participation helps students improve their professional skills?

(5) What changes do you think the addition of corporate mentors has made to the course?

(6) What difficulties do you feel in the implementation process?

(7) Do you have any suggestions for the current training method?

Table 1 Information Sheet of the Interviewed Teachers

No	Name	Position	Education Background	Year of Education	Duration of Interviews
1	Ms. C	Head of Teaching and Research	Associate Professor of Fine Arts / National Level 2 Colourist / Senior Lecturer in New Media Operations	20	30 min
2	Ms. S	Lecturers	Master of Fine Arts/ Doctor of Industrial Design	18	30 min
3	Ms. L	Corporate Mentor	MA in Design Art	5	30 min
4	Mr. H	Corporate Mentor	Bachelor of Computer Science	2	30 min

Student's Name :

Interview Location :

Interview Time :

Questions:

(1) Do you think it is helpful to choose your own professional direction for your study?

(2) In the third semester, did you change your professional direction? What is the reason?

(3) Do you think you know what you can do after graduation? What other skills do you need to learn?

(4) What do you think are the differences between the dual tutors (corporate mentors and school teachers) and the corporate courses?

(5) How do you think the inclusion of corporate mentors in the course will help you in your studies?

(6) Do you have any suggestions for the current training method?

Table 2 Information Sheet of the Interviewed Students

No	Name	Age	Level/ Year	Major	Duration of Interviews
	Mr. W	20	2nd year	Digital Media Art and Design	15 min
2	Miss C	18	2nd year	Digital Media Art and Design	15 min
3	Miss C	19	2nd year	Digital Media Art and Design	15 min
4	Miss W	19	2nd year	Digital Media Art and Design	15 min
5	Mr. L	20	2nd year	Digital Media Art and Design	15 min
6	Mr. F	19	2nd year	Digital Media Art and Design	15 min

Based on the question of “self-selection of major direction and the help of dual course tutors (enterprise tutors and school teachers teach at the same time)”, in-depth interviews were conducted with six students based on drawing lessons from the existing relevant research results. Mainly from the following six questions:

(1) Do you think it is helpful to choose your own professional direction for your study?

(2) In the third semester, did you change your professional direction? What is the reason?

(3) Do you think you know what you can do after graduation? What other skills do you need to learn?

(4) What do you think are the differences between the dual tutors (corporate mentors and school teachers) and the corporate courses?

(5) How do you think the inclusion of corporate mentors in the course will help you in your studies?

(6) Do you have any suggestions for the current training method?

Appendix C

Classroom Observation Record Sheet (Teacher)

Table 3 Classroom Observation Record Form (Teacher)

Course Title		Observations Date	
Object of Observation		Observational Location	
Observational Performance	Teacher Performance		Appraise
Circumstances	Is the design of teaching materials in line with constructivist ideas, and does it provide real, complex problems and situations?		
	Does the organization of teaching reflect the thought of constructivism, and does it encourage students to explore and find problems actively?		
Construct	Are there group discussions in class, and are students encouraged to build cases and solve problems?		
	Are students to learn and apply constructivist ideas in practice through various ways (such as experiments, projects, etc.)?		
Concentrate one's attention on	Ask students to concentrate in class and to avoid distractions.		
	Are multiple teaching methods used to attract students' attention to improve learning efficiency?		
Community	Are students required to help each other and make progress together in cooperative learning?		
	Do you encourage students to build strong interpersonal relationships and foster a spirit of cooperation in the learning process?		
Ability	Are there some ability-related questions set up in quizzes or exams to assess students' ability development?		
	Do you understand how students' abilities and		

	quality improve through observation of their actual operations and practice?	

Table 4 Class Observation Record Form (Student)

Course Title		Observations Date	
Object of Observation		Observational Location	
Observational Performance	Student's Performance		Appraise
Circumstances	Does the learning environment allow students to explore and discover on their own?		
	Are the learning materials too diverse and challenging, thereby failing to stimulate students' interest in learning?		
	Is the learning task relevant to the students' real-life experiences and background?		
Construct	Do the students demonstrate their acceptance and understanding of the new knowledge?		
	Can the students connect and integrate the new knowledge with the existing knowledge?		
	Do students take the initiative to build their own understanding and knowledge system in the learning process?		
Concentrate one's attention on	Do the students show a positive learning attitude and participation?		
	Do the students show perseverance and determination in solving the problem?		
	Can students maintain their attention and focus on their learning tasks?		
Community	Can students actively collaborate with their peers to learn and solve problems?		
	Can students participate in group discussions, share, and listen to different perspectives?		
	Do students show respect and support for others, and do they build an active learning community?		
Ability	Do the students demonstrate both critical thinking and creative thinking?		
	Can students apply what they learn to practical problems and situations?		
	Do students demonstrate the ability to perform independent learning and continuous learning?		

Teaching of the “Self-Planning” Model

Evaluation of the “Self-Planning” Model

Evaluation Process	**Evaluation Process (60%)**						**Formative Assessment (40%)**	
	Before class		**In class**			**After class**	**Final assessment**	
Evaluation method	Self-study before class (5%)	Pre-class tasks (5%)	Attendance (5%)	Evaluate tasks (25%)	Quality evaluation (10%)	After-school development (10%)	Knowledge assessment (20%)	Skills assessment (20%)
Evaluation subject	Teacher comments			Teacher comments, group mutual evaluation, student self-evaluation, enterprise evaluation		Teacher comments, company participation	Teacher comments	Company reviews