

Empowerment of Arts Education: Optimization and Innovation in Integrated Teaching Models under the Science and Education Development Strategy

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Abstract: *With the in-depth promotion of the strategy of "developing the country through science and education", the teaching problems faced by professional art colleges and universities are becoming more and more prominent, such as uneven distribution of educational resources, single teaching method, and lack of practice opportunities, etc. In order to optimise and innovate the art education mode, we should adopt an integrated teaching mode to achieve a comprehensive upgrade of art education. In order to optimise and innovate the art education model, we should adopt an integrated teaching model to achieve a comprehensive upgrade of art education. Specifically, we should take student-centred measures such as strengthening practical teaching to improve students' comprehensive quality; enriching teaching methods to stimulate students' internal drive and innovation; integrating school and enterprise resources to broaden employment channels. Through these initiatives, we can promote the reform and development of art education and cultivate more excellent art talents with innovative ability and practical experience.*

Keywords: *inclusive teaching, comprehensive literacy enhancement, multiple parenting*

1. Introduction

The strategy of developing the country through science and education is of great significance to the support of talents for modernisation, so it is necessary to deploy education, science and technology, and talents as a whole, in order to adapt to the new requirements of the new journey for the majority of science and technology and education workers. According to this theory, we focus on "science and education integration, school-enterprise collaboration, wisdom and innovation" three aspects of the teaching mode reform thinking, research, hoping to sort out the teaching ideas applicable to the current and the next five years of art and science and technology teaching trends.

2. Status and background of the study sample

2.1. Background to the Establishment of the Arts and Technology Programme

Since Art and Technology became a second-level discipline of Design in 2012, many art colleges and comprehensive universities across the country have opened this speciality. The sample of the team's research and practice is the game art design direction under the art and technology speciality, which has been constructed in Sichuan Fine Arts Institute for ten years, focusing on the teaching mode of "production, learning, research and use" to cultivate composite art design talents. But how to high-quality development is still a top priority that can not be ignored, in the teaching process to explore the teaching of innovative methods, talent training programmes, the results of the transformation mechanism is also an unavoidable problem.

2.2. Current problems with the teaching model

Art and technology majors rely on the educational resources of art colleges and universities to offer courses and organise teaching practice. The current teaching mode has many advantages, but there are also some outstanding problems, such as: the feedback cycle of the learning situation is too long, the update of knowledge to respond to the needs of the times is not timely, and the practical part of teaching is insufficient. In traditional teaching, feedback is often given on a weekly basis, i.e., once a

week; and in the case of the practical session, for example, with 6-7 hours per day, the theoretical hours account for about 3/5, and the practical hours account for 2/5. Obviously, there are insufficient practical hours, and students need to rely on their own self-control and executive power to carry out extra-curricular extension, which is neither controllable nor stable, and affects the effectiveness of the practice.

Problem 1: Inadequate construction and use of online educational resources. Game art design under the art and technology major, as a special professional direction, is supposed to shoulder the mission of walking with the times, but it seems that the construction of its online resources is still insufficient, which includes two aspects: firstly, its own construction is not systematic, although the materials are presented online according to the chapters of the lecture notes, but it lacks video explanations, which is not intuitive enough; secondly, it is the introduction and updating of the scarcity of the students, and it is not able to satisfy the students' self-study needs after class and during holidays. The second is the lack of introduction and updating, which can't meet the students' needs for self-study after class and during holidays, and can't assist students in reaching their extracurricular learning goals.

Problem 2: The teaching mode is detached from the objectives of talent training. The art and science and technology programme is based on the cross-border integration and innovative development of art and science and technology, focusing on the cutting edge, artistry, technology and interactivity. The previous teaching mode has been unchanged for a long time, with limited innovation, and has failed to create a multi-level and composite practice platform, so many courses follow the traditional teaching mode, with no way to reflect the characteristics, and the extensibility of the courses is also poor. Firstly, the courses are weakly articulated in the process before and after, failing to effectively break down the barriers between the various aspects of teaching and make them play a synergistic role. Secondly, the teaching experience of the course has not been systematically sorted out and formed into results; the practical results of the students have not been subject to disciplinary and social assessment; and the teachers have not organised extra-curricular practical activities for the students to expand their activities.

2.3. Teaching model innovation in art colleges is imperative

The speciality of art and science and technology lies in interdisciplinarity. When facing the proposition of cultivating talents for new industries, the way out is to implement the spirit of the "14th Five-Year Plan" document, deepen the integration of science and education, and collaborative education between schools and enterprises, and to promote the articulation and coherence of the education chain, the talent chain, the industrial chain, and the innovation chain. Only by exploring and innovating the teaching mode based on the characteristics of the times can we better cultivate professional art and design talents with scientific thinking and innovative spirit in cultural and creative industries and digital arts.

3. Research on the integrated teaching and learning model

During the two-year research cycle, the team conducted research on the implementation of this teaching model through teaching and learning scenarios such as faculty activities, three meetings and one class, aesthetic practice, professional visits, professional internships, and second classes.

3.1. Focus on practical results

The teaching team conducted research on the teaching activities and effectiveness of current and graduated students, teachers, academic staff and employers to understand the efficiency of teaching organisation, feedback mechanism, conversion rate of results, social practice ability, and enterprise satisfaction in teaching activities.

Adopting a comparative research method, the research team conducted a case study using a studio with several years of experience as the sample for analysis. The researcher conducted in-depth analyses of studios or courses that have implemented different practice methods such as flipped classroom, virtual project practice, and extracurricular practice tracking. At the same time, members of the project team also introduced practice projects in their own courses and observed their results. Through this method, we can gain a deeper understanding of the effects, advantages and disadvantages of various practice approaches, which can provide reference for further optimising the curriculum and teaching methods.

In the teaching process of the completed and ongoing classes, we have deeply explored the impact of the "integrated" teaching mode on the teaching effect. In order to understand the students' experiences in this mode of teaching and learning, we have collected and collated a variety of feedback information from course practice to students' needs. Based on the actual teaching situation, we will continue to adjust and optimise this teaching mode, so as to promote the external cycle to lead the internal cycle and further improve the quality of teaching.

3.2. Emphasis on process management

Actual research phase: questionnaire survey documents such as 'Research on the Status Quo of 'Internet+Teaching' and the Use of Network Teaching Resources' and 'Some Questions on Virtual Projects and Special Events to Enhance Practical Teaching Ability' were issued and recovered from different professional class groups under Design Studies. The questionnaires included questions about the frequency of use of 'Internet + Teaching', satisfaction and so on, and we found that a lot of students have a low frequency of use of existing online teaching resources. Such as this, we carry out data statistics and problem listing, and form a research report and countermeasures.

Collating and analysing stage: We integrate and analyse the theoretical preparation and research data in the early stage to find out the problems of the current teaching mode in teaching method, teaching effect, learning feedback, evaluation of results, etc., and put forward targeted and operable countermeasures.

Application and practice stage: We have applied teaching methods such as flipped classroom and virtual project practice in actual teaching, and at the same time, we have continuously adjusted and optimised the teaching methods according to the students' feedback, in order to strive for the authenticity and reference value of the cases of the research theme.

Evaluation and summary stage: Through the research on learning conditions and feedback from course practice (including the second classroom), members of the project team will write a report on the current situation of the "integrated" teaching mode and the exploration of reform strategies, and participate in or organise teaching workshops to discuss the issue. Based on the feedback and evaluation of the practice phase, we believe that the 'integrated' teaching model has achieved positive results in some aspects, but there are also some areas that need to be improved, and we have also collated the results of the practice and listed the issues that need to be continuously paid attention to in the future.

4. Practical Exploration of the Integrated Teaching Mode of Art Colleges and Universities under the Strategy of Developing the Country by Science and Education

The ideological basis of the theory of "science and education for the country" has a long history, which not only refers to the progress and development of science and technology, but also should include how to scientifically develop education and teaching. If the teaching is in form and on paper, it will be empty and vain, so we have to explore and construct teaching ideas, methods and systems based on "science and education fusion, school-enterprise collaboration, wisdom and innovation", and use the results of the practice to prove it[1] .

4.1. Reflections on the improved path of the teaching model

Promoting the integration of science and education achieves full coverage of the integrated teaching mode. Integrating scientific research into classroom teaching strengthens students' research and development and practical skills, cultivates their ability to apply theoretical knowledge to practice, and exercises their ability to take action through participation in real projects. Research on teaching and learning activities is conducted on current students, graduates, teachers, and academic administrators to understand teaching and learning relationships, effectiveness of organisational methods, mutual conversion rates, and satisfaction. A variety of research methods are used to obtain comprehensive information, and the data are analysed and processed to draw accurate conclusions and recommendations. Teaching activities require joint efforts and co-operation of all parties to achieve the best teaching results.

The collaboration between the university and enterprises buttresses the needs of social development and highlights innovativeness. This approach deepens the exploration of the integrated teaching mode

of 'industry-academia-research-use.' Based on existing teaching activities, it explores the ecosystem of 'integrated' teaching. Combining flipped classrooms, virtual project practice, and the integration of classes and competitions strengthens students' learning experiences and compensates for shortcomings in traditional teaching. At present, we have cooperated with Chongqing Pasia Technology Co., Ltd. and Chongqing Youlu Technology Co., Ltd. etc., and students can gain real-world experience by participating in the practical topics of the company in the professional courses [2].

We will intensify the practice of teaching methods such as "Internet+Teaching" and school-enterprise distance joint teaching, and study the impact of the "integrated" teaching mode on the effectiveness of teaching and learning in the light of the existing teaching programmes. We will make use of online tools such as "Super Star", "Nail" and "Tencent Meeting" to achieve a seamless connection between online and offline teaching. In view of the requirements of the professional development of art and technology on the knowledge structure and weighting of students, we will put forward the idea of innovating the teaching mode in a targeted manner. We will endeavour to make the content scientific, reasonable and comprehensive, and able to objectively reflect the training needs of design talents.

4.2. Exploring pathways to inclusive practice in response to pedagogical issues

Through classroom practice, we activate the teaching body's own initiative and growth. We activate students' motivation and self-exploration through the introduction of real-life enterprise projects and online expert courses. Clarify the relationship between the teacher and the recipient in the teaching activities, the teaching mode is for the service of the teaching activities, no matter the teachers use the flipped classroom or the curriculum project method to guide the students, the fundamental purpose is to stimulate the subjective initiative of the recipient. In the current teaching activities, teachers are more to guide, inspire, assist students to gradually establish professional thinking, enhance creativity, and then transform creativity into market value. Teachers should change from the traditional "teacher-centred" to "student-centred", encouraging students to explore their own abilities, discover the "hidden value" and improve their "hidden skills". They are encouraged to explore their abilities, discover their "hidden values", enhance their "hidden skills", diversify their development, and understand and improve their overall quality in multiple dimensions.

The team introduces expert courses according to the characteristics of the discipline, uses Internet+teaching and blended teaching, expands the learning platform, updates the database, expands the sources of information, strengthens the learning effect, and stimulates personalised development.

Practice verifies the effectiveness of teaching and upgrades the talent cultivation programme. The team clarifies the goal of "integrated" talent cultivation of practice-type and development-type, and clarifies the relationship between classroom practice teaching and industry needs. On the basis of the existing classroom teaching, the team introduces special competitions, virtual projects and remote teaching seminars for the professional direction of game art and design, so as to involve social resources and assessment systems in teaching. This approach deepens the exploration of the integrated teaching mode of 'industry-academia-research-use,' shortens the practical test cycle from teaching to use, enhances students' awareness of workflow planning and management, and strengthens their sense of healthy competition. It integrates enterprise project practice into some courses and introduces enterprise simulation projects and mentor teams to broaden students' horizons and optimize the talent cultivation system. The teaching team can dynamically optimise the system according to the teaching results and feedback from enterprises to help students adapt to the needs of enterprises and improve their comprehensive quality.

Comprehensive practice, comprehensive enhancement of ability. The practical path of "integrated" teaching mode is proposed based on the needs of the new era. Through three years of research, the team explores based on case tracking and data feedback. Based on the principle of "school-enterprise co-construction, co-operation and innovation", we promote the in-depth integration of teachers and students, projects and events, in order to achieve significant improvement in teaching and practice. Practice leads to learning, practice leads to teaching, teaching grows together, so that teachers, students, enterprises complement each other's strengths, share resources, and coordinate their development; at present, there is a significant improvement in teaching, learning ability, practical ability and other aspects.

To promote the integration of science and education, the team explores the "integrated" teaching ecosystem based on the existing teaching activities. The team combines "Internet + Teaching", flipped

classroom, virtual project practice, interdisciplinary cooperation, and mutual integration of courses and competitions to achieve the integrated teaching mode covering all professional courses[3].

5. Prospects for an Inclusive Teaching Model

5.1. Optimising course content and teaching modes

The project team conducted in-depth research based on actual art design and teaching cases and assessment systems. Based on the comparative analysis of the objectives, programmes, research, practice and outcomes of the reform strategy with the traditional teaching model, we conducted a sampling study on the weighting of theoretical and practical teaching, and the effectiveness of the curriculum, to further optimise its sustainability and circularity. The content, design, implementation and feedback of the study all focus on the existing educational ecosystem, and seek to explore a more effective and sustainable teaching programme.

Build 'online + offline' course teaching resources including video tutorials, online workshops, and on-site research. Organizing a collection of examples of application and transformation of teaching results improves existing professional training programs, revises innovative practical teaching syllabuses and lesson plans. Consolidating what has been built and expanding what is to be built in terms of enterprise internship bases, projects, and industry-university-research cooperation bases provides guarantees for the construction of courses, practical training of teaching staff, and cooperation between schools and enterprises in cultivating talents.

5.2. Integration of science and education helps to improve professional quality

The team combines scientific research with teaching related to art and design in order to enhance students' scientific research ability, cultivate their ability to connect theory with practice, and exercise their execution ability to participate in real projects. In order to better achieve this goal, the team teachers have created and used various practical teaching methods such as individual studios and project working groups according to the needs of teaching and research, such as flipped classroom, virtual project practice, competition classes and other diversified teaching methods, so as to improve the teaching effect and realise the positive effect of the "integrated" teaching mode on improving the professional quality of the students. The positive effect of the "integrated" teaching mode on improving students' professional quality is realised.

5.3. Intelligent Innovation, Exploring Futuristic Teaching and Learning

The team strengthens the use of 'Internet+Teaching' methods, such as online art museums and virtual exhibitions, to enrich teaching content and resources; uses teaching practices such as school-enterprise telematics seminars, and conducts research and tracking on all aspects of teaching, from the content, usage rate, effectiveness, and feedback system of teaching resources (online+offline) to Sampling and analysing, researching the impact of flipped classroom, "Internet + Teaching", virtual project combat, special competitions, etc. on the traditional teaching effect. The rationality of the "integrated" teaching mode will be demonstrated through the teaching process, results and feedback, and information will be collected before, during and after the class, as well as the connection with the previous and previous courses. We will analyse the effects of the implementation of "online + offline", "in-class + out-of-class", "teaching practice + virtual project", "integration of classes and competitions", etc. " and other implementation effects are analysed and compared.

To sum up, under the guidance of the strategy of developing the country through science and education, professional art colleges and universities should adopt an integrated teaching mode. This model should be student-centred and classroom-based, solidify core qualities, emphasize "process management" and "industry docking", encourage personalized development, and adopt the "foundation + consulting + school-enterprise co-construction" approach to cultivate students. It encourages personalised development and adopts a "basic + consulting + school-enterprise co-construction" approach to cultivate students' independent thinking and execution skills. At the same time, through workshops and joint courses between schools and enterprises, we promote learning through competitions and actively organise coursework competitions to enhance students' practical ability and competitiveness in employment.

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